COAL AGE

DEVOTED TO COAL MINING AND COAL MERCHANDISING

EXTRACTION METHODS, EQUIPMENT AND MINING NEWS
MARKET REPORTS, PRICES AND STATISTICS
OF THE COAL INDUSTRY

ISSUED WEEKLY

VOLUME XXII

July 1 to December 31, 1922

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10th AVE. AT 36th ST.
NEW YORK
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The Problem at Washington

DIFFICULT as are the problems that will confront the coal miner and the coal operator at the Washington conference they will be far less puzzling than those which the President and his advisers must face. Having adopted a "hands-off" policy so long as seemed advisable, the administration now judges the time ripe for action. To delay would seem likely to entail serious consequences to the country. The point taken by the President seems fuly justified and it cannot be gainsaid that his decision is well timed.

The immediate interest of the consuming public is coal—coal enough to meet the demand without exciting to panic prices. Occasionally a word is printed about the need for a better functioning industry, about the reforms that should be accomplished and the "ills" that should be cured, but the general public knows little of what it is all about and, unfortunately, cares less. In what the President has set about the public at large can see nothing except the government getting the miners back in the mines in order that it may have coal.

If Washington sees no further than this its problem is simple. If all that is desired is to get production Washington can soon bring that to pass. The miners are impatient and must work; they have reason to feel that all is not well with their cause. A compromise with them could easily be arranged; a compromise, for instance, that would give them no reduction in wages in the hard-coal mines and a slight reduction in the bituminous fields coupled with their demanded interstate agreement. Such a settlement would be equivalent to victory for them and would be a fitting crown for the efforts of the International officers of the United Mine Workers until, stocks being again replenished, the non-union bituminous field would once again have all the spot orders for soft coal and all the contracts also. That concession is the utmost they can hope for and probably as much as they expect to receive.

Compromise No Principles

It is not inconceivable that the President could force the operators into such a compromise, for the power of the Chief Executive in molding opinion in such a matter is tremendous. Washington, however, is too well advised on all sides of the controversy unwittingly to drive matters in this course. The danger lies rather in an impatient public demanding a hasty action that would not be in the best national interest. The problem has two well-recognized aspects, one of which is to patch up a temporary settlement, the other to provide against repetitions of like kind. The temporary arrangement must be of such character as not to prejudice a proper and permanent solution. It is important that in the haste to get coal before it be too late, no principles be compromised.

The miner's right to collective bargaining and to strike are the fundamental principles on the one side. On the other side the principle of the right of management to manage and to employ whomsoever it will without forcing tribute to the union must be reinstated. Above all, in the interest of the public the principle of obedience to the laws of the land which stamp murder as murder and which guarantee to every individual the right to work where he will must be sustained. The problem at Washington is to evolve a formula under which the production of coal may be resumed without abridging the rights of the contestants or compromising these principles. This will prove to be no easy task.

The operators who are meeting at the request of the President have not called into question the rights of the men to organize or to strike. The United Mine Workers, however, is challenging the right of the owner to manage his property and of the individual worker to live, just as it has and is challenging the laws of the land. It were better that President Harding take over every mine, put an American flag on every tippie and give the country coal, rather than submit to the collective threatening of the union.

Lower Wages the Immediate Issue

Majority opinion has from the beginning held that the positions of the miners and of the operators were so opposite and so strongly held that some form of federal intervention was inevitable. It is now materializing. John Lewis has begun a repetition of the pilgrimages to Washington that preceded the end of the 1919 strike. The government saved him from his friends on that occasion; perhaps it will save him again. In other words, the end is in sight even though the details of the road to be followed are but dimly discernible.

The fundamental strategy of the miners' union, of course, is to prevent wage reductions. This accomplished, the prestige of United Mine Workers is enhanced and the incumbency of the officials made secure. Leaders that win have no fear for their jobs. The insistence on a joint interstate settlement—a national wage agreement—which is the war cry of the union, has no other significance. The miners reason correctly that to accede to state or district settlements is tantamount to lower wages. It is to get wages down that the operators are insisting on that form of negotiations, just as the miners in 1920 were quite willing to resort to state agreements to get their day wage raised from $6 to $7.50.

The miners cannot win in a straight endurance test with the operators, but as against the country they have an advantage. In that all-important sense it is the consuming public against the miner, for the consumer pays the wages of the miner, up or down, and he is the one who needs the coal and must go short and
suffer if sufficient fuel is not produced. The government represents the interests of the public in this matter, and in the last analysis the interest of the public is paramount.

One need ascribe no altruistic motives to the operators in saying that their efforts to reduce the cost of producing coal by lowering wages is in the public interest. The public demand for lower-priced household fuel is an issue which the anthracite operators know cannot be denied. They are but transmitting to mine labor the pressure they already feel. The operators of bituminous-coal mines in the union fields face competition from the non-union areas that will overwhelm them if it is not met. The government, acting for the consumer, is as much concerned as the operator in the lowering of the cost of production by a reduction of wages.

Nor does anyone deny the right of the miners' union to seek as high wages as it can get and hold. Labor may not be a commodity but, like capital, it must in the end take as its recompense that which it brings on the market and that which the ultimate consumer can afford to pay. But when competition is removed and there is no limit to the price save the conscience of the vendor, public policy dictates another course. Last month the country witnessed the self-restraint of those operators who were producing coal in holding to a price level below that which the market afforded. Capital, it is clear, is amenable to such restraint. Similarly last month the country also witnessed labor in the full exercise of its monopoly. Murder and wanton massacre at Herrin measured the self-restraint of the United Mine Workers of America when their monopoly was threatened.

There is ample evidence to indicate that the rank and file of the union miners recognize the fairness as well as the inevitability of wage reductions, but because of the leaven of radicalism in the union their leaders dare not make such an admission. Quite recently a majority of the representatives of the union miners in Nova Scotia agreed to a wage reduction. They even had the courage to defend their course before a meeting of their constituents. They repudiated the action of their duly appointed agents and wound up the meeting by voting to ask the Canadian Government to lend the Russian Soviet Government fifteen million dollars. The moral is that it is political suicide for John Lewis and his lieutenants to abandon their extreme position even though they and all their members know that in the end it cannot be maintained. That is why the coal operators refuse to put their fortunes in the hands of this particular labor monopoly.

**Destruction of the Union Not Sought**

Those who hold to the belief that the policy of the operators against a Central Competitive Field agreement is a policy aimed at the destruction of the United Mine Workers are misinformed. In all this land there are no truer friends of the union coal miner, no stauncher advocates of collective bargaining, than among the operators of the southern Ohio field. Yet it was the southern Ohio operators who to a man first took the stand that has prevented a central field conference. With hands tied behind its back by wage scales and working conditions dictated in Central Competitive Field agreements by a national labor union and by operators in larger fields to the north and west with which it is not now and has not for a score of years been competitive, southern Ohio has had to submit to having its throat cut by non-union fields to the south. With this field it is not a question of how its wage scales and costs compare with eastern Ohio or Indiana but how they compare with West Virginia. No one in Washington can induce this field to abandon its decision to seek the right of self-determination. Southern Ohio is significant in that it represents a type.

The problem of Washington, then, is to find a formula that will save the face of the union and at the same time preserve to the operators in the several fields the right to negotiate with their men wage scales that will be truly competitive one with another and with those without the fold. That is, we may witness a conference of the United Mine Workers and all union coal operators dealing with general principles but not setting district wages.

**Let It Be a Non-Partisan Board**

Whatever the process by which the miners are returned to work to meet the immediate requirements for coal it must from the very nature of the circumstances be of temporary character. Matters of policy and matters of fact interwoven in the issues of this controversy cannot be disposed of lightly. The present outlook therefore contemplates some form of commission that will, after the men are back at work, make an intensive and extensive study of the problems and report on the merits of each. It is further contemplated that this shall be an arbitration commission and that each side will be expected to agree in advance to abide by its findings.

We have evidence at the outset that the miners do not favor arbitration. It has been offered to them in the anthracite region after nearly three months of fruitless negotiations and they have refused to accept it. They are not disposed to abide by the findings of arbitrators ever after they have so agreed, as witness the fruits of the two Presidential commission awards in 1920. There is hope, however, that henceforth the labor unions may be induced to have greater respect for their contracts and that arbitration awards, unfortunately at best but compromises, may become more effective.

Transcending in importance the possible terms of settlement with respect to wages and working conditions that may be laid down by the commission now generally expected to be offered and appointed by the President are the principles governing future conduct for the coal industry that we have a right to expect, nay, even demand, from such a body. Twenty years of comparative tranquility in the anthracite region followed the adoption of procedure laid down by the Roosevelt commission. That record would not have been broken in this year of 1922 were it not for the overpowering ambition of the United Mine Workers to exert its "full economic strength" against the country to win in the soft-coal strike.

Pressure will be exerted to have representatives of the miners and of the operators on this commission. Already there is local talk among the hard-coal miners as to who should be chosen to represent them and there is some evidence of a feeling that a willingness to submit to the findings of a board should be predicated on the pledge that the personnel will be acceptable to them. The supreme problem of Washington is to take a stand for a commission overwhelmingly non-partisan and to insist on time for adequate investigation.
Fading Soft-Coal Stocks as Well as Lack of Anthracite Attest Timeliness of Efforts for Resumption

Unprecedented Stores of 67,000,000 Tons on April 1 Take
Record Drop of 47,000,000 Tons in Three Months—Consumption Estimate of 34,500,000 Per Month Indicates Seriousness of Situation

ADMINISTRATION efforts to start the coal mines are being taken none too soon if a serious coal shortage during the coming winter is to be averted. There are practically no available above-ground supplies of anthracite except those held by retail dealers and that already in the cellars of householders. Pea is the only size that can be had from producers in quantity, small lots only of both larger and smaller sizes being available to replenish yard supplies. The total is equivalent to less than one month’s production. The hard-coal mines have no overcapacity with which to make up deficiencies and there is no non-union production to supplement that now on strike. If the anthracite mines were now at work, producers would be obliged to allocate shipments, and every day’s output lost from now on will add to their troubles next winter and sharpen the demand to a point where runaway prices for some of the independent coal will give to the trade the “color of profiteering” it had in 1920.

On top of this potential shortage of anthracite the country faces a situation with respect to bituminous coal that under similar circumstances in the past has resulted in panic prices and exhibited all the symptoms of a shortage. Production measured against demand, not consumption, sets the price. If the definition be that there is a coal shortage when every buyer cannot get coal when he wants it, then the stage is all set for a soft-coal shortage. Demand from now on will equal consumption plus what the buyer would like to store against next winter.

It will be recalled that the Geological Survey, in its estimates of stocks on April 1, reported at least 65,000,000 net tons of bituminous coal in the hands of consumers. The study of official data on the three interrelated factors, production, stocks and consumption, summarized in the accompanying diagram shows that stocks were in fact around 67,000,000 net tons, exclusive of coal on upper Lake docks but including coal in cars not yet delivered to consumers. A new high record was thus set.

Never before has so much coal been delivered—and held by consumers in this country. Preparations against the strike were as complete as consumers could make them. In the months of April, May and June another record was set, for the stocks of coal took the biggest drop on record. From the peak of 67,000,000 net tons on April 1 to 20,000,000 tons on July 1 represents a draft of 47,000,000 tons. That the country had this reserve supply on which to draw while the union mines are closed explains the equanimity with which the strike has been viewed so far. Compared with the decrease of 47,000,000 tons in the past three months is the record of 40,000,000 tons in the seven months from the Armistice in 1918 to July 1, 1919.

In the first six months of 1921 the production of bituminous coal was 196,292,000 tons and exports less imports were 12,555,000 tons, leaving 183,737,000 tons available for consumption. Stocks were reduced 3,000-
000 tons, which, added to available production, indicates a consumption of 186,737,000 tons in that 6-month period. Production of bituminous coal in the corresponding period of 1922 was 186,415,000 tons, and exports less imports were around 3,558,000 net tons, giving a total net available for consumption of 183,857,000 tons. Stocks were reduced from Jan. 1 to July 1 an estimated 24,200,000 tons, which indicates a consumption of 207,257,000 tons. That is, the consumption of bituminous coal in the United States from January to the end of June this year was 20,500,000 tons greater than in the corresponding six months of last year.

Although production in the half year of 1922 was 9,877,000 tons less than the same period of 1921, exports also were less by 9,197,000 tons, leaving the country with some 680,000 tons less production for home use. Offsetting this small loss has been the draft on stocks exceeding last year by 21,200,000 tons.

The draft on stocks by months is estimated as 19,-500,000 tons in April, 14,700,000 tons in May and 13,000,000 tons in June. Assuming no resumption of mining in July, making allowance for the holiday which affects both production and consumption, and anticipating a sharp increase in demand sufficient to call forth every possible ton of production, we would expect a further reduction in stocks in July of at least 10,000,000 tons, leaving on Aug. 1 but 10,000,000 tons on hand. These figures are, of course, but estimates, for in the very nature of the case no other data can be had. But if as estimates they are within 20 per cent of correct, and we feel that the limit of error is not much more than half of that, it is apparent why the President has begun to act.

Judging from the history of the past seven years, an above-ground stock of bituminous coal of only ten million tons represents an impossible situation in this country. During 1917 and 1918, when consumption was at the rate of about 40,000,000 tons per month, there was a serious coal shortage when stocks were as low as 20,000,000 tons—that is, when the average for the country was equal to two weeks’ requirements. Consumption is now estimated to be at the rate of 34,500,000 per month and two weeks’ supply is therefore some 17,000,000 tons. Although skating close to the danger mark, the country had not by July 1 reached a crisis. Some time before Aug. 1 that point will have been reached if production is not resumed. In other words, by that time, but for successful intervention by Washington, the United Mine Workers will have the country where it wants to be—helpless and begging for coal.

From April 1 to Aug. 1, 1921, the estimated rate of consumption of bituminous coal was 28,200,000 tons per month. From Aug. 1 to Nov. 1 the rate was 35,-890,000 tons per month and from Nov. 1 to March 1, 1922, the rate was increased to 34,200,000 tons. Since that date the rate of consumption is estimated at an average of 34,500,000 per month, with the figure
at the end of June somewhat above that figure. In
the thirteen weeks ending with July 1 the requirement
for consumption and exports (less imports) has been
8,085,000 tons, or in round numbers eight million tons
per week.

Railroads are the largest single consumers of coal and
likewise the largest holders of stocks. Figures
recently assembled by the American Railway Associa-
tion of coal on hand for railroad use furnish an interest-
ing check on our estimates. All roads had on April 1
19,843,833 tons of coal. By May 1 this had been
diminished by 4,800,000 tons to 15,052,268 tons and by
June 1 still further reduced by 4,200,000 tons to 10,-
846,567 tons. Business on the railroads was greater
in June than in May and it is safe to estimate that on
July 1 their stocks were not in excess of 6,500,000
tons, equivalent to 23 days' requirements, if no new pro-
duction be used. Our estimate of total reserve on May
1 is 71 per cent of the supply on April 1. Compared
to this the railroads held 79 per cent of their maximum.
On June 1 the figures are 79 per cent for the country
and 72 per cent for the roads, and on July 1 it is
estimated that both the country as a whole and the
railroads had 60 per cent as much coal as 30 days pre-
viously.

Looking ahead it is apparent that were the produc-
tion of bituminous coal to be increased barely suffi-
ciently to meet the weekly requirements of around
8,000,000 tons that would not suffice. Stocks must again
be built up against the winter's need. If production
is not resumed in time and at a sufficient rate to meet
all current requirements and to put at least 30 days' supply
on the average into consumers' storage piles by
Nov. 1, at the latest, we will have a perpetual coal short-
age throughout the coming winter. On top of the output indicated is the need for some 20,000,000
tons of shipments for the upper Lake docks, all of
which must be produced and shipped before the close
of navigation—that is, by the middle of December.
There is, furthermore, the very evident possibility
that the certain shortage of anthracite will add still
further demands on the bituminous-coal industry.

STOCKS OF BITUMINOUS COAL COMPARED WITH PRODUCTION AND CONSUMPTION

From a peak of 67,000,000 tons on April 1, stocks declined to 20,000,000 tons on July 1,
a shrinkage of 47,000,000 tons in three months
Razing of Seneca Hoist Tower
By Dynamite
And Rebuilding of Breaker

BY DEVER C. ASHMEAD*
Kingston, Pa.

Dynamite Sticks Placed in Its Ten Legs Are Exploded While Locomotive and Stump Puller Pull Structure Out of Perpendicular—Good Example of Modern Breaker of Moderate Dimensions

SeVERAL years ago an estimate was made of the quantity of coal available at the Seneca Colliery of the Lehigh Valley Coal Co., and the calculation showed that approximately 2,000,000 tons of coal could be drawn from the mine, which, according to the present rate of mining, would have lasted until about 1920. This period is past and the mine is still operating. About one year after the date set for the possible abandonment of the mine another estimate was made showing 2,500,000 tons more available than when the first estimate was made.

The original breaker at this colliery was built in 1888 and the first coal was run through it on June 18 of that year. The building was of wood and in 1919 it became necessary to remodel it. The work was done a little at a time, but in July, 1921, the company decided to cease operating the breaker until the remodeling was completed. This reconstruction work began at a time when the mine, according to estimates, was supposed to have been exhausted. Advances in the art of mining and not errors in the estimate enabled the company to extend the life of the mine, and it is possible that other new methods of operation will be found that will further extend the duration of the plant beyond the limit now set.

For this reason the Lehigh Valley Coal Co. is well justified in expending the money needed for the complete remodeling of the breaker, not only on account of the increased life of the property, which in itself would justify such an expenditure, but also because of the probable life of the mine, which while it cannot be calculated can be surmised as being of considerable length. Many thin beds and seams which are not now considered commercially valuable are to be found in the area tributary to the colliery, and they probably will be mined by the time the coal covered by the estimate has been removed, for improved methods of mining and preparation make coal available that in earlier days could not have been operated.

In order to permit operation to continue the old tipple had been braced. The lower timbers of the old tower had become so rotten that it had settled about 2 ft. and was a little out of plumb. The company decided to remove the tower hoist which lifted the coal to the top of the breaker and to install a dragline scraper in its place. This called for the erection of a 10x42-in. flight conveyor.

Perhaps the most difficult problem encountered in the remodeling of the breaker was the removal of the old tower hoist. The following description of the manner of its razing is by J. H. Rockefeller, Jr., of the mechani-

*Anthracite editor, Coal Age.
The dynamite had to be placed in the legs of the tower with due judgment, or damage might have been done to the breaker posts that were adjacent. For this reason one-quarter stick only was used in each leg.

The tower was first cut loose from the main part of the breaker throughout its entire height, so that it rested on ten 12 x 12-in. posts, arranged in two rows of five. Holes were bored in the five posts of the outer row at points 3 ft. above the ground and in those of the inner row at an elevation 3 ft. higher. Each hole was charged with about one-fourth of a stick of dynamite, the charges in the front row of posts being connected in series and those in the back row being similarly connected but in another series.

In the meantime a hand-operated stump pulser was anchored to the ground about 200 ft. from the center of the tower in the direction in which it was desired to have the building fall. A rope from the winch was connected with two pulling ropes, the ends of which were fastened to the outside posts of the tower at a height of 140 ft. above the ground. Power was applied to the winch so that the pull on the building was 250 tons. In consequence the tower at its top was pulled away from the old structure about 6 in.

To take up any slack that might be in the ropes and to compel the tower to fall in the desired direction, a steam locomotive was attached to them. The explosive charges in the outside row of posts were now fired.

The tower started to fall. The locomotive then began to take up the slack in the rope. An instant later the charges in the inside posts were fired, causing the tower to stretch itself over the ground in the direction planned. The operation was entirely successful.

Although the locomotive which was used to pull the ropes was straining on them when the charges were fired and its wheels were spinning when the tower began to fall, the locomotive was not able to move fast enough to keep the ropes tight.

The old tower was 170 ft. high and by the use of the dragline conveyor to take the coal to the top of the breaker this height has been reduced to about 105 ft. The accompanying illustrations show the breaker before any remodeling commenced, the early stages of the remodeling, the tower in the act of falling, the cloud of dust that arose just as the tower hit the ground, and then the finished breaker. A minute or two after the tower had come to rest on the ground the cloud of dust had risen to a great height, and the air was black with the fine coal dust.

There is comparatively little difference in the methods of preparation in the old and the new breakers, but all the machinery has been made more accessible and fewer men are needed to operate the new breaker than were needed at the old. At present thirty-two men are required, whereas with the old arrangement forty-eight men were employed, a saving of sixteen men. This in one year's time will mean a large saving in the bill for the preparation of coal for the market.

The new breaker is of wood, as was the old, but the machinery is of the latest type, and the new structure with its equipment gives better results than its predecessor. This new breaker was constructed at a cost of about $225,000. Its capacity is approximately the same as that of the one it replaced, or about 1,800 tons in an eight-hour day.

The accompanying flow sheet not only shows the method of treatment of the coal but it also gives the number of tons of coal that pass through each process. In the description of the method of coal preparation that follows, the figures in the text refer to those shown in the flow sheet.

By means of a rotary dump the mine cars from the Seneca and William A. collieries of the Lehigh Valley Coal Co. are discharged into a hopper at the foot of the dragline conveyor. The coal is taken from the dump by means of this conveyor to the top of the breaker.
and is delivered onto a set of shakers (3 and 4). From the top deck (3) of these shakers the lump coal passes to a picking table (5) and from the bottom deck (4) the steamboat coal passes to the same picking table (5), while through deck 4 the coal passes to another shaker (6 and 7).

On picking table 5 the large rock is removed from the coal and goes to the rock dump. The cleaned coal goes to the crusher rolls (8), and from these rolls it passes to a set of shakers (9, 10, 11 and 12). The coal from the top deck (9) passes to No. 3 rolls (13). The coal from the second deck (10) and from the top deck of shaker 6 and 7 can go either to the rolls (13) or can be bypassed around them to the broken picking table (14). From this picking table the coal goes directly to the broken pocket (33), and the rock goes to the rock dump.

**Coal Above Pea Goes to Jigs for Cleaning**

Coal that is crushed in the No. 3 rolls (13) joins with the coal from decks 11 and 12 and passes to a double set of shakers (15, 16, 17, 18 and 19). The egg coal which is taken from the top deck (15) goes to the egg hoppers (30, 31 and 32) and from these hoppers it is fed directly to the egg jigs, which are of the Lehigh Valley type, after which the clean egg coal goes to the egg pocket (39). The stoved coal from the second deck (16) goes to the stoved coal hoppers (27, 28 and 29), and from these hoppers it is fed to the jigs and from the jigs to pocket 38. The nut coal from the third deck (18) goes to the nut hoppers (24, 25, and 26) and from these hoppers to the chestnut jigs and thence to the chestnut pocket (37). Pea coal, which is sized on the fourth deck (18), passes to the pea hopper (23) and then to the pea jigs and pea pocket.

The buckwheat coal, which is prepared on the fifth deck (19), passes directly to the buckwheat pocket and is ready for shipment to the market. The smaller sizes of coal go to another set of shakers (20 and 21) and the rice and barley coals are separated and go to their respective pockets or to the boiler plant to be used as fuel. The slush, which passes through the barley shaker, goes to the slush shaker (22) and then to the silt bank, and the coarser material goes to a car and is redumped and sent through the pocket. Practically all the rice and barley coal produced at this colliery, together with part of the buckwheat coal, is used for boiler fuel and is sent to the boiler house. The rock that is separated from the coal by the jigs is taken to the rock dump.

Interesting features in connection with the flow sheet of this breaker are the figures giving the distribution of the tonnage. They show the quantity of coal prepared in each jig and shaker and the waste material that has to be handled in the form of rock and also the areas of the several screens.

Before leaving the description of this breaker I want to quote once more from Mr. Rockefeller's article: "With the razing and remodeling of the Seneca breaker comes to the surface a most remarkable fact concerning its hoisting engineer. Thomas Langan was placed in charge of the tower hoisting engine when the breaker was started. He had charge of this engine continuously until it hoisted its last trip on July 19, 1921, a total of 33 years. The efficient care given by
COAL AGE  
Vol. 22, No. 1

THE engine during the 33 years handled approximately all the 8,500,000 tons of coal which has been shipped from this colliery. This means that this engine has hoisted about 12,000,000 tons of material, including boiler fuel and refuse, making in so doing approximately 6,000,000 hoists. Figuring 225 ft. of travel of cage per hoist, these cages have traveled approximately 256,000 miles, or about ten times around the earth.

The engineer who took such good care of his engine is entitled to much honor for his painstaking zeal, and the Lehigh Valley Coal Co. has not failed to show its appreciation of his services. In every company there are men who show a devotion to their work which the mine officials should not fail to recognize by due commendation and acknowledgment.

Zeigler Mine Copied Wehrum's Methods

BY CLARENCE R. CLAGHORN
Baltimore, Md.

In E. W. DAVIDSON'S article on "Zeigler No. 1 Mine," in the May 25 issue of Coal Age, p. 873, E. L. Berger, superintendent of that mine, is quoted as believing the rotary dump in use at this mine "is the first underground rotary dump ever operated."

He may be interested in knowing that two-car (tandem) power-driven rotary dumps were used underground at the shaft mines of the Lackawanna Coal & Coke Co. at Wehrum, Pa., in 1903, in connection with underground bins, pneumatic gates and self-dumping skips. In fact, at Zeigler not only the dumps but other equipment was, in many respects, patterned after the Wehrum installation and built by the same firm.

This installation, including the rotary dumps, the bins, the bin gates and irons and the skips were covered by patent No. 811,129, applied for May, 1903, and issued August 1906, so the Zeigler installation was anticipated by some fourteen years.

Copper Bond with Steel Terminals Suited For Electric Welding at Track Joints

It is now well known that the joining of steel to steel is the easiest form of electric welding. Recognizing and utilizing this fact the rail bonds shown in the accompanying illustration have been devised. These consist of copper bonds fitted with steel terminals slightly rounded so as to make it easy to join them to the rails.

As may be seen, these bonds are of two types—that known as the A.W. 7, which has one strand of any desired length and the terminals of which are welded to the base of the rail, and the A.W. 8, which is short, U-shaped and double stranded and is intended for attachment to the ball of the rail.

In both cases the ends of the strands are protected by a copper sleeve. These bonds are manufactured by the Ohio Brass Co., of Mansfield, Ohio.
Public Ownership of Coal Mines Causes Much Loss to Philippine Government and Affords Little Coal

National Coal Co. Stock Nearly All Held by Government—Coal After Five Years' Work Costs, Without Interest but Including Development, $17.50 Per Ton—First Coal So Dirty It Wouldn't Burn

By Roy C. Bennett
Manila, P. I.

Indications are that the Philippine Government, with approximately four and a half million pesos invested in coal-mining enterprises, is about ready to retire from this business and let someone who "knows the game" dig the insular fuel supply. Recent actions of the National Coal Co., a government concern whose head offices are in Manila, strongly suggest this outcome. C. Russell, manager of the coal company, said that the business in its present condition cannot well be turned over to anyone else, but that within six months the mine will be so far developed that it will be possible, he anticipates, for the government to lease the mines to an operating company on a royalty basis.

By this time the company will have invested another half million pesos and will have brought prospecting and development to such a stage that, according to the manager, the company can tell exactly what coal it has in sight. It is the opinion of Mr. Russell, and apparently of the board of directors as a whole, that the government couldn't "get out from under" just now without a heavy loss, but that the time is not far distant when it can.

No One Wants to Be Partner with Government

The National Coal Co., which has brought much criticism on the Philippine Government, was authorized and established by an act of the Philippine Legislature in 1917. The organic act specified that at least 51 per cent of the stock should be government-owned, and provided for the holding of the other 49 per cent privately or by provincial or municipal governments. The company has a capital stock of P3,000,000, all subscribed and paid in. At the present time the government owns all the stock, except P18,000 which is in private hands. The investments to date represent the sum total of the capital stock plus P2,000,000 which was borrowed from the National Development Co., another government organization. The company still has left about a half million of the loan it obtained from the development company.

Warren D. Smith, chief of the division of mines, Philippine Bureau of Science, who knows more than any other person about Philippine mineral resources and Philippine mine development, is a strong advocate of the government's getting out of the coal-mining business. In fact, after he had investigated the National Coal Co. properties he submitted a report in which he painted a very discouraging picture of the future prospects of the company, but he now gives the company full credit for the progress made since his report was written.

All Government Ownership Is Undesirable

In a report on mineral resources, just off the press, Mr. Smith says in part: "My investigation of the National Coal Co. has led me seriously to question if national mining projects, whether controlled by Filipinos, Americans or any other people, are wise. The reasons for the difficulties which this company has experienced are many, and not all of them should be laid at the doors of the Philippine Government or the Filipinos. Inexperienced Americans on the board of directors are equally responsible, but the gravest objection of all to these national projects is that they are likely to become hopelessly mixed in politics. A much safer plan and one that doubtless would bring results would be to subsidize worthy private companies, the government exacting some security for the money so lent. If the government received no more than the interest on the loan it would be amply repaid."

Mr. Smith says that coal is to be found in some quantity on practically every one of the larger islands of the Philippine archipelago. "There is no question," he says, "about the potential mineral wealth of the Philippine Islands. All those qualified to pass judg-
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The Cebu coal air slacks, but the Cotases and Butong coals, which are practically smokeless, do not. None of the three grades is subject to spontaneous combustion. Little trouble with water is experienced in any of the mines. In Cebu the coal beds dip and strike irregularly, but drillings have indicated that the Mindanao seams are more regular. The Cebu deposits have suffered much through the work of native miners who dig holes a short distance into the beds and then took out large quantities of coal, letting the earth fall in behind them. Large bodies of coal between these little mines have been made practically unminable.

**Dirty Coal Would Neither Burn Nor Sell**

As to marketing the coal the general manager wrote in the annual report the following statement:

> "Placing the coal in the market has been our principal difficulty. The first experiments with run-of-mine coal were failures, it being necessary in every case to mix our product with some bituminous coal before it would burn. We discovered that the poor results were caused by an excess of ash, a large quantity of shale being mixed with the coal during the process of mining. After this shale was removed by screening and washing we were able to obtain satisfactory results. There is no question as to our ability to sell at least 200,000 tons of semi-anthracite coal annually, provided we can produce it at a price that will allow us to compete with foreign coals."

The company formerly experienced much trouble from sickness among the employees in the Mindanao camps, where malaria was prevalent until steps were taken to remove the cause and to improve health conditions. Mr. Smith considers the mining laws in the Philippines adverse in several respects to mine development. In this connection he mentions high taxes for mines, adverse leasing regulations and other things needing reform. He particularly considers "political instability" a deterring factor.

As to labor conditions the following is quoted from the general manager's report:

> "It is difficult to give exact data on production cost at our present stage of development. It may be said, however, that it is possible in both Cebu and Mindanao to mine coal from the room and place it on the tipple at a cost of less than P4 per ton. It might be said with equal accuracy that every ton of coal produced during the year has cost, not including interest charges, but counting overhead, development expenses, railroad maintenance and operation, operation of our launches, etc., more than P35 per ton. Either statement is true but neither will give an accurate idea of the real cost of coal production. We estimate that the cost on board ships alongside the wharf in Malangas will average P8 per ton when the mine is fully developed. This allows for the depreciation of equipment as well as the proper return of the funds invested with interest, but is dependent upon the property's being developed up to full capacity. It is impossible to estimate on Cebu without more accurate information regarding the quantity of coal available. At present we have less than 200,000 tons assured. Assuming that we have 1,000,000 tons available, a not improbable amount, the cost of coal delivered in Cebu, when the mine is fully developed, should not exceed P10 per ton including all charges."

> "There are two conditions which make it difficult to market coal cheaply in the Philippines, transportation and labor. It costs us more than P11 per ton to ship coal from Malangas to Manila, whereas Japan often ships coal to Manila at as little cost as 6 yen ($3) per ton. While local production costs at the mine will compare favorably with those in the United States or Europe, the cheap labor of China and Japan, especially the former, will render competition difficult."

**Hard to Pay Dollar and Compete with Nickel**

"Chinese laborers in Borneo are contracted for at 30 centavos (15c.) per day, without subsistence. They are experienced miners, and such prices enable certain Borneo mining companies to produce coal at a low cost in spite of otherwise unfavorable conditions. In the interior of China, in the region where the Peking syndicate is operating, miners get less than 10 centavos (5c.) per day. Contrast this with Philippine conditions, where inexperienced miners are demanding, and obtaining, P2 ($1) per day."

In order to provide efficient supervision in the mines and to guarantee a supply of skilled labor the company recommends that a technical night school be conducted for the laborers.

The directors' report, which is in line with numerous
Plastic Fuel from Low-Grade Coal and Oil

In THE issue of Coal Age of June 8, p. 953, an article appeared entitled "Plastic Fuel Can Be Made of Low-Grade Coal and Oil and Can Be Coked Even If Non-Coking Coal Is Used." This article had a subtitle in which appeared the words, "With fine grinding almost all but inherent ash is removed by Trent Process." Exception having been taken to this wording, Walter E. Trent replies to a letter to one of the editors of Coal Age in the following words:

"This discussion as to the removing of inherent ash has been presented to me regularly for the past three years, first by the U. S. Bureau of Standards, then by members of the U. S. Bureau of Mines and others, all tackling the stand, exactly as you do, that the inherent ash is the silica or aluminum silicate, being the insoluble part of the original soil and mineral matter that found its way into the original wood.

"About that side of the question we need no discussion, but as to the grinding of the material sufficiently fine to detach it from the carbon, I must state that we do separate a large percentage of that impurity. We take a perfectly black piece of coal, showing no impurities whatever; grind it to approximately 200-mesh, forming of course, a large percentage of 300-, 400-, 500-, and even 1,000-mesh material. This actually separates a large part of the inherent ash, and thus its removal by the Trent Process is effected.

"I do not understand that you believe the inherent ash to be other than physically mixed in very small sizes, which is correct; but a great many people have claimed that the silica and aluminum silicate were chemically incorporated and could not be separated. This is absolutely incorrect. You will find that the U. S. Bureau of Mines, the U. S. Patent Office and everybody who has investigated our process willingly admit that we do remove inherent ash, in so far as it is physically detached from the carbon, and in some cases it amounts to from 60 to 90 per cent.

"My French company, for instance, has seven different kinds of French coals, the ash in which it is reducing to 1 per cent. I have only two coals that give this great reduction, but every single coal shows that inherent ash is removed. This question has arisen in all the principal patent examining offices in the world and has been conceded by them, and my patents are allowed in the United States, France, England, Holland, Germany and other countries."

"I am sending you copies of three patents that relate to our coal cleaning; one deals with the detachment and separation of inherent ash without any oil reaction (No. 1,420,163); another deals with the oil reaction alone (No. 1,420,164), and the third case deals with the physical detachment by pulverizing, the separation of the ash from the carbon by the oil reaction, and the distillation of the amalgam (No. 1,420,165). Will you kindly give your special attention to the parts of these patents that are marked with pencil, as they relate to the particular subject on which we are corresponding?"

Coal Age is informed that the coal, oil and water in amalgamation are agitated by paddle blades rotating at a speed of 150 r.p.m. and that where the coal is pulverized to a fineness such that it will pass readily through a 200-mesh screen a mixture of 62 gallons of light fuel oil to 2,000 lb. of coal will produce an amalgam in granules about 1 in. in diameter. The article stated 1,000 r.p.m. in the one case and 150 lb. of coal in the other.

J. J. Rutledge, superintendent of the central district experiment station of the Bureau of Mines at Urbana, Ill., calls our attention to the fact that the bottom layout at the Glen Rogers Mine, West Virginia, described by him before the Illinois Mining Institute and reported in Coal Age of June 22, 1922, page 1013, as designed by Carl Scholz was in fact designed by Oscar Cartledge, assistant to Mr. Scholz.
The Case Against Use of Purchased Power at Coal Mines

Steam Hoist with Mixed Pressure Turbine Advocated—
Cost of Stations and of Attendance Threaten Omitted in Mr. Clayton's Figures—At Nason Plant Power Cost Is 10c. Per Ton

BY C. W. SMITH†
Chicago, Ill.

IN A PAPER relative to power stations at mines a brief review of the development of mine power stations should be made in order to understand the conditions that exist at many mines even at this time.

The earlier mines used steam power only for hoisting, for ventilating and for pumping water from the shaft bottom. Mine power plants at this time were very crude. The hoist engines were small, as the cars hoisted seldom held more than a ton of coal and the shafts usually were shallow. Fans were of the old paddle-wheel type and were operated by simple slide-valve engines. The pumps at the shaft bottom were operated by steam lines running down the shaft. The boilers operating these plants were either of the long cylindrical type or its later development, the long boiler with two large flues. The coal was mined by hand and hauled to the shaft by mules. Any water inside was bailed by hand and hauled to the shaft. The coal was prepared by bar screens. At this time slack coal was either left in the mines or dumped in waste piles on top.

The next development in mining practice was the introduction of rope haulages for handling longer trips and negotiating heavier grades. The engines for operating these were steam-driven and were located either on top or underground near the shaft. This innovation represented a considerable advance in haulage practice and resulted in a remarkable increase in tonnage at most mines where the installations were made.

About the same time compressed-air puncher machines were introduced to enable more coal to be mined. This in part was made necessary by improvements in haulage.

These two developments were the last important changes made before the introduction of electricity into the mining industry. Both greatly increased the use of steam at the mines and resulted in the building of more modern boiler plants. Horizontal return-tubular boilers were installed and the power plant became the real heart of all operations about the mine.

Soon after the World's Columbian Exposition, in Chicago, many experiments were made in the use of electric locomotives for mine haulage and during the next ten years much progress was made along this line until, by 1900, many successful haulage systems were in operation. During this same time experiments were made with electric mining machines, but here progress was not so rapid, for the type of mining machine then in use was not adapted to an electric drive and it was necessary to develop the chain mining machine, a type hitherto unknown. Even after the machines had been fairly well developed the miners' organization in many instances, by opposition, prevented successful operation.

With the introduction of electricity into the mines little change was made in power-plant practice. The steam haulage engines and air compressors were replaced by steam-driven electric generators. The generator engines were of up-to-date design, and as transmission losses were much reduced the steam consumption was greatly lowered. Often after electrifying a mine it was found that even in a plant that had been previously overloaded a considerable reserve boiler capacity was available.

Boiler plants at this time consisted generally of hori-

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Mixed-Pressure Turbine

A 1,000-kw. machine at the Nokomis mine of the Nason Coal Co. Power at this plant costs 5.75c. per kw.-hr. generated, but all the power is not used for generating electricity, the hoist being run by steam. Furthermore, the mine was working at that time at only 70 percent of capacity. The cost per ton was 9.86c.

†Chief engineer, Nason Coal Co.

‡This probably was true in Illinois, which at that time was quite backward, being a new field. In Pennsylvania rope haulage much antedated compressed-air punchers.—EDITOR.
Since return-tubular boilers, often as many as ten or twelve in number. Stacks were small and not over 40 or 50 ft. high. The boiler settings were of brick and they usually were in poor condition. They were fired by hand, and waste coal was used, for it must be remembered that at this time slack had little or no commercial value. The plants usually were built piece-meal, that is, boilers were added whenever the steam supply became short, and as a result piping and header lines often were improperly installed. No thought was given to efficiency of operation, because labor was cheap and coal was had for practically nothing.

From 1900 to 1910 the coal industry of Illinois marvelously developed. Many large mines were sunk and the maximum daily tonnage grew from about 2,000 in 1900 to about 4,000 in 1910. Coal production increased greatly, and most of the newer mines were well laid out and designed from an engineering standpoint. Power-plant design lagged, however, for two reasons. First, direct-current power was used entirely about the mines, and consequently no important advances could be made in its distribution. Second, boiler plants were designed as simply and as near fool-proof as possible, because it was then thought that the coal-mining organization was too busy producing coal properly to look after complicated boiler plants. The result was that simple rules of thumb and prevailing mining practice were followed in the building of this portion of the mining plant.

Mines Outgrew Their Direct-Current Plants

As a result of this system by 1910, or a little later, many of these large mines had been extended to hitherto unthought-of distances and were beginning to have great difficulty in supplying adequate power to the working face. With the direct-current power used the only way to overcome this condition was to put in more copper feeders, and in many cases the cost was almost prohibitive.

In 1912 sinking of the Nokomis mine of the Nason Coal Co. began. In 1913 coal was reached, and the first mining machines were installed. At this time the Central Illinois Public Service Co. entered this field, and after conference with their representatives and with representatives of the Sullivan Machinery Co. the Nason company decided to install the first alternating-current mining machines used in the State of Illinois. After these had proved successful in operation it was decided to install an underground motor-generator set to supply current for the trolley locomotives.

Negotiations with the State Mining Board were necessary before it would permit the transmission of high-voltage current underground, even in armored cables, but all objections eventually were overcome and the installation was completed. Power was purchased from the Central Illinois Public Service Co. at 2,300 volts and stepped down to 275 volts underground for use in the mining machines. The motor-generator sets for driving the trolley locomotives and for charging the storage motors were driven directly by 2,300-volt alternating current. Subsequently this installation was expanded and the mine now has thirty mining machines and seventeen storage-battery and four trolley locomotives in operation.

COULDN'T MIX ISOLATED AND PURCHASED POWER

This system of power generation and distribution proved economical and satisfactory. It solved the problem of power transmission in coal mines. However, as Nokomis was equipped with a boiler plant and a steam hoist, the system of purchasing a portion of the power and producing the rest proved to be too expensive. In periods of slack work it was necessary both to maintain a boiler plant and to pay the primary charges to the power company.

During certain seasons of the year power interruptions were numerous, occasioning serious delay and many losses. The combined power costs averaged nearly 15c. per ton. Finally in 1919 and 1920 two or three successive increases in purchased-power rates raised costs so that it became necessary to seek relief. As no reduction of power rates could be expected, the only alternative was to discontinue the purchase of power.

With this in mind, the power conditions at the mine were carefully studied. The plant then installed consisted of six horizontal return-tubular boilers 84 in. in diameter and 20 ft. long, each of 175 b.hp. These furnished steam to a pair of 28x48-in. Danville hoist engines, to an 18x18-in. fan engine and to some miscellaneous car-puller engines, shop engines and pumps.

At first the installation of a high-pressure turbine was recommended, but this would have made necessary a great increase in the size of the boiler plant. Finally
it was proposed that all the equipment be electrified except the hoist engine and that a mixed-pressure turbine be installed to be operated by the low-pressure exhaust steam from the hoist. C. M. Garland, of Chicago, who recommended this installation, gave it as his opinion that no additional boiler power would be required to operate this plant. After careful consideration of this project Mr. Garland was commissioned to proceed with the installation. The plant was put into operation in June, 1920, and no additional boilers were required.

The new plant consists of a 1,000-kw. Ridgway mixed-pressure turbine equipped with a surface condenser and a large Rateau regenerator, and a 300-kw. General Electric turbine equipped with a jet condenser. A complete switchboard was installed and equipped with sufficient meters to measure the power each department consumed.

As the mine did not operate steadily during the latter part of 1920, no reliable figures as to the cost of power were available until the first three months of 1921. The cost of operating the power plant during January, February and March, 1921, is given in Table I.

### Table I. Cost of Operating Plant of Nason Coal Co.

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineer</td>
<td>$777.36</td>
</tr>
<tr>
<td>Firemen</td>
<td>2,179.04</td>
</tr>
<tr>
<td>Handling ashels</td>
<td>531.81</td>
</tr>
<tr>
<td>Cleaning boilers</td>
<td>181.94</td>
</tr>
<tr>
<td>Oilers</td>
<td>485.91</td>
</tr>
<tr>
<td>Electricians</td>
<td>363.33</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>7.25</td>
</tr>
</tbody>
</table>

Total operating labor: $24,622.03 tons.

Table II has been taken from Mr. Clayton's paper:

### Table II. Cost of Purchased Power at Three Kincade Mines

<table>
<thead>
<tr>
<th>Mine</th>
<th>Tons of Coal Produced</th>
<th>Days of Operation</th>
<th>Kw.-Hr.</th>
<th>Cost of Purchased Power</th>
<th>Cost of Kw.-Hr. per Ton, Cents</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>818,400</td>
<td>219</td>
<td>1,991,496</td>
<td>$41,116.26</td>
<td>5.04</td>
</tr>
<tr>
<td>9</td>
<td>767,852</td>
<td>209</td>
<td>1,950,000</td>
<td>47,225.81</td>
<td>6.10</td>
</tr>
<tr>
<td>10</td>
<td>585,206</td>
<td>236</td>
<td>1,330,000</td>
<td>29,000.00</td>
<td>4.90</td>
</tr>
<tr>
<td>Total</td>
<td>2,171,358</td>
<td>664</td>
<td>5,202,296</td>
<td>91,346.15</td>
<td>4.93</td>
</tr>
<tr>
<td>Average</td>
<td>725,846</td>
<td>221.3</td>
<td>1,734,099</td>
<td>39,288.15</td>
<td>2.40</td>
</tr>
</tbody>
</table>

The above figures tell the whole story as far as the power company is concerned, but they are only the beginning as far as the mining company must figure. The costs given above represent the cost of power at the transformation station. In order to get the figures to the same basis as those I have given, the cost of operation of the power plant, exclusive of the hoisting engineers, must be added. In mines hoisting 4,500 tons, with electric hoists, it is customary to have an attendant in the power plant to look after the machinery, circuit breakers, motor-generator sets, etc. This will add one man at $7.25 per day for a total of 664 days to the above figures.

Depreciation, repairs, interest and taxes on the hoisting machinery, hoist and power buildings, foundations, etc., also must be figured as part of the power cost. At each of these three mines the cost of such equipment probably was $100,000.

Then, too, these three mines apparently all operate from one maximum-demand meter because the combined maximum demand is only 2,292 kw. If each were operating independently the maximum demand probably would be about 1,100 kw. per mine.

Taking these factors into account, the revised power figures for these mines would be as in Table III.

### Table III. Cost of Purchased Power at Kincade Mines with Allowances

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchased power</td>
<td>$172,864.55</td>
</tr>
<tr>
<td>Allowance for maximum demand</td>
<td>25,740.00</td>
</tr>
<tr>
<td>Power-house attendants</td>
<td>4,814.00</td>
</tr>
<tr>
<td>Depreciation and repairs</td>
<td>50,000.00</td>
</tr>
<tr>
<td>Interest</td>
<td>18,000.00</td>
</tr>
<tr>
<td>Taxes</td>
<td>6,000.00</td>
</tr>
<tr>
<td>Total cost</td>
<td>$202,418.55</td>
</tr>
</tbody>
</table>

On a per ton basis this would figure as follows on the 2,171,358 tons produced:

<table>
<thead>
<tr>
<th>Description</th>
<th>Cents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchased power with allowance for maximum demand</td>
<td>6.61</td>
</tr>
<tr>
<td>Labor</td>
<td>0.22</td>
</tr>
<tr>
<td>Depreciation and repairs</td>
<td>1.88</td>
</tr>
<tr>
<td>Interest</td>
<td>0.83</td>
</tr>
<tr>
<td>Taxes</td>
<td>0.27</td>
</tr>
<tr>
<td>Total cost per ton</td>
<td>9.31</td>
</tr>
</tbody>
</table>

The Nokomis mine was the first to install alternating-current mining machines in Illinois. This was back in 1913.
During this period these mines were operating at about 74 per cent of capacity. It is apparent from a comparison of these two tables of figures that with purchased-power rates as they are now a mine equipped with a mixed-pressure turbine plant can operate as cheaply as can a completely electrified mine.

The principal advantages to mine operators in having the power plant located at the mine are as follows:

(1) The entire operation is under control of the management.
(2) Mechanics and electricians already in the employ of the mining company can operate and maintain the plant with little additional cost.
(3) Fewer losses of operating time due to power interruptions will result.
(4) Power costs in many cases are less than the cost of purchased power.
(5) When the mine is operated irregularly a large primary charge does not have to be paid each month.
(6) Alternating current is being more generally used about coal mines, so that an alternating-current plant can be built, and the power that it generates can be transmitted as effectively as purchased power.
(7) Smaller initial investment is necessary in opening up a large mine, where a future mixed-pressure plant is contemplated, than where a completely electrified mine is planned.

Would Have Mine Plants Self-Contained

It is becoming the practice of all large corporations to make their plants as self-contained as possible. Large utility companies are purchasing their own coal mines and operating them, even though their business is that of generating power. Railroads long ago purchased mines to assure their own full supply. The larger oil companies and steel companies are doing the same. A large coal company or corporation with millions invested in its mining plants cannot afford to have the very operation of those plants entirely dependent upon something beyond its control.

Within recent years the mines have become so large and their organization so complex that the operation of a power plant is a mere additional detail. Large mines must have skilled engineers, mechanics and electricians to maintain the mining equipment, and these men are capable of properly caring for a large power plant.

The chances of interruptions and the consequent loss of tonnage are much less with the power plant at the mine than where the current is brought in over 50 to 100 miles of transmission lines. At Nokomis only 15 minutes have been lost on account of interruptions since the power plant was put into operation. When power was purchased such interruptions averaged about 15 minutes for each operating day.

Power costs in many cases are less with the power plant at the mine than with purchased power. This, of course, depends upon the wage scale at the mines and upon the purchased-power rates. Large completely electrified mines have a large maximum demand and therefore a large primary charge. An article in Coal Age on May 18, 1922, by Eugene McAuliffe, who operates such a mine, shows that when the operating time is halved, the power cost is doubled. This is not true with a power plant at the mine, because operation of the plant and operating forces can be reduced at such times.

Why Not Generate Alternating Current?

Most large mines now being sunk contemplate the use of alternating current, for it is now recognized that this is the solution of transmission problems. It is as easy to generate alternating-current power in a mine plant as it is to produce direct current. In addition to this, the alternating-current machinery and equipment is less expensive than that for generating or using direct current, so that an alternating-current power plant is the cheaper and more convenient to install.

For large mines of from 5,000 tons daily capacity upward, an electrical hoist is an expensive piece of machinery. The electrical and mechanical equipment alone for such a hoist will cost from $100,000 to $125,000. When it becomes necessary to hoist coal at the main shaft, this entire sum must be expended at one time and the entire investment must be carried until the mine is brought up to full production. The capacity of an electric hoist, once it has been built, is definitely fixed and cannot be increased by deftness of operation.

On the other hand, for the same mine a steam hoist, costing perhaps $30,000, and a boiler or two could be installed and would be sufficient to operate the mine for a considerable period. If a comprehensive and complete plan is worked out for the installation of generators and boilers an efficient plant can be built and none of the units added until actually needed. In this way the total investment can be spread over a long time. A steam hoist has the additional advantage that its speed can be greatly increased by expert operation. No better example of this can be found than the performance of the Orient mine in March. Such a remarkable show-
ing would have been out of the question with an electric hoist.

It is true that the load factor of the average mine plant is much more irregular than that of a central-station plant. But by carefully planning the equipment used in a mine a fairly uniform load for at least sixteen hours can be provided. At present the consumer apparently does not reap much of the benefit from the better load factors of central-station plants because the rates seem to be based more upon the ability of the consumer to pay than upon the cost of producing power.

The time may come when the load and load conditions at each individual plant will receive more consideration than at present and when long-term contracts will be made in Illinois as they are made in other districts. Investigation has shown that in other mining fields where the central-station loads are not as well balanced as in Illinois, prevailing coal-mine power rates are in some cases only about one-half as high as in this state. It is possible that rates eventually will be reduced here and such rates guaranteed in long-term bona-fide contracts, but if this is done it probably will be only because of competition with large efficient power plants at the mines.

Mining Coal by Eighty-Foot Block System

BY J. A. GRAFT*

Beckley, W. Va.

IN a method that I have used successfully for two years and which is known as the 80-ft. block system the rooms are driven 20 ft. wide and in pairs, the pillars between the rooms in each pair being 30 ft. wide and between pairs 80 ft. It will be noted that crosscuts are driven more frequently between the rooms in each pair—that is, through the narrow pillar—than through the pillars between the pairs, which are wide.

In starting the pillar in the first room a 20-ft. slab is taken toward the main entries, thus reducing the barrier pillar which, being, before slabbing, 130 ft. wide, is made by that action only 110 ft. in width. As is shown in the second right entry, a slab is then taken of pillars A, and A in rooms 1 and 2. At the same time a cut 1 is made across the pillar to the left of room 2 and also 4 ft. from the upper edge of the pillar B, to the left of room 3. In the 4-ft. web left in the wide pillar B, frequent cuts should be made, leaving in, however, most of the coal.

When pillars A, and A are slabbed off to half their thickness, start slabbing C, and C and at the same time start crosscuts in pillar D of room 4 and another in pillar D, of room 5. When the pillars A, and A are entirely removed and C, and C are partly mined out, pillars E, and E should be slabbed and crosscuts 5 and 6 in pillars F and F, of rooms 6 and 7 should be started. The props that are found in the area formerly occupied by pillars A and A, should be taken out and the top allowed to fall, first setting sufficient props or cribs to prevent falls across the face of C, and C. When the entry has reached its limit all chain pillars and room stumps are to be drawn in retreat.

New River Mining Method

Arrangements are made so that the roof will fall in large blocks, the coal face to be mined being protected by stumps cut 4 ft. wide. The plan also provides for driving rooms in pairs with small pillars between members of the pair and large pillars between pairs. The crosscuts between pairs are roughly 70 ft. apart whereas these in the larger pillars are 95 ft. between centers. It will be noted that each cross entry has a good flanking pillar of 95 ft. and the pillar between the members of the same entry is only 40 ft. wide. This also is good practice, as crosscuts have to be made in the entry whereas none has to be driven through the flanking pillar. The pillar on the side opposite from the workings would avail but little, however, if the workings themselves were not judiciously laid out.
Safety in Timbering at the Working Face

Need of Strict Rules and Close Supervision—Impossible to Establish a Uniform System to Meet All Conditions— Safest Practice Is to Stand Timbers When and Where They Are Needed

Statistics show that a large number of accidents occurring in coal mines are due to careless or insufficient timbering by miners. Strange as it may seem, old and experienced miners suffer from these accidents as frequently as do inexperienced men.

This fact alone shows the need of making and strictly enforcing rules for the safe and practical timbering of all working places. There is an element in the make-up of the average coal miner that renders him careless and prone to take risks. A very large proportion of miners pay little attention to the timbering of their places, unless they are compelled to do so under penalty.

These remarks have been suggested by the reading of two excellent letters that have appeared in Coal Age, one by George Edwards, Vol. 20, p. 968, and the other by Ostel Bullock, Mar. 16, p. 453. In the main, I agree with what these writers have said in regard to safe timbering in mines. However, I am inclined to the opinion that it is impracticable, if not impossible, to establish any fixed rules that will apply to all the conditions that often exist in the same mine.

Different Conditions Require Different Methods

According to Mr. Bullock, his practice is to establish rules that will make safe the worst places in the mine. He says that he is then sure there will be no trouble anywhere. Apparently he means that the same amount of timber and the same method of timbering must be used throughout the mine, as is required in places where conditions are the worst.

It is needless to say that this ruling is wholly unnecessary and would be expensive. It reminds me of an experience I had several years ago when leading a shift of company miners and working two rooms having a smooth, hard and strong sandstone top. Other sections of the mine had a drawslate roof, the slate ranging in thickness from 12 to 20 in. While the coal was being taken out, this slate would appear sound; but a little later it would crack and fall off around the timbers, leaving only what was above the cap. It was the custom in this section to use cap-pieces 2 in. thick, 8 and 10 in. wide, and from 2½ to 3 ft. long.

Elsewhere, in the same mine, the coal was overlaid with a very treacherous top, having pots, horsebacks and rolls. These irregularities were often hard to detect and required careful timbering. Again, in other portions of the mine, the roof was a hard blue slate that required little timbering and, here, the cap-pieces were 4 and 5 in. wide and 18 in. long.

Readers will recognize that this was a mine where it would be impossible to establish any fixed rule of timbering that would be safe. On making his visit to our place one morning, the boss announced that he had established a new rule for timbering. From now on, timbers must be stood in all parts of the mine by a regular system, the posts to be set 4 ft. apart every way, or in 4-ft. squares.

No Fixed Rule Will Apply to All Conditions in Mines

In reply to this announcement, I invited the boss to examine the corner of my eye and see if he could find anything green there. He seemed not to comprehend my meaning and I explained that such a fixed rule would not be adequate in some parts of the mine, while in other parts it would mean a waste of timber. The boss departed and we heard no more regarding his established fixed rules.

In my opinion, the only practicable, sensible and safe thing to do is to use good judgment and stand timbers where and when they are needed. A mine foreman must be a miner of wide and varied experience and a close observer of conditions existing in each working place. From these observations, his experience will dictate the method of timbering that must be employed and the amount of timber to be used in a place. Safety lies in properly training and instructing miners in the care of their own places, since dangerous conditions often develop unexpectedly and the boss cannot be in all places at all times.

Always Best to Play Safe

While it is true, as George Edwards remarks, "When a miner makes up his mind to be trust no roof, however sound it may appear, he is playing safe," it is likewise true that some kinds of roof are less dangerous than others and do not require the same amount of timbering, which in the interest of economy should not be used. We must take conditions as we find them and study to make the mine safe.

Before closing, let me say a word regarding miners timbering their own places. Observation convinces me that where miners keep a good axe and saw in their place there is always found a much better job of timbering. I believe in having timbers of all the lengths required in the mine kept on hand in the timber yard, each length being piled or stacked by itself.

Unsafe and Careless Timbering

But, at the best, conditions in the working places are irregular and it is seldom possible to find a first-class job of timbering where the miner has no axe or saw. When the top and bottom are hard and cannot be cut with a pick, if a timber is a half-inch too long it cannot be stood plumb and might as well not be stood at all, since it is worthless as a protection.

While acting as foreman on one occasion, I went to a miner's place and found six or seven timbers near the face considerably out of plumb. Picking up another timber, I knocked out each of the posts and departed, leaving instructions for the miner to reset each post plumb. I then gave the driver orders not to set any more empties in the place until my instructions had been obeyed.

John Rose.

Dayton, Tenn.

Certified Mine Superintendents

Many superintendents now hold mine foremen's certificates — Successful mine management requires knowledge and experience in every branch of the work—Need for broadminded mine officials.

In an excellent letter by S. D. Hainley, Coal Age, June 8, p. 967, mention is made of some of the requirements needed to make an ideal superintendent. It seems strange to me that the writer did not refer to the need of a superintendent holding a certificate of competency.

In my opinion, the certification of this class of mine officials would be a forward step in attaining the highest efficiency in the management and operation of mines. It is clear that the superintendent's duties and qualifications are of a higher class than those of the mine foreman and, in examination, he would be required to answer a different set of questions than what are given in foremen's examinations.
In the letter to which I have referred, the choice of a suitable superintendent has been left to the judgment of the general manager, who is expected to decide on his fitness for the position by a careful study of his several qualities.

**Men's Fitness for Positions**

As he has stated, there are superintendents who are qualified to fill that position but who would be a failure in another position. In other words, the particular requirements that go to make up a successful superintendent are of a nature wholly their own.

It is my belief that it would be difficult, for an examining board to frame a set of questions that would show the capability of men to fill this position. Most men will agree, however, that it would not be out of the way for a mine superintendent to hold a first-class mine foreman's certificate.

Observation shows that this is becoming the fact, more and more each year. Several of the larger coal companies, in this country, are now requiring this of men whom they appoint to the position of mine superintendent. In the majority of cases, the superintendent has been promoted from the position of foreman, in which he was required to hold a foreman's certificate.

**Experience Needed to Succeed**

The greatest degree of success in the management of a mine, from the superintendents' standpoint, can only be attained by the man having a previous experience in every branch of the work that now falls under his supervision. Without this experience, few men could be expected to develop a large mine, in a manner to produce results and compete successfully on the market with other producers.

There is need, today, that both the mine superintendent and the foreman shall be men who are broadminded and able to put into practice the many ideas that can come to them only through observation and experience. Some writers have spoken of the difficulty of working under a superintendent who has not the same practical knowledge of mining. Speaking for myself, this has never been my trouble. A foreman must first gain the confidence of his superior officers, by proving to them that he has a true grasp of the tasks he advocates. He will then seldom meet opposition in what he proposes.

Central City, Ky. *Ostel Bullock.*

**Certification in England**

*Overman, in England, required to hold certificate—Undermanager or overman for mine foreman in this country—A deputy or fireman is a fireboss here.*

**Some time since, I remember, a writer in Coal Age stated that, to the best of his knowledge, the mine manager was the only certified mine official in England. This statement being far from the truth, I desire to correct the impression it has left in the minds of foremen and firebosses in this country.**

In England, the undermanager, or "overman" as he is more commonly called, corresponds to the mine foreman here. Also, the deputy, or fireman, as he is called in some parts of England, corresponds to the fireboss in this country.

It was the same writer, I believe, who stated that the overman and the deputy, in the old country, were each given what he termed a "vest-pocket certificate" when appointed to their several positions by the manager. He claimed these certificates were all that was required, in the way of certification, of either of these men.

Being myself the holder of an overman's certificate, which I obtained at Newcastle-On-Tyne, in January, 1897, I am able to say positively that the statement of the writer to whom I have referred is wrong.

**Overmen Must Be Certified**

At the present time, the overman, in England, must hold either a first-class or a second-class certificate, before he can be appointed to that position. Moreover, I understand that the deputy or fireman, in the mind, is now required to hold a certificate of competency making him eligible for that position.

In support of these statements, allow me to quote one or two extracts from the English law, as follows:

*"The enactment of a mine must be under a manager responsible for the control, management and direction of the mine and holding a first-class certificate. Daily, personal supervision of the mine must be exercised by the manager or by an undermanager holding either a first- or a second-class certificate. First- and second-class certificates of competency may only be granted to men of at least five years' practical experience, who have satisfied the examiners as to competency, sobriety, experience, ability and general good conduct. Their certificates may be suspended or canceled on the ground of incompetency or gross carelessness."*

*William Dickinson.*

Lochelly, W. Va.

**Is the Game Worth the Candle?**

Qualities of the successful foreman—Requirements in England—Standard in this country too low—Many facilities for study but little incentive.

**Reading** all that has been said with reference to the required qualifications that make the successful mine manager (foreman) to ask, "Is the game worth the candle?"

Failing to fail to understand the meaning I have in mind and realize the importance of its application to the certification problem in this country.

Let us review briefly the difference between a practical mining man and one who is purely theoretical in respect to mining. The comparison will assist us to a better understanding of this vexed question.

I say "vexed question," because so many ambitious young men have struggled to equip themselves for successful filling some higher position in mining and when the fruit of their efforts was almost within their grasp, have been disappointed by seeing the
correlated position given to another less qualified.

Briefly stated, the practical man has learned by experience to do the actual work of sinking a shaft, digging coal, laying track, fencing an air-course, building brattice and a hundred other useful and necessary jobs that are required in the mine.

On the other hand, the man who has studied the principles of mining is able to estimate the proper size of a shaft and determine its equipment; calculate the horsepower of engines and motors; plan the ventilation of the mine; estimate the size and power of the ventilator, and calculate the capacity of pumps, besides ascertaining numerous other necessary details.

It is readily seen that each of these types of men possess qualities that are essential to the successful operation and development of a coal mine. In other words, the ideal foreman will combine, in one person, the qualities of two distinct personalities.

Allow me to give, here a crude illustration of my meaning, in order to press home this point. Compare the attempt to build a wall of brick without mortar, with one where the bricks are laid without compensation. The first symbolizes the practical man having the material experience, but lacking the technical knowledge that would stabilize his work.

THE SO-CALLED “VEST-POCKET CERTIFICATE” NO LONGER USED

In this connection, may I comment on the statement of R. W. Lightburn, Coal Age, Feb. 16, p. 291, regarding the “vestpocket certificate” he describes as English practice. For his information and others, I want to say that that is a thing of the past. Candidates for the position of overman (foreman) or deputy (fireboss), in England, have long since been required to pass a government examination.

It is worth of the most earnest thought that the demands coming here and the growing necessity for a more complete extraction of the coal have called for the use of the most approved types of machinery, in coal cutting, haulage, ventilation and drainage.

In order to adopt and successfully operate this class of improved machines, it has become necessary to employ men who understand principles and have mechanical ability. It is in this respect that the difference between the two types of men I have mentioned is most manifest.

Let me say here that the standard of mine foremanship, in this country, is too low to meet the present needs of the industry. Mine examining boards should be composed of men who are thoroughly up-to-date in their knowledge of present-day mining. There are instances, I regret to say, where some of the board members would be unable, themselves, to answer the questions asked by their board.

In sharp contrast with this condition, I recall my first examination, taken in the old country. Every member of the board was a recognized authority on mining, or a first-class mining engineer. To pass that examination a man had to be well qualified and, if not, he might better have stayed home. Two examinations were held each year and a different board appointed each time, so that it was impossible to tell beforehand who the examiners might be. They all served for a year.

At the present time, many facilities are open to young men, in this country, to obtain an education, but these are very largely neglected. There appears to be little incentive among the young men to study for self-improvement and the reason is not hard to find.

GIVE AMBITIOUS WORKERS A CHANCE

Few coal companies have adopted and held strictly to the rule of giving their young ambitious workers every opportunity for advancement. Vacancies have been filled, in many cases, with those less qualified by experience or technical knowledge of mining. This has virtually thrown a damper on the desire of young men for study, in order to fit themselves for a higher position. That this is true cannot be disputed; I have seen it occur many times. In one instance, recently, a young man employed as bookkeeper was taken from the office and made superintendent, although he had not worked a day underground and knew nothing of mine gases, ventilation, haulage and drainage.

Another instance was that of a miner who held an official position in the miners’ union. At the time, he was reported to be away on official business; but when he came back he informed the men that he had been appointed superintendent of the mine, though it was not known that he had any particular qualifications for that office.

In closing, let me ask: When such occurrences as these take place, is it not enough to make the student ask the question: “Is the game worth the candle?”

X. Y. Z.

West Frankfort, Ill.

Inquiries Of General Interest

Electric Locomotive Operating with Wheels Of Unequal Diameter

Operating a Locomotive with Wheels of Unequal Diameter—Effect on Machine and Power Required to Operate—Advantage of Two-Motor Locomotives

KINDLY permit me to ask, through Coal Age, a few questions that I believe will be of general interest to all mine operators using electric locomotives. It will be generally admitted that the necessity frequently arises of having to replace a worn or broken wheel on the locomotive. In that case, it often happens that the new wheel is not of the same diameter as the old wheel on the machine. Or, it may chance that one or more of the wheels have become unequally worn. In any case, trouble is almost sure to be experienced in operating the machine.

The questions I want to ask are:

1.—How will a mine locomotive behave on the track if one wheel is ⅛ or ¼ in. less in diameter than the other wheels?

2.—What will be the effect in respect to the wear of the wheels, owing to a slight difference in their diameter?

3.—What will be the effect on the mine track?

W. P. ROBERTS, Mine Foreman.

Colver, Pa.

This is an important practical question and, for the purpose of getting first-hand information that would be of the greatest practical value to users of mine electric locomotives, it was submitted to Graham Bright, general engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., whose reply follows:

1.—The axle of a locomotive on which one of the wheels is of different diameter from the other, will tend to assume a position not parallel to the other axle. There will then be a tendency of that axle to bind in the journal boxes. Also, the wheels being fast on the axle, one of the other or both will slip on the rails.

This slipping of the wheels will not only cause a considerable wear in the journal boxes, but more power will be required to operate the machine. Owing to the slipping of the wheels, also, there would be less tractive effort and the tractive power of the locomotive will be decreased in the same proportion.

2.—The wheels will, no doubt, wear considerably faster than under normal conditions. If there is much play in the journal boxes there will also result a considerable wear of the flanges. This condition may become worse instead of better if it happens that the smaller wheel slips more than the larger wheel.
3—It is hardly likely that there will be any serious effect on the mine track, since the locomotive passes over a given point in the track but a few times in the day. In other words, the wear on the rails, in excess of what occurs under normal conditions, will hardly be appreciable.

Allow me to add a few words regarding locomotives equipped with two motors, as compared with those equipped with a single motor and using either a worm drive or a chain drive to connect the two axles on the machine. In the former case, the principal damage done by wheels not being of the same diameter is a useless expenditure of power to operate the machine and an unnecessary wear on the wheels and journal boxes.

In the latter case, however, when the locomotive is equipped with a single motor, it becomes necessary for the worm drive or the chain drive to take care of any difference there may be in the size of wheels on different axles. The two axles being thus connected must revolve at the same rate of speed and it follows that any difference in the size of the wheels on the two axles will cause a slipping of the wheels and a considerable strain is thus thrown on the drive, which will greatly reduce the mechanical efficiency of the machine.

This is one of the principal objections to the use of a single-motor drive, for the reason that few mining companies check up accurately the size of the wheels and make any attempt to correct these troubles when they occur.

I recall a recent case of this kind where the locomotive was equipped with a single motor and a worm drive connecting the axles. One pair of wheels had been changed, owing to wear, while the other pair still remained on the machine. Of course, the new wheels were larger in diameter than the old ones and the attempt to operate the locomotive caused the shaft to break between the axles.

The fact is now fairly well established that a two-motor locomotive is much more economical in the use of power than a locomotive equipped with a single motor. A considerable portion of that loss is due to the control system used. No doubt, however, a large portion arises from the mechanical losses of the single-motor locomotive, because of its inability to keep all the wheels of equal size.

**Examination Questions Answered**

**Miscellaneous Examination Questions**

(Answered by Request)

**Question—** Explain the method of ventilating and working a panel of coal: (a) On the advancing system; and (b) on the retreating system of mining. Make sketches showing the plan in each case.

**Answer—** As shown in each of the two figures, cross-entries are driven off the main headings, at distances of, say 250 to 300 ft. apart. Rooms are then turned to the rise of the haulage road, on each pair of cross-entries.

(a) In the advancing system, as shown in Fig. 1, the rooms are widened inby, or in a direction away from the main heading. The track in each room is carried up the straight rib and the refuse stored in the vacant space on the other side of the track. This plan affords a good opportunity for loading the coal when drawing back the pillars. As each room reaches the limit or the barrier pillar protecting the air course on the next pair of cross-entries, the pillar adjoining the track is cut through and the work of robbing begins. As shown in the figure, it is important to keep the line of pillar work as straight as possible, in order to equalize the pressure on the ends of the pillars and avoid the crushing of the coal. This will also greatly assist the work of mining. Where machines are used in robbing, a cut three or four yards wide is started, say 2 yd. back from the end of the pillar and on the side next to the track or away from the gob, as that will afford greater protection for the men and the machine while cutting the coal.

(b) In the retreating system shown in Fig. 2, the cross-entries are driven to the limit of the panel, or to the boundary, before any rooms are turned. The first rooms are then turned, starting at the inby end or head of the entry, and driven to the rise, in the same manner as before, except that the rooms are now widened in the direction outby or toward the main heading. As before, the track is carried up the straight rib or on the inby side of the room. With the single exception of widening the rooms, robbing in the room, instead of inby, the work of driving the rooms and driving back the pillars is the same as in the advancing system just explained.

**Question—** Give the rule for determining the size of barrier pillars, in the anthracite region, in Pennsylvania.

**Answer—** A common practice in the anthracite region, and agreement of many of the larger companies, is to calculate the thickness of barrier pillar, separating adjoining coal properties, by multiplying the thickness of the seam by 1 per cent of the depth below drainage level, and adding to this product five feet for the thickness of the seam. In other words: To 1 per cent of the depth below drainage level, add 5 ft. and multiply the sum by the thickness of the coal, in feet. The product will be the required width of barrier pillar, in feet.

**Question—** What is the thickness of barrier pillar does the Pennsylvania Bituminous Law require to be left when approaching old workings containing an accumulation of water?

**Answer—** The Bituminous Mine Law of Pennsylvania, (Art. 3, Sec. 5.) requires a thickness of barrier pillar 25 per cent greater than the thickness of water to which the pillar is exposed.

**Question—** How would you prepare a burned man, before removing him from the inside to the outside of a mine?

**Answer—** Every means available should be used to keep the air from the burned portion of the body. The clothing should be cut off from those portions of the limbs and body and cautiously removed to prevent unduly injuring the flesh. In order to exclude the air from the burned surface, apply a thin paste of baking soda or dry flour. Vaseline, olive oil or cream, if available, are good and the application should be covered with a light bandage. The sufferer should be handled with great care and not exposed to the raw air outside of the mine longer than necessary.

**Question—** Explain the conditions under which coal in mines becomes dangerous as a source of explosion.

**Answer—** Any accumulation of fine dust, on the floor, sides, roof and tumberson the airways and working places of a mine, is dangerous. When this fine dust is blown into the air by the force of a shower, and acted on by the flame of a blowout, a more or less localized explosion is liable to result. Under favorable conditions, this local explosion will be extended throughout the mine.
Selling Coal Ideas: A Study of Associations


By George Cushing

IF COAL men hear a heap of quarreling in and about their associations they should not be disturbed. Instead they should feel encouraged. Some normal men do not quarrel over worthless things. They simply throw them away. Therefore the very fact that busy coal men are willing to squabble over an association is proof conclusive that its is worth a great deal—really worth dominating, for example. Also, if coal men criticize the policy of their association, it is a sure sign of growth on the part of the critics. They criticize—analyze—to find what is wrong in order to set it right. That is purposeful interest, which is growth.

I take it that much of the current discussion of the many coal-trade associations means that coal men are finally becoming dead in earnest about their associations and propose to make of them what they ought to be. On that premise I want to raise a point for consideration in connection with all of the associations in the coal trade. At that point I lose title to an idea. The great distinction which we must always keep in mind is: A coal company sells a commodity. Coal associations "sell" ideas. Their subject—coal—is the same. Their methods are, necessarily, as far apart as the poles. For instance, a commodity has bulk, weight and, therefore, substance. A given amount may be sold—if someone needs it—for a given sum of money. In case of dispute over the coal, the owner can prove title and by going into court can collect his money.

HOW EASILY ONE LOSES TITLE TO AN IDEA

Selling coal is a business which is done according to rules laid down by law. The courts stand behind the producer until his claims are satisfied. In this respect it is a very simple business, relatively speaking. But selling ideas "is something else again, Mavrus. You work for weeks, months, or years to get, develop and perfect an idea. When you have it all thought out and so accurately phrased that anyone must grasp it in a minute, you spill it into the ear of a friend. Instantly your friend says: 'Yes, that is true. I have thought of that.'"

At that point you lose title to that idea. You are as poor as on the day you were born. There is no redress; no recovery. Your friend told the truth. He has thought of it. By your very lucidity you have compelled him to think of it. Of course, your friend is careful to express himself in the past tense. He leaves with you the vague impression that years ago he hatched exactly that idea, and expressed it in its own natural language—that which you just used. You cannot deny it. If you do, you can't prove your case. As far as you know, your friend may have been born with the idea which you feel, in your inner consciousness, was coined out of your bitter experience. Yet you cannot go an inch behind the cold fact that what he says is literally true—"I have thought of that." He has thought of it and you are done.

Once I told a friend an idea. He made half a million off it and merely said: "You confirm what was my own idea." He made the money and I was done.

Again, I worked ten years to clear up a thought. A friend heard the conclusion and said: "Just what I have always contended." Again I was done.

Associations, as "sellers" of ideas, have always to face that stubborn fact. They labor and agonize over ideas. They find them, develop them and perfect the expression of them. But the instant they are expressed, they become common property. They belong to everyone. They are not patentable. They cannot be copyrighted. The intangible association may have the consciousness that it has done a good job. It may feel that it has clarified a situation. But it cannot pay dividends with any money obtained for its ideas because no money was ever paid for them. They were given away—or expropriated.

It is possible, however, to cash in even on the sale of ideas. If it were not possible this article would not be written. But it is necessary to change away from the selling methods used in a commodity and adopt those employed in marketing ideas. The great merchant groups who have actually cashed in on ideas are, in order: The statesmen, the newspapers, the lawyers and the doctors. Others who have ideas to sell will do well to study their methods. The statesman retains title to his ideas and gets full benefit of them. He does what seemingly is impossible because he has an organization behind him which realizes that it can win support for itself only by advocating the views of its leading men.

The newspaper certainly retains title to and gets the benefit of its ideas. It succeeds in what seems like a hopeless task because it throws behind its ideas the weight of incessant repetition.

CITIES ADVANTAGE OF SYSTEMATIZED THINKING

The lawyers and doctors "sell" their ideas because, in their ideas and because, in their schools, they are taught a system of thinking on their themes. All lawyers talk about the law in exactly the same way. They say certain things to every client on every occasion. Each lawyer gets the benefit of emphasis of the statements and reiterations of the lawyer thought by all other lawyers. They have made a sort of a cult of the law. Also both lawyers and doctors are bound by a code of ethics which supports and emphasizes their point of view. This code becomes at once the common defense of the whole fraternity. Thus the cardinal principles of success in selling ideas are: To have the ideas of the leaders supported by the mass, to have those ideas reiterated incessantly and to approach the formality of a code in the way the ideas are publicized. It all makes the painstaking effort at preparation and persistence in propaganda.

The coal associations can, if they will, combine all of the forces upon which all these others depend. They can put this combined force behind their ideas. That is, they can put behind their association ideas the weight of the same kind of an organization which supports the statesmen, the frequent repetition which gives authority to the ideas of the newspaper and the consciousness and formalized expression which is the backbone of the success of the lawyers and the doctors. But, before coal men can bring their associations to the full flower of their power, they must first realize the vital distinction between selling coal and selling the coal-association idea. They must realize that the personal business is a matter of selling a measured commodity. The coal association is a matter of selling the common ideas about that business. One is a matter of dealing in things. The other is a matter of dealing in mere thoughts. The selling method must be fitted to the thing to be sold.

The coal men supply the money which supports the association. It is, therefore, an expression of themselves. Its ideas are literally the money spent. They supply that money solely to have their ideas circulated and adopted. That being true, the practical question is: How can they get the greatest value for their money—the widest circulation of their ideas?
Many coal men, unfortunately, take toward the statements of their association officers much the same attitude as did the old farmer whose neighbor had lent him a copy of the writings of Socrates. When he returned the volume he said: "This fellow Socrates is a smart man. I see he is using some of my stuff."

That is, coal men are not willing to surrender wholly an idea to their association—even to the association which they support. They are hardly, as yet, willing to get behind the idea of their president, even though he expresses their own thoughts exactly. They want to keep the association going but they want to keep its ideas as their personal property. Of course, they can't do any such thing because the world can expropriate an individual's thoughts as easily as it can those of an association.

The other—and it would seem, proper—method of procedure is for each member to get wholeheartedly behind the main association idea. In season and out of season, he should say: "On that subject the Blank Association expresses not only my personal opinion but that of the entire coal trade," etc. That method would get the main idea across with one hundred to five thousand times the pulling power which could possibly attach to any individual opinion.

Let's be frank about this thing. The only reason we coal men do not give our association this ungrudging support is because we feel that if we do we will enhance the reputation of the man who put forward the idea in our name. It is true that with much enthusiasm we elected So-and-So as president of the association. It is true that we authorized him to speak for us. And, apparently, he has done a job because he has expressed an idea which we think is worth appropriating. But we are not quite willing to let him get away with the glory—if there is any—of having so accurately phrased our thought. It is unfortunate but true that human nature works in that way. What we fail to realize is that by holding out on the president, we weaken in proportion the very thing we are spending money to strengthen.

Where is your association going to end if you gentlemen withhold your endorsement from the men who express your ideas? Do you, personally, gain anything? What will be the effect on the association?

In conclusion: You sell a commodity successfully when you work alone. You sell an idea successfully when you work in a gang. Your regular business is selling a commodity. There you have to work alone. But in your association you have to work as a unit with dozens and hundreds of others. Only in making that shift from your daily practice to the other attitude can your association attain the position of power which it ought to occupy.

Fewer Mine Fatalities During May, Though Production Exceeds That of April

During May, the second month of the coal miners' strike, 74 men were killed by accidents at the mines, or 3 less than the number killed during April, according to reports received by the U. S. Bureau of Mines from state mine inspectors. All of the fatalities except one were at bituminous mines; one man was killed at an anthracite mine in Pennsylvania by falling down a shaft. None of the anthracite mines in producing coal.

The production of bituminous coal in May, as reported by the U. S. Geological Survey, was 19,015,000 tons, about four million tons more than in April, 1922, but over thirteen million tons less than in May a year ago. The fatality rate for bituminous mines in May, 1922, was 3.68 per million tons of coal produced, as compared with 4.88 for the preceding month of April and 3.87 for May, 1921. The rate for anthracite mines in May, 1921, was 5.74 per million tons; there are no comparable figures for April or May, 1922, because all of the mines are closed.

During the nine-year period 1913-1921 the month of May has averaged 176 fatalities at bituminous and anthracite mines, with an average production of 46,215,000 tons of coal, the fatality rate being 3.80 per million tons. For bituminous mines alone the nine-year fatality rate is 3.33 per million tons mined, and for anthracite mines it is 6.82.

COAL-MINE FATALITIES DURING MAY, 1922, BY CAUSES AND STATES

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

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<td>Pennsylvania (anthracite)</td>
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Congress Considers Various Phases of Coal Strike and Ways to End It

ESTABLISHMENT by Congress of a permanent fact-finding agency on the coal industry was advocated by Representative Browne, of Wisconsin, in a House speech on the coal strike. "There will be a terrible coal shortage even if the men should go back tomorrow," he stated. He placed the blame for the strike on the coal operators because of their refusal to confer with the union. Referring to court proceedings to restrain the Federal Trade Commission from obtaining cost data as to the coal industry Mr. Browne charged that the coal interests opposed developing the facts because they "fear the facts."

Representative Burke, of Pennsylvania, introduced a resolution authorizing and directing the President to take over and operate coal mines for one year or as long thereafter as in his discretion may be necessary for the public good. It would also direct the President to enter into negotiations with the miners' committee and arrange a mutually satisfactory wage and working agreement.

John L. Lewis, president of the United Mine Workers, conferred with Secretary of Labor Davis on the coal situation again on Wednesday, June 28, and reiterated his opposition to the district referendum the Congress is considering.

The President received an appeal from the Public Committee on Coal, of which Norman Haapgood is chairman and M. C. Johnston, secretary, asking for an investigation of the coal industry by a government fact-finding agency. The petition was received also by Senator Walsh, of Massachusetts, and read by him to the Senate. Senator Walsh also presented to the Senate a petition from the Lowell Coal Merchants' Association urging action to cause a re-sumption of anthracite coal mining not later than July 15 because of depleted stocks in New England.

The Herrin (Ill.) coal riots were discussed in a House debate. Representative Goodykoontz, of West Virginia, scored the miners for murder, while Representative Denison, of Illinois, in whose district the riots occurred, declared the outrages were caused by the operators and charged that reports of the affair had been exaggerated.

Mr. Denison's explanation that the reports of the riots were exaggerated was interrupted by Representative White, of Kansas, who asked: "Do you mean to say that not more than half is true in respect to the number assassinated in cold blood for exercising the national right to work?" Mr. Denison insisted that the reports had been exaggerated.

In extenuation for the strike riot Mr. Denison said the district was completely unionized and that the miners became embittered and their reason gave way to passion when the coal company imported 50 miners from Chicago to operate the mines after a contract had been made with the union to prepare the mine and operate it after the strike should have closed.

Representative Fish, of New York, introduced a resolution for the appointment of a joint committee of Congress to investigate the causes of the strike of coal miners. The committee would be composed of five Senators and five members of the House, who would be authorized to investigate the causes or causes of the strike of coal miners in the anthracite and bituminous coal regions, the question of wages, hours, conditions of employment, and the question of profits and losses of mine operators. The committee would be empowered to take testimony in Washington or elsewhere, to send for persons and papers and return its report to Congress at the earliest possible time, indicating a method of settlement of the strike which will protect and conserve the interests of the people.

Says Operators Exact Hoover Maximum, Eliminating Jobbers and Wholesalers

From the first conference held with Secretary Hoover of the Department of Commerce jobbers, wholesalers and middlemen have wondered where they would come in if the maximum price were reached and the demand were such as to turn all of the buyers to the miners. It was written in Cincinnati this week newspapers and newspapers have the virtual elimination of the wholesalers who were sufficiently conscientious to abide by the government's ruling and request. Cincinnati has been the central point of coal movement in the West since the strike began, so the jobbers and middlemen there have watched with considerable wonder the mad scramble to producing fields in Kentucky and West Virginia by buyers who were determined to deal direct with the producers.

J. C. Layne, of the Eaton Rhodes Co. and a member of the fair price committee appointed by Secretary Hoover, on June 26 sent the following telegram to Secretary Hoover:

"There is a very growing tendency on the part of coal operators to demand the maximum price announced by you, making no allowance for jobbers. This condition is forcing jobbers to add a profit, contrary to the understanding and desire of the jobber, and thus forcing the price upward. As one of your committee in eastern Kentucky will appreciate telegraphic advice as to policy to adopt. We desire to aid you in every possible way but are facing complete elimination as selling companies unless the operators are restrained or we are permitted to add a reasonable profit to the producers." In answer to this Mr. Layne received the following: "Please give specific cases, so we can lay this before the committee."

From the advices that have been received in Cincinnati it would appear that two-thirds of the southeastern Kentucky operators are culpable together with a fair sprinkling along the Norfolk & Western.

Retailers to Educate Newspaper Editors

R. WULFF, chairman of the committee on public information of the National Retail Coal Merchants' Association, has had prepared a statement on the coal situation, not for publication but, as stated by Mr. O'Toole, executive secretary of the association, "to educate newspaper editors and impress upon them the absolute necessity for differentiation in newspaper articles relating to coal between conditions applying to bituminous coal and those applying to anthracite."

This document, entitled "Two Fuels, Two Strikers," summarizes conditions in the two industries, reviews the conditions leading up to the strike and sets forth the situation as it now exists. The statement has been forwarded to all metropolitan dailies from Chicago east and may later be given even wider distribution.
Thirteenth Week of the Coal Strike

EDITORIAL REVIEW

President Harding's action in calling the union miners and operators into conference at Washington on July 1 is generally conceded to mark the beginning of the end of the strike. What is now and for some time will be going on at Washington will hold the center of public interest in the strike. Strict secrecy has marked the joint sessions of the miners and operators with secretaries Hoover and Daniels, and to all outward appearances there has so far been no relenting by either side from previously established positions. The debate so far seems to have centered on the question of district conferences and contracts versus a Central Competitive Field agreement. There is a very persistent undercurrent of feeling favoring the idea that some modification of the previous form of negotiations will be found, giving the districts separate agreements yet providing the semblance of a national character, as demanded by the miners. It yet remains to be seen which party will look back on this as the unlucky thirteenth week.

In Illinois and in Pennsylvania there have been some steps taken to initiate negotiations on a state basis. In both cases they are undoubtedly doomed to failure, if for no other reason than that of veto by the policy committee of the United Mine Workers.

Production continues to increase, though slightly, in the non-union fields of Pennsylvania. The production of West Virginia can be still further increased from mines in the northern part of the state, but apparently the limit has been reached in the southern district, due to the inability of the railroads to handle more tonnage.

Clifford B. Connelley, Commissioner of Labor and Industry of Pennsylvania, who had hopes of settling the anthracite and the bituminous strikes through conference, fixed July 6 for the bituminous conference at Pittsburgh.

"We have offered the services of the Department of Labor and Industry in a friendly way to the bituminous operators and miners of Pennsylvania in the hope that they will accept this opportunity to avert serious consequences to the industries of the state," said Commissioner Connelley in discussing his plans.

On June 29 P. T. Fagan, vice-president of District No. 5, United Mine Workers, declined the invitation.

In his letter to Mr. Connelley Mr. Fagan said that "we must at this time reject sectional settlements, because of the fact that there was an interstate joint contract existing in the competitive field between the coal operators and the United Mine Workers of America." He added that he had accepted President Harding's invitation to a conference in Washington on July 1 of operators and miners, and said: "We, therefore, cannot see the advisability of, or believe any benefit would be derived for our people or the consuming public from, a meeting such as you suggest at this time."

Baxter Charged with "Selling Out"

Union Members in Canadian Fields

J. B. McLachlan, secretary-treasurer of the Maritime district of the United Mine Workers Union, declares President Baxter of the U.M.W. for the maritime district (No. 26), "sold out" the members of the district. McLachlan has been supported in the stand by Phalen Local, one of the biggest of the locals of the district. McLachlan asserts that Baxter betrayed the miners of the Canadian coal fields, especially those employed by the British Empire Steel Corporation (Dominion Coal Co.), the start in the alleged betrayal being made at the time of the recent Montreal conference just previous to the appointment of the Scott conciliation board.

According to McLachlan the miners held aloof from the operations of this board. He said President Baxter appointed I. B. McDougall, of Inverness, as the union representative on the board because McDougall was one of his henchmen. The miners, according to Phalen Local and McLachlan, will not support either the majority or the minority report of the Scott conciliation board, which was appointed to adjust the dispute over the cut in wages ordered by the British Empire Steel Corporation at the Cape Breton collieries.

McLachlan characterizes Baxter as a traitor who used his office as president for his own financial ends. On the other hand, Baxter says he is not in sympathy with McLachlan's tactics and describes the latter as a Bolshevik who is trying to advance the cause of the One Big Union and not that of the United Mine Workers and the American Federation of Labor.

The pot is merrily boiling in U. M. W. circles in eastern Canada. Most of the talk has been coming from McLachlan; Baxter being comparatively quiet. McLachlan includes in his condemnation John P. White, who came from Indianapolis to help clear the air among the members of the U. M. W. in the Maritime district but has achieved little success thus far.

Man Shortage and a Few Disturbances

Handicap Colorado's "Busting" Output

COLORADO'S labor difficulties at the end of June were not so much those of hard feeling and resultant trouble as they were of man shortage and difficulty in supplying the keen fuel demands of the C. B. & Q. and the Union Pacific railroads. Both roads were buying all the coal they could reach, the "Q" having contracted the output of all the mines it could command, including many of the Colorado Fuel & Iron Co., the Victor-American Fuel Co. and many independents. Much of this coal is being shipped to all parts of the "Q" system, even as far east as Chicago.

No serious labor disturbances occurred in the state during the month, though small evidences of bitterness by strikers were seen here and there. On the early morning of the 29th a bridge was burned out a mile from the Ideal mine, of the Colorado Fuel & Iron Co., in the Trinidad field, thus cutting off a flow of 800 tons of steam coal a day, and here and there shots were fired at company employees, including William McLaughlin, son of the superintendent of the Fox mine, near Boulder. But operators declared the mass of miners in the state were not in sympathy with the strike, which had little effect in Colorado except in the Cañon district, where a few mines are down and where the rest are working at half capacity.

Colorado operators to a man credit Governor Shoup and the State Rangers with the good order that has prevailed. This force of 50 men has inspired such respect for itself that the state is full of stories about how a ranger dashes by motorcycle into a town where trouble is brewing and quells the incipient uprising by a word and a look. These men do not wait for a war to start. Their policy is to be there first. Many a man in Colorado is saying Illinois would not have had the Herrin massacre or anything like it if that state had such a force of law enforcers. Also they say Colorado is so full of trouble breeders that the state might easily have had war before this had it not been for the ranchers and the common knowledge that Governor Shoup will instantly lend the full strength of official Colorado to protect property and preserve peace.

As evidence of this on June 20 he ordered 500 National Guard troops into the fields to safeguard life and property because of threatened trouble that broke loose on July 1. Adjutant General Patrick J. Harlock is in command.

National Guard headquarters obtained information that radicals were planning to attract rangers to Frederick following a union meeting and to hold them at that place.
Commissary Stations for Strikers
In Indiana Post Strict Rules

Some of the signs hanging about the commissary station established recently in West Terre Haute, Ind., for the miners of that district who are striking are:

"Miners' Commissary."

"Leave Orders One Day in Advance."

"To Get Bred, Line Up and Take Your Turn and Keep Other Men Waiting."

Similar commissaries have been established in Clinton to aid miners in that field. The commissaries are the first to be established in the Indiana field. No woman may appear at the station for food unless her husband is sick, and should such a report be turned in, the case is immediately investigated to prevent miners who are engaged at other work from coming in on bogus claims. Badly paid miners who are not employed. The store door is kept closed and each miner who registered the day previous is called by name to get his basket. The apportionment is made according to the number of persons in the family, 50c. for adults and half that for children.

The men operating the commissaries come from the ranks of the miners, but are not working under the supervision of the United Mine Workers of America, but as a separate body. The men met and formed a group under the head of the Miners' Relief Association. Two committees are in different parts of the state soliciting aid for the miners and their families. Robert Pife, 88 years old, who has been in the mines since he was nine years old, starting as a trapper boy, waits in line with others for his food. He is the oldest miner in Vigo County and probably the oldest in Indiana. Mose Morgan, 77 years old, usually accompanies him to the commissary.

Smokeless Mines of West Virginia are now producing at the rate of 5,000,000 tons per month, which is the largest in the history of the region. In round numbers the Huytons field is mining 70,000 tons per day, the Tug River field 20,000 tons per day, the Winding Gulf 30,000 tons per day and the New River 20,000 tons per day.

A number of high-cost mines have resumed operation since May 31, and it is believed that at the present rate of improvement the New River field will be able to increase its production to 25,000 tons per day by July, which is more than the field was producing before the strike.

Every effort is being made by the Chesapeake & Ohio and the Norfolk & Western to keep their equipment rolling and consignment of coal to the scales at Portsmouth, Ohio, on the C. & O., and to Russell, Ky., on the C. & O., is being discontinued on account of the delinquency of loaded cars at these points. Unless through billing cars are furnished, these loads are not being moved from the tipples and in case any coal is found unconsigned at the scales at these western points the railroads immediately embargo the mines and furnish no more equipment until the unconsigned loads are furnished. This, it is claimed, holds up the rate of production.

Demonstrations Cease at Wagon Mines
Of Indiana Pending Injunction Action

No further disturbances are being reported in the wagon-mining coal fields in Indiana. Striking union miners who recently conducted demonstrations and closed non-union mines in these fields are withholding further activities pending action by the federal court at Indianapolis on an application for an injunction to prevent wagon-mining operators filed by operators of Knox County. Crowds of miners are continuing to congregate in various cities, but no signs of violence have been shown since a number of union men were arrested and arraigned in the Clay circuit court at Brazil on charges of riot and conspiracy to riot.

Kentucky Dumps Vast Volume of Coal
Onto the Country During Strike

Kentucky is breaking some records in production of coal at the present time. Figures received from the Louisville & Nashville R.R. show that in May the road handled 13,698 more cars of coal than during any previous month in its history. The total number of cars handled was 66,415, as against a previous record of 62,717 cars, a gain of 15,698 cars during the month.

Officials of the road assert that the strike lasts much longer the Louisville & Nashville R.R., which to date is out in front as the largest coal carrier of the country for 1922, will prove the premier coal carrier of the year.

During the May L. & N. had movement of Alabama and western Kentucky coal going both to Chicago and Pittsburgh, an unusually interesting movement for movement of Alabama coal. Officials of the road say that if the strike lasts much longer the Louisville & Nashville R.R., which to date is front as the largest coal carrier of the country for 1922, will prove the premier coal carrier of the year.

Mine capacity on the Cumberland division of the Louisville and Nashville railroad is running one thousand cars a day in excess of the railroad's ability to handle the coal. A representative of the American Railroad Association is on the ground, however, and there is every assurance that coal will move at the absolute maximum capacity of the division.

Affairs had reached such a pass in connection with the strike in northern West Virginia during the last week of June that miners of Monongah, a mining town in the Fairmont field, were prepared, in utter defiance of the county officials of Marion and the officials of the City of Fairmont, to storm the Marion County jail and liberate 91 men arrested on June 23 in connection with a demonstration of miners. When it was learned that the miners were gathering at Fairmont every available city police officer and county police officer was summoned to duty to prevent the entrance of the miners to the city, city officers being instructed to close water barges on the miners if they attempted to enter the city. C. F. Keeney, president of District 17, who was at the headquarters of sub-district 4 at Fairmont, was advised of developments and left immediately for Monongah. Upon his return to the city he told Prosecuting Attorney Amos that he was confident that there would be no further disorders.

Vernon W. Van Fleet, formerly judge for a period of eight years of the Superior Court of South Bend, Ind., was sworn in June 30 for a term of seven years as a member of the Federal Trade Commission, and has entered upon the discharge of his duties. Since March, 1921, Judge Van Fleet has been special assistant to the Attorney General, giving his attention particularly to reorganization work.
Government Plan Calls for More Than Temporary Adjustment of Strike Differences

BY PAUL WOOTON
Washington Correspondent of Coal Age

At the close of Sunday's conference at Washington between the bituminous operators and mine workers there were indications that an agreement finally would be reached whereby wage scales would be negotiated on a district basis. While the conferences on Saturday and Sunday were behind closed doors, there is reason to believe that the arguments presented for district conferences outweighed those advanced by John L. Lewis and his associates for a national agreement.

The belief among operators that the mine workers ultimately will come to district settlement was not altered by the vote against such procedure at the Sunday afternoon session. The recession is expected to come gradually and probably not until the delegates to this conference have discussed the matter with their constituents.

After the Monday session the conference adjourned until July 10. After the meeting Secretary Hoover expressed the hope that after the representatives of the operators and the miners had had the opportunity to discuss the situation with their associates more progress would be made. No government plan was put forward during the meetings.

It is reported that during Monday the operators in a closed meeting decided that should no result be attained in the later meeting with the miners, they would go home prepared to open important mines in each of the closed union fields. They were induced to give up this plan as far as this week is concerned. It is understood, however, that they have served notice on the miners that they will start mines next week if the union does not reach an agreement with them. They are reported to be determined to bring matters to a conclusion at once.

It is apparent that Secretary Hoover and Secretary Davis are going to insist that there be more than a temporary adjustment of differences. Every effort will be made to provide for the initiation of policies looking to the treatment of such fundamental ills as intermittency. While the remarks of President Harding to the representatives of the operators and of the mine workers are capable of being interpreted as foreshadowing action that will amount to compulsory arbitration, it is known that he is relying largely on the advice of Secretary Hoover. Mr. Hoover is known to be a strong advocate of a more permanent settlement than can come from a compromise of wage differences, which is practically the only possible outcome of arbitration.

In view of the fact that agreement is desired on a program looking to the removal of fundamental difficulties in the industry, an effort is being made to work out a plan whereby work in the union fields can be resumed pending a settlement, as such a program necessarily would extend over a considerable period of time.

At the Saturday morning session Mr. Lewis took vigorous exception to the fact that the so-called doubtful fields were not represented on the operators' side of the conference. He insisted that operators from Kanawha, New River, Colorado and other fields partly affected by the strike should be in attendance. A. M. Ogle, president of the National Coal Association and designated by the President to be chairman of the conference committee, stated that only those districts which are seeking a conference with the United Mine Workers had desired to avail themselves of the opportunity to name delegates. He pointed out that representatives of the operators were, in most instances, the presidents of the local operators' associations. In certain instances, he is understood to have explained, illness and other causes had prevented the attendance of the president of the operators' association. Representatives of most of the non-union fields were in Washington as observers.

Meetings thus far held indicate clearly that the operators believe they are certain to win the strike if it is allowed to run its course. They are practically a unit in their advocacy of district agreements. On the other hand, their is some indication that the position of the mine workers may be altered in that connection.

PUBLICITY TO BE GIVEN THROUGH GOVERNMENT

The President, in requesting that the negotiations be conducted in executive sessions, was actuated, it is believed, by desire to prevent criminations and recriminations on the part of the interests concerned. An agreement is understood to have been reached whereby all publicity will be given out through government channels.

While Secretaries Hoover and Davis were participating in the conference with the bituminous operators, Secretary Fall met with the representatives of the anthracite operators and mine workers. Secretary Fall is said to have expressed the personal opinion to the anthracite operators that their business is a public utility and should be subject to the regulations usually imposed on that class of industry. The anthracite operators are understood not to have received a satisfactory answer, when they asked Secretary Fall if the government is prepared to fix the price of coal so as to permit a fair return on the investment and to take the other steps which go with a regulation of public utilities.

When the operators and the officials of the United Mine Workers assembled at the executive offices at the White House at 10 a.m. Saturday they were received by the President. Nothing transpired at that session except the formal address of the President. There were no responses. When the President had finished his remarks he shook hands with each one present and departed almost immediately for Gettysburg. The text of his address follows in full:

Gentlemen of the coal industry. I asked you to meet here this morning, with the thought that in bringing you together I might be serving both the mine workers and the mine operators of the United States, and at the same time serve the great American public to which both you and I are obligated. I hold no specific authority under which to admonish you, but I do have the right to invite your immediate attention to a situation which deeply concerns the
country, the solution of which you collectively owe to the American people.

You who are here today represent a large sponsorship for America's supply of fuel. In that sponsorship you have an indissoluble relationship to the commonwealth of America. Coal is indispensable to our life as a people, and since this country has afforded you the opportunity of development on your part, both as workers and operators, you have created, in turn, an obligation to serve. Conflicting views as to your policies and your obligations to one another in no wise modify your obligations to that public which made possible your industrial existence.

Because of expiring agreements relating to wage scales and working conditions a large percentage of the mining activities of the country have been suspended three months to a day. It is not for me to touch upon the merits of your opposing positions. I have not called you as a partisan of the mine worker or the employer. I do not mean even to discuss a single phase of controversy. The main point is to bring you together and in that contact of men to men, mindful of the necessity of righteousness in any useful and abiding relationship, to have you frankly and fairly consider your problems in their relation to the welfare of our common country.

It is pretty generally recognized that there are fundamental difficulties in present-day coal production, the solution of which will be bound in some degree to be your daily task, and to be of every assistance possible, as official hosts to such a company.

Let me remind you that tolerance, fairness, the spirit of give and take, and finally a sense of the larger obligations to the public are essential to successful conference.

And I commend to you executive sessions, and assume full responsibility for such a recommendation, even as I assume the safeguarding of the public interest in asking you to come together. Differences are more often magnified than composed in their parading, and the call of the hour is adjusted differences, with due concern for the public welfare.

I thank you all alike for your response to my invitation, and I express the hope that in the realization of your responsibilities, and in an appraisal of your obligations, in the face-to-face, man-to-man, and citizen-to-citizen contact, you will find a way to a just concord which the American public may gladly acclaim.

Those who were appointed to represent the operators at the conference were:

A. M. Ogle, James Needham, representing the Montana Coal Operators' Association.

P. J. Qualey, president, Southern Wyoming Coal Operators' Association.


c. C. McAlpin, president, Oklahoma Coal Operators' Association.

Ira Clemens, president, Kansas Coal Operators' Association.

C. Smith, president, Colorado Coal Operators' Association.

E. S. Pfahler, representing the Iowa Coal Operators' Association.

Rice Miller, president, Illinois Coal Operators' Association.


H. C. Adams, president, Central Illinois Coal Operators' Association.


J. B. Paulley, representing the Indiana Bituminous Coal Operators' Association.

Hugh Shirkle, representing the Indiana Bituminous Coal Operators' Association.

Don Rose, representing the Pittsburgh Coal Producers' Association.

F. M. Posten, representing the Southern Ohio Coal Exchange.

Ed. Jones, representing the Southern Ohio Coal Exchange.

Michael Gallacher, president, Pittsburgh Vein Operators' Association.

T. W. Guthrie, representing the Pittsburgh Coal Producers' Association.

M. P. Pollock, president, Coal Operators' Association of the Thick Vein Freeport Seam of Pennsylvania.

C. B. Watkins, president, Central Coal Association of Pennsylvania.

B. M. Clark, president, Association of Bituminous Coal Operators of Central Pennsylvania.

In each instance the district association named its representative. Mr. Ogle had no part in designating any of the representatives of the operators, as has been stated in certain quarters.
Reed Resigns as National Coal Secretary to Take Up Accounting Practice

W. B. REED has presented his resignation as secretary of the National Coal Association and has opened an office in Washington, D. C., where he will devote his attention to the handling of matters of federal taxation and accounting, specializing in these matters particularly for bituminous-coal operators.

Mr. Reed has had an accounting experience of upward of twenty-two years with the bituminous-coal industry. Soon after the formation of the Pittsburgh Coal Co. in 1899 he entered the accounting department of that company. In 1911 he became connected with the New River Co., where he had charge of general accounting matters for that company and its operating subsidiaries, including that of its selling company, the White Oak Coal Co.

He left the New River Co. in October, 1918, to join the National Coal Association. In this connection he worked with the accountants of the Federal Trade Commission in an endeavor to produce a cost sheet which would be acceptable alike to the government and to the coal operators.

He is the author of a book on cost accounting in the bituminous industry which will be published by the McGraw-Hill Book Co. Mr. Reed has been in frequent touch with the Internal Revenue Bureau in matters of taxation and while occupying the position of secretary of the National Coal Association acted in an advisory capacity to many of the coal operators in taxation and accounting matters.

National Parley, Say Illinois Operators, Would Be Unwieldy and Unsatisfactory

I n announcing that a committee of Illinois operators would attend the conference at Washington to consider ways and means for breaking the present deadlock in the coal-mine labor question in the organized fields of the country, F. C. Honnold, secretary-treasurer of the Illinois Coal Operators’ Association, said they were going with open minds and sincerely hopeful that some appropriate and effective means would be found by which all of the anticipated benefits of such meeting could be obtained and the coal mines in all parts of the country put to work at an early date. The statement continued:

In their participation in such conference, however, the representatives from Illinois will continue to insist that, in their judgment, the coal industry as well as the public can expect to secure the best benefits only through state conferences.

“Throughout the past ten or more years the direct result of interstate negotiations has developed discriminatory and burdensome conditions in the working agreement with the miners in this state, due to the fact that the Illinois miners are both more closely organized and greater in number than in any other bituminous-coal-producing district, and on this account consideration has always been denied by the miners to every suggested change in working agreement that would permit of a reduction in the cost of coal, even when such changed conditions did not affect the annual earning capacity of the men.

“War conditions and practices as well as a sharp change in the tendencies and policies of mine-labor leaders and the increase of uncontrolled radicalism among the members have also brought about many new conditions that can be successfully reached only through local negotiations and adjustments. To a greater or less extent similar conditions prevail in the twenty-five or thirty other larger coal-producing districts in the country.

“It is therefore patent that no national consideration and adjustment of the coal-mine labor situation is at this time possible either through joint conferences of operators and miners or by a national arbitration commission.

“A national joint conference body covering all coal fields of the United States would be of such size and diversified opinion that such a method of procedure would accomplish nothing. By the same token consideration by a national arbitration commission of all of the numerous discriminatory conditions that have developed during the past 15 or 20 years would make an unsatisfactory grant and award until after the expiration of several months.

“A wage scale and working agreement calculated to best protect the public in all sections of the country must therefore be negotiated in smaller groups in order that both the miners and the public in such local districts may receive the greatest benefit. A scale of wages amply adequate and satisfactory in one section may not be sufficient in another, provisions for the mining of coal under a set of conditions prevailing in West Virginia, Maryland or Pennsylvania may be and as a matter of fact are unsatisfactory in Illinois mines.

“After 25 years’ experience in interstate collective bargaining, Illinois operators are convinced that this method of wage-scale negotiations has not only failed to justify itself either through benefit to the individual workman of the industry or to the public, but that, to the contrary, such method is distinctly prejudicial to the best interests of all parties concerned.

“It is also a discrimination against all those consuming sections of the country who are compelled to rely upon coal produced from unionized districts to pay a price for their coal that is predicated upon a wage scale made arbitrarily higher than that prevailing in non-union districts, where the right of employment is unbridled and management is unembarrassed by compulsory working conditions that are detrimental to public interests and that develop unnecessary coal cost and subsequent coal price.”

MOSCOW DISTRICT COAL OUTPUT.—Coal production in the Moscow basin in February amounted to 5,218,900, 99.7 per cent of the quantity demanded of it by the government. The output is considerably over that for January. The number of shifts working was 45.

NEW GERMAN BRIQUET PROCESS.—A German technical journal reports a new process for making hard-coal briquets without the addition of foreign binding material. By this method the fine coal is heated to the temperature at which the appearance of the slow combustion gases begins.
JULY 1 ushered in the expected rush for coal. This week has brought forth more inquiries and actual orders than have reached shippers for several weeks past. The sales offices of coal companies have been expressing wonder lately as to how long the many small consumers could hold out. They are getting their answer this week as orders for stock replenishment come in. Those who held off awaiting the reduction in freights have their answer in mine prices that more than take up the reduction. It is reported, for example, that wholesalers increased the price on Eastern coal in Milwaukee by 50c. following a freight-rate decrease of 35c. The consumer loses 15c.

Demand has by no means reached the peak on all markets, but Cincinnati reports activity exceeding that of war times and along the Atlantic seaboard nothing but the abundance of water-borne coal from the South has held prices within reason. Line points served by all-rail coal from northern West Virginia and Pennsylvania are feeling the effect of high prices.

Spot Price Index Reflects Strength of Market

Coal Age index of spot prices of bituminous coal reflects the strength of the market. From 234 on June 26, representing an average price of $3.44, the index on July 2 stood at 290, corresponding to an average mine price of $3.51 per net ton. Every advice indicates that nothing but the agreement of the operators with Mr. Hoover serves to hold the price in the South from reaching a new high level for this year.

When the country realizes the full import of the statement of the Geological Survey that five and a half million tons per week is the practical maximum for soft-coal production from mines now at work, due to lack of transportation facilities, and when it becomes apparent that the conferences at Washington now in progress show no sign of getting the men back in the mines for some time, the demand for coal will make still further gains. In other words, everything is heading up to produce a panic among buyers. The efforts of Washington are now the only hope for the consumer.

There is some lack of understanding, not yet cleared up by the government, with respect to the margin to be allowed the jobber. With the price at the mine up to the Hoover figure the jobber must either quit or exceed his agreement, or so it appears.

The anthracite deadlock, being discussed at Washington, naturally has aroused the consumer from his long period of indifference. Orders are flowing into the retailers for next winter's needs as the householder realizes that a rush period in the autumn is now sure. Retail stocks are fast going down and the dealer can do little else than file these orders for future attention. Pea is moving better and some of this coal is being used as a substitute for the scarce steam sizes. River barley is in increasing demand and prices are up.

No announcement has been made as yet as to the attitude of the producing companies regarding the levying of the Pennsylvania coal tax, pending the appeal to the high court.

The coke market is strong but not panicky. There is so little tonnage offering that spirited bidding is being done. While the output has been increased it is very little help to the market, as most of it is by furnace interests.

BITUMINOUS

“The thirteenth week of the coal strike has been marked by a recurrence of traffic congestion in certain of the non-union fields, and as there has been no compensating increase in the fields affected by the strike, production of bituminous coal will be slightly less than in the week preceding," says the Geological Survey. "Production of anthracite is still practically zero.

“Complete returns for the twelfth week (June 19-24) show a production of 5,337,000 net tons of bituminous coal and 24,000 net tons of anthracite, a total of all coal of 5,361,000 tons. In the corresponding week a year ago the total raised, including anthracite, was 9,550,000 tons. In 1920, when business was active, it was 11,900,000 tons. In

<table>
<thead>
<tr>
<th>Estimates of Production</th>
<th>(Net Tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BITUMINOUS</strong></td>
<td></td>
</tr>
<tr>
<td>Week ended:</td>
<td>1921</td>
</tr>
<tr>
<td>June 19 (a)</td>
<td>8,010,000</td>
</tr>
<tr>
<td>June 17 (b)</td>
<td>7,550,000</td>
</tr>
<tr>
<td>June 15 (c)</td>
<td>7,704,000</td>
</tr>
<tr>
<td>Daily average</td>
<td>1,284,000</td>
</tr>
<tr>
<td>Calendar year</td>
<td>188,856,000</td>
</tr>
<tr>
<td>Daily av. cal. yr.</td>
<td>1,279,000</td>
</tr>
</tbody>
</table>

| **ANTHRAHITE**          |            |
| June 10                 | 1,963,000  | 12,000    |
| June 17                 | 1,941,000  | 22,000    |
| June 15 (c)             | 1,847,000  | 24,000    |

| **COKE**                |            |
| June 17 (a)             | 106,000    |
| June 14                 | 109,000    |
| Calendar year           | 331,000    | 310,000   |

(a) Subject to revision. (b) Revised from last report.
terms of all coal, therefore, the quantity now being mined weekly is 5 or 6 million tons below normal.

The situation opened with a production at a high rate. Loadings on Monday, June 26, were 16,735 cars, the largest on any Monday since the strike began. But on Tuesday, and again on Wednesday, congestion on the railroads serving southeastern Kentucky and parts of southern West Virginia began to curtail production and loadings fell off 1,000 cars. By Thursday, however, the congestion was lessening and 16,411 cars were loaded. Present indications therefore point to a total output for the week of less than 5,300,000 tons.

DAILY LOADINGS DURING THE STRIKE

<table>
<thead>
<tr>
<th>Day</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cars</td>
<td>14,445</td>
<td>11,019</td>
<td>13,785</td>
<td>11,437</td>
<td>11,445</td>
<td>8,888</td>
</tr>
<tr>
<td>1st week</td>
<td>14,772</td>
<td>11,045</td>
<td>13,800</td>
<td>11,437</td>
<td>11,445</td>
<td>8,888</td>
</tr>
<tr>
<td>2nd week</td>
<td>15,058</td>
<td>11,370</td>
<td>13,800</td>
<td>11,437</td>
<td>11,445</td>
<td>8,888</td>
</tr>
<tr>
<td>3rd week</td>
<td>14,597</td>
<td>11,056</td>
<td>13,222</td>
<td>11,090</td>
<td>11,296</td>
<td>8,888</td>
</tr>
<tr>
<td>4th week</td>
<td>13,359</td>
<td>10,905</td>
<td>13,991</td>
<td>9,950</td>
<td>9,950</td>
<td>8,888</td>
</tr>
<tr>
<td>5th week</td>
<td>12,399</td>
<td>10,905</td>
<td>13,991</td>
<td>9,950</td>
<td>9,950</td>
<td>8,888</td>
</tr>
<tr>
<td>6th week</td>
<td>11,326</td>
<td>10,905</td>
<td>13,991</td>
<td>9,950</td>
<td>9,950</td>
<td>8,888</td>
</tr>
</tbody>
</table>

"The decrease in loadings is reported to be due not to scarcity of cars but to inability to move them faster than a certain limit set by the existing yard and track facilities, and it is to be noted that the railroads concerned are making new records in volume of traffic handled. Production in the non-union fields of the Middle Appalachians has reached a maximum and further gains in output are not to be expected except as mines hitherto closed by the strike resume operations. During the past week the increase in the non-union fields of Pennsylvania has been slight. In none of the strongly organized districts has work been resumed."

The rising markets on the Eastern seaboard have caused the British stevedores to look this way for an outlet. A Massachusetts port has received the first cargo of Newcastle coal and a few others are under load or on the way.

All-rail movement to New England was 669 cars during the week ended June 24. This was an increase of 155 cars as compared with the previous week. Prices on central Pennsylvania grades are firmer, but the New England market presents a poor outlook for these coals, due to the severe competition from Hampton Roads.

Dumpling at Hampton Roads for all accounts were 494,182 net tons during the week ended June 29, as compared with 450,231 tons in the preceding week. New England and North Atlantic ports are taking the bulk of this tonnage. Shippers are pulling so much of this coal into Baltimore, Philadelphia and New York, at attractive prices, that these Southern coals are the main factor in keeping down the Tidewater price on all-rail fuel. Prices Inland
from North Atlantic ports thus exceed the quotations at
the piers.

Northwestern fuel buyers are now fully aroused to the
possibility of a shortage next winter and are canvassing
the docks for tonnage. These stocks are so low, however,
that with one exception order taking is very limited. One
dock company is still accepting orders and is even shaving
prices in an endeavor to clear away the high-priced coal
accumulated this season, it being the heaviest receiver of
cargoes at the Head-of-the-Lakes this season. Congested
roads and a strong market elsewhere are holding down
the movement to the lower ports. It is this price factor that
has deterred Lake buyers all season—no one wants to
stock heavily when lower prices may be just around the
corner.

COKE

Beehive coke production increased to 109,000 net tons
during the week ended June 24 from 106,000 in the pre-
ceding week. Additional Connellsville ovens are being
fired, but the increased production is largely by furnace
interests and is off the market, which is very strong. It
is doubtful if any furnace would pay present coke prices,
as the pig-iron market would not justify it. The extremely
limited coke offerings are therefore being taken by foundries
and miscellaneous users rather than by furnaces.

ANTHRACITE

Production of anthracite is still confined to steam coal
dredged from the rivers. The scarcity of fuel, however, is
causin ged increased activity and production is larger, approx-
imately 24,000 net tons being produced during the week
ended June 24, a gain of 2,000 tons over the preceding week.
Retail stocks are dwindling as consumers are placing
more orders. The prominence of strike news in the papers
has impelled many householders to seek their next winter's
requirements. Actual deliveries are necessarily low, how-
ever, and much of this deferred business will fall into the
rush period after the strike has been settled.
Foreign Market
And Export News

British Trade Feels Export Slump

British production during the week ended June 7 was 4,350,000 gross tons, according to a cable to Coal Age, a partial recovery from the severe slump of the previous week. Prices show no strength as the supply is still tophaype. The Durham trade is very poor. Orders which have materialized lately are so spread over long periods that their effect on the market is practically nil. Several contracts for home public undertakings are the only ones to be recorded.

The Northumberland pits are better off. There is an improved demand for all steam varieties and the pits will remain active until the middle of July. The Swedish State Railways have asked for tenders for 25,000 tons of best steams, either Durhams, Northumberland or Scottish coals.

The South Wales market is uncertain and prices unsteady. Some producers are facing a shutdown. Wales has few contracts to report. The Argentine Department of Navigation and Ports has ordered 25,000 tons for delivery from August to the end of the year, and the Midland Great Western Railway of Ireland will require about 100,000 tons during the next twelve months.

Following the coal owners’ recent intimation of a coming reduction of wages notices of the reduction, effective Aug. 1, are now being posted in the collieries. The wages of employees receiving 24s. and upward per shift will be reduced by 2s. per shift and those receiving less will suffer a proportionate reduction.

Substantial reductions in the prices of domestic coal have been announced. These reductions in most cases amount to around 9s. per ton in the London area.

Strike Further Curtails Exports

That the strike curtailed exports during May is shown by the report of the Bureau of Foreign & Domestic Commerce. Only 399,551 gross tons of bituminous coal were shipped in that month, as compared with over 700,000 during April. In May of last year our exports were 2,500,374 tons, much of the tonnage being shipped as a result of the British strike.

Paragrapghs from Foreign Lands

ITALY — The price of Cardiff steam first is now 37s. 3d., according to a cable to Coal Age, a slight decline from last week’s quotation of 37s. 9d.

GERMANY — Production of coal in the Ruhr district during the week ended June 17 was 1,593,000 metric tons, cabled to Coal Age. The output during the preceding week was 1,447,000 tons.

NORWAY — The Norwegian Spitsbergen Coal Co. has been very active during the winter. The output has been up to 3,000 tons, and over 300 men have been employed. Shipping will go on during this season both to North Norway and Christiansia.

French Secure More Coal Markets

All things considered, the market for French coals remains rather satisfactory. Sarre collieries are developing their sales to Central Europe, and they are now sending increased tonnages to Germany (where they recently sold large quantities to the State railways), to Switzerland, Italy and Austria. They have just sold 50,000 tons of flaming run-of-mine to the Vienna Electrical Works at the price of 54,000 Austrian crowns per ton at the German-Austrian frontier, which is yet below the price in Austria of Czecho-Slovak or Upper-Silesian coal.

The 2-fr. rise of the British pound within the last 10 days has partly whittled down the difference in price, some Italian markets, between French and imported British coals.

Hampton Roads Pier Situation

<table>
<thead>
<tr>
<th>Week Ended</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 29</td>
</tr>
<tr>
<td>N &amp; W: Piers, Lamberts Point</td>
</tr>
<tr>
<td>Weighed</td>
</tr>
<tr>
<td>Tons on hand</td>
</tr>
<tr>
<td>Tons dumped</td>
</tr>
<tr>
<td>Tonnage waiting</td>
</tr>
</tbody>
</table>

Virginia Piers, Sewalls Point:

| Weighed | 2,022 |
| Tons on hand | 109,550 | 101,400 |
| Tons dumped | 105,077 | 123,601 |
| Tonnage waiting | 7,073 | 6,810 |

C. & O. Piers, Newport News:

| Weighed | 4,316 |
| Tons on hand | 87,450 | 98,000 |
| Tons dumped | 104,022 | 119,836 |

Tonnage waiting | 6,300

Export Clearances, Week Ended June 29, 1922

FIREAS:

For Brazil: Tons

<table>
<thead>
<tr>
<th>Country</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Italian S.S. San Gianni, for Buenos Aires</td>
<td>6,637</td>
<td></td>
</tr>
<tr>
<td>Brazil S.S. Barbecana, for Perumbarana</td>
<td>8,437</td>
<td></td>
</tr>
</tbody>
</table>

For Canal Zone:

<table>
<thead>
<tr>
<th>Country</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Am. S.S. Cristobal, for Cristobal</td>
<td>2,523</td>
<td></td>
</tr>
<tr>
<td>Dan. S.S. Elizabeth Marie, for Havana</td>
<td>2,509</td>
<td></td>
</tr>
<tr>
<td>Nor. S.S. H. K. Wange, for Havana</td>
<td>3,029</td>
<td></td>
</tr>
</tbody>
</table>

Pier and Bunker Prices, Gross Tons

<table>
<thead>
<tr>
<th>Pier</th>
<th>June 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pool 10, New York</td>
<td>$7.25</td>
</tr>
<tr>
<td>Pool 11, Philadelphia</td>
<td>$7.40</td>
</tr>
<tr>
<td>Pool 10, Philadelphia</td>
<td>$7.60</td>
</tr>
<tr>
<td>Pool 2, Hamp. Rds.</td>
<td>$6.50</td>
</tr>
</tbody>
</table>

BUNKERS:

<table>
<thead>
<tr>
<th>Pier</th>
<th>June 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pool 10, New York</td>
<td>$7.50</td>
</tr>
<tr>
<td>Pool 9, Philadelphia</td>
<td>$7.40</td>
</tr>
<tr>
<td>Pool 10, Philadelphia</td>
<td>$7.60</td>
</tr>
<tr>
<td>Pool 1, Hamp. Rds.</td>
<td>$6.50</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Country</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiff</td>
<td>45s.</td>
<td>45s.</td>
</tr>
<tr>
<td>Adelphi, Large</td>
<td>45s.</td>
<td>45s.</td>
</tr>
<tr>
<td>Stearns, Small</td>
<td>45s.</td>
<td>45s.</td>
</tr>
<tr>
<td>Newmarket</td>
<td>45s.</td>
<td>45s.</td>
</tr>
<tr>
<td>Best Steam, Large</td>
<td>45s.</td>
<td>45s.</td>
</tr>
<tr>
<td>Best Steam, Small</td>
<td>45s.</td>
<td>45s.</td>
</tr>
</tbody>
</table>

Additional columns of figures have been shown in a heavy type on the line of headings.
North Atlantic

Release of July 1 Orders Has Strengthening Effect

Industries That Awaited Lower Freights Find Higher Mine Prices Now—Good Coal Scarcе—Line Demand Greater Than Tidewater—Prices Lower at Tide—Eyes on Washington.

JULY 1 released many orders and strengthened the market. A number of industries had been running short of coal, but had delayed purchasing in order to obtain the benefit of the lowered freights. Mine prices have advanced, however, and it is doubtful if any material saving has been effected by this procedure. Good coals are difficult to obtain, being well sold up and unclassified fuels are about all that are offering.

Line demand exceeds that at Tidewater. Prices are lower at Tidewater, where heavy shipments of Southern coals are being taken at attractive prices. The trade is watching the Washington conference, hopeful that an early resumption of union mining will result.

PHILADELPHIA

The buyer’s interest increases, although there has been considerable hesitancy of orders in view of the conference called by the President. Since so many of the consumers, especially the moderate users, have held off so long, they are taking a little more time to get a perspective on what may be established at the meeting. On the other hand there were some orders let loose, without a doubt, on account of the lowered freight rate, and on the whole buying has been better.

Buying has actually been in advance of the increase in non-union production which has been claimed. The demand for the highest quality coals has become such that they are almost unobtainable except by the largest buyers and on contracts. Many houses are unable to get anything but unclassified coals, somewhat similar to Pool 10, and considerably lower.

A new factor entering into demand lately has been increasing inquiries coming from plants of considerable size who during the past few years adopted crude oil as a fuel. On account of the greatly increased demand for gasoline, as well as the advancing prices, producers are “cracking” all their crude for the last possible drop of “gas” and are not anxious to renew fuel contracts.

NEW YORK

Many inquiries were received at the end of last week for July delivery. Consumers as a rule put in sufficient coal to last three months. With their reserve supply nearly gone these consumers are becoming anxious.

Supplies at Tidewater are gradually growing short. On June 29 there were less than 1,100 cars at the piers, the smallest number in many weeks, but sufficient to meet all immediate demands. With the new holiday approaching shippers expected that there would be a substantial increase in the number of cars at the piers when business was resumed on July 5.

It was anticipated a new Clearfield rate to New York will be $2.74 instead of $3.11, and that the rate from the Fairmont region will be $2.95 instead of $3.36. Whether or not demand will now increase remains to be seen.

The low quotations for Pennsylvania coals at the local piers are due, many dealers declare to the heavy receipts of Southern coal here. Quotations for the latter ranged July 17 at $7.75 per ton alongside.

The new freight rates from New York have not yet been officially published, but we understand that the freight on anthracite domestic will be $2.34 per gross ton and on pea and smaller coals $2.84. Bituminous coal from Clearfield and Meyersdale now takes a rate of $2.74, Greensburg, $2.84, Westmoreland and Fairmont, $2.99, and Pittsburgh, $3.14. These rates are all to the lower ports; 5c. additional is charged to upper ports.

CENTRAL PENNSYLVANIA

United Mine Workers are devoting their time and attention to visiting local unions and encouraging the miners on strike to stick to the ranks. President John Brophy states that the morale of the men is good and that the situation is improving, as more miners join the locals and desert their work.

From the operators comes the report that production is increasing and has been more than doubled during June over May. The Central Pennsylvania Coal Producers Association held a meeting in Altoona on June 27, but gave nothing out as to whether any action has been taken relative to resuming operations. The principal gain in production is noted in the Windsor district where the Berwind-White Company has extensive mining operations.

BALTIMORE

A number of industries are running short and it is becoming more difficult to assure purchasers. More consumers are in the market every day and they are paying any reasonable price. Bunker coals are extremely scarce, the price at the piers being around $7.30 trimmed.

Baltimore is still getting oil considerable coal from Hampton Roads, and the pioneer move in this trade has been joined by other interests in bringing Pocahontas and New River fuels up the Chesapeake Bay. None of this coal is sold to local consumers, but a great part of it is reloaded for transshipment. This coal can be moved to Baltimore at $2.25 per ton, which brings it below the present cost of fuels offered in bunker trade at the local piers. The present price at the local piers is probably influenced by the fact that the heavy tonnage shipped to the piers has outstripped the demand.

From mining regions came confidential reports that the miners are growing short of funds and are becoming desperate. Only the fact that the union leaders have been using the talk of a railroad strike for July as a weapon has prevented a number of miners from returning to work, irrespective of union connections. Many of the private advices received here predict that the unions will begin to slip seriously before mid-July. There is a growing belief that the mine strike in a number of regions is near its close.

FAIRMONT

With surplus stocks in the East getting low, there was a perceptible stiffening in demand and a recovery in prices during the week. The price of coal at the Fairmont is $2.45, notwithstanding the fact that many consumers had been waiting for the advent of July with its lower freight rates. Production is still climbing, having reached a daily average of 25,000 tons. There was a marked increase in the number of mines in operation, 177 plants running on an open-shop basis, and Disturbances are somewhat more general among the strikers as they realized that there were defections in their ranks.

UPPER POTOMAC

Not only are mines gradually resuming production, but increased output at all operations owing to the larger number of men reporting for work. Sentiment for a return to work is growing among the miners and disturbances are at a minimum. Prices have advanced and all at the maximum, owing to a marked increase in demand.

West

KANSAS CITY

There is a quiet tone to the market. The wheat threshers laid in a supply early from Colorado and New Mexico, and there is practically no demand for domestic grades. Steam grades are in demand to some extent and as some mining operations have been shut down, the production is taking good care of it. Prices are unchanged.

In the Kansas fields, the miners are about equally divided between the Howat following and the national organization, and this fact no doubt has helped to keep the peace in that district. Most all of the miners that are digging coal are home owned and as they are of the radical element, no trouble is anticipated, for, as is general in all coal fields, the radical element rules.

A chestnut size of anthracite from New Mexico is being offered at retail in Kansas City at $11.25 per net ton. If this is any indication of what prices will be before the close of the year, it looks like the elimination of anthracite from Pennsylvania and a very low price for Arkansas anthracite and smokeless, which are the popular grades of domestic coal in this market.
Anthracite

Strike News, Rail and Coal, Brings More Retail Orders
Many Yards Cleared of All but Pea Coal—Consumers Able Only to Place "Applications" Pending Arrival of Replenishments—No Announcement on Pennsylvania Tax.

I NCREASING prominence of strike news—rail and coal—brought more retail orders and has cleared many yards of nearly all stocks except pea coal. The Washington conference has aroused consumers to the gravity of the situation, but retailers can do little but take "applications" for next winter's needs.

No announcement has been made as yet regarding the attitude of companies as to levying of the Pennsylvania coal tax, pending appeal to the high court.

Some pea coal is moving for steam use and mine stocks are going down. River barley is in increasing demand, production is heavier, and prices up.

NEW YORK

The efforts of the authorities at Washington to settle the mine troubles has resulted in more of the public's attention being focused on the situation. Consumers have at least seemingly become aware that they might have difficulty in getting their next winter's coal supply. Retail yards are about empty of the sizes generally used and the dealers themselves are beginning to see dark clouds ahead.

Disbarment hearing here of the decision of the Pennsylvania Courts declaring the coal tax law constitutional. Nothing has been announced as to the attitude to be taken by the companies reported to be levying the tax, pending the probable appeal to the United States Court.

Buyers are still able to pick up some buckwheat coal but it is not plentiful. River barley is coming into this market, quotations ranging $1.90@$2.15, at point of loading. Regular independent barley was scarce, but some shippers were reported as quoting $3.50 for stock coal.

BOSTON

News items from Washington have somewhat allayed public anxiety, but they come at a time when retail dealers have all the business they can possibly take care of, present stocks considered. It will be hardly more than a fortnight before the larger retailers will be in position to take nothing but "applications" for stove and chestnut. The trade is much interested in reports of a cargo of Welsh anthracite en route to New Bedford. The delivered cost is understood to be around $13.50, but opinion is as yet uncertain whether the cargo is for one retailer or whether it is to be divided up for distribution among several dealers.

BALTIMORE

The prospective rail troubles and the fact that the anthracite situation remains unsolved are menacing hard coal consumers. An inspection of the storage yards shows that there is not more than a total of several thousand tons, at most, in this city.

No hard coal is offering here. Some semi-bituminous is being brought to Baltimore and offered as a substitute, but so far is being received without enthusiasm.

PHILADELPHIA

There could not help being considerable change in the retail business, with the increasing prominence of strike news—coal and rail—in the daily papers. Even though the most prominent news seemed to promise some sort of a settlement of the coal strike through Government intervention, it would seem that the coal user was most affected by the threat of a rail tie-up. At least this was the inference of the dealers, all of whom have been called on this week to deliver coal. So strong was the demand on some of them that they all are out of everything but pea.

In accord with their belief of an early ending of the strike the retailers have slightly let up in their demand for storage pea coal, at least this size has lost some of the momentum it had been acquiring during the past three weeks.

With the exception of an occasional stray car of buckwheat the only steam coal offering is river barley and the producers of this fuel are gradually getting their price up. Recently there has been quoted a range of $2.50@$2.75 and some sales made. Thus is the advantage of the new rates of freight quickly lost.

ANTHRAHITE FIELDS

A count of the votes recently taken shows an overwhelming majority cast in favor of giving the general scale or policy committee authority to call a strike, if necessary. Action is being deferred, however, pending the outcome of the conference at Washington, called by the President.

A split has occurred in the union ranks in District 1, where an organizer has defied the local leader's order of dismissal and has secured the endorsement of 4,000 of the men. Some picketing is being done at the Woodward Company and by both the Pittsburgh Coal Co. and at the East Boston Coal Co., but otherwise the region is quiet.

BUFFALO

The lack of interest in the general market continues. Jobbers can do little more than keep in touch with the supply and wait for special needs. They quote $7@7.25 for 48-hr., Connellsville, and $8.60 for 48-hr. furnace and $4.25 for stock.

CONNELSVILLE

While production of coke continues to increase slowly, the amount offered in the open market, yet prices have not increased as at all the heavier production being by furnace interests, particularly the Frick company. The iron and steel industry shows that it is not merely maintaining its supplies of coke and coal, but is increasing them somewhat. Byproduct production continues heavy and there is probably more coke coming from West Virginia, supplementing the increased production in the Connellsville region.

Offerings of coke being very limited and there being foundries and mislabeled users who must have coke, prices have been bid up further even though it is doubtful whether any further increase would push the spot price of pig iron not justifying. It is claimed that all the coke offered now in the open market is of indifferent quality, under the distinction of "foundry" coke is lost, the market being simply for "coke."

The Courier reports coke production during the week ended June 24 at 72,700 tons by the furnace ovens, and 15,360 tons by the merchant ovens, a total of 88,060 tons, an increase of 1,200 tons.
Premium Prices Prevail, But Buying Is Backward

Congestion and Shortage of Cars in Kentucky Curtail Offerings—Only Perfunctory Sales Efforts Made With Output Largely Contracted For—Screenings Very Scarcе.

COAL was more or less at a premium on the Chicago market last week even if consumers were indisposed to buy heavily. Orders were held up as a rule because of the lower freight rates, yet prices climbed daily in the western Kentucky field and on Saturday they had reached the high mark of $4.60. A growing car congestion and shortage in the Kentucky districts made the offerings lighter each day and toward the end of the week operators were making small efforts to sell. The low production in Kentucky was pretty well contracted for and what coal was free was held at producers’ prices. Mine-run was offered at $4.50, and prepared sizes at $4.40@$4.50 at the close of the week, an advance of 25c.@35c. from the opening of the period. Screenings were a very scarce product at $4.60.

CHICAGO AND MIDWEST

Adding to the distressing car situation, locomotive equipment on the L. & N. in Kentucky was condemned and sold, but Western roads were reported sending in their own engines to haul coal for their own use. There was very little immediate buying in any of the fields reported by the railroads. Movements were on sales previously made.

Large industrials in Chicago permitted the week to drift by without any marked purchasing. What coal was taken was in small lots and there was no apparent concern over the threatened rail strike. Consumers were more affected by the news of the Washington conference and held hopes for the beginning of some kind of negotiations looking toward peace in the strike. Such a turn, it was said, will be the only thing that will break the present high Western Kentucky market. This probably had more influence on the buying than appeared on the surface. The docks at the Head of the lakes continued to call for eastern Kentucky coal, but demand for that coal was pretty well sold out and sales could not be made on any more orders. Prices in the eastern Kentucky fields remained at the Hoover mark, but only occasional reports of higher selling by jobbers. There were a number of inquiries reported from small industries and the country trade in Wisconsin, Michigan, Iowa and Illinois, as there were also in the western Kentucky fields.

West Virginia high-volatiles were in good demand at the high suggested by Secretary Hoover, and Pocahontas struggled along a little weaker at $3.25@$3.50 on mine run. The retail trade was reported as buying strong on the smokeless coals, under pressure of heavy inquiries from the weakened public and farmers who are demanding thrashing coal.

INDIANAPOLIS

Much more of an industrial demand for coal prevails. The fact that industries are running a little more than usual accounts for the activity displayed concerning prices and deliveries. The demand for domestic is quiet although there is a little winter fuel now being stored.

Prices are unchanged as far as domestic coal is concerned, inasmuch as the present supply was bought on a lower market than now prevails. In Indianapolis retailers are not disposed to buy much coal at the maximum price of $3.50, inasmuch as considerable of this coal sold on the spot market around $1.15@$2.oo.

West Virginia coal is being sold in Indianapolis while the western Kentucky grades also are being offered here with fewer takers. No Indiana coal from standard mines is on the market.

LOUISVILLE

There is a very active demand for coal, which has chased eastern Kentucky screenings up to $3.50, along with mine run. Some of the mines in the Straight Creek field are quoting $3.75 on all sizes.

Western Kentucky is getting good car supply and running on a steadily increasing tonnage basis. Labor is also plentiful, as a result of many miners from Illinois and Indiana coming into the district.

In eastern Kentucky some of the branch railroads are overburdened with tonnage, and this along with congestion at Cincinnati and other gateways, is holding back car loading. However, production is very heavy, mines operating at around 70 per cent of the capacity of the field, or better.

Jobbers report that the demand for coal is so active that it is more of a case of finding tonnage to sell, than of selling it, although many consumers are haggling over the top ten or fifteen cents a ton.

Retailers are buying a little better than they have been, retail prices being about $1.25, rather than they were in the early spring. Retailers there are worried over the threatened rail strike and long coal strike, figuring that coal will be scarce and high in the fall, with the result that they are making inquiries for prices.

WESTERN KENTUCKY

During the past few days demand has increased as a result of the threatening rail strike, reduced stocks in consumers’ hands and larger railroad consumption. There was a great deal of tonnage sold back bybuyers until after July 1, to secure freight rate reductions, which would result in a much heavier demand.

Quotations are $4.40@$4.50 for all sizes. It is not especially easy to secure the $4.50 level, but it is thought that $4.40 may be taken at 40c. Some of the jobbers had anticipated a break after the market reached the high level, but inquiry and demand continue strong, and it is expected that the price will hold.

Whether there will be any advance over the $4.50 level, which exceeds the price demanded before the Hoover conference, but not accepted by producers, the operators do not care to antagonize Washington, and there is a strong chance that the market will be held at that level.

The demand is picking up just a little, as retailers are getting better business from consumers who are afraid of the long strike making for higher prices and fall shortage. The threatened rail strike also scares consumers into stockpiling now. Retailers, however, are lucky where they are able to keep 40 per cent of their delivery equipment in service.

ST. LOUIS

There is a stronger evidence of buying on the part of large steam users. Storage piles are depleted and both Kentucky and Alabama coals are moving into this market, with west Kentucky favored on account of freight rates. The domestic demand continues quiet.

The country demand for threshing coal has slackened because the season is now on and dealers are afraid to purchase high-priced coal and have it arrive in the fall. The demand is perhaps after the threshing season is over.

Prevailing prices on west Kentucky coal in this market are $4.25 on mine run, and, although some prices have been quoted on 25-in. lump at $4.50 per ton at the mine, there seems to be nothing available but mine run and very little of that.

The fact that Mr. Lewis has been invited to Washington to attend a conference with the President with a view to starting negotiations between the miners and operators seems to have a good effect on the market. There has been a reduction of the prices this week being 25c.@40c. higher than they were a week ago.

SOUTHERN ILLINOIS

Since the disturbance in the vicinity of Marion and Herrin in the Carterville district has been instigated by local operators, it was anticipated that mining operations of any nature will be attempted until officially sanctioned by the United Mine Workers.

In the past two days sales have been made of some few cars of lump, egg and nut held in storage by operations on the Illinois Central, near Herrin, at $2.50, the Illinois Central district there is no tonnage available.

In the Standard district there are perhaps 2,000 tons in storage, all of which has been quoted at $4.50@$4.75. This is being loaded and shipped as rapidly as equipment is available and the cars can be loaded. This tonnage is principally on lines having mines located on their rails in the non-union fields and in which fields most of their equipment is at present engaged. Otherwise this small tonnage would have been moved long ago.
Northwest

Buyers Now Anxious, Having Too Long Held Off for Drop

Few Orders Being Taken—Shortage Seen Unless Mining Is Resumed Soon

—Milwaukee Price Advance Exceeds Freight Cuts—Duluth Dock Reductions
Price to Pare Heavy Stock.

The anxiety of buyers is growing. Many held off too long in the hope of lower costs while dock stocks slipped away to other users. Order taking is now infrequent and production must be resumed soon to overcome a definite shortage at the Head of the Lakes docks this winter.

At Milwaukee bituminous prices have been advanced 50c. per ton, more than absorbing the freight reduction of 35c. on all-rail coal. One dock in Duluth has cut its prices, but this move has not been followed by others. The cut is explained by the fact that the dock has been the heaviest taker of coal this season and was spurred to this action by the fear that a strike settlement would find it embarrassingly long on high-priced coal. It is this fear that has kept most docks from replenishing their stocks until new cost conditions can be determined.

DULUTH

An inexplicable weakening in prices has taken place at the Head of the Lakes. One dock has been reported as shuttered off from the market in order to insure orders. This dock is the one which has received the largest shipments this year, and it is thought that fear exists of a sudden ending of the strike and a surplus of high priced coal on hand.

Four cargoes of coal arrived last week and two were loaded out for lower ports. Two more cargoes are scheduled to go this week, and none are known to be on the way here from Lake Erie.

One indication of the scarcity of coal here is shown in the fact that vessel fuel has advanced and that docks are not loading these ships for the round trip as previously reported.

The anthracite situation is attracting considerable attention, and local consumers are filling their bins against a scarcity this winter. It is estimated that 1,100,000 tons more than the 300,000 tons now on docks will be needed to carry the territory through the winter. Unless the strike is settled by July 15 it will be physically impossible to get this amount of coal here.

Country dealers are not buying. The main factor controlling this is that they are in desperate straits financially. They have come through trying financial times and have many accounts receivable on their books which they are unable to collect. Their credit with the docks is nearly exhausted.

MINNEAPOLIS

Some coal buyers are beginning to get rather uneasy. They were well content to hold off as long as possible, but now that the season of navigation is about half gone, they are beginning to wonder if their strategy has been as satisfactory as could have been hoped. It is not too late for the Northwest to be easily provided for, if coal production is resumed soon. But there is no assurance that it will be resumed soon.

A number of the wholesale companies are not taking orders now, and those which will, would speedily be exhausted if any rush of business set in. Hence there is nothing that can be done by the buying trade but await developments. Some small business might be handled, but the stocks on hand are down to a small tonnage, after the coal covered by contract is excluded.

So the next few weeks will be rather anxious ones for the trade of the Northwest, unless there is something very tangible being done toward a resumption of production.

While the tonnage needed is much smaller, the hard coal situation is the most urgent here as elsewhere. It is probable that soft coal can be furnished from some field, sufficient to care for the most urgent needs of the Northwest. But hard coal production is at a standstill and there are no substitute fields nor coal available.

So the coal trade must needs await developments, earnestly wishing for some real action within a short time. Quotations are about withdrawn because of the scant stocks now available.

MILWAUKEE

There is an increasing demand from users of hard coal, who are becoming alarmed at the prospect of a shortage. As there is no other market, coal dealers are forced to decline orders or file them for future delivery.

Jobbers report that there is quite a demand for July shipments of soft coal, discounted from the new freight rates. The reduction amounts to about 35c. per ton on Eastern soft coal received by rail. Dealers have been notified that all soft coal, with the exception of anthracite, will be advanced 50c. for July. Western Kentucky and Alabama coals are now being offered.

An appeal has been sent to the State Railroad Commission by the Wisconsin Utilities Association requesting a relief from the coal shortage in Wisconsin. The average supply by utilities is sufficient only for but two or three weeks more.

Cargoes by Lake thus far this season aggregate 700 tons of anthracite screenings and 566,193 tons of soft coal, against 382,748 tons of anthracite and 1,104,170 tons of soft coal during the same period last year. Thus far this season 180,000 tons of soft coal have been delivered to Lake Michigan ports from Duluth. Milwaukee received one cargo, Eyovonca twin, and the remaining cargoes were delivered to Sheboygan.

New England

Inquiry Improves Somewhat, But Receipts Are No Heavier

Discounting of Freight Cut by Pocahontas and New River Shippers

Lower Prices Slightly—June Holdbacks Must Now Enter Market—Imports Interest Trade.

With the approach of July 1 there was somewhat better inquiry last week, both for spot cargoes and for shipment. Inland from rehandling plants at this end. Most of the Pocahontas and New River shippers have already discounted the 28c. reduction in tolls, and in consequence prices are modified a little as compared with a fortnight ago.

Receipts are no heavier, but buyers who waited through June are now obliged to enter the market for small tonnages. Arrival of foreign coal interests the trade.

Prices f.o.b. loading port range $6@$6.25. A few agencies are asking $6.44, this being the $3.50 Hoover price plus the reduced rate of freight from mines to the Roads.

After throwing out bids for July and August basis coal, one of the State Charitable Departments re-advertised and now has accepted new proposals on practically the same basis as the old. Contrary to the impression we gave a week ago, the rejection of the former bids was due to a misunderstanding with regard to the strike clause on the part of some of the bidders. In any case, the purchasers lost nothing by waiting.

The trade is much interested in cargoes of Newcastle coal that have begun arriving at this port. The first cargo was unloaded at the N.Y., N.H. & H.R.R. wharf and is assumed to be for engine supply, the delivered price being rumored around $6.40.

What small output of Pennsylvania coals happens to be offered is quoted at somewhat higher levels. Several mines that went on strike now shut down, due doubtless to the tragedy at Herrin, III. Receipts all-rail continue very light.

Coastwise freight rates are on the same easy basis reported last week. Steamers can be had at 90c@$1, with smaller bottoms, either barges or sailing vessels, at a range of $1.10@$1.25.
Freight and Rail Strike

Tend to Enliven Demand

Some hesitancy shown pending outcome of Washington Parley—Prices are at Hoover level and strong—Heavy Movement from Producing Fields causes congestion of Loaded Cars.

The Washington conference has created some buying hesitancy on the part of consumers in the hope that mining may be resumed and lower prices follow. Despite this factor, there is an increased demand, as July 1 released many orders which had been held in abeyance until the freight reduction became effective. The rail trouble is another factor in enlivening demand.

Coal prices are strong, being at the Hoover level, and in the case of Connellsville, $3.75. There is some congestion of loaded cars, due to the heavy volume rolling from the few producing fields and a troublesome coal shortage is predicted when reserves are being built up again.

CLEVELAND

The past week has uncovered a broader and more insistent demand than in a similar period since the beginning of the strike. Numerous consumers had been holding off ordering until after the freight reductions became effective. This event together with the rapidly dwindling stocks has helped to liven up the market. Prices continue firmer.

Operators are optimistic regarding a settlement of the strike as a result of the negotiations initiated by the administration. They insist that every week’s delay in resumption of full-time production will make a coal shortage this winter that much more probable. Only the lack of realization of the facts in the general situation has prevented any rush to buy, according to some opinions.

Greatest concern now is being felt over the Northwest. With upper docks cleaning up and with only a small fraction of the 23,000,000 tons required in that territory shipped, congestion or actual shortage is feared. Some operators are looking for a car shortage when output is started in full swing and when crop movements get under way.

COLUMBUS

A stronger demand for all grades has developed. With reserve stocks becoming depleted and with industrial revival coming on there is a more widespread call. Quotations have advanced to almost the Hoover level. In a few instances some quotations above this have been made but has brought no orders.

Retailers are still cleaning up but are fairly well sold out and will soon be in a position to take in some stock. Household consumers are getting rather anxious over the prolonged strike and are calling in a frame of mind to lay in stocks for the winter. Retail prices are growing stronger in sympathy with higher prices at the mines.

Lake business is becoming more active. The H. V. Docks at Toledo during the week ended June 28 loaded 114,000 tons, making a total of 1,131,490 tons for the season. No coal has been loaded by the T. & O. C. docks at Toledo.

PITTSBURGH

Just before President Harding called the market conference operators and miners officially for July 1 the rumors that an effort would be made in the first week of July to start some of the mines in the Pittsburgh district to work harder, but since this call was issued the rumors have been in abeyance. The general feeling is that there is much doubt whether the President’s efforts will lead to a settlement and while the common estimate is that even if they should, a month or so would probably be consumed.

The opinion of the trade for some time past has been that whenever a settlement should be reached coal would not become plentiful for quite a while. This explains the making of 60 and 90-day contracts for some time past, without much thought being given to the ending of the strike.

One cannot find in the coal market any weakening traceable to the Washington efforts to end the strike, while on the other hand some buyers are holding off for a railroad strike somewhat seriously and are not anxious to buy. The Connellsville steam coal market, which is almost all the coal marketed in Pittsburgh, quickly regained the slight loss in strength reported a week ago and has since stiffened farther, being now quite firm.

It is notable that there is but little price range now, and this is probably attributable to buyers taking a firm stand instead of huddling freely for tonnage. There is a fairly wide market, with numerous small sales, though but little more tonnage than a month ago. At no time has the market gone above the $4.59 price which the Connellsville operators wished Secretary Hoover to countenance.

DETOIT

Sluggishness and inertia continue the predominating condition of the market for bituminous. Wholesalers and jobbers are still waiting for the increased volume of business that was forecasted to come in after July 1. Its materialization apparently will be slow. Even the talk of a possible strike of railroad employees has failed to bring anything active demand.

From the jobbers’ point of view the present indifference of buyers is creating a situation that will develop into a shortage later in the year. Warnings already are being given of the probable development of coal shortage and freight traffic congestion on the railroads within a few weeks.

Smokless lump and egg is quoted $3.50. West Virginia or Kentucky lump and egg holds about the same level. Mine run is bringing $3.25 and nut, pea and slack holds around $3.10.

EASTERN OHIO

Reports of activities in the trade indicate that demand is increasing. A factor which has been a part of the present shortage is the anticipation that the present conference at Washington will result in the early resumption of用人单位, which time they expect to be able to cover their fuel needs at prices considerably under those prevailing at this time. There has not yet developed with the rank and file of industry any situation of dire straits for coal.

There has been some interference with stripping mine operations, this apparently being well on the increase. The recent outrage at Herrin, Ill. At Lafferty, Ohio, one steam shovel operator was killed and several other workers injured. Notwithstanding this interference, the stripping mines continue to produce some 40,000 tons per week.

Spot prices stiffened somewhat early in the week but have since reacted. Eastern Ohio strip runs from $3.30 to $3.40 and slack and mine run is $3.80 to $3.90, lump sizes, $4.25; eastern Ohio deep mine and No. 6 mine run, $3.75.

Receipts of bituminous coal at Cleveland during the week ended June 24 showed a decrease of 128 cars under the preceding week; industries received 995 cars, retail yards 101 cars, total 1,195.

BUFFALO

As the time progresses the inquiry increases and there is now quite an improvement in the general movement. In fact the outlook is so encouraging that a certain shipper confesses that he is holding coal on track and paying demurrage, with the idea of making money on the venture.

Still there is the bear in the trade who does not believe there is going to be a furry. He takes the position that manufacturers cannot afford to buy $5 June prices, a little higher, to which some concern with that coal for heating and this must be supplied at whatever price. All of which goes to show that nobody can tell now just what is likely to happen.

While it does not seem proper to quote coal higher than last week, it is certainly growing stronger, at $4@4.25 for 2-in. lump and $3.75@4 for mine run and slack, with the latter rather more active. The new freight rates to be added are $2.00 from Allegheny Valley, $2.24 for Pittsburgh and No. 8, with a rate for occasional shipments from the Connellsville district of $2.39.

NORTHERN PANHANDLE

The effects of the strike are being felt to some extent. All but two or three mines are running regularly. Most plants are now entirely free from any disturbance or demonstrations. During the closing days of June prices were a little firmer, the general range on mine run and slack being $3.50@$3.75.
Cincinnati Gateway

Flood of Inquiries Puts Hoover Prices to Test
Wholesalers and Jobbers Hard Put to Keep in Bounds—Big Industrial Buyers Find Retailers Competing for Fuel—Mines Ask Limit Prices.

The opening of July saw this market flooded with inquiries and most of the wholesalers and jobbers fighting an uphill task of keeping within the bounds set by Secretary Hoover. Lake, railroad and steam buyers, all of whom have been prominent in purchases for the past two weeks, saw the retailers stepping in for their share of the small doles that are being sent out from the union fields to be spread over constantly increasing demands for fuel.

The result has been an unprecedented endeavor to get coal and had there been no restraint placed upon prices as set by the government there is no telling where the values would have gone to. As it is, buyers are going directly to the mines, which are taking the full Hoover price, threatening to eliminate the wholesalers.

CINCINNATI

Both in volume of business and strength of inquiries the stiffest of the post bellum business can hardly compare with the fight that is being made for coal. Not alone was the lower freight rate inducement before the buyers, but there was a period of inactivity that has to be reckoned with for there will be little coal produced between the last day of June and July 5, and at this time every pound of coal that does not go into the cars leaves just that bigger a hole to fill.

Producers in the southeastern coal field of Kentucky and those in the Elk Horn and on the N. & W. are awaiting the full Hoover price. There have been talk of “premiums” being paid to get coal, but this is hard to trace to an actuality. The fact remains, however, that the buyers are going to the mines direct and many of these are taking the full Hoover price. This condition caused J. C. Layne of the Fair Price Company, and Mr. Hoover the latter to set up a system of affairs and who asked that specific incidents of such practices be forwarded to the Department of Commerce in Washington.

Retailers have issued a warning to buyers to get in their coal and say that if the maximum government price continues for any length of time they will be forced to a higher level. In answer to a request from Julius H. Barnes that a price committee be named the local Chamber of Commerce answered that Cincinnati prices were 60 cents below those that would have been allowed.

LOW-VOLATILE FIELDS

NEW RIVER AND THE GULF

The effect of a strike in the New River field has been reduced, owing to the progress made by producers in resuming operations. The output lacks about a shortage of labor and Market conditions were somewhat more conducive to a larger production. With the possibility of a rail strike, buyers have entered the market again and there is a fairly large volume moving to eastern and western markets.

Gulf mines are managing to maintain production at about 30,000 tons a day although having a shortage of labor to contend with and experiencing further trouble in securing the prompt placement of cars. The Virginian has been found to supply all the eminently needed. Mines were placing a large part of their output at Tidewater during the closing days of the month. Spot prices were on a somewhat higher level, the range being $2.25@$2.50.

POCAHONTAS AND TUG RIVER

Labor shortage losses were reduced to some extent in the Pocahontas region, but there was little or no gain in production, owing to tardiness of the railroad in delivering cars, growing out of congestion. The Norfolk & Western is taxed to the limit in attempting to handle the tremendous tonnage originating in the Pocahontas region. Prices have hardened somewhat, though they hardly reach the maximum.

Tug River mines are producing almost 115,000 tons a week. Operators find themselves somewhat handicapped by inability to secure placement of equipment as producers are attempting to handle the tremendous tonnage originating in the Pocahontas region. The demand for byproduct in the Western market is active and a large part of the output is being consigned to Western points.

HIGH-VOLATILE FIELDS

KANAWHA

Operators are gradually overcoming the effects of a strike, as disclosed by the fact that nearly 100 mines are now placing current conditions and promises of protection in the event of any future agreement with the union are encouraging men to return to work. The demand was a little stronger toward the close of the week and one producer was the fact that stocks were dwindling and that there was a possibility of a rail strike. This brought prices near the maximum, with minimum strong at $3.90.

LOGAN AND Thacker

Logan production is well over 350,000 tons a week. Coal trains are being given the right of way over all other traffic and the movement to the Lakes and to other Western points is heavier than it has ever been. Congestion in

yards and on sidings was somewhat in evidence during the latter part of June. There is expected to be a rush for coal during July but producers will not be able to handle much more business.

Thacker mines are operating virtually at capacity. There has been more or less delay in placing cars owing to congestion and the crowded conditions of sidings and on the loading yards. More miners could be used if they were available. Toward the close of the month there appeared to be a further increase in production. Prices showed a tendency to stiffen and were not far below the maximum.

NORTHEASTERN KENTUCKY

After holding back for a month for lower freight rates consumers are securing more coal and this has appreciably stiffened the demand for all grades. Transportation difficulties, however, are holding back production, all lines being badly congested. Mine run is averaging $8.25 or better, with lump bringing $8.50@$8.75.

South

BIRMINGHAM

Alabama mines are moving a large tonnage to Western points and new business is being booked for emergency users, there being a good demand for medium and lower grades of mine run, and some better inquiry for Cabah, Black Creek and other lower-quality fuels. It is estimated that from 40,000 to 50,000 tons of steam coal is being disposed of in foreign markets and in the domestic territory.

Bonner is still restricted in the territory normally supplied, but the lowering of freight charges is having a stimulating effect. Domestic dealers are beginning to expect more interest in buying for future supply, and the lower and medium quality coals which have been hard to move, are in somewhat better demand.

Quotations f.o.b. mines follow:

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<tr>
<th>Washed</th>
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<td>Cabah</td>
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<td>Montevallo</td>
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Both commercial and furnace company mines are operating on better schedules and production is on the increase in all parts of the district. There is some shortage of skilled labor.

VIRGINIA

With the demand somewhat stronger during the closing days of the week and during preceding weeks, production being almost equal to capacity in some sections of the district. Consumers had been without holding orders for production of furnace coals, but seem to have become somewhat alarmed as to a railroad strike. Car and labor shortage losses are the principal items in this territory. Mine run is holding up the best in point of demand, domestic sizes have a little better market, as retailers have commenced to replenish their stocks.
ALABAMA

The County Coal Co. is making extensive improvements on its properties in the County, Tuscaloosa and Birmingham districts, where work is being under way on a spur track for connecting with the larger system of the company's lines. The steel bridge over the Cahaba River is practically completed and work is being pushed on the other steel bridges that steel tipples will be built at the junctions of the new lines. The work is being done under the supervision of the company's engineers.

The company is also getting under way on a large road-building project, and plans are being made to put in new machinery to meet the increased demand for coal. The company is looking to the future with confidence and is planning to expand its operations in all directions.

INDIANA

The State of Indiana has started a test suit against the Western Indiana Company for damages sustained by the property of the company from the Elwood district of Indiana. The suit was filed against the Western Indiana Coal Co. of Terre Haute, to ascertain who owns the coal under the Wabash River in that county. The suit was filed against the company under the provisions of the law which authorizes the state to recover damages sustained by its property from trespassing on its lands.

The suit charges that the company has taken and used the coal from beneath the river bed. The first question to be determined is whether the river is navigable in Vigo County. If it is found to be true, the State of Indiana is in possession of its claim to ownership of coal that has been taken out and used for navigation.

The case is now under the jurisdiction of the State's attorney, who will prosecute it. The company will make a demand for the return of the property and if it is not returned, it will enter a counterclaim for damages sustained by the company from the trespass.

The case is important to the company, as it involves the right to use the river for navigation, and the company is determined to recover its property and hold it against the State of Indiana.

MISSOURI

As soon as a suitable site is definitely decided upon, construction work will be begun on the new main coal yard. The company has purchased a tract of 4,000 acres of land at a cost of $18 million, and has been conducting extensive surveys and engineering work to determine the best location for the new yard.

Construction will begin immediately, and the work will be carried on in two phases. The first phase will be the construction of the main plant, including the main building, offices, and other necessary structures. The second phase will be the construction of the coal yard, including the ruins, hoppers, and other necessary structures.

The company is preparing to begin operations at the new yard in 1899, and is determined to make it one of the largest and most modern yards in the country.

NEW YORK

The Pittsburgh Fuel Co. has leased from the state of New York for a term of forty-two years, the water front property at 125th St. and the Harlem River, New York. A coal plant consisting of eight coke ovens,四个 coke ovens, and other modern equipment will be erected on the property.

The Rubel Coal & Ice Co., of East New York, Brooklyn, recently purchased the Jamaica Coal Co., and is now in possession of the coal at Ozone Park, Elyria Hills, and the Hyatt-wood Coal Co., of Jamaica.

Anson W. Burchard, vice-chairman of the board of directors of the Electric Steel Co., has been elected president and chairman of the board of directors of the International General Electric Co., succeeding Mr. J. F. A. Jenks, who was recently chosen president of the two companies, and Charles Neave, former chairman of the L. G. E. Co., in the election.

Nearly four million tons of coal and coke were consumed in supplying Greater New York during 1921, according to reports filed by the gas and electric companies with the Public Service Commission. Of this tonnage the gas companies used 1,744,620 tons, coke and the electric companies 2,185,876 tons, in the production of steam and electricity.

In the same period two of the gas companies made 425,145 tons of coke, of which they sold 281,039 tons and sold 144,659 tons.

OHIO

Opposing views of operators and mine workers on the strike which has tied up all Ohio producing for the fifth month in a row were presented before the annual meeting of the Columbus Chamber of Commerce by W. D. McKinney, secretary of the Western Ohio District, who represents the operators, and Lee Hall, secretary of the Ohio District, who represents the workers. Each speaker was allowed 20 minutes to develop his side of the question.

The meeting has been managed by H. H. Liggett, president of the Liggett Brothers Coal Co., Cincinnati, that his company had signed a mine workers' contract with the Liggett Coal Mining Co. of Canton, was present. The company has planned to erect hoppers in its storage yards at a cost of $25,000.

The White-Barr Coal Co., Cincinnati, has been chartering vessels with a capital of $30,000 by W. L. Barr and others.

The Rutledge Coal & Mining Co., Toronto, has returned to operating and is using the mine and mine coal in the eastern Ohio field. Among the incorporators are James W. Rutledge & Co.

The C. D. Peters Ice & Coal Co., Cincinnati, has been chartering vessels with a capital of $25,000 to do a retail business by C. D. Peters, S. C. Domahuc and others.

A. Wright, president of the New Coal & Coke Co., has returned to his headquarters in Cincinnati after a brief absence due to sickness. He makes the recovery of $10,144,07, which has been negotiated for a contract for domestic use in Cincinnati, smokeless coal, and is now more and more into vogue in that city.

The United States District Judge John W. Drink Wurzburg, in the case of the United States v. Ohio Coal Co., held a meeting for filing of a new action, the suit of the Tidblades Coal Co., Cincinnati, against H. D. C. Peters, including all other parties in interest. The recovery of $10,144,07, which has been negotiated for a contract for domestic use in Cincinnati, smokeless coal, and is now more and more into vogue in that city.

Southern and Kentucky coal dealers at the Cincinnati market recently were: D. C. Thayer, president of the Ohio Coal Co. of Knoxville; A. R. Anderson, of the Liberty Coal & Coke Co., of Strathaird, and R. F. Brown, president of the Ohio Coal & Coke Co. of Knoxville; J. R. Clark, of the Cincinnati Coal Co., W. V. and W. T. Funk, of Sutton, Ky.

PENNSYLVANIA

The National Mining Co., a subsidiary of the United States Steel Corporation, will open two mines in Washington County, Pa., in the vicinity of a large coal mine. The larger development is planned, and the other mine will be used for coke. The mining district is in the vicinity of Washington, on the Monongahela pike, has been selected as the site for the new coal town and development. It has at least 3,500,000 tons of coal. The steel corporation is operating a large coal mine in the vicinity of Washington, and the coal company is now purchasing 20,000 tons of coal at a cost of $5 per ton. The coal company is reported to be interested in the coal in the county with a river frontage. The field was formed by the H. C. Frick Coal Co. & Co., and the Minco Coal Co., both of which are subsidiaries of the steel company.

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In addition to the holdings of the H. C. Frick Coke Co., in this section and the Ohio Coal Co., the Liggett Coal Mining Co., has purchased all the coal leases in the county, and the coals are being shipped to the Minco Coal Co. of Pittsburgh.

The board of directors of the Liggett Coal Mining Co. has arranged with T. M. Chance for the operation of the Chance Flotation System Plant at one of its mines.
mines unless the proposed appeal to the United States Supreme Court from the circuit court's decision is granted. There are some 5,000 miners working in the coal-striking region.

During the week the tax bills were sent out the produce of which is the subject of this report, the taxable valuation is down to the 1912 date. The tax assessors were heard by the courts on the point of whether the tax would be payable on the basis of the 1912 valuation or the 1922 valuation. The tax court decided against the 1922 valuation and awarded the minerals to the 1912 valuation.

In the meantime the coal companies have been paying the taxes on the basis of the 1912 valuation and have been deducting the taxes from the wages paid to the miners. The result has been a strike by the miners, who feel that they are being taxed on the basis of a valuation that is lower than the actual value of their coal.

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BRITISH COLUMBIA

Dr. J. D. MacKenzie, of the Geological Survey of Canada, made examinations of the underground structure of the Cornoa coal field which he believes will determine the extent of the field and its relation to the overlying strata of shale.

The Community Coal & Coke Co. has been organized to take over and exploit the old coal property in the lower Lower Valley. Recently a 10 ft. seam of high quality coal was discovered in a tunnel driven above the government road. It is proposed to commence mining and shipping in a small way immediately.

ONTARIO

Toronto Furnaces, Limited, has been organized in Toronto, and has been granted an Ontario incorporation. Incorporators are J. W. Gage, E. H. Roy and J. W. F. MacPherson, all of whom are prominent engineers. The company will build a furnace for the production of steel.

The Western Coal Operators' Association has now advised the Minister of Labor at Ottawa that, as a guarantee of its readi-ness to accept the basis of wages proposed in the meeting of the executive members of section 3 of the Conciliation Board, which section on the average has agreed to approximately 10 per cent over that proposed on contract rates. The association offers to the Labor Board to negotiate on opening its mines, an agreement to be on the basis.

C. W. Moss and W. D. Smith, of the Vulcan Coal Co., went this week to the Mining Ministers at Ottawa to make representations to the government on the coal situation.

The Steeple & Nicoll Mining Co. has been granted a charter to incorporate, the incorporators being C. W. Steeple, W. H. Nicoll, R. R. Ceder and others. The capital stock of the company is $50,000.

Frank Howard, of the Belleview Coal Co., has been appointed a director of the Toronto coal company. He is a director of the Toronto Coal Co. and a member of the executive committee of the latter company. Howard has been an active director of the Belleview Coal Co. for the past three years.

WASHINGTON, D. C.

The executive committee of the American Wholesale Coal Association announces that it will be represented at Washington on August 11. The committee will approximate the association at Washington and its officers are:

The committee is devoting itself to the consideration of the problems which have been suggested as possible candidates for this position. The committee will appreciate suggestions from members. The committee is a part of the American Wholesale Coal Association and consists of the following members:

M. A. S. T. Brown, 19th Ave. and W. Pike St.; Mr. A. M. L. Johnson, 6th Ave. and S. W. 7th St.; Mr. E. M. E. Smith, 2nd Ave. and W. 10th St.; and Mr. J. A. C. Miller, 1st Ave. and N. W. 12th St.

In discussion of Navy coal before the Senate Appropriations Committee recently, Secretary of the Navy, Mr. E. H. Stimson, said that last year, up to April 1, 1921, the Navy had purchased 8,000,000 tons of coal from Pennsylvania mines. Since April 1, 1921, through the end of the fiscal year, the Navy purchased 1,200,000 tons of coal from Pennsylvania mines. That is a decrease of 68 per cent. The Secretary also said that the price of coal to the Navy has been quoted at $2.50 per ton. In the period from April through November, the Secretary said that the price of coal to the Navy has been quoted at $2.75 per ton. In the period from April through November, the Secretary said that the price of coal in the Atlantic has been quoted at $3.30 per ton.

The Secretary also said that the price of coal in the Pacific has been quoted at $3.90 per ton. In the period from April through November, the Secretary said that the price of coal in the Pacific has been quoted at $4.25 per ton. In the period from April through November, the Secretary said that the price of coal in the Pacific has been quoted at $4.50 per ton. In the period from April through November, the Secretary said that the price of coal in the Pacific has been quoted at $4.75 per ton. In the period from April through November, the Secretary said that the price of coal in the Pacific has been quoted at $5.00 per ton.

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The President’s Proposal

WITH the best intentions but with singular lack of courage and with but dim perception of the consequences of its course, the administration at Washington has hopelessly befuddled the coal problem. Firm and defiant at Marion on July 4, the President returns benign and benevolent to Washington and on July 10 avers that public interest requires that the coal operators grant the demands of the United Mine Workers. There has been no parallel to this since the passage of the Adamson law six years ago.

The situation with respect to supply of coal demands action, not delay. The solution offered by the President is no solution at all. It can and will only postpone the day of peaceful resumption of coal mining. In a panic over the coming shortage of coal, the principles at stake are to be compromised. The operators are asked to surrender to the campaign of intimidation, terrorism and massacre that has characterized the union’s conduct in this strike.

Must this country have coal at such a price?

The fundamental issue in this strike is and has been the reduction of union coal-mine labor’s wage in conformity with the same principles that prompted its war and post-war time inflation. To prevent such a reduction the United Mine Workers have wielded the big stick of a nationwide strike—they have exerted the full economic pressure of their organization. Hands dripping red from Herrin, is the union invited to Washington and told that coal production is going to be resumed at whatever mines and by whatever miners choose to work? No. On the contrary, in the most polite, hospitable manner they are invited to go to work at the wage scale that they are striking to maintain.

Knowledge and courage command respect. Who, even among the United Mine Workers present on that eventful Thanksgiving eve of 1919 at the Red Cross Building in Washington, but admired the grit, determination and command of himself and his subject exhibited by Dr. Garfield when he told the miners they could have a 14-per cent wage increase and not the 60 per cent they demanded nor the 31 per cent offered by the Secretary of Labor!

The present emergency calls for another exhibition of indomitable will and clarity of purpose. Apparently the operators must this time supply the stamina and take the punishment that attends opposition to the United Mine Workers. They have the brains, they have the perception of the issues to carry through if they but maintain their unity.

It is wholly idle to speculate on what might have been. It is sufficient to note that a week previous the coal operators offered a plan to which they were fully empowered to commit the bituminous-coal industry—a plan embracing essentially every point for which the administration had taken a stand. The plan offered the miners as a substitute for the Central Competitive Field a new grouping of districts. It provided arbitration boards to settle appeals arising from tangles in the conferences of collective bargainers. This plan was lacking only in not providing a basis for immediate resumption of work. Precedent for determination by an administrative officer of the government of a proper and suitable wage scale in such an emergency was set by Dr. Garfield in 1919. If the administration had a spark of conviction on the economic necessity of liquidation of post-war peak wages it could have accepted the operators’ concessions coupled with an ultimatum to the union on wages. The data essential for such a determination are as accessible now as in 1919.

For the operators to agree to President Harding’s proposal would be not only to surrender on the points for which they have taken a stand but to abandon the country to the rapacity of a strengthened, domineering labor monopoly. The country has patiently subjected itself to more than three months’ strike in the coal fields as a necessary travail in the economic adjustment of this basic industry. The public most assuredly will not approve official recognition and unnecessary even though temporary perpetuation of an uneconomic wage scale under conditions that will rapidly elevate the cost of all coal to previous peak levels.

The administration has offered the country a solution of the coal strike that is not even peace without victory, for so ill-considered are its terms that even though operators and miners be forced into acceptance, coal production can proceed under nothing less than an armed truce. To mine coal under such a plan is but to recondition the contestants for further trouble in 1923.
One Law for All

What ails the state authorities, especially in Illinois, that they are mustering troops in order to protect the railroads? If the transportation interests would cease to carry mails, convey passengers and haul freight there would be no violence. Instead they fly in the face of Providence—and of the union—by attempting to operate.

Some arrangement should be made with the union so that it would be willing to let the union men work, and surely the railroad companies should be prevented from attempting to hire men to do the work which the union has interdicted.

It is said that the railroads have even gone so far as to hire guards to keep order and protect men who are willing to work. Such conduct is unthinkable. They should in all things rely on the state governments, which everyone knows are never remiss in keeping order, wherever, of course, everything is done in accord with the behest of the union.

As the country does not thus reason it must view the railroad strike in a different way from that in the coal regions. It is doing in the one what it almost invariably refrains to do in the other. If the states would put men in the coal fields and instruct them to keep peace at the mines and to maintain the rights of citizens, if the public would back up private guards in the execution of such duties as the state failed to perform, if men who wanted to work were given protection, strikes and bloodshed would be less frequent.

The nation coddles the coal strike. If it ceased doing so the strike would end. The country protests against private guards and refuses protection, yet it blames the coal industry for failing to maintain order, which is the function not of individuals but of the governments of the county, state and nation. If the officers of the law fail to keep order, then they themselves are to blame. It is the police of New York City and the public that hires them that are at fault when houses in that city are entered and men are sandbagged and it is in no way a dereliction of the persons victimized.

Similarly, it is the sheriff, the militia heads, the governors, the chief executive and the public of the United States that are to blame when men are killed as at Herrin, Ill., and when the mines are closed throughout the country in the face of men who are willing to work. The operators are the victims and neither the union nor the public can lessen their own guilt by malicious criticism of those whom they victimize.

The miners have a political advantage that the railroad men do not possess. They are grouped together where they have full control of the vote, and those in mining sections who are not mine workers usually are completely controlled by them. In Williamson County, Illinois, not only the miners but the county also is, as it were, unionized. The mine workers thus congregated elect State Senators and Representatives, and so long as they can do this they can and do make state laws and control executive action. Congressmen also are elected by them, and the laws they demand are too often enacted.

The railroad men, more numerous but more scattered, are less able to use their vote and are more likely to use it sanely because, living in the family with Uncle Sam, they somehow sense his needs, whereas the mine workers, who live alone, see only what they want and nothing beyond.

It is time that the state be made responsible for mob violence. Often to make the county liable is to put the burden on the very property owners who are victimized by the disorders. They are prevented by the negligence of the sheriff from keeping order and they have to pay the bills for any injury to their property that results.

When mine workers and coal companies whose property were destroyed can claim redress, and when the families of the mine workers are as well protected by the state against mob violence and even murder as they are against accident by the employer there will be less disorder.

The public is more responsible than the coal operators or the mine workers generally for the strife and strikes in that industry. If union anarchy is allowed to reign in the coal region it is because the states and the nation have divested themselves of their police powers and have evaded those duties for which they were in the main constituted.

The Bituminous Operators' Labor Policy

It has long been a matter of speculation as to whether the bituminous-coal operators could manifest sufficient cohesion on a labor policy to devise and see through a consistent program. Sectional differences and even internal schisms in small groups have many times proved too much for the leadership of the operators. In the labor crisis of 1919 the Central Competitive Field dominated, even to the point of locking out, as it were, the operators representing the outlying fields.

The surprising unity with which the operators met the miners at Washington is the outcome of the leadership and concert of purpose developed by the National Coal Association. It is not necessary to infer that it is the association itself that has brought this to pass as an official function, although the decision this year to admit the subject of labor to the councils of that organization has been a potent factor. It is rather that five years of meeting and agreeing on other matters of great concern to all or to large portions of the coal producers has trained what before the war was a provincial aggregation in the manner of associating for a common purpose and acting as a unit. In the beginning it was only necessary to dig down into their pockets for cash to finance their part of the Fuel Administration program. Then it was cost accounting, railroad problems and threatened hostile legislation. Now the highest and most formidable hurdle, labor, is being taken with all the form of a trained athlete.

When, if ever, the inside story of what has transpired within the councils of the operators this year in handling the strike situation is told it will make interesting reading. The results are apparent and are a credit not only to those who have led the way but as well to those operators who under protest have submerged their views and desires in the common cause.

The strike is not over and no one is out of the woods. If the operators will carry on as closely as they have progressed thus far, supporting without reserve the program of the majority, they will accomplish that which few expected of them—they will have demonstrated to themselves the value of association and their particular national association. One step at a time, but each step is reaching farther and leading toward that integration of the bituminous-coal industry that alone will be its salvation.
Good Coke Now Manufactured from Non-Coking Coals of Illinois, with Saving of Byproducts*

Seek to Coke Coal Before Cementing Material Is Oxidized—
Heat Graduated to Suit Thickness of Bed to Be Coked—Coking Time Lowered to Twelve Hours—Gas Introduced at Two Levels

BY H. A. PATTERSON†
Chicago, Ill.

COALS of Illinois are rich in valuable byproducts and if considered from that standpoint alone they would compete with coals from any district. They have not been utilized in coke manufacture only because they coke indifferently when treated in any of the coke ovens heretofore on the market.

Although in and near Chicago there are over 2,000 coke ovens with a capacity for coking 33,000 tons of coal per day none of the coal coked is from Illinois. This is proof that the coals of that state will not coke in these ovens, for why should the companies controlling them pay the higher freight on Eastern coals if they can successfully coke the coals from the nearby fields of Illinois and Indiana?

Broadly speaking, the coals from Illinois are lacking in the humus and resinoid bodies which act as cements during the coking process. It is notable that the Illinois coals are high in oxygen, and it is further known that this is a characteristic of most non-coking coals.

The designers of the Roberts oven have spent many years in the study of coals and their coking qualities and it was their belief that the high oxygen content in conjunction with the low content of humus matter was the cause of the non-coking quality. They further believed that a method could be devised whereby the heat could be applied uniformly and continuously to a coke oven and in such large volumes per unit of time that coke would be formed before a harmful reaction could take place between the oxygen and the small quantity of cementing constituents.

After years of experimenting and the building of test ovens the present design was finally developed, and the ovens built in accordance with it have been in successful operation at Granite City, Ill., since January, 1921. During this year and a half of operation it has been definitely proved that the theories on which the ovens are built are correct, for not only have they been successfully operated during that period on Illinois coals but with the aid of the coke produced a new world's record in both coke-oven and blast-furnace operation has been made.

Anticipating that the successful use of Illinois coals would lead to great expansion of the steel industry in the St. Louis district, the Granite City plant was laid out for an ultimate daily capacity of 3,000 tons of pig iron and 8,000 tons of coal. This will mean six blast furnaces and 320 ovens.

The first unit consists of 80 Roberts byproduct coke ovens and one blast furnace. It is probable that another furnace and at least one more battery of 40 ovens soon will be erected. The daily capacity at present is 500 tons of pig iron from the furnace, and the ovens will handle 2,000 tons of coal.

Coal cars arriving at the plant may be unloaded for immediate use to track hoppers from which the coal is delivered to conveyor belts which serve the crushers, or it may be received for storage and dumped into hoppers where by means of a bridge it is distributed to stockpiles. A car dumper of up-to-date design, also

*Abstract of paper on “Coking Illinois Coals.” This paper was read before the Illinois Mining Institute at its summer session.
†Engineer, American Coke & Chemical Co.
is installed. It is capable of handling the largest cars now engaged in interstate commerce. This car dumper has a capacity of forty cars per hour and is used for both coal and ore. These are delivered by the dumper to an electrically propelled transfer car of 100 tons capacity. This transfer car travels about 100 ft. from the dumper to the track hoppers, which deliver to the conveyor belts.

In the crusher building are two coal crushers, each of 250 tons capacity per hour. They may be operated either separately or at the same time, the coal from them being delivered to the second conveyor belt.

The crushed coal is discharged to either of two bins of 100 tons capacity, which are in the top of the mixer house. Though no difficulty has ever been encountered in making excellent metallurgical coke from Illinois coals in the Roberts oven, there are certain characteristics of ash and sulphur which may be obtained by proper mixing. By combining them in such proportions as will produce an ash content suitable to blast-furnace operation, better results are obtained in the furnaces. All Illinois coals so far tried produce a perfect coke from the standpoint of cell structure, strength and free-burning qualities.

From the mixer bins the crushed coal is delivered to the mixing belts, where the coal is mixed in any desired proportions. These belts are 30-in. apron conveyors operating under gates which may be raised to pass any desired quantity per unit of time.

The mixed coal is dropped to the hammer mills through proper chutes, and by the action of the hammers the coals are not only pulverized but very intimately mixed. The true mixing, therefore, occurs in the hammer mills, and the mills are more proportioning belts than mixers.

The storage bin is divided longitudinally and each compartment is provided with five valves in the bottom which register with the five hoppers on the larry car. By having the storage bin divided, two different coals may be charged, and it is also possible to run tests on large quantities of new coals.

There are at present two batteries of forty ovens each. These are standard Roberts recuperative ovens as built by the American Coke & Chemical Co., of Chicago. The ovens were designed to operate on 15-hour coking time but the time has been reduced to 12 hours with a charge of 15 tons. This gives a capacity of 30 tons per oven per day, the largest capacity of any oven so far designed.

The products of distillation are taken off on the pusher side of the battery through a single ascension pipe which is connected to duplex foul-gas mains, so that separation of the rich and lean gas is possible. The foul gas passes first through the primary coolers, by which the temperature is reduced to about 90 deg. F. The water flows countercurrent to the gas and is under automatic control, so that the temperature of the outlet gas is maintained constant at any given point.

From the coolers the gas passes through the Roots exhausters, which are heavy-duty machines direct-connected to Chandler & Taylor engines. There are three exhausters, the center machine being used as a spare for either rich or lean gas. The exhausters are each capable of handling more than 10,000,000 cu.ft. of gas per day and are under control by governors that are actuated by the gas pressure at the inlet of the primary coolers. In this way the pressures are maintained constant, and the differential through the coolers also will remain constant under various operating conditions.

From the exhausters the gas passes through F. A. type tar extractors. The tar-free gas passes from the tar separators to the saturators, where the ammonia is extracted. The saturators are large lead-lined tanks containing a solution of sulphuric acid and water. The bath, as it is called, usually contains about 5 per cent sulphuric acid. The ammonia combines with the acid, forming ammonium sulphate, which is a white salt valuable as a fertilizer.

By means of air lifts the solution of sulphate and the mother liquor is raised from the saturator to a draining table on which the salt settles by gravity, and the mother liquor is again returned to the saturator. This process is continuous and involves nothing more than the addition of acid from time to time to make up for the loss due to formation of the salt. From the draining table the salt is run into centrifugal driers and in them is dried to about 2 per cent moisture, after which it is carried to storage, where it is kept until shipment is made.

From the saturators the gas passes to a set of final coolers. From these it passes into steel towers about 90 ft. high, where the light oils are extracted. These towers are filled with wooden trays or hurdles so set that the gas has a tortuous passage from the bottom to the top. A paraffin oil with a high boiling point is introduced at the top of the towers and passes down counter-current to the gas. This oil has the power of absorbing the light oils from the gas and as its contact
with the gas is intimate, due to the hurdles, the absorption is efficient. The saturated wash oil is pumped directly to a still heated by steam to such a temperature that the absorbed light oils will be removed from the wash oil, which has a higher boiling point than any of the absorbed oils. This still is called a light-oil, or stripping, still. The wash oil, after removal of the light oils, is cooled and again circulated through the towers, so the process is continuous.

The crude light oils thus extracted from the wash oil are stored in tanks and may be treated as a whole for use as a motor fuel or may be fractionated for refined products. In the case of motor fuel it is common practice to wash the light oil with 66 deg. sulphuric acid to remove the impurities, then neutralize with caustic soda, then redistill in a column that is under accurate temperature control. The resultant product meets all the requirements for motor fuel, but is seldom used alone. The general practice is to mix it with kerosene or some other comparatively heavy oil. The fuel thus made is far superior to ordinary gasoline, as it produces greater power and there is a noticeable absence of carbon in the cylinders.

If the light oils are to be worked into the several fractions they are first distilled as a whole with careful temperature control, cuts being made in the fractions at about 80, 110 and 140 deg. C. These fractions are the crude benzol, toluol, solvent naphtha, etc. Thus produced they are each washed separately with sulphuric acid and neutralized with caustic soda and again distilled with exceptionally accurate temperature control. The resultant products meet specifications calling for a boiling point varying not more than a few tenths of a degree Centigrade. They will be water-white and are in every respect high-grade products. Their uses are many, especially in times of war, when the call for explosives is heavy. They also are used in the dye industry and as the basis for many articles in daily use.

After extraction of the light oils the rich gas is ready for sale, and the lean gas is returned to the battery, where it is used for heating the ovens.

We now come to a description of the ovens, which are the heart of the plant. The Roberts type differs from any other oven in that there are no flues in the walls. The wall, therefore, operates under uniform conditions and there are no dead spots or lines caused by division walls between flues.

There is but one brick shape used in the heating wall. This brick forms both sides of the space allowed for the combustion of the heating gases. The surface of this brick which is exposed to the heating gases is about two and one-half times the surface which is exposed to the coal. The result is the rapid absorption of heat by the brick and an equally rapid distribution of this heat to the coal.

The effect may be likened to that of a well-known superheater in which the steam to be superheated passes through the interior and the heating gases pass around the exterior of a tube. The exterior is made with fins similar to those on an air-cooled automobile engine. The result is that a large volume of heat is transmitted to the steam and an exceptionally high degree of superheat is attained.

In the Roberts oven the heating gases are in contact with a large surface and the heat thus absorbed is transmitted rapidly to the coal through the small surface which forms the wall of the coking chamber. By having the brick set so that they act as baffles, the combustion is complete and uniform and as all parts of the wall are identical in construction, both the generation and transmission of heat will be uniform.

The gas used for heating is admitted at the top of the heating wall at a point about 16 in. below the coal line and at this point meets the air necessary for combustion. This air is brought up through the intermediate wall from the recuperators, which are directly under the oven chamber. The air is accurately controlled by means of dampers and by slide brick which cover the air ports, and, as the gas also is under control, the combustion is maintained at the desired point with great accuracy.

The control of the gas for heating is one of the features of this type of oven and will bear a somewhat detailed description. All coke ovens have a taper from the coke side to the pusher side—that is, the side on which the coke is discharged is wider than the side from which it is pushed. This taper is given in order that the effort in pushing will be reduced. In consequence the thickness of the coal on the coke side will be greater than on the pusher side of the oven and will vary at each point between the ends of the oven. It is equally apparent that in order to have the coking of each portion of the charge completed at the same time more gas will have to be burned where the coal is thickest.

Until the Roberts oven was designed this delicate adjustment of the quantity of gas was impossible. In
that oven, however, it has been worked out in a simple manner. The gas is introduced through cocks on the top of the battery, and these have holes, through which the gas passes, drilled accurately through the core. Beginning on the pusher side, where the coal charge is thinnest, the holes in the cores are gradually enlarged until the largest will be the last cock on the coke side, where the coal charge is the thickest. As the cocks are on 21-in. centers this means that the supply of gas is graduated for each 21-in. section of the oven. Furthermore, as the cores of the cocks are cast-iron and are always at atmospheric temperature they may be drilled to the thousandth of an inch and will always maintain their correct size under operating conditions.

We have then on each side of the oven a set of accurately graduated openings for the passage of the gas and it is well known that an opening of given size will pass a quantity of a gas in direct proportion to the size of the opening and the pressure. The result in our case is that each burner passes the exact quantity of gas necessary to coke the coal in that part of the oven which is to be heated by that particular burner.

Another point that must be mentioned is the introduction of the gas at two points in the height of the wall. That is, there is what is called the "primary gas," which is introduced at a point about 16 in. below the coal line. This primary gas is about 50 per cent of the total gas necessary for the coking of the charge. With it is admitted sufficient air to sustain combustion of the total gas required. The primary gas, therefore, has a 100 per cent excess of air necessary for its own combustion. This excess air tempers the flame temperature so that the generation of heat is commensurate with the requirements in the top of the oven.

After passing through a short mixing duct the burning gases meet the staggered construction previously described, and by impingement on the neck of the wall brick the combustibles are well mixed and combustion is sustained at the desired rate.

About halfway down the wall the primary gas is exhausted, and it is here that the "secondary gas" is admitted. This gas is under the same accurate control as the primary and although at the point of introduction it is at a high temperature it is admitted into an atmosphere filled with the inert products from the primary combustion. The burning of the secondary gas is, therefore, subdued by the inerts, and the generation of heat is continued in the same uniform manner as in the upper part of the wall. The lower part of the wall is identical in construction with the upper part and the extraction and transmission of heat is carried on with the same efficiency throughout the entire combustion space.

The proportions of primary and secondary gas are maintained by the use of orifices similar to those in the cores of the individual burner cocks. The simplicity of the entire control of combustion is therefore evident. To change the coking time it is but necessary to change the pressures on the main supply to the battery. Each oven header and each burner then will automatically carry its proper quota of gas.

The products of combustion, after heating the walls, still retain a large quantity of heat which is reclaimed in the recuperators. These consist of a series of flues through which the waste gases pass, and the air to be preheated passes around the exterior of these flues. The flow of the waste gases and the air are opposite to each other, and the air, therefore, meets progressively hotter flues as it passes upward through the recuperator. With this system the air for combustion is preheated to a temperature as high as 2,000 deg. F. After passing the recuperators the waste gases, which are then about 750 deg. F., are taken to the 250-ft. stack, which maintains sufficient draft to provide for the circulation of the air and gases through the regenerators and combustion chamber.

Each point of admission of gas and air is under exact control and the waste gases also are under control, so that the proper differential always is maintained in the combustion spaces and the generation of heat is in direct proportion to the requirements for the coking time at which the oven may be operating.

After the charge is coked for the desired length of time the dampers are closed and the doors are removed from
The coke from this will average: Moisture, 4.44 per cent; volatile matter, 2.47 per cent; ash, 13.06 per cent; sulphur, 1.13 per cent.

It is interesting to note that the percentage of breeze is only 3.7 because it has been generally assumed that the use of high-volatile coals involved large losses from breeze—and this is true with any other system of coke ovens.

The coke made in the Granite City plant is used in various industries and also for domestic purposes. Practically the entire output of one battery is used in the furnace which is operated by the St. Louis Coke & Chemical Co. This furnace, which was designed by Freyn, Brassert & Co., of Chicago, is rated at 450 tons per day. During the past two months the furnace has produced about 515 tons of pig iron per day with a coke consumption of only 1,785 lb. per ton of pig iron produced.

Many attempts have been made to carbonize Illinois coals but so far the only successful method is the one herein described. The more recent experiments have been along the line of low-temperature carboniza-

Cross-Sections of Ovens

The left hand shows a half section of an oven on the pusher side, partly as cut through the primary and partly as taken through the secondary burners. On the right hand side the section is transverse, the large open spaces in the upper half being the ovens proper. Adjacent to the ovens are the flues and in the center of the wall between ovens may be seen the flue for preheated air which comes up from the regenerator in the base.
tion. This system produces a coke that makes an excellent domestic fuel but does not as yet form a metallurgical coke.

For a blast furnace, the coke must stand the rough handling that occurs in transferring it to the stock bins and from those to the skip hoists and from these again into the receiving hoppers at the top of the furnace. In the latter quantities of hard limestone will be dropped on it, and after this it will be subjected to the heavy burden of the furnace. Not only is the coke subject to the burden of ore and limestone in the furnace charge but it undergoes also a grinding action as it passes down toward the hearth. The physical structure of the coke must, therefore, be such that it will stand very rough usage.

That the Roberts oven will coke not only Illinois but Eastern coals also and equally well was completely proved at Granite City.

By Twist in Track Cars Are Turned Partly Over, Dumping Contents

BY A. F. BROSKY*
Pittsburgh, Pa.

TRANSPORTATION congestion lies at the bottom of many low-tonnage difficulties. If the cars could be dumped promptly, fewer cars would be necessary and locomotives never would have to wait while a full trip was being made up. If a hull comes for some reason in the coal received at the dumping point, the locomotives when they come will be delayed in their return by the slow dumping of cars.

These delays are quite serious, especially where plants are designed to produce 8,000 to 10,000 tons per eight-hour day. Some plants indeed are already scheduled for 13,000 tons a day, and only an element of caution prevents their designers from announcing their ambition publicly. They are afraid they may have to wait as long as did Zeigler before they reach and pass as Zeigler did the goal set. In fact, many mines fail utterly to reach their projected tonnage. One of the principal difficulties with many concerns is slow dumping, which sometimes, because it lays locomotives idle, is charged up as a failure of transportation.

But fast dumping results often in degradation—in making coal worth $2.50 a ton into slack worth only 75c. With these points in mind, a new plan has been developed by General Edward O'Toole, general manager of the United States Coal & Coke Co. He is the patentee. The device is known as a helical gravity dump. General O'Toole also is devising an endless skip hoist which promises to eliminate many of the faults of present shaft hoist arrangements. This dump discharges coal from the mine car quickly and gently with no labor and no expenditure of power, as the dump itself does not move. The cars corkscrew through the dump until they assume a position where all the coal in them is ejected; then they reverse the direction of rotation, leaving the dump in an upright position. The accompanying illustration shows a working model, one-eighth of actual size, from which an excellent conception of the dump operation may be obtained. Like the rotary dump the cars are held to the track by means of a

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*Editor, *Coal Age*. 

Models of Helical Gravity Coal-Car Dump and Endless Skip Hoist

The cars thread through the dump turning clockwise to the position assumed by the forward car, then they reverse in a counter-clockwise direction until they right themselves. The three cars shown in the dump exhibit three of the positions assumed by the car during the cycles of dumping and reversing. The endless skip hoist is shown in model on the left. The crank shown on the sheave at the top is used to operate the hoist.
removing guide, placed at a distance from the rails equal to the diameter of the car wheels. This comes in contact with the wheel tread when the car begins to enter the dump. Unlike the rotary dump the cars are not spotted, which detail of operation results in lost energy and also lost time.

In the rotary dump all the coal is emptied from the car by rotation without movement in the direction of progress. In this dump the car partly transposes as it progresses through the dump and thus the coal is unloaded. The car while moving ahead turns over gradually, and therefore the coal itself is dumped gradually. In consequence degradation is minimized. The tracks and guides are bolted to castings each of which is shaped to give the desired pitch and twist to the rail and guides. These castings, in turn, are securely anchored to an inclined foundation so that the dump itself is immovable. The slope of the foundation depends upon the speed of dumping desired and the frictional resistance of the car. However, the inclination of the dump will be such as to cause the cars to pass through faster than would be desirable in actual operation. The speed of dumping, therefore, will be governed by a car retarder.

**Removal of Ball Bearings from Mine-Locomotive Motors**

This Operation, as Well as Their Replacement, Requires Skill and Care—Pinions and Bearings Should Be Pulled Rather Than Wedged Off

By E. Ashworth
East Pittsburgh, Pa.

In the successful operation of the ball bearings of mining motors, lubrication is the first consideration. A close second in importance is the correct removal and application of the bearings and pinions. The latter deserve attention, for the procedure commonly followed around a mine in removing or applying ball bearings is quite likely to damage them.

Fig. 1 is typical of the ball-bearing mountings used in mining motors. Various schemes for locking the bearings in place are employed. The fit of the bearing on the shaft and the results obtained usually are the same regardless of the particular scheme of locking. That is, the bore of the inner race of the bearing is slightly smaller than the shaft itself, giving a press fit upon it, which, assisted by any of the several types of locking devices, prevents rotation of the inner race with respect to the shaft. The outer race, however, has a sliding fit within the housing, so that it will creep around slowly, thus distributing the wear on the bearing and obtaining a maximum life.

To remove the pinion and ball bearings in such manner as to avoid possible damage to the shaft, bearings and housings a proper puller should be used. It is common practice to remove the pinion which is shrink onto the shaft, by driving thin wedges between it and the nuts of the ball bearings. This procedure is quite likely to damage these nuts while the shock on the bearings certainly does them no good. With some constructions if wedges are used they must be driven between the housing and the pinion. This is likely to put heavy stresses on the bearing which is arranged to take the end thrust.

Fig. 2 shows one type of pinion puller in operation.
in the center with a heavy copper bar. The jolt thus imparted will loosen the pinion without putting as great a stress on the puller as would be necessary if the plate were not thus treated.

The same puller plate is used to pull the ball bearings on both the pinion and commutator ends. In the latter case, however, the four bolts are screwed into tapped holes in the housing. It is not necessary to bump the center of the plate when pulling bearings, as they move more easily than pinions. Fig. 3 shows the bearing puller in operation.

Fig. 4 shows a type of construction with which, if wedges are used to remove the pinion, there is danger of damage being done to the pinion-end housing as well as to the commutator-end ball bearing which is arranged to take the end thrust. It will be seen that driving a wedge between the pinion and the cap of the ball bearing might break the cap. Also, all of the end thrust caused by driving the wedge will be taken by the end housing of the commutator.

Although this housing is arranged so that the thrust will be exerted against the inner race of the bearing it is quite probable that under the high pressure required to withdraw the pinion this race will bend so that part of the thrust will be taken through the balls. It will be noted that the pinion is threaded in the counterbore, thus providing for a jackscrew arrangement in its removal. The puller for this type of housing is shown in Fig. 5. The bearing cap in this case screws into the housing. To pull the bearing the cap is removed and the puller screwed into its place. The bearing may then be withdrawn by tightening the jackscrew.

Information regarding the removal of pinion nuts and ball-bearing nuts or other locking devices has been omitted. This was done, first, because it is obvious that these parts must be removed before attempting to pull the pinion or withdraw the bearings, and, second, because a great variety of schemes are used for this purpose. Whenever this information is desired it should be obtained from the manufacturer of the particular equipment.

In applying ball bearings or a pinion, clean housings and contact surfaces are primary requisites. Both shaft and housing fits on the bearing should be cleaned well and covered with blue ointment to prevent corrosion at these points. The bearing should then be placed in the housing and either driven or pressed onto the shaft. The method commonly followed is to place a piece of brass pipe fitting over the shaft and against the inner race of the bearing and drive it with a heavy block of wood. Care must be taken to start the bearing straight upon the shaft. The bearing-locking device should be made to hold the bearing as tight as possible. If a pressed-on collar is used it should always be pressed to place and never be expanded by heat and then shrunk on. When that is done the collar cools so that it does not fit tightly against the bearing.

To apply the pinion properly both the shaft fit and the pinion bore must be perfectly clean. The pinion should be heated in boiling water for about an hour. It should then be removed and, while it is still hot, be driven onto the shaft with a few taps with a 4- or 6-lb. hammer, using either a sheet of copper or a block of wood as a buffer. The pinion nut should be tightened to place only after the pinion has cooled.

Boiler Tests Recently Were Made by John A. Davis, superintendent of the Alaska experiment station of the Bureau of Mines at Fairbanks, of the steaming values of Matanuska coals in comparison with Nenana coals, the results determining the purchase price of coal by the Alaskan Engineering Commission. The coal resources of the Broad Pass region and of the Copper Mountain district in the Kantishna region are being given consideration by the Bureau of Mines.
Making the Mine Layout Match the Surface Equipment*

Much Tonnage Lost by Two-Way Development—Takes Four Years for Big Plant to Earn Its Operating Expenses—Air Should Be Split Near Foot of Airshaft—Careful Drilling Important

BY D. D. WILCOX†

We all have dreams of the ideal mine, where accidents do not occur, where there are no strikes, where the machinery does not break down and where the coal comes out in a never-ending stream. We have even seen some we thought were ideal, but they always belonged to our neighbors, not ourselves, and the probabilities are that we saw only our neighbor’s top equipment with its latest designed engines, with alternating-current turbo-generators, symmetrical tipple and beautiful buildings. He had the advantage of the knowledge and experience of the world’s best engineers for that part of his work, but the part you didn’t see was that which was left entirely to him, and that part was down below and well out of sight.

I have in mind a mine superintendent who was sent to take charge of a property, and, upon investigating, found a splendid coal field and exceptional equipment, but a bottom and mine plan that limited the mine to half of its rated capacity. Most of us are familiar with circumstances where the owners of mines have spent large sums of money to purchase new equipment with intent to increase the daily output and after the machinery was installed found that the increase in tonnage was not sufficient to justify the expenditure.

During the last few years owners and operators of coal mines have begun to realize that the designing of a mine plan is an engineering problem. The mining engineer is no longer a surveyor who puts up sights and takes levels. He is to be consulted in the plan and development so that the expensive modern top equipment may be properly co-ordinated with the work at the face.

It would be folly to attempt in a short article of this kind to dwell upon all of the features that must necessarily be considered when the development is being planned. A mere enumeration of them would take up too much time. It is evident, however, that the development of machinery and equipment has been much more rapid than underground advancement. It is not unusual to find mines with roller-bearing cars and with no place to oil them, or a mine with splendid electric haulage locomotives and with no suitable place underground for their repair. Even the safety engineer may have guards on all the machinery and no throws on the switches.

But worse than all of this is the plan that apparently takes care of all of the modern equipment, hoisting with skips, an auxiliary hoisting shaft, the bottom graded and the ribs concreted with a roof support of I-beams and concrete and yet neglects the airshaft. Every proper plan may have been made for the hoisting of the coal, but the air leaves the airshaft through a narrow entry to find its way inside if it can. A mine plan must be projected from the bottom of the airshaft and not from the bottom of the hoisting shaft. Major splits should be as near the bottom of the downcast as possible.

Most Illinois mines come under the provision of the law which now makes it necessary to install a cage

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*Abstract of an article entitled “The Projection of a Mine Plan,” read at Illinois Mining Institute, June 9, 1922.
†Superintendent, Superior Coal Co., Gillespie, Ill.

Two-Way Development

A mine in Illinois. All the coal and all the air must pass along one or other of two roadways, cluttering up the development. The mine bears evidence at the shaft bottom of having “just grown” at first but of being well developed thereafter. Still the early error of only a double approach, with only two main airways and two returns, was not and almost could not be corrected. The lack of early layout dooms a mine to failure.
in the airshaft for the hoisting and lowering of men. Skip hoisting also makes this the more practicable. This cage is to be used also in the sending down of material. Even with this cage and the stairway it is practicable and desirable to split the air three ways directly at the bottom of the downcast with a possibility of more splits immediately adjacent. This gives almost the same security as if three or more different mines were being ventilated.

All the advancement in the underground plans of mines in Illinois has been made in all probability since the members of this institute have been connected with the mining industry. You will remember the original plan was to start off the bottom each way with a pair of entries. At intervals room entries were turned off and driven to the boundary. Caging was from both sides of the shaft, the cars usually running on flat sheets. Haulage was entirely with mules, and the trips as a rule were so short that no storage room was required for empties. But haulage machinery calls for loaded and empty storage, and instead of mule barns motor barns are necessary. With the advent of these improvements caging on one side of the shaft was accepted, and caging machines with empty trippers were developed.

The danger of squeezes and fires forced the panel system on the industry. Designing a mine layout was no longer a “hit-or-miss” proposition but one for the engineer. As it is almost a criminal offense in Illinois to cause a subsidence of the surface, the room-and-pillar system is used in most mines, and more than 96 per cent of the coal in the state is mined by that method.

Most room-and-pillar mines have not departed from two-way development. This plan has the practical effect of creating two mines with a common hoisting shaft, as the sides are separated as to haulage and ventilation, but this is not enough. It soon is found that while the coal is worked on all sides of the shaft the development is only in two directions. The cross entries after reaching a certain stage are stagnant as far as development is concerned. In other words there are as many men working there when the cross entry has been driven one-half mile as there are when it has been extended almost to the boundary.

With the knowledge that the restricted area of the shaft itself is really the greatest hindrance it has been realized that with the present system of development and the increased efficiency of the hoisting equipment the time is near at hand when more coal can be hoisted out of a single shaft than can properly be developed with the present mine plans. Meantime men show an increasing distaste to the idea of double-shifting entries, and operators of coal mines are beginning to realize that night work as a rule is not efficient. These facts have caused thought to be given to methods of development that allow a mine to be placed on an operating basis in a shorter period of time than in the past. In considering the cost of production of coal the public fails to take into account that after a mine is sunk and all equipment purchased and installed it is at least four years before the production is sufficient to pay operating expenses. In the meantime the development cost is growing.

Any plan that will cut down this time is advantageous to the owner and the consumer. Greater recovery per acre will do it, and for this the plans now in effect can with little difficulty be used, and the recovery percentage raised from 50 to almost 96. It must be recognized, however, that not much above 50 per cent can be taken out without subsidence of the surface. The attached map of an Iowa mine shows a panel system of mining where the recovery is about 90 per cent.

In order to keep sufficient development in most large mines some unusual practice is necessary. Some mines still double-shift their entries, others place a gang of men with a machine in the entry, and in others experiments are being made with entry-driving machines which cut and load the coal. We have been told that one of these has passed the experimental stage. They would solve the problem of development but would not assist us with our haulage and ventilation problems.

The attached map of the Standard Oil Co.'s mine
near Carlinville shows a splendid method for development, haulage and ventilation. The operators of this mine believe a similar plan is being used in other large mines in the state. It will be noted that instead of two main entries there are four, and the development is in four directions instead of two.

This plan goes into another pressing problem—that of haulage tracks. After watching main-line haulage motors waiting on each other or motors compelled to do relay work instead of going directly to the bottom one usually considers the double tracking of the main line. This plan allows four main lines instead of two, or four distinct sections of the mine. If it had been necessary in the first instance to drive narrow entries because of top conditions, double tracking would be more expensive than the additional entry required by this plan. It also will be noted that four distinct air splits are possible as well as four distinct haulageways.

Safety is the first consideration in the planning and development of a mine, as it is in other features of the industry. For a long time we had a definite idea that more speed made more accidents, but it was found that when we arranged for more speed we inevitably arranged for more safety. A motor cannot run fast on poor track, neither can the motorman make speed when he shares the roadway with another motor.

The installation of skips instead of self-dumping cages has made no material change in mining plans, though it is customary to run the main bottom parallel to the shaft where skips are used and across the shaft at right angles thereto where self-dumping cages are operated. Without question, however, a larger tonnage may be expected where skips have been introduced.

No industry in the world is more competitive than the coal-mining business, and in order to obtain a return on the more expensive equipment the development must be speeded up. It is true that the mines in the country are able at this time with their present equipment to more than supply the need of the consumer. It also is true that the installation of modern machinery has raised the output per miner and eased his working conditions. But the operator who develops a mine in this day must have all of the advantages of equipment and proper underground plans and development in order to get a return on the investment. He has a duty to the employee to see that the mine is so planned as to give the best working conditions possible and owes it, not only to the owner but to the public also, that the coal be put in the railroad cars at the minimum price possible.

While a few years back the large mines were equipped for an output of 4,000 tons, excellent management on the part of some, notably Orient and Zeigler, has doubled this figure and even now they are unwilling to concede that they have reached their limit. Some of the newer shafts are equipped to take care of 12,000 tons per hoisting shift. This means that places must be found for more miners. They naturally wish to work where they can make the most money per day, and the modern mine is more desirable than the obsolete operation as seen from that angle.

The mining engineer is prevented in many cases from making an exact plan of the underground work because of lack of knowledge of the contours of the coal strata. In some mines the change of plans made necessary because of adverse grades has cost thousands of dollars and, furthermore, has retarded development. Even in Illinois, where the grades usually are uniform, faults have been encountered which have disarranged the entire plan. Prospect holes should be drilled in sufficient numbers not only to ascertain the strata to be met in sinking but to establish the contour of the coal. If advantage can be taken of natural grades costly and troublesome machinery at times may be eliminated. I know of one mine where it is necessary to have in service a conveyor or drag on the loaded side of the bottom which would have been eliminated had the location of the hoisting shaft been shifted 100 ft.

Because of surface conditions or sometimes railroad service it is not always possible to locate a shaft in the center of the field and in some cases the bed or the holdings are irregular or uncertain or natural grades
or conditions make a central position impracticable. The map of the Iowa mine accompanying this article shows the possibilities even under these conditions. To figure properly the length of loaded and empty storage tracks the engineer should know the size and kind of mine cars to be used before completing his mine plan.

By taking advantage of all the information afforded by mine inspectors and the bulletins of the Illinois State University and the U. S. Bureau of Mines the planning of the underground work may be done as exactly and scientifically as is the engineering work on the surface.

Government to Expend $1,000 on Trophies for Rescue Work in Mine Disasters

COMMENTING on the remarks of J. L. Knight, of Glen White, W. Va.,* and on the statement of the Metropolitan Vickers Electrical Co.+ relative thereto, Graham Bright, general engineer, Westinghouse Electric & Manufacturing Co., in response to a question addressed to him by the editors of Coal Age, says: "The scheme is fairly old and has been described many times in various publications in this country. Mr. Sykes, formerly with our company, gave an account of this system in 1910 in an address to the American Institute of Electrical Engineers, illustrating it with a wiring diagram. At the same meeting Messrs. Pauly and Rushmore, both of the General Electric Co., submitted a paper on hoisting equipments in which they also mention the converter scheme and illustrate it in a similar manner.

"About ten years ago the Westinghouse company installed an equalizing system at the Pennsylvania R.R. docks at Cleveland, Ohio, which is practically the same as that which Mr. Knight proposes. In this case considerable load was attached to the direct-current side of the rotary converter, so that the direct-current motor with its flywheel was used largely to equalize the direct-current load on the rotary converter. Of course any alternating-current load also would receive the benefit of the equalization system. I believe that two or three plants of this type are in operation in this country, but the scheme has never been particularly popular."

Scheme for Meeting Peak Hoisting Loads

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*Coal Age, Nov. 10, 1921, Vol. 20, p. 761
URGES THAT COAL OPERATORS LIVE CLOSER TO THEIR EMPLOYEES

In your valuable Coal Age it seems to me that you should urge all coal operators to run their own business—give no check-off. Urge them to live closer to their miners, and help the miners to educate their boys and girls. Teach them what the laws of this country mean; teach them to earn money, save money, and respect their companies.

I would recommend that each company have a reading room, and the superintendent employ someone to explain the laws of this country to all miners and their families, show them the average wages of miners and what other laborers earn, so that they may see how the earning capacity of the mine worker compares with the earning capacity of other labor in other lines of industry.

The coal operators of the United States should be pre¬
vailed upon to own South American coal mining stations; there should be exported enough coal from the United States to allow the coal industry of the United States to keep steadily moving.

The ruler of this nation should assist the entire coal industry in getting its valuable coal into South American markets; we should enjoy the market that Great Britain is now holding in that country.

D. W. Boone, President, New River Export Smokeless Coal Co.

Lookout, W. Va.

ATTRIBUTES WAGE DIFFICULTIES TO MINERS’ LAXITY IN OBSERVING WORKING HOURS

As I read Coal Age and the various bulletins that are coming out it occurs to me that the public should be better informed on what I consider the more salient points that the miners’ officials bring out to justify the demand that the war-time scale of wages should prevail, and that is by reason of the intermittent employment of the miners in general.

Now, there surely is a reason why there are too many miners, and the answer is simply that the miners as a class have taken upon themselves privileges which no other industrial occupation would tolerate or admit of. The miner goes to work just about when he pleases and leaves the work when it suits him. Visit any mine in any state and you will find men coming home at any hour between starting time and quitting time and this on their own volition. If a miner feels like idling a day or two or three he does it. If he was working in a mill or factory he would be compelled, except on account of sickness, to work out his day and not come out and go home at any time it suited him, nor would he be permitted to lay idle two or three days after pay day for drinking or other causes.

I have been engaged in mining over fifty years. For the past twenty years I have been employed in an official capacity. I have had ample opportunity to observe the traits, character and habits of the miner. Being one of them, I am naturally much interested in their welfare, but justice is justice and it is the truth that the public is entitled to. I have estimated, rather roughly, of course, that I have to have 20 per cent more working places, which means 20 per cent more miners, than should be necessary to a given tonnage output, but because of the men laying off at their own leisure I must necessarily have more men than should be needed.

Now, this simply means an increase in the production cost because the overhead remains the same whether all the men are at work or not. The working places all have to be examined by officials according to law. The pumphers have to attend to pumping out of the water. Timbermen have to attend to the safety conditions and, of course, there is so much more equipment tied up because of there being the additional number of working places over what should and would be necessary if the men would tend more steadily to their work. In my experience I have known a great shortage of men to harvest the crops but the miner could not be induced to go and engage in this work. Is it reasonable to expect the farmer who produces the foodstuffs to be content to work as he does work from daylight until dark and the miner expect to derive a good living from thirty hours per week?

The miner has privileges and his remuneration is so far in excess of other industries that it is beyond question. The labor-saving appliances that have been introduced during the experience have completely changed the condition of employment in mines and the miner has received nearly all the benefits derived from the introduction of these labor-saving appliances and that which is added to the safety and comfort of the men engaged in mining. He is entitled to a fair share of all these, but the public should be considered.

There are a large number of mines opened up that should never have been opened; I question whether some of them will run again for many years to come. It simply means that they were opened up ahead of their time and economic conditions will prevent their operating because the production cost would be out of balance with the prices which the public generally have a perfect right to expect from coal.

WALTER R. CALVERLEY,
Union Colliers Co., Pittsburgh, Pa.

Are Foreign Workers More Careful Than Americans in Coal Mines?

In Coal Age of May 18 there appeared a statement saying “That foreigners were more careful than Americans.”

The following statistics, sent us by R. M. Lambie, chief of Department of Mines, Charleston, W. Va., show that during the year there were 188 Americans killed, or one for every 342 men employed. These figures also bring out the surprising fact that there was one person killed for every 645 Hungarians and one for every 555 Austrians.

FATAL ACCIDENTS, CLASSIFIED BY CAUSES, FOR 1921

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<thead>
<tr>
<th>Causes</th>
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<tr>
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FATAL ACCIDENTS FOR 1921 CLASSIFIED BY NATIONALITIES

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RATIO OF FATAL ACCIDENTS TO TOTAL EMPLOYEES

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Redeeming the Depreciated Value of the Mine Foreman’s Certificate

What Study Does for the Mind—Value of the Certificate
Discredited by Lack of Experience—Mine Foremen Should Work to Redeem the Certificate and Restore Its True Value

That holding a certificate does not make a man more competent to take charge of a mine has been stated by more than one writer of recent letters in Coal Age. It has been urged that experience is the chief factor in successful mine foremanship. Though a matter for regret both of these statements are undoubtedly true, to a large extent, at the present time. There is one fact, however, that should not be overlooked. When a man commences to study the principles of mining, for the purpose of fitting himself to pass the examination and secure a certificate of competency, he is training his mind in a manner that will enable him to meet the various problems that will later demand his attention and call for solution.

Goal of a Man’s Ambition

The man that is truly interested and desires to make a success, in his chosen line of work, does not consider the gaining of a certificate as the goal of his efforts. When he has reached that point in his career he will still continue to study and read all that pertains to mining.

Such a man realizes that the certificate he has may rely upon the fact that he has satisfied an examining board regarding his technical knowledge of mining. The holding of a certificate may or may not cause an operator to think the man worthy of giving him a chance.

Past Record of the Worker His Surest Commendation

Every ambitious worker knows, however, that success or failure depends on himself. He has a reputation to make and sustain and, to that end, his every effort is directed. What a man has accomplished, as shown by his record in the past, is his surest commendation for the future.

It cannot be denied that the value of the certificate of competency granted by examining boards has been largely discredited by the attitude of young men of fair education taking the examination which they succeed in passing with flying colors because they are well versed in mathematics and have a mind trained to remember formulas.

Men of this type are wont to pride themselves on their technical ability and the fact that they have passed an examination in which older and more experienced men have failed owing to the lack of an early education, which made it difficult for them to answer the technical questions asked.

Disrepute of the Certificate

The result is that the certificate has fallen into disrepute with operators, who prefer to form their own independent judgment of men who apply for work, regardless of whether or not they hold a certificate.

In closing, let me ask all mine foremen to examine themselves to redeem the value of the certificate, by giving their best services in the management of the work in their charge, and proving thereby the practical value of the technical knowledge they have acquired.

William J. Walker
Aultman, Pa.
Mine Foreman

Overcoming a Handicap

Determination and concentrated effort necessary to overcome difficulties—Analyzing success in life—One who achieved extraordinary success against great odds.

Reference has been made recently, in Coal Age, to men who suffer by reason of being handicapped owing to their lack of early education, or being otherwise unqualified for the struggle they must undergo to advance to higher positions in life.

There is no question but that a handicap of this nature is a hindrance to the man thus trammeled. Nevertheless, my opinion is that the success of any man rests within himself. In launching out in any line of endeavor or business, one must first make sure that he is adapted to the work.

How to Succeed

Determination and concentrated effort are essential in any undertaking in which one hopes to win. Setbacks must be expected, at times; but these should not give rise to discouragement. By continuous effort, one must show that through constant failures he still has the power to rise.

The oft repeated adage, “There is always room at the top,” will hold true in the case of any determined worker. The world is looking for men that are able to do things of which it has been said, “The thing cannot be done.” It is not too much to say that money, fame and positions are open and within the reach of all who strive honestly to attain the goal of their ambition. One writer has analyzed success as “Five per cent inspiration and ninety-five per cent perspiration.”

One Who Overcame His Handicap and Rose to Prominence

Let no one think that these are idle words spoken for their possible effect on a few ambitious ones. They apply alike to all who accept their true meaning and are willing to work and strive for the results they hope to gain.

In this connection, let me refer to one who achieved extraordinary success against great odds. He is a man who came to this country about twenty-five or thirty years ago at which time he was unable to talk, read or write our language. It is true he had the benefit of an ordinary education obtained in his homeland, and, if I remember rightly, he had had one year in college, studying mining engineering.

This man came to our country with scarcely a sou in his pocket; took a job as laborer in a sawmill. Presenting his paycheck at the bank, at the end of a month, he was informed there were no funds and was compelled to lose that month’s hard toil.

Following this experience and in the hope of learning the language, our friend worked for a time on a farm. Later he secured a job as draftsman in a mining office, at Charleston, W. Va.

Rapid Rise Comes as Reward for Faithful Work

His faithful work soon earned for him a position as mine surveyor and, a few years later, he was appointed superintendent of some mines. From that time, his rise has been rapid, until he is now conceded to be one of the ablest mining engineers in the United States.

At the present time, the man of whom I have been writing is vice-president and general manager of a large coal company who are installing two of the modern and most efficient plants in the state of West Virginia, at a cost of several million dollars. In addition to this extraordinary record, the man is retained in a consulting capacity by several other large coal-producing companies.

No one will dispute the fact that, de-
spite his serious handicap, he has attained the pinnacle of success, which has been nothing short of marvelous. The story of such advancement gained through continuous and unremitting labor should be an incentive to all. The record exemplifies and proves the truth of the words of the poet:

The heights by great men reached and kept,
Were not attained by sudden flight,
But they, while their companions slept,
Were climbing in the night.

The lesson may often prove a hard one, but there's no other way than to accept the challenge of unremitting honest toil if we would win.

J. W. POWELL,
Raleigh-Wyoming Coal Co.
Edwright, W. Va.

Blasting Machine-Mined Coal

Three writers agree that an undercut or mining being filled with water does not constitute a solid shot—The water, unless confined, offers no resistance to support the coal.

REFFERING to the inquiry that appeared in Coal Age, Mar. 30, p. 538, raising the question as to whether a shot fired in coal mined with a machine when the undercut or mining is filled with water could be considered a solid shot, I can see no ground for such a suggestion.

The reply to the inquiry assumes that the coal has been mined to a depth of 6 ft. Then, if the depth of the hole was less than that of the undercut, it cannot be claimed that this was a shot on the solid. The water offers no resistance that tends to support the coal, which is free to fall and would fall, into the space occupied by the water, the moment it is dislodged by the shot. Let me urge you to think otherwise try the experiment in the mine and satisfy himself.

MINING LAW IN ILLINOIS Requires COMPETENT SHOTFIRERS

Our mining law relating to shotfiring requires all shots to be prepared in a practical workmanlike manner and that when so prepared they shall be fired by a competent shotfirer.

I have had machine-cut coal, dipping 10 per cent and the undercut filled with water, but have never known a shotfirer to refuse to fire such a shot when it was otherwise properly prepared and charged. There has never been a question but that such a shot was safe to fire.

In that section of the mine, the men have loaded out more coal than in any other section, and no trouble has ever resulted in the nature of solid shooting. In my judgment, this Colorado shotfirer cannot be justly accused of firing a solid shot, under the conditions described.

PETE BOLAND,
Mine Manager, Mine B.
Herrin, Ill.

ON this subject, let me say I would not consider this as being a solid shot and cannot understand how any one could have claimed that the shotfirer should refuse to light the shot when he found the undercut, mined by a machine, filled with water.

In a place going to the dip and making water, it is quite natural to find the cut full of water soon after the machine has departed. But, as stated by the editor in his reply to this inquiry, the water is not confined in the cut and, though incompressible, exerts no pressure against the coal.

PRESSURE OF WATER IS DOWNWARD

In my view, the pressure of the water is all downward in this case. Where water heads up to a higher level, it is possible for it to exert an upper pressure against a surface that is below that level; but such is not the case in this instance.

Certainly, if there is no resisting pressure offered by the water on the coal, a shot in the coal is not a solid shot. Better loading conditions will, of course, be afforded by draining the water from the cut before firing the shot.

HARRIS COPeland.
Crawford, Tenn.

WATER not being a solid can offer no solid resistance, unless it is confined, as has been stated in replying to the question as to whether the firing of a shot in coal when the undercut is full of water is the same as shooting off the solid. I can see no comparison between the two cases.

It is assumed, of course, that the hole was not drilled beyond the depth of the undercut and the charge is not, therefore, laid on the solid, which would be necessary before we can call this a solid shot.

IS THIS SOLID SHOOTING?

While it may cause some readers of Coal Age to wonder how it could be, I will cite one instance that occurred in this district. A room had been driven on a slight upgrade and the coal was undercut with a Sullivan shortwall machine to a depth of 5 ft. The drillholes were 5 ft. deep. The undercut was thoroughly cleaned of all loose coal. The shotholes had been examined, charged and fired by the shotlighter and yet it was claimed these shots were fired on the solid. Let me suggest that it will be well to study over the matter, in order to avoid a similar occurrence in one's own mine.

ANOTHER PRACTICE THAT IS EquALLY DANGEROUS

Speaking of solid shooting, let me mention another practice that is equally dangerous, though followed by 90 per cent of our shotfitters. Attention has been drawn to this matter, in Coal Age, more than once and miners cautioned against the practice.

In order to hasten the work of firing, the custom is common, here, for a shotfirer to light from one to six shots in a wide room; or, perhaps, from one to three shots in crosscuts and then rush into an adjoining room to do the same thing there.

In more than one instance, it has happened that the crosscut shots have blown through the pillars and killed the shotfirer or crippled him for life. I mention this merely in the interest of safety in shotfiring.

Crawford, Tenn. OSCAR H. JONES.

Making the Mine Safe

Run the ventilating fan continuously day and night—Equip a gassy mine with two fans—Extensive miners having large abandoned areas require watchful care to avoid disaster—Study local conditions always.

TWO things have been mentioned, recently, in Coal Age, that have a most direct bearing on making the mine safe. One of these is the question of operating the fan continuously, or shutting it down when the mine is idle; and the other, the treatment of large abandoned areas.

In respect to the first of these questions, I agree with the statement made by a Tennessee mine foreman, in a former issue of Coal Age. He remarks: "A ventilating fan should run continuously, day and night."

I am a great believer in keeping the fan running all the time, or 365 twenty-four hour days a year, particularly at gassy mines.

LONG EXPERIENCE OF SHOTFIRER IN TWO GASSY MINES

For a period of six years, I served as ventilation boss in one mine where the fan was run continuously, day and night, including Sundays and idle days, throughout the year. This was a very gassy mine that was equipped with safety lamps exclusively. At another mine I served in the same capacity for two years. That was also a gassy mine, but operated with open lights, and the fan was always kept running continuously.

These were both slope mines and very irregular in formation, besides having a deep cover. Each mine was equipped with two fans, one held in reserve in case of a breakdown. At the first mine, the speed of the fan was not slowed down on Sundays or idle days, but at the second mine, the fan was run at about one-third less speed on these days.

LARGE ABANDONED AREAS LEFT OPEN GAVE NO TROUBLE

As is commonly the case in large operations, each of the mines mentioned had extensive abandoned districts, which were left open or unsealed, though little trouble was experienced in either case. In my judgment, however, it was due very largely to the practice of running the fan continuously and giving no opportunity for gas to accumulate.

Speaking about ventilating abandoned areas, with the exception of gas accumulated on falls, it does not require more than a small steady current of air to keep such places clear. My observation is that barometric changes have little effect in a mine when the fan is run continuously.
Now, a few words in regard to whether it is safer to seal off abandoned portions of a mine or to ventilate them. It appears that the consensus of opinion, in that discussion, was in favor of ventilating large abandoned areas. In my opinion, however, this question can only be decided by a careful study of local conditions affecting the area in question.

Such areas require constant watchfulness to avoid disaster. Conditions may be such that these areas cannot be sealed off with any degree of safety, but can be ventilated more effectively. As we all know, it is an easy matter to prescribe means and remedies for the elimination of dangers in mines; but when these are applied they are not always a success. Like the Indian's gun, they cost more than they effect.

**PLAN TO AVOID LARGE ABANDONED AREAS**

The question to be solved is: In the ordinary operation of coal mines, how must the work be planned in order to avoid as far as practicable the existence of these large abandoned areas; and where they do exist, how must they be regarded as to safety?

Experience shows that these evils cannot be wholly avoided and must be safeguarded by adopting such means as a careful study of local conditions may suggest. In any case, keep the fan running continuously and make the mine safe.

**JOHN ROSE**

Former District Mine Inspector.

Dayton, Tenn.

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**Testing a Safety Lamp**

What is a proper test to determine the safe condition of a safety lamp before entering the mine—Is such a test customary with fire bosses and men in charge of lamp rooms?

**O NLY** recently, after reading the answer to an examination question given in *Coal Age*, I had a talk with three of our fire bosses, in reference to the testing of a safety lamp to determine its safe condition before entering the mine.

During the last three years, I have employed several gas inspectors, some of whom have had long practical experience in the examination of mines. It was well known that my habits were to go into the mine, once every three months, on a Sunday afternoon, for the purpose of ascertaining what gas had accumulated in certain places since the shutting down of the fan at 11 p.m. the previous night.

**LAMPS WHEN TESTED BY FOREMAN ARE FOUND UNSAFE**

On one occasion, my fire bosses asked the privilege of accompanying me. Although it had always been my custom to make these trips alone, I gladly consented to their going along, and asked them to prepare their lamps carefully for running into sharp gas. When all was ready I decided to examine their lamps, myself, with the idea of seeing how carefully each man had prepared his lamp and to assure myself that all the lamps were safe.

Much to my surprise, I found that it was possible to blow out the light in each lamp, by blowing hard against it just below the glass cylinder, or where the glass rested on the brass ring supporting it. It was clear to all that this simple test showed that the lamp was not proof against a strong blast of air, which might be met in the examination of the mine.

**FEAR OF CRACKING THE GLASS**

In answer to my inquiries, they all explained that they had never seen a lamp tested in that manner before. They stated, moreover, that they would be afraid to tighten the lamp against the glass more than what they had done in this instance. Their fear was that the heat of the lamp would expand the parts and break the glass. But this argument did not appeal to me, knowing as I did that the expansion of brass was much greater than that of glass, which would make the result the opposite of that claimed.

However, I have since been wondering whether this test should not be applied in every case before lamps are taken into the mine and whether it is possible to tighten the lamp too much for fear of breaking the glass.

**W E R L E Y, KY.**

**JOSEPH CAIN.**

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**Shortwall Machine for Low Coal**

Coal-puncher machine requires too much headroom for use in low coal—Shortwall machines used to good advantage, in the thin seams of Northern Illinois.

**R E F E R R I N G** to the inquiry asked a short time ago in *Coal Age*, Apr. 6, p. 578, asking if it would be of advantage to use a coal-punching machine in mining the coal from a 22-in. seam, let me say that there would not be sufficient headroom in this seam to enable a man to handle a coal-puncher.

The inquirer states that the coal is clean and the seam contains no sulphur. That being the case, the conditions are fine for employing a shortwall machine. These machines are used to good advantage in mining the low coal in Northern Illinois.

As is well known, the shortwall machine is particularly adapted to the mining of low coal. I make this suggestion in the hope that it may be of some assistance to this correspondent.

**HERRIN, ILL.**

**PETE BOLAND.**

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**Inquiries Of General Interest**

**Percentage of Gas Estimated from Volume Generated per Ton of Coal Mined**

Mine Gives Off 4,500 Cu.Ft. of Gas, Per Ton of Coal Mined; But Inspector's Report Says "No Gas"—What Estimated Percentage of Gas Should Be Present?

**W E N** going through the mine inspector's (Canadian) report, recently, what was my surprise to find a condition that took me back, in memory, several years when it was customary for an inspector or a fire boss, in reporting the gaseous condition of a mine, to say "a little gas," without attempting to define the degree more clearly by estimating the amount of gas generated per minute, or giving the percentage he found in the return current.

What particularly arrested my attention was the report of a certain mine known to be generated gas, the volume of which was estimated at 4,500 cu.ft. per ton of coal mined. Notwithstanding this rating of the mine with respect to gas, this fireboss' report would seem to indicate that no explosive gas had been found in the mine.

Such a thing is only what might have been expected a few years ago, before the danger point of firedamp mixtures was officially defined; but, nowadays, when every fire boss knows the inflammable and explosive limits of methane and air, and the means are at his command for determining the percentage of gas present in the air when making his examination of a mine, there is no excuse for a report not stating clearly and in intelligent language what percentage of gas is found in the return airway of a mine examined.

In this connection, I want to ask what would be a fair estimate of the percentage of gas that might be expected in the return airway of a mine rated as generating 4,500 cu.ft. of gas, per ton of coal mined? To my mind, for a report to state that no explosive gas is found in this mine is an evasion of a most important feature of the examination. The idea conveyed in the report is too ridiculous for expression and should call for a rigid investigation by some higher official in the district.

**MINING ENGINEER.**

Canada.

In replying to this inquiry, it is only possible to estimate, in a general way, what volume of air would be in circulation in a mine, as based on the
Examination Questions Answered

Miscellaneous Examination Questions

(Answered by Request)

Question—In a large mine, the board and canvas stoppages erected between the main airways have been replaced by concrete stoppages. What changes would you expect to find: (a) In the quantity of air circulating around the faces? (b) In the total quantity measured in the fan drift? (c) In the water gage reading? Explain why.

Answer—(a) Assuming the concrete stoppages are well built and sealed at the roof, the result of erecting such stoppages will be to increase the quantity of air sweeping the working faces. The reason for this increase is that the new stoppages will eliminate the loss due to leakage through the old board and canvas stoppages.

(b) Assuming that the power on the air remains unchanged, the total quantity of air passing in the fan drift will be somewhat decreased; because all the air is now traveling the entire length of the airways, instead of being short-circuited by reason of the leaky stoppages. Increasing the length of air travel increases the mine resistance and decreases the total quantity of air in circulation, the power remaining unchanged.

(c) For the same reason, the water-gage reading, in the fan drift, will be slightly increased, the increase being in proportion to the greater mine resistance.

Question—What should be the maximum adverse gradient on a haulage road, in order that a 7-ton electric locomotive having a tractive power of 2,600 lb. may haul a trip of twelve loaded cars weighing 3,000 lb. each? Assume the frictional resistance to be 1/40 of the gross weight, for the cars, and 1/70, for the locomotive.

Answer—First, calculate the frictional resistance, which is, for the locomotive, 1/70(7 × 2,000) = 200 lb.; and, for the cars, 1/40(12 × 3,000) = 900 lb. The total resistance due to friction is, therefore, 200 + 900 = 1,100 lb., which must be subtracted from the tractive power of the locomotive, making the effective tractive power 2,600 − 1,100 = 1,500 lb.

The gross weight of the entire trip, including the 7-ton locomotive and the twelve cars is 7 × 2,000 + 12 × 3,000 = 50,000 lb.

Finally, the sine of the grade angle, for the maximum grade up which a tractive force of 1,500 lb. will haul a gross weight of 50,000 lb., is 1,500 ÷ 50,000 = 0.03; corresponding to an angle of 1° 43' or a 3 per cent grade.

Question—If the distance between two lifts in a mine is 100 yd., measured on a pitch of 25 deg., what will be the pitch distance between these lifts, measured on a pitch of 55 deg.?

Answer—Assuming the vertical height between the lifts remains unchanged, this vertical height for a distance of 100 yd., on a pitch of 25 deg., is (3 × 100) sin 25° = 300 × 0.4226 = 126.786 ft. Then, the corresponding distance measured on a pitch of 55 deg., will be 126.786 ÷ sin 55° = 126.786 ÷ 0.81915 = 154.16 ft.

Question—The tidal elevation of the top of a slope is 900 ft. and that of the bottom 750 ft.: (a) What is the difference of levels between the head and foot of the slope? (b) If the slope is 1,000 ft. long, what is the grade?

Answer—(a) The difference of level between the top and bottom of the slope is found by subtracting the elevation at the foot from that at the top of the slope; thus 900 − 750 = 140 ft.

(b) Assuming the length of this slope is 1,000 ft., measured on the incline, the sine of the slope angle is 140 ÷ 1,000 = 0.14, which corresponds to an angle of, practically, 8 deg., or a grade of 14 per cent.

Question—The bearing of the main entry, in a mine, is N 30° W and the bearing of the cross-entry from it is N 30° E. Rooms turned off the cross-entry run parallel to the main entry. If the perpendicular distance between the centers of the rooms is 36 ft., what distance should be measured on the entry between their centers?

Answer—As shown in the accompanying figure, the bearing of the main entry being in the northwest quadrant and that of the cross-entry in the northeast quadrant, the angle between these two entries is the sum of their bearings or 60 deg., which is also the angle that the rooms make with the cross-entry. Then, if the perpendicular distance between the room centers is 36 ft., the distance between centers, measured on the cross-entry, is 36 + sin 60° = 36 + 0.866 = 41.57 ft.

Question—Suppose a tunnel to be driven through a mountain, from east to west, a distance of a mile or more; in which direction will the air flow through the tunnel, in the morning and again in the evening? State why.

Answer—Assuming that the height of the mountain above the two mouths of the tunnel is sufficient to produce a difference in temperature caused by the heat of the sun, which raises the air on the eastern slope in the morning and on the western slope in the evening, there will be a corresponding difference in the density of the air columns acting on the respective entrances to the tunnel.

In the morning, the denser column will be on the western slope and the result will be a blow of air from the west to the east, at that time. Again, in the evening the condition will be reversed and the denser column will then be on the eastern slope and the flow of air will then be from east to west. This reply ignores, of course, any prevailing winds that would modify the movement of air through the tunnel, even on sunny days.
The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

PRACTICALLY every industry for which figures have been received by the Department of Commerce showed greater activity in May than in April. Out of 42 production movements reported 38 showed an increase and only 4 declined, compared with the month preceding. Prices have shown the greatest increase for any month in more than two years. Forward orders are increasing and business again presents the picture of prosperity.

Prices on the average have not fallen below about 40 per cent over the pre-war level. They are now nearly 50 per cent above that level. No one knows at what level prices will finally become stabilized, but it is believed that care should be used in placing large forward orders for raw materials at prices much above the present level.

Fundamental conditions in this country are for the most part favorable. The agricultural situation is particularly good. The construction industry is having the biggest boom ever known, and this carries with it a large number of contributory industries. Employment has reached a point where a scarcity of men is reported at some points. The financial situation is favorable with abundance of money available at low rates of interest.

Receipts of wool in Boston during May showed a seasonal increase in the domestic product, while receipts of foreign wool were approximately equal to those in April. Total receipts were 40,972,000 lb. There was an increase in the activity of most woolen machinery, compared with the preceding month.

The activity of cotton spindles increased over the low point reached in April, but it is still below that of the closing months of last year. Exports of cotton cloth amounted to 60,448,000 sq.yd. in May, compared with 51,615,000 sq.yd. in April. This is the largest amount recorded for any month since last October and is nearly double the amount exported in January.

Both exports and imports of iron and steel showed moderate increases in May. Exports totaling 188,000 tons were the largest since March, 1921. Production of sheet steel showed an increase, although sales and unfilled orders fell off, compared with April. Copper production took another big jump, with a total of 88,714,000 lb., the largest for any month since 1920 and four times the production recorded six months ago. The exports of both copper and tin were less than a month ago.

The May production of petroleum amounted to 46,473,000 barrels, or only slightly less than the record attained in March. Consumption, at 49,572,000 barrels, also showed a marked increase. Imports reached a new record of 14,018,000 barrels.

All of the industries associated with building and construction showed a marked increase in output during May. The lumber industry as a whole is now operating at practically 100 per cent of normal. Production, shipments and unfilled orders of brick were much greater than in any recent month. Shipments and new orders for enameled sanitary ware showed large increases, while stocks on hand declined.

Exports of wheat and wheat flour increased over April, but were less than half as large as a year ago. Exports of corn fell off in May from the high figures attained in recent months. The total of 11,306,000 bushels is still far above the average for this cereal. In general the movement of foodstuffs was larger than in April.

Rail Strike May End Soon

The strike of railway shopmen on July 1, which threatened to involve 450,000 workers, including maintenance of way men, thus far has caused little inconvenience to traffic. The maintenance of way men have refused to go out and the companies announce that a marked drift back to work is noticeable and that skilled mechanics are applying in large numbers for the places of the strikers. B. M. Jewell, head of the striking shopmen, has expressed a willingness to entertain peace proposals.

Philadelphia Industries Better

Although June normally is a month of declining industrial activity, it has not proved so in the Philadelphia district, according to the July review of business conditions issued by the Federal Reserve Bank at Philadelphia. Reviewing activities there, the bank says that the improvement noticed in April has continued. "It is true," says the bank, "that the gains made during the last month have been smaller than those of May, but the improvement has been marked. Several of the industries that heretofore had not been affected by the general upward movement have recently reported considerably heavier sales, and this, coming at a time when a decline was to be expected, is especially significant as indicative of the underlying trend of business."

New England Trade Static

Business activity in New England during June was about on a par with that of May, or slightly better, according to the July review issued by the Federal Reserve Bank at Boston, covering conditions in the First Federal Reserve District. "The change, if any," says the bank, "was so small, however, that it has been difficult to measure accurately. New England manufacturing activity has been increasing at a nominal rate for the last two months, although there has not been a corresponding increase in car loadings."

Trade Gains in Richmond District

Reports received by the Federal Reserve Bank at Richmond, Va., late in June show clearly, says the bank’s July bulletin, that the states in the Fifth Federal Reserve District are sharing in the apparently nationwide improvement in business. West Virginia is temporarily disturbed by the coal strike, and the early appearance of the boll weevil is annoying South Carolina, but elsewhere in the district signs point to better conditions and outweigh the deterrent factors. Textiles and cotton both showed improvement and agricultural prospects in general are good.
IMMEDIATE resumption of coal mining under a plan of settlement of the strike proposed by President Harding is now being considered by operators and miners. Realizing that the conference was deadlocked the President suggested last Wednesday that mining be resumed on the wage scale in effect on March 31 last. A commission to be composed of three representatives each of the miners and operators and five representing the public is suggested to investigate and report in thirty days, if possible, on a new wage scale to run until March 1, 1923. The President also stated that he would ask Congress to give authority to this commission to make a thorough investigation of the coal industry looking to its stabilization and to the promotion of peace in the industry.

The President’s conference with the operators and miners adjourned at noon. The anthracite operators conferred on the proposal at the Bureau of Mines, the bituminous operators at the Washington Hotel and the miners’ representatives at the Red Cross Building. The President asked the miners and operators to give him their answer by night.

Both operators and miners were unable to make answer to the President’s proposal at once, the union being the first to move for delay on the ground that its representatives at the conference were not authorized to accept the proposal. They at first proposed to call the general policies committee of the union in conference at Washington on Monday, July 17. President Lewis went to the White House to ask for a week’s delay and when he came away he said the general policies committee meeting would be advanced to Saturday, July 15.

No Answer at End of Day’s Conference

At the end of a day’s conference both bituminous and anthracite operators announced that they had not reached an answer to the President’s proposal. They said the delay of the miners in acting on the settlement plan was having no effect on their action in the mines. Attention was called by the bituminous operators to the fact that the miners’ representatives have been participating in the conferences looking to settlement of the strike, although they appeared to have no authority to take action, while the operators have been ready to act.

To this John Lewis countered by saying that it was all along understood that the miners’ representatives at this conference had no power to act. He also charged that the bituminous operators were not fully represented at the present conferences.

After the anthracite operators adjourned their conference announcement was made that they had not reached a conclusion on the strike settlement plan. They then went into informal conference with the bituminous operators.

President Ogle of the National Coal Association pointed out that the strike settlement offer submitted by the operators on July 3 met all suggestions advanced by the President in opening the conference and would have provided an ample and direct method of reopening the mines.

President Harding’s address to the conference Monday follows:

“Gentlemen, the information has come to me that your conference is deadlocked, or, at the best, attempting to agree on something that will require extra time to work out. I have said heretofore that the government prefers that you who are parties to the dispute should settle it among yourselves, because you best understand all the problems involved. The government cannot settle it for you. It will force no man to work against his free will, it will force no men to employ men against the free exercise of an employer’s rights. The government will not be partisan, but the government is concerned with coal production sufficient to meet the industrial and transportation requirements of the country and to safeguard against a fuel famine when winter comes again, and it is desired to have production resumed at once.

“Your government does desire to be helpful. With such a thought, therefore, I submit to you the following proposal:

“Mine workers are to return to work on the status quo wages which expired last March 31, and mines now idle because of strike or suspended operation to resume activities, without interference with activities of mines now working. The 1922 scale to be effective until Aug. 10, 1922.

“A coal commission to be created at once, consisting of three members selected by the mine workers, three members selected by the mine operators, and five members to be named by the President. All decisions by this commission shall be accepted as final.

“This commission to determine, if possible, within thirty days from today, for the miners on strike a temporary basic wage scale, which scale shall be effective until March 1, 1923. In event that the commission is unable to report its scale by Aug. 10 it shall have power to direct continued work on the President’s schedule scale.

“The commission shall investigate exhaustively every phase of the coal industry. It shall reveal every cost of production and transportation. The President will ask Congress to confer authority for the most thorough investigation, and make appropriations necessary to do such work. The commission shall make recommendations looking to the establishment and maintenance of industrial peace in the coal industry, the elimination of waste due to intermitteny and instability, and suggest plans for dependable fuel supply.

“I have taken this short cut to a resumption of operations because I believe it to be in the interest of the public welfare. It is that simple form of adjusting disputes which answers the call of good conscience and a just civilization. With two great forces not agreeing there must be a peaceful way to adjustment, and such an arbitration opens the way.

“I do not expect reply without due consideration. Please take the proposal to separate conferences. I wish you to appraise the situation, weigh your responsibilities, and then answer this proposal as you wish to be appraised by American public opinion. In making final decision in the public interest, but I am likewise mindful of the rights of both workers and operators. You also are an inseparable part of that public interest. With due regard for all concerned it ought to be easy to find a way to resume activities and command the approval of the American public.”

Operators and Miners Withhold Comment

Comment on the President’s plan has been withheld by both operators and miners. There is a general feeling that the miners sought the delay of one week in order to ascertain in advance of their decision what public opinion may develop and what progress the railroad strikers make in tying up coal production. They are no more inclined than the operators to flout the President and face public reproach. It has been suggested, however, that neither side may accept the administration’s plan in full and that each side may tack on so many reservations to their acceptance as to prevent its operation.

It is being pointed out that there might well be great difficulty in moving coal from the soft-coal mines during the anticipated short period when the miners’ wage is reduced at the old high rate and production costs high. Fake buyers, for instance, it is suggested, would hesitate at stocking such high-cost coal when lower prices were in immediate prospect. The anthracite operators are understood to fear that the same would apply to householders and retail dealers, who would postpone purchases until wages had been reduced and the mine price lowered.

On the other hand, some have seen in the power that would be delegated to the commission by the President to
extend beyond August 10 the March wage scale, providing no negotiation had been reached, a danger that the miners could hold indefinitely to their high wages, once they got started. The principal objection of the operators appears to center about the attempted imposition of the last wage scale after they have held out for over three months in an effort to get a lower wage. They appear to feel that once they accept the plan would put them back where they were when the strike started.

Another point that provokes but little comment on either side has to do with the check-off. It is not stated in the President's paper that the old contracts be resumed, but only that the men return to work at the old scale of wages, and this might be interpreted as either with or without the check-off. Non-union operators are especially apprehensive on this basis, as to hold them they would doubtless raise wages and this would raise the level of prices all over the country. Mines now working would not be affected and this is interpreted to mean that in those areas, as Kanawha, where former union operations have been started open shop, they would be permitted to continue. A large question is raised, however, in the case of the Connellsville area since full compliance by the union with the President's terms would presumably require the union to withdraw from that field and put those men back to work at the non-union scale in effect on March 31 of this year.

Observers at Washington are trying to square the government's position with railroad labor with that taken in the coal situation, and are not anticipating early acceptance by the strikers of or operators of the President's plan. In other words, those in close touch with the sides of the situation are not anticipating coal production to begin this month.

Washington, July 7.—The administration, it seems at this writing, has maneuvered itself into a position where it hardly can refuse to force the arbitration of the questions at issue between the coal operators and the United Mine Workers. There is said not to be any such agreement it placed itself in a position where it would be difficult to refuse were one of the parties to the controversy to request that an arbitration committee be set up. The anthracite operators have stated that they want to arbitrate the matter. They can say to the President that he now has tried moral suasion without result and that the time has come for him to invite the miners to agree to such a plan.

There is a widely held opinion that this will be the outcome, despite the earnest desire of Secretary Hoover to do something more fundamental than agree on wage scales which will make possible a one or two-year truce.

In that connection, however, it is suggested that the President could say that he would call upon the parties to the dispute to enter into arbitration proceedings, provided each would find itself to undertake certain obligations with a view of effecting some fundamental betterments in the coal business.

There has been considerable speculation as to the possibility of the President's initiating a movement for the creation of a tribunal along the lines of the Railroad Labor Board. There is no indication, however, that such a plan is under consideration. It is considered that the setting up of such a tribunal for a public utility, long subject to government regulation, is entirely a different matter from making the same provision for a business which has been unregulated. To set up a coal labor board, it is believed, would involve more government interference with business than the administration is prepared to undertake.

Proposals to redistrict the union territory have gotten nowhere. Nevertheless there are some who see hope of some such plan going through. One of the suggestions for redistricting would reduce the thirty-five wage-scale districts to six. Another proposal would be the division of the union territory into fourteen districts. While the mine workers are outspoken against any changes in the existing wage-scale districts, it is believed that they would prefer, if forced to negotiate on a district basis, to do so in new districts along the lines of some of the suggestions which have been made. Increased freight rates and changes in markets have made desirable certain changes in district boundaries, and it is not improbable that some such changes will be agreed on in the settlement of the existing strike.

The demand that something be done by the federal government to end the strike and start the production of coal moving to the Northwest and to New England is becoming more insistent. The most pressing appeals are coming from New England, where the public is beginning to fear for its anthracite supplies for the coming winter. The sentiment, however, is not confined to New England, for protests are reaching Washington in increasing numbers from all parts of the anthracite-consuming section of the East. As the situation now stands production of anthracite is fully 20,000,000 net tons behind the normal output. While this deficit can be overcome to a certain extent, it cannot be made up entirely and each day that the strike continues means that much further limitation on the anthracite which will be available to domestic consumers: this winter. Even if work were resumed at once, there are many thousand families who burned anthracite last winter who would not be able to obtain supplies for this winter's use.

The public in the Northwest has been particularly passive and it is only within the last week that any signs of anxiety as to next winter's fuel have developed. Senator Kellogg and certain of the members of the House of Representatives from the Northwest, however, have been, contrary to the past two weeks or more, putting pressure on Department officials in regard to the situation. The unusually large carryover at upper lake docks has made available sufficient supplies to satisfy a considerable demand during the early part of the coal year, but reports as of July 1 indicate that stocks on the upper lake docks continue large with only a very gradual increase in order. Throughout the entire time since the strike began there have been considerable supplies of coal available to the Northwest at lower lake ports.

The strike has resulted in two unusual movements of coal on the Great Lakes. The upper lake docks have been shipping coal to Lake Michigan docks, while steel plants at Buffalo have been getting coal from Lake Erie ports. There is no legal provision for either of these transfers since they are made by the National Committee on Gas and Electric Service, under the immediate direction of George H. Elliot, has been announced by F. R. Wadleigh, chief of the newly organized Coal Division of the Department of Commerce. Mr. Wadleigh's announcement reads as follows:

"The canvass of the coal stocks of electrical and artificial gas public utilities as of June 5 shows an average of 53 days' supplies in hand. A great many utilities are receiving current supplies from non-union production, and on the basis of their current encroachment on stocks it seems that their stocks would last about 12 to 15 weeks."

The canvass of stocks at metallurgical plants is about to be completed.

While isolated shipments of Nova Scotia and Welsh coal have gone to American ports recently, it is not believed that price conditions favor any important movement of these coals to the United States in the near future. There has been, however, a notable increase in the volume of Nova Scotia coal mined and it is moving up the St. Lawrence in unprecedented quantities.

A DIRECT EFFECT OF THE COAL STRIKE is seen in a considerable slump in the sale of explosives in the United States recorded for the month of April by the Bureau of Mines. The quantity of explosives sold during April for use in the United States was 25 per cent less than the record for March; 18 per cent less than for April of last year; and 46 per cent below the figures for April two years ago.
Bituminous Operators’ Plan Proposed Arbitration
By District Boards and Nationwide Probe

BITUMINOUS-COAL operators made a proposal on July 3 to the joint conference of miners and operators meeting in Washington with Secretaries Hoover and Davis. In this plan they provided for regrouping of the union fields to avoid the objections to the old Central Competitive Field and at the same time give the miners an adequate substitute. To meet the desires of the administration for a comprehensive and forward-looking program on coal the operators provided in their resolution for a non-partisan commission to be given powers to make a thoroughgoing investigation of the coal industry and to make a report on the fundamental problems of the bituminous-coal industry and to make recommendations to the President for their solution.

Local set boards of arbitration were suggested to handle disputed points, with provision that they should settle all matters in controversy by Aug. 1. The miners refused to accept this plan of the operators and withheld its publication until July 10. The resolution in full follows:

“Pursuant to the call of the President of the United States and in order to bring about a speedy termination of the strike now in progress in the bituminous coal fields the operators have voted to hold an immediate and move in adoption of

“(1) That the negotiation of wage scale contracts in all of the scale-making districts here represented be referred to the miners and operators in each scale-making district for settlement.

“(2) In accordance with the suggestions of Secretaries Hoover and Davis this conference shall appoint a committee of six miners and six operators, which committee shall consider the practicability of grouping scale-making districts, where possible and mutually agreeable to the miners and operators in the districts affected, to reduce the work of scale making.

“(3) In order that there may be a speedy resumption of work and no unnecessary delay in reaching agreements a board of arbitration shall be established in each scale-making district or group of districts, to which board shall be referred all disputed points remaining unsettled by July 15, 1922, shall be referred to the boards of arbitration as established by the President in each scale-making district. Upon questions so submitted to arbitration the boards of arbitration shall report on or before Aug. 1, 1922.

“(4) The President of the United States is requested to appoint a board of arbitration in each scale-making district. Each board of arbitration shall consist of three interested members, none of whom shall be miners or operators, nor in any way connected with the bituminous-coal industry.

“(5) In accordance with the suggestion of President Harding a board shall be appointed by him, whose duty it shall be to study the fundamental problems of the entire bituminous-coal industry and make recommendations to the President for their solution.

“(6) Negotiations shall proceed in all scale-making districts at once in order that the public may be supplied with coal of proper quality in three months. Operators were of the opinion that wages had been reduced to about 8s. 4d. a day ($1.87 at present exchange), or two guineas per week ($9.32). Wages were being brought down to only 20 per cent over those in July, 1914, whereas the cost of living was 81 per cent above that ruling at that date. Moreover the working time was short at many of the mines.

Mr. Bridgeman’s remarks ended, the Labor members started to tear the statement to pieces, speaking on a resolution to reduce the proposed appropriation. During the past fifteen months, said Mr. Adams, wages had fallen more seriously than at any other time. In his own district, Fife, the fall had been 12s. ($2.66 at present exchange) or £3 ($13.32) in an average working week. In addition to the general fall, partial reductions had been made by certain owners. In three of the fields wages had been reduced to about 8s. 4d. a day ($1.87 at present exchange), or two guineas per week ($9.32). Wages were being brought down to only 20 per cent over those in July, 1914, whereas the cost of living was 81 per cent above that ruling at that date. Moreover the working time was short at many of the mines.

Mr. Heus, another Laborite, wanted an equalization fund set up in each district and provision made that after any individual colliery had received 17 per cent of its standard wages and 17 per cent of its surplus, 50 per cent of any surplus remaining should be paid to the fund. Similarly any colliery which could not afford to pay the rate of wages fixed for the district should receive out of the fund a sum equivalent to 50 per cent of the colliery wages by which it failed to meet the charge fixed for the district wage.

Another Laborite, C. Edwards, found it hard to glory in the re-establishment of the British export trade in the presence of the low wage. He said the coal almost had been given away. Mr. Lawson said that large numbers of colliers were making no more than from £2 to £9 ($8.88 to $13.32) per week, and Mr. Walsh, another Laborite, said that “though the government expected to go week by week to the guardians to have their wages supplemented because they could not earn sufficient to keep body and soul together.”

In response Mr. Bridgeman said that the taxpayers had subsidized the miners by a gift of £25,000,000 to keep up wages and £7,000,000 to ease their decline. He could imagine no greater folly than the desire of the men to repudiate the profit-sharing arrangement just because it happened that they were now at the bottom of the wave.
Kentucky-Tennessee Operators’ Association Elects J. E. McCoy as Secretary

DIRECTORS of the Kentucky-Tennessee Coal Operators’ Association met in the offices of the association, Knoxville, Tenn., Friday, June 30, and accepted the resignation of D. S. Miller, commissioner-secretary, and elected J. E. McCoy to succeed him in the capacity of secretary only. Mr. McCoy was for twelve years secretary and treasurer of the Southern Appalachian Coal Operators’ Association.

The Kentucky-Tennessee Coal Operators’ Association is a new organization, the result of the split in the membership of the Southern Appalachian Coal Operators’ Association, and is composed of operators formerly members of the Southern Appalachian and non-members in the territory. The territory covered by the Kentucky-Tennessee Association is the southeastern district of eastern Kentucky and the State of Tennessee. The tonnage represented by the new organization is approximately 3,000,000 per annum.

Members of the Kentucky-Tennessee association operate under what they are pleased to term an “open shop, non-union” wage contract without the “check-off” feature which is provided for in all U. M. W. A. contracts.

The present contract expires March 31, 1924, and is a modification of the wage agreement negotiated for this field at Washington, in October, 1917, and approved by H. A. Garfield for the U. S. Fuel Administration. This contract provides for further modification in the matter of wages to meet competitive conditions.

Ford Offers to Lease Part of L. & N. Lines To Move Coal to Detroit

HENRY FORD has submitted an offer to lease that part of the Louisville & Nashville Railroad between Banner Fork and Corbin, Ky., and from Corbin to Cincinnati, and operate it with the present force of railway employees in order that coal may be moved to Detroit. Mr. Ford had made the offer to the president of the Louisville & Nashville after the railroad company had informed him it was unable to move 8,000 cars of coal consigned to Detroit industries because of labor troubles.

The Banner Fork branch is the coal carrying division of the railroad. Connection would be made at Cincinnati with the Detroit, Toledo & Ironton R.R., which is owned by Mr. Ford. Mr. Ford’s offer included the taking over of the railroad’s equipment on this branch under the proposed lease.

Members of the staff of W. L. Mapother, president of the Louisville & Nashville R.R., expressed surprise when they were told of the Ford offer. W. J. Michael, secretary to the president, said that press reports were the first intimation that had been received of the proposal.

Some of Ford’s coal mining interests are located at Banner Fork. Through a private agreement with his men his mines are not affected by the coal strike.

Senator Pepper Argues Against Sale of Coal Stock to Reynolds Syndicate

THAT the stock of the Lehigh & Wilkes-Barre Coal Co. may come into the control of the Lehigh Coal & Navigation Co. should the bid of the Franklin Securities Corporation for the stock of the former company be accepted, was revealed July 5 in the hearing in the Federal District Court at Philadelphia of a case growing out of the Reading dissolution suit.

Acquisition by the Lehigh Coal & Navigation Co. of the Lehigh & Wilkes-Barre coal stock would materialize, it was said, if the Franklin Securities Corporation, upon obtaining the stock decided it did not want to operate the company.

Senator George Wharton Pepper charged that such an agreement existed in an argument on the motion by the Central Railroad of New Jersey, owner of the Lehigh & Wilkes-Barre stock, for the dismissal of the petition of Isaac T. and Mary T. W. Starr, that the sale of the stock to the Reynolds Syndicate be set aside. Senator Pepper, counsel for the Starrs, contended that the Franklin Securities Corporation’s bid was better than that of the Reynolds syndicate.

The court reserved decision in the case with the announcement that if it was unable to reach a decision on the legal points raised by Senator Pepper a special master would be appointed to take testimony.

German Coal Prices Show Upward Trend

THE Information publishes a table taken from the German journal Werkstätten und Statistik showing the average monthly prices of German and foreign coal for the first quarter of the year:

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<th>Commodity</th>
<th>December</th>
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POTENTIAL COAL CONSUMPTION DURING MARCH

PUBLIC-UTILITY plants consumed 2,484,500 net tons of coal during May, 1922, according to the report of the Geological Survey, just published. This was a slight increase as compared with 2,457,790 tons in April, but was less than the March consumption of 2,723,561 tons. These consumers used 2,585,259 tons in February and 2,893,540 in January. The average daily consumption of coal in March was 87,900 tons, in April, 81,900 and in May, 80,100.

The coal strike may have affected the demand for electric power to some extent in the eight leading coal-producing states. Considering the mean daily output in these states during March as 100 per cent, the April figure was 94.5 per cent and May 94.7 per cent. The remaining states, excluding those on the Pacific Coast, show 97.7 per cent and 99.2 per cent, respectively. The average daily output for May was 122,600,000 kw.-hr., as compared with 120,100,000 kw.-hr. in April. The proportion of the total output produced by water power increased from 34.6 per cent in January to 42.8 per cent in May.

WITH THE BEGINNING of the new fiscal year the Department of Commerce has given coal a commodity division all its own. Heretofore coal and petroleum have been handled in a single division. This was necessary because of the lack of funds available for the commodity divisions, but with larger appropriations available for the current fiscal year the division has been effected. H. C. Morris, who has been handling the petroleum part of the work, continues as chief of the petroleum division, and F. R. Wadleigh continues handling coal matters.

AFTER A WHILE, perhaps, the leaders of certain unions will discover that wages cannot be hoisted with bombs.

—Columbia Record.
Fourteenth Week of the Coal Strike

EDITORIAL REVIEW

MUCH mystery, secrecy and, withal, quiet, marked the fourteenth week of the strike. On Monday, the day before the holiday, the third meeting of union operators and miners was held in Washington under the auspices of the government. Previous meetings on Saturday and Sunday had developed a violent debate behind closed doors with no official record into which each delegate could feel obliged to establish his stand for future reference. The miners had offered their resolution to go into negotiations through the medium of the Central Competitive Field and the operators offered their resolution for district conferences, both of which were as promptly voted down. This much was made public after the meetings.

On Monday there was word that some proposal of new and striking significance had been made by the operators. It was reported that the story had leaked, that the Associated Press had it and had been induced to withhold it. President Harding's injunction of secrecy, with the suggestion that all would be told later, was carefully observed. The delegates disappeared from the scene the eve of the Fourth, to gather again on Monday morning July 10, prepared to hear what the President should have to tell them, after hearing their report of total lack of progress in previous conferences.

What transpired on Monday, July 10, is described elsewhere in this issue. Washington is still the center of strike interest with a meeting of the Policy Committee of the United Mine Workers set for Saturday, July 15, to consider the President's proposal.

In the fields production slumped greatly because of the holiday. The miners who have been working were tired, had plenty of money and were ready and anxious for a rest and good time. They pretty largely extended their celebrations over more than the one day and nearly every district shows the effect in decreased output. Fortunately the same is true with regard to consumers and the coal business, of course, recorded a corresponding drop. The strike on the railroads has had but local and small effect on the movement of coal to date, but that is no assurance that it will not be a factor later in limiting production on some roads.

No disturbances have been reported this week in the wagon mine district in western Indiana. All the mines have resumed operation following the continuance of an injunction suit in federal court against the striking miners, officials of the United Mine Workers having promised Judge Anderson, June 29, that there would be no further interference with the operation of these mines.

Farrington Takes One More Step Toward Making Separate Wage Deal in Illinois

AS AN aftermath of the first futile conference in Washington of operators and miners, and as a forerunner of the second meeting on Monday, July 10, Frank Farrington, president of the Illinois miners, convened his executive board in Springfield Friday the 7th—minus certain members for they had left, President Lewis of the International union—and got authority to negotiate to determine a separate state wage scale in case nothing definite developed at Washington. The day of the executive board meeting Mr. Farrington emphatically denied that any move was being made toward a separate deal. But during the meeting he cleared the way for such a deal.

Various operators, in session at Chicago, disclaimed any previous knowledge of Mr. Farrington's plan and had no comment to make upon it except that the action seemed to be in line with Mr. Farrington's original promise to the operators to negotiate for a separate peace in case "an emergency should arise." During the first miner-operator conference at Washington, July 1, 2 and 3, the declaration was made that Illinois miners were going to stick it out with the International union, come what would.

Operators in that state, while strictly preserving their pledge of secrecy concerning the Washington conference, nevertheless went back to Washington Saturday night for the Monday conference with high hopes that a definite development would appear and that peace negotiations in the mine strike would soon be under way, with a resumption of mining operations.

In the meantime comparative peace appeared to reign in the mining fields of Illinois and Indiana. Union leaders have suppressed the program of threats with which many clerks and other company employees in wet mines such as those of the Madison Coal Corporation near Carterville were driven from the pumps two weeks ago to the detriment of the mining properties. By the end of last week it was reported that every pump necessary for the protection of a mine was working.

No Further Outbreaks in "Bloody" Region, But Situation There Is "Like Dynamite"

OUTSIDE of a little trouble at the McClinton mine at Johnston City everything is quiet in the southern Illinois field following the slaughter at Herrin three weeks ago, although there is some underrun that may develop into trouble at different places. Union miners have been threatening the workers who are keeping the pumps going at the mines. This, however, is about at an end by order of Frank Farrington, Illinois miners' president.

The only difficulty reported during the week took place at the McClinton mine near Johnston City, where the company, which is building a new tipple, offered the laborers $4 a day. The miners refused to take this, demanding a higher scale, whereupon the company imported labor. All of the work is outside of the jurisdiction of the United Mine Workers. That does not seem to worry the Williamson County gang, however, because apparently there is no law in the county.

Reports from southern Illinois indicate that miners from Williamson County have been going down to Kentucky in automobiles carrying moonshine whiskey and generally causing trouble, or trying to, at mines in the western Kentucky field. Several thousand miners are reported to have deserted the union ranks and gone to work in these districts and the miners justify their expeditions into the western Kentucky field by alleging that they are trying to ascertain whether the absentees from Illinois have gone to work there.

"There haven't been any further outbreaks," said an operator of the southern Illinois region, "but the situation here is like dynamite; there's no telling when something may go off."

Holiday Fever Slows Up Operations In Connellsville Coke Region

JULY 4 seems to have had a slowing-up effect on the Connellsville coke region. The H. C. Frick Coke Co. lost about forty miners at the Leisening No. 2 plant, but made this up in gains at other points, so that as a whole the company is holding its own. The Hillman Coal & Coke Co., W. J. Rainey, Inc.; American Coke Corporation and Pittsburgh Steel Co. also are about holding their own.

The Republic Iron & Steel Co. has recovered the ground lost a week ago at its Brookwood plant. The Mather Collieries Co. has lost about 20 per cent and the Crucible Fuel Co. about 85 per cent as the result of a number of miners' mass meetings and picnics in that vicinity during the past week. Railroad shipments indicate a loss of about 10 per cent as compared with a week ago.

There have been a number of small scattered dynamitings throughout the region during the past week. No one of them has done much damage. The state police are still in charge of the towns of Brownsville and South Brownsville.
Garment Workers' Union Votes Gift of $100,000 to Striking Coal Miners

THE International Ladies' Garment Workers' Union has voted to give $100,000 to assist the coal miners on strike, according to the report of the meeting of the union held in New York City July 6. Half of the sum will be available immediately. This is the first relief to be received by the striking coal miners.

The gift was voted after appeals made by Samuel Gompers, president of the American Federation of Labor, and John J. Lewis, president, and William Green, secretary, of the United Mine Workers.

In 1919 the Garment Workers' Union gave $60,000 to the steel workers.

Violence Reported in Hocking Field; Federal Judge Restores Injunction

COAL loaders, driven from a slack pile near New Straitsville, Ohio, appeared before Federal Judge Sater in Columbus June 5, seeking an injunction restraining union miners from interfering with their work. This was about the first notice of violence since the opening of the strike in the Hocking Valley field. A temporary injunction restraining the strikers from interfering with loading, which was lifted some time ago by Judge Sater, was immediately restored. Hearing on a permanent injunction will be held soon. The men appeared in overalls and working clothes and averred that they had only these clothes since their camp was burned. Several were nursing wounds as a result of shots fired into the camp. Thomas Marshall, of Altoona, Pa., was killed by the firing. The attacking party consisted of between 200 and 300 men.

Application for troops was made to Governor Harry L. Davis by the operators of stripping operations in Harrison County. A representative of the Adjutant General's office was sent to investigate and reported that there was no necessity for troops. Threats had been made and at least two men were killed in that section.

Politics Mixed in Colorado Situation; No Violence Since Arrival of Troops

APPEARANCE of state troops in the field seems to have been welcomed by the majority of citizens in Colorado, but the radical element denounced the action of Governor Oliver E. Shoup.

On July 2 Adjutant General P. J. Hamrock and Lieutenant Governor Earl Cooley, candidate for nomination for Governor on the Republican ticket, engaged in a verbal clash when the former charged that the acting Governor violated the order of Governor Shoup in addressing a meeting of union miners at Frederick, Col.

Guardsmen were ordered not to allow any mass meetings in the state. General Hamrock, it is said, told Governor Shoup that the Lieutenant Governor caused the strikers to be called together through James Barclay, president of Frederick Local of the United Mine Workers, despite the fact that he was informed by Captain John Campion, in command of the troops there, that no meetings were allowed.

Governor Shoup has cancelled his vacation trip to the Pacific Coast as a result.

No violence among miners has been reported since the troops have been sent into the field along with the State Rangers, according to Adjutant General Hamrock.

All Quiet Now in Utah, Although Guardsmen Under Arms Stay on the Job

CONDITIONS are quiet in Utah. There is, however, no talk of recalling the guardsmen. The announcement that operators would not be permitted to recruit men and send them to the mines and that only persons who paid their own fare to the coal fields would be allowed to remain, has caused much dissatisfaction among mine owners. It is pointed out that in other lines no interference is made and that the recent decision in the present strike is only a sign of weakness on the part of the chief executive officers of the state. The leading newspaper of Price (Carbon County) has made a bitter attack on Governor Mabey, and sneers about his being only an executive in a $20,000 country bank before taking his present position. On the other hand men in high places have praised his stand regarding strike breakers.

Nova Scotia Miners Threaten to Strike If Wages Are Cut; Conciliators Named

MINERS employed at the collieries of the Inverness Coal Co., Inverness, N. S., have threatened to strike owing to a dispute over wages. The company has refused to consider the demands of the men that wages be not reduced. The federal Minister of Labor, James Murdoch, has been appealed to for a special board of conciliation to adjust the dispute. He has agreed to the appointment of a similar board representing the Inverness Coal Co. will be G. McG. Mitchell, of Halifax, N. S., with L. D. Currie, of Glace Bay, N. S., representing the miners. I. D. McDougall, of Inverness, who represented the miners on the Scott board, which recently investigated the claims of the miners employed by the British Empire Steel Corporation (Dominion Coal Co.), also was appointed to represent the men of Inverness, but declined. He gave pressure of private business as a reason for not acting, but it is believed that dissatisfaction of the miners with his efforts in their behalf on the Scott board has been a factor in his refusal to act on the Inverness board.

Mr. Currie, the miners' representative on the Inverness board, recently was graduated from the Dalhousie University Law School.

Owing to the fact that Mr. Mitchell for the operators and Mr. Currie for the employees have not been able to agree on a chairman after several meetings, the Minister of Labor has been asked to appoint a chairman. This is a situation similar to that which existed at the formation of the Scott board.

J. B. McLachlan, district secretary-treasurer of the United Mine Workers, has refused to accept Robert Baxter's challenge to oppose him for the office of district president at the next annual election. In an interview, July 6, Mr. McLachlan made the following statement: "I have no intention of running for the office of president. If President Baxter wishes me to oppose him for the election, why doesn't he get some of the locals to nominate him for the office? To be secretary-treasurer is to do a perfectly well that no individual has the power to nominate himself for any office. According to the constitution that is a matter for the locals."

Going further, Mr. McLachlan said that he had received nominations already from four of the locals of the district and none of the lists contained the names of President Baxter, Vice-President Delaney, McCormick or Silby Barrett. The nominations which Mr. McLachlan has in his possession are Dan Livingstone for president, Alex S. McIntyre for vice-president, J. B. McLachlan for secretary treasurer, M. S. McNeil, of Dominion, for sub-district board member for District No. 1, and Alex Stewart, of Westville, for international board member.

Is Howat Merely Seeking Another Chance To Stir Up More Trouble for Somebody?

ALEXANDER HOWAT is ready to have his followers in Kansas return to work at once in the mines there. This decision was reached at a recent meeting of a group of about 700 men favorable to the Kansas mine-union president deposed by international headquarters of the union last autumn with his entire entourage of officers. Louis Burnskill, chairman of the meeting, said that the men saw no other way for them to become reinstated in the union than to go to work. Naturally enough, many observers doubt in this action just another effort to embarrass John Lewis and the other leaders of the United Mine Workers of America.
LAST week was a trying one for the coal buyer. Production was curtailed by the July 4 holiday and the available supply was further cut down by a serious congestion of loads in the non-union producing fields. The scarcity became so acute toward the end of the week that higher prices were inevitable. The consumer who had delayed buying in order to obtain the lower freight rate after July 1 now finds that spot prices have more than wiped out the 10-per-cent reduction. In the meantime stocks have been reduced below the safety point and the procurement of immediate supplies is becoming imperative.

Quotations have definitely slipped out of the bounds suggested by Secretary Hoover. Coal Age Index of spot bituminous prices stands at 301 on July 10, an advance of 11 points as compared with 290 on July 3. This week’s index represents an average spot price at the mines of $3.64, which is 13c. over the average for the previous week. The strengthened prices are most noticeable in western Kentucky, where no maximum price has been agreed upon. This coal is selling well over the $5 mark. Eastern Kentucky and the West Virginia high-volatiles are now using the Hoover figure of $3.50 as the minimum, with the top price strong at $4. Low-volatile prices are being held more firmly in check, but sales exceeding the Hoover maximum are becoming increasingly numerous.

MIDWEST MARKET MOST ACTIVE; PRICE NO FACTOR

The market is most active in the Middle West. Price seems to be no factor in that territory, the main desire being to get coal. Not only are the smaller consumers clamoring for tonnage but the railroads and large users are being forced to replenish their supplies on the spot market. The demand is so good that old piles of slack coal at Indiana mines, some of it on the ground for years, is being marketed around $2.50.

A panicky feeling now prevails throughout the Northwest. Commercial supplies at Duluth-Superior are less than 550,000 tons of bituminous coal and 250,000 tons of anthracite, the latter being of the less-wanted sizes. Total dock receipts this year were 288,000 tons to July 1, as compared with more than 4,000,000 tons in the corresponding period last year. Dock coal is being doled out to needy consumers and none else. It is now apparent that every day’s delay in Lake coal traffic is adding to the Northwest’s coming predicament next winter.

New England coal sales are increasing. Inquiry is only relatively better, however, as large consumers still have good supplies on hand. So many diversified demands are being made on the fields supplying the Hampton Roads piers that prices are stronger, and coastwise freights reflect this condition, although there is no dearth of vessels.

So far the railroad shopmen’s strike is not felt on the surface although it is hampering the movement of loads in the Kentucky fields. This trouble also is affecting the movement of coal South. The Erie has canceled 21 suburban trains on its New York City schedule, giving as a reason “shortage of coal.” This is surprising news, coming atop the railroad strike, as it is the first intimation that railroad fuel supplies were near the danger mark. The outstanding feature of the coal strike last week was the preparation of

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**Estimates of Production**

<table>
<thead>
<tr>
<th></th>
<th>1921</th>
<th>1922</th>
</tr>
</thead>
<tbody>
<tr>
<td>BITUMINOUS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week ended:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 17</td>
<td>7,531,000</td>
<td>5,013,000</td>
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<td>June 24 (a)</td>
<td>7,794,000</td>
<td>5,633,000</td>
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<tr>
<td>July 1 (b)</td>
<td>2,765,000</td>
<td>5,207,000</td>
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<td>Daily average</td>
<td>2,776,000</td>
<td>2,761,000</td>
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<td>Calendar year</td>
<td>106,464,000</td>
<td>159,613,000</td>
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<tr>
<td>Coal, calc. yr.</td>
<td>1,279,000</td>
<td>1,216,000</td>
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<tr>
<td>ANTHRACITE</td>
<td></td>
<td></td>
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<tr>
<td>June 17</td>
<td>1,941,000</td>
<td>22,000</td>
</tr>
<tr>
<td>June 24</td>
<td>1,847,000</td>
<td>24,000</td>
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<tr>
<td>July 1 (c)</td>
<td>1,666,000</td>
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<td>COKE</td>
<td></td>
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<td>June 24 (a)</td>
<td>50,000</td>
<td>110,000</td>
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<td>July 1 (d)</td>
<td>42,000</td>
<td>114,000</td>
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<tr>
<td>Calendar year</td>
<td>3,968,000</td>
<td>3,216,000</td>
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</tbody>
</table>

(a) Subject to revision (b) Revised from last report.
certain large Pittsburgh district producers to resume operations at once, under guard. Labor shortage is beginning to be felt in Alabama, where peak production is fast being approached.

The anthracite supply is running down, despite the indifference of consumers. Retailers are listing increasing orders for delivery as soon as possible, conserving present meager supplies for hotels, hospitals, etc., which must have coal through the summer and autumn.

**BITUMINOUS**

"Production during the fourteenth week of the strike was interrupted by the Independence Day holiday," says the Geological Survey. "The total output of bituminous coal probably will fall between 3,500,000 and 4,000,000 tons, and even the average production per working day will show a decrease. Production of anthracite remains practically zero.

Complete returns for the thirteenth week (June 26-July 1) indicate an output of 5,207,000 tons of bituminous coal and 25,000 tons of anthracite, a total of 5,232,000 tons, of all coal. In the corresponding week of 1921 bituminous mines produced 7,690,000 tons and the anthracite mines 1,870,000 tons, a total of 9,560,000 tons. In 1920, a year of active business, the total coal raised was 12,064,000 tons.

"The record of daily loadings of cars of bituminous coal shown in the following statement clearly discloses the effect of the Fourth of July holiday. On Saturday, July 1, 12,614 cars were loaded as against 13,993 cars on the preceding Saturday. On Monday only 11,165 cars were loaded. On Independence Day itself production ceased almost entirely, and the recovery thereafter was slow. By Thursday, July 6, loadings had reached 14,000 cars but were still running 2,000 cars below the level of the week preceding. Even allowing for full recovery on Friday and Saturday, it does not appear likely that the week's production can pass 3,800,-000 tons."

**DAILY LOADINGS DURING THE STRIKE**

<table>
<thead>
<tr>
<th>Week</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>11,445</td>
<td>11,019</td>
<td>11,417</td>
<td>11,090</td>
<td>11,268</td>
<td>8,888</td>
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<tr>
<td>9th</td>
<td>15,058</td>
<td>15,222</td>
<td>15,289</td>
<td>13,790</td>
<td>12,696</td>
<td>12,545</td>
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<tr>
<td>10th</td>
<td>14,597</td>
<td>15,269</td>
<td>15,849</td>
<td>16,325</td>
<td>14,884</td>
<td>13,991</td>
</tr>
<tr>
<td>11th</td>
<td>15,474</td>
<td>15,800</td>
<td>16,894</td>
<td>16,622</td>
<td>16,484</td>
<td>13,465</td>
</tr>
<tr>
<td>12th</td>
<td>15,311</td>
<td>16,748</td>
<td>17,032</td>
<td>16,402</td>
<td>16,402</td>
<td>13,993</td>
</tr>
<tr>
<td>13th</td>
<td>16,247</td>
<td>17,748</td>
<td>17,656</td>
<td>14,112</td>
<td>12,614</td>
<td>12,614</td>
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**Coal Age Index 301, Week of July 10, 1922.** Average spot price for same period $3.61. This diagram shows the relative, not the actual, volume, on fourteen coals, representative of nearly 90 per cent of the total output of the United States, weighted in accordance first with respect to the proportions each 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. (Pittsburgh District, Illinois, Indiana and eastern Ohio prices not included in figures for last week.)

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

### Low-Volatile, Eastern

<table>
<thead>
<tr>
<th>Market</th>
<th>June 12</th>
<th>June 26</th>
<th>July 3</th>
<th>July 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smokless mine run</td>
<td>Columbus</td>
<td>$3.75</td>
<td>$3.65</td>
<td>$3.65</td>
</tr>
<tr>
<td>Smokeless mine run</td>
<td>Columbus</td>
<td>3.50</td>
<td>3.45</td>
<td>3.45</td>
</tr>
<tr>
<td>Smokeless screenings</td>
<td>Columbus</td>
<td>3.20</td>
<td>3.35</td>
<td>3.25</td>
</tr>
<tr>
<td>Smokeless lump</td>
<td>Chicago</td>
<td>3.65</td>
<td>3.65</td>
<td>3.65</td>
</tr>
<tr>
<td>Smokeless mine run</td>
<td>Chicago</td>
<td>3.40</td>
<td>3.40</td>
<td>3.40</td>
</tr>
<tr>
<td>Smokeless lump</td>
<td>Cincinnati</td>
<td>3.65</td>
<td>3.65</td>
<td>3.65</td>
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<tr>
<td>Smokeless mine run</td>
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<td>3.45</td>
<td>3.45</td>
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<tr>
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<td>3.25</td>
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<tr>
<td>Smokeless mine run</td>
<td>Boston</td>
<td>6.65</td>
<td>6.30</td>
<td>6.40</td>
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<tr>
<td>Clearfield mine run</td>
<td>Boston</td>
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<td>2.35</td>
<td>2.50</td>
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<tr>
<td>Cambria mine run</td>
<td>Buffalo</td>
<td>3.75</td>
<td>3.60</td>
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<tr>
<td>Somerset mine run</td>
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<td>3.75</td>
<td>3.60</td>
<td>3.50</td>
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<tr>
<td>Pool 1 (Navy Standard)</td>
<td>Baltimore</td>
<td>3.85 to 3.90</td>
<td>3.85 to 3.90</td>
<td>3.85 to 3.90</td>
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<tr>
<td>Pool 2 (Navy Standard)</td>
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<tr>
<td>Pool 8 (Super Low Vol.)</td>
<td>Philadelphia</td>
<td>4.05</td>
<td>4.05</td>
<td>4.05</td>
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<tr>
<td>Pool 10 (Super Low Vol.)</td>
<td>Philadelphia</td>
<td>4.25</td>
<td>4.25</td>
<td>4.25</td>
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<tr>
<td>Pool 10 (Navy Low Vol.)</td>
<td>Philadelphia</td>
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<td>4.35</td>
<td>4.35</td>
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<tr>
<td>Pool 10 (Navy Low Vol.)</td>
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<td>4.75</td>
<td>4.75</td>
<td>4.75</td>
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<tr>
<td>Pool 11 (Low Vol.)</td>
<td>Philadelphia</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
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<tr>
<td>Pool 11 (Low Vol.)</td>
<td>Philadelphia</td>
<td>4.15</td>
<td>4.15</td>
<td>4.15</td>
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<tr>
<td>Pool 11 (Low Vol.)</td>
<td>Baltimore</td>
<td>3.75</td>
<td>3.75</td>
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### High-Volatile, Eastern

<table>
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<th>June 26</th>
<th>July 3</th>
<th>July 10</th>
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<tbody>
<tr>
<td>W. Va. screenings</td>
<td>New York</td>
<td>4.00</td>
<td>3.90</td>
<td>4.25</td>
</tr>
<tr>
<td>W. Va. mine run</td>
<td>New York</td>
<td>3.65</td>
<td>3.50</td>
<td>3.50</td>
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<tr>
<td>W. Va. lump</td>
<td>New York</td>
<td>3.65</td>
<td>3.50</td>
<td>3.50</td>
</tr>
<tr>
<td>W. Va. mine run</td>
<td>Pittsburgh</td>
<td>3.25</td>
<td>3.25</td>
<td>3.25</td>
</tr>
<tr>
<td>W. Va. lump</td>
<td>Pittsburgh</td>
<td>3.35</td>
<td>3.35</td>
<td>3.35</td>
</tr>
<tr>
<td>W. Va. mine run</td>
<td>Cleveland</td>
<td>3.45</td>
<td>3.45</td>
<td>3.45</td>
</tr>
<tr>
<td>W. Va. screenings</td>
<td>Cleveland</td>
<td>3.20</td>
<td>3.25</td>
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</tr>
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</table>

### South and Southwest

<table>
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<th>Market</th>
<th>June 12</th>
<th>June 26</th>
<th>July 3</th>
<th>July 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Ky. lump</td>
<td>Louisville</td>
<td>3.75</td>
<td>4.10</td>
<td>4.40</td>
</tr>
<tr>
<td>West Ky. mine run</td>
<td>Louisville</td>
<td>3.75</td>
<td>4.00</td>
<td>4.20</td>
</tr>
<tr>
<td>West Ky. lump</td>
<td>Chicago</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
</tr>
<tr>
<td>West Ky. mine run</td>
<td>Chicago</td>
<td>3.95</td>
<td>4.25</td>
<td>4.45</td>
</tr>
</tbody>
</table>

### Kansan lump

- Kansas City: 4.75 to 5.00
- Kansas City: 4.75 to 5.00

*Note: Spot market prices as of July 10, 1922. Prices in heavy type are the average of the previous week. Prices in italics are in decline, prices in regular type are unchanged.*
Lake coal dumped during the week ended July 10 was 243,946 net tons—230,362 tons cargo and 13,584 bunker—as compared with 389,452 tons last week. The total movement to date is 4,061,173 tons, as compared with 11,907,210 tons in the corresponding period last year. During June 247,542 net tons of coal, all bituminous, passed through the "Soo" for upper ports.

RECEIPTS OF COAL AT DULUTH SUPERIOR HARBOR a

<table>
<thead>
<tr>
<th></th>
<th>Hard</th>
<th>Soft</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>April</td>
<td>4,562</td>
<td>35,169</td>
<td>39,731</td>
</tr>
<tr>
<td>May</td>
<td></td>
<td>93,971</td>
<td>93,971</td>
</tr>
<tr>
<td>June</td>
<td></td>
<td>135,034</td>
<td>135,034</td>
</tr>
<tr>
<td>Total to June 30, 1922</td>
<td>4,562</td>
<td>284,174</td>
<td>288,736</td>
</tr>
<tr>
<td>Corresponding period, 1921</td>
<td>449,078</td>
<td>3,794,345</td>
<td>4,243,423</td>
</tr>
<tr>
<td>Corresponding period, 1920</td>
<td>423,280</td>
<td>964,737</td>
<td>1,388,017</td>
</tr>
<tr>
<td>Corresponding period, 1919</td>
<td>469,470</td>
<td>3,312,302</td>
<td>3,781,772</td>
</tr>
</tbody>
</table>

(a) As reported by U. S. Engineer Office, Duluth.

All-rail movement of bituminous coal to New England declined to 642 cars during the week ended July 1, as compared with 669 cars in the week preceding. Congestion of the roads supplying the West Virginia mines has curtailed the movement of water-borne coal and enabled all-rail shippers to obtain slightly higher prices for their fuel in the New England territory.

Hampton Roads dumpings for all accounts were 338,800 net tons during the week ended June 16, as compared with 494,182 tons in the previous week. Some labor trouble at the piers delayed the program somewhat and less coal is on route, as demand elsewhere is strong. Prices at the piers are up and coastwise freight rates reflect the better demand.

COKE

Beehive coke production continues to gain slowly. During the week ended July 1 the output was 114,000 net tons, as compared with 110,000 tons during the preceding week. The principal improvement was due to increased activity in the Connellsville region, although the first week of July saw some decline owing to fresh labor troubles and rail congestion. Coal consumers are more and more turning to West Virginia and Alabama cokes, as Connellsville offerings are very limited.

ANTHRACITE

Production of hard coal in the thirteenth week of the strike was approximately 25,000 net tons. Practically the same amount was produced during the preceding week. This represents steam business sizes dredged from the rivers, which are about the only steam coal being offered. Storage stocks of anthracite are reduced to egg and pea coal, the latter moving much old tonnage.

Lower prices when mining is resumed are somewhat of a question, even with the reduced freight rates, as there is still the impending Pennsylvania coal tax to be considered. Domestic consumers, however, apparently are not interested in prices, being more concerned with getting their orders on file for delivery after the strike at prices ruling when the order is filled.

Relative Activity of Markets for Bituminous Coal at End of Fourteenth Week of Strike

Demand strong. Rail congestion reduces available supply. Prices exceed Hoover level.
New England buyers coming in. Southern coals strong, as pier receipts are cut by congestion on roads.
Steam business good. Domestic demand also improves.
Still quiet.
Foreign Market
And Export News

Dull Market Hurts British Industry

Export quotations on British coals are at best hardly firm. There is a freer line of inquiry, however, and emergency shipments to the United States are continuing. South America, India and the Continent are asking for quotations. Production during the week ended June 24 was maintained at the level of the previous week, according to a cable to Coal Age. The output was 4,334,000 gross tons as compared with 4,600,000 tons the week before. The recent poor market has been followed by the closing of some operations.

There is a well-organized campaign among the miners to secure alteration of the wage standard, and to place the wages on a level with the cost of living.

United States May Exports, By Customs Districts

<table>
<thead>
<tr>
<th>Customs Districts</th>
<th>Gross Tons</th>
<th>Continuousurchance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maine and New Hampshire</td>
<td>294</td>
<td></td>
</tr>
<tr>
<td>Vermont</td>
<td>231</td>
<td></td>
</tr>
<tr>
<td>Connecticut</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>St. Lawrence</td>
<td>11,579</td>
<td></td>
</tr>
<tr>
<td>Rochester</td>
<td>3,439</td>
<td></td>
</tr>
<tr>
<td>Buffalo</td>
<td>41,192</td>
<td></td>
</tr>
<tr>
<td>Philadelphia</td>
<td>4,600</td>
<td></td>
</tr>
<tr>
<td>Virginia</td>
<td>123,711</td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>10,980</td>
<td></td>
</tr>
<tr>
<td>Florida</td>
<td>6,000</td>
<td></td>
</tr>
<tr>
<td>Ohio</td>
<td>37,446</td>
<td></td>
</tr>
<tr>
<td>New Orleans</td>
<td>901</td>
<td></td>
</tr>
<tr>
<td>San Antonio</td>
<td>506</td>
<td>100</td>
</tr>
<tr>
<td>El Paso</td>
<td>5,036</td>
<td>88</td>
</tr>
<tr>
<td>San Diego and Los Angeles</td>
<td>29</td>
<td>16</td>
</tr>
<tr>
<td>Arizona</td>
<td>601</td>
<td></td>
</tr>
<tr>
<td>San Francisco</td>
<td>985</td>
<td></td>
</tr>
<tr>
<td>Washington</td>
<td>1,154</td>
<td></td>
</tr>
<tr>
<td>Idaho</td>
<td>917</td>
<td></td>
</tr>
<tr>
<td>Oregon</td>
<td>911</td>
<td></td>
</tr>
<tr>
<td>Dakota</td>
<td>3,460</td>
<td>33</td>
</tr>
<tr>
<td>Duluth</td>
<td>4,247</td>
<td>69</td>
</tr>
<tr>
<td>Michigan</td>
<td>87,629</td>
<td></td>
</tr>
<tr>
<td>Ohio</td>
<td>91,383</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>399,551</td>
<td>60,860</td>
</tr>
</tbody>
</table>

Labor Trouble Slows Roads' Tonnage

Strike of electrical operators at the three terminals at Hampton Roads failed to tie up the coal movement through this port. Although some delay was experienced in dumping, the movement has gradually increased until it is considered about normal.

When the men left their work, office men, and officials of the three railways, went immediately to the terminals, taking their places and continuing the operation. Coastwise vessels are now receiving coal as fast as they can make the round trip to New York and New England points and the situation locally is considered satisfactory.

Export clearances from Hampton Roads during the week ended July 6 were but two, namely, Nor. S.S. Thor- gerd, with a cargo of 3,824 tons for Havana, Cuba, and the Jap. S.S. Yei- fuku Marie, with a cargo for Porto- ferraio, of 7,476 tons.

Hampton Roads Pier Situation

<table>
<thead>
<tr>
<th>Week Ended</th>
<th>June 29</th>
<th>July 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. &amp; W. Piers, Lamberts Point:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cars on hand</td>
<td>2,663</td>
<td>2,381</td>
</tr>
<tr>
<td>Tons on hand</td>
<td>15,379</td>
<td>13,269</td>
</tr>
<tr>
<td>Tonnage waiting</td>
<td>20,099</td>
<td>20,069</td>
</tr>
<tr>
<td>Virginia &amp; Piers, Sewalls Point:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cars on hand</td>
<td>1,185</td>
<td>1,439</td>
</tr>
<tr>
<td>Tons on hand</td>
<td>1,016</td>
<td>1,060</td>
</tr>
<tr>
<td>Tonnage waiting</td>
<td>123,601</td>
<td>95,117</td>
</tr>
<tr>
<td>C. &amp; O. Piers, Newport News:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cars on hand</td>
<td>84,146</td>
<td>1,756</td>
</tr>
<tr>
<td>Tons on hand</td>
<td>87,400</td>
<td>9,060</td>
</tr>
<tr>
<td>Tonnage waiting</td>
<td>119,386</td>
<td>10,714</td>
</tr>
</tbody>
</table>

French Seek Way to Reduce Prices

The coal market is very quiet as regards house coal, but shows some activity in industrial fuel. Concessions for summer delivery of 3fr.-gfr. per ton on sized coals of the Nord and Pas-de-Calais, which were to be abolished on July 1, will be maintained up to the end of September. This is a proof of the downward trend of the market.

The French Ministers of Public Works and of Labor on June 24 received a delegation of miners, in view of a discussion of the questions raised by the operators of the Nord and Pas-de-Calais at Douai on June 4, and, particularly, on the threatened reductions of wages, which have already been accomplished in a few coal fields. Great stress was laid upon the difference between the respective prices of French and foreign coals, especially British, and particularly upon the fact that the wages now paid are much higher than those received by the British miners.

The ministers concluded by asking the delegates to see for themselves how this difference could be whittled down, and they suggested, as an alternative, an effort of the miners to materially increase the individual output. At the same time, the ministers assured the miners that it was the intention of the government to extend the measures already taken in view of a reduction in coal transportation rates on French railways.

British Exports, May, 1920, 1921, 1922

<table>
<thead>
<tr>
<th>Country</th>
<th>Gross Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1920</td>
<td>1,239,261</td>
</tr>
<tr>
<td>1921</td>
<td>1,239,261</td>
</tr>
<tr>
<td>1922</td>
<td>1,239,261</td>
</tr>
</tbody>
</table>

QUANTITY AND VALUE OF EXPORTS, MAY AND FIRST FIVE MONTHS

<table>
<thead>
<tr>
<th>Gross Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1920</td>
</tr>
<tr>
<td>1921</td>
</tr>
<tr>
<td>1922</td>
</tr>
</tbody>
</table>

Piers

<table>
<thead>
<tr>
<th>Piers</th>
<th>Gross Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>7,260</td>
</tr>
<tr>
<td>New York</td>
<td>9,700</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>7,990</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>9,700</td>
</tr>
<tr>
<td>New York</td>
<td>7,700</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>7,990</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>10,900</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>10,900</td>
</tr>
<tr>
<td>New York</td>
<td>12,794</td>
</tr>
<tr>
<td>New York</td>
<td>14,200</td>
</tr>
<tr>
<td>New York</td>
<td>13,265</td>
</tr>
<tr>
<td>New York</td>
<td>23,450</td>
</tr>
<tr>
<td>New York</td>
<td>23,450</td>
</tr>
</tbody>
</table>

Bunkers

<table>
<thead>
<tr>
<th>Bunkers</th>
<th>Gross Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>7,260</td>
</tr>
<tr>
<td>New York</td>
<td>9,700</td>
</tr>
<tr>
<td>New York</td>
<td>7,990</td>
</tr>
<tr>
<td>New York</td>
<td>9,700</td>
</tr>
<tr>
<td>New York</td>
<td>7,700</td>
</tr>
<tr>
<td>New York</td>
<td>7,990</td>
</tr>
<tr>
<td>New York</td>
<td>10,900</td>
</tr>
<tr>
<td>New York</td>
<td>14,200</td>
</tr>
<tr>
<td>New York</td>
<td>13,265</td>
</tr>
<tr>
<td>New York</td>
<td>23,450</td>
</tr>
<tr>
<td>New York</td>
<td>23,450</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Quotations</th>
<th>British Coal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiff</td>
<td>7.50s</td>
</tr>
<tr>
<td>Admiralty, Large</td>
<td>7.25s</td>
</tr>
<tr>
<td>Steam, Smalls</td>
<td>7.60s</td>
</tr>
<tr>
<td>New York</td>
<td>7.50s</td>
</tr>
<tr>
<td>New York</td>
<td>7.60s</td>
</tr>
<tr>
<td>New York</td>
<td>7.60s</td>
</tr>
<tr>
<td>New York</td>
<td>7.60s</td>
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<td>7.60s</td>
</tr>
<tr>
<td>New York</td>
<td>7.60s</td>
</tr>
<tr>
<td>New York</td>
<td>7.60s</td>
</tr>
</tbody>
</table>

*Advances over previous week shown in heavy type: declines in reds.
Consumers Seem Shy; More Inquiries for July Delivery

Much interest evinced in spot market—Orders following freight cut not up to expectations—Where possible, buyers await Washington developments.

Consumers are still hesitant, but show considerable interest in the spot market. The freight reduction has not yet been productive of the volume of orders anticipated after July 1. The buyer who can do so is still delaying in the hope that the Washington conference will bring about an early resumption and lower coal prices. There is, however, a growing line of inquiry for July deliveries.

The rail trouble is not apparent on the surface but nevertheless it constitutes a disturbing factor in the situation for consumers, as their stocks are sadly in need of replenishment. Demand at tide is still below the line call and prices at the piers are held down by offerings of Southern coals.

**NEW YORK**

An offering of about 200 tons of Leeds (English) coal at $6.50, harbor, or about $7 alongside, was reported during the week. Those wholesale dealers who had been offered the coal were acting carefully before deciding the question of purchase. It was not thought likely that the English coal would be brought here in large quantities, at least not so long as the output of domestic coals continue on the present basis.

Inquiries are rapidly increasing, many prospective buyers asking particularly about July deliveries. There were less than a thousand cars at the piers on July 7. Line demand was stronger, with equally more strength in quotations.

Southern coals are in steady demand, with quotations gaining strength. Considerable of these coals are coming forward, most of it, as heretofore noted, on consignments. Quotations to this harbor ended $8.00 @ $8.50.

Quotations changed frequently during the week. Some unclassified coal said to be equal to Pool 9 was offered around 70c.00 a ton in the week, while later straight Pool 9 was quoted 41.5c and Pool 10, $3.85.

**PHILADELPHIA**

Hesitant but anxious fully describes the consumers' attitude. There can be no question as to their need for coal as many are believed to be much lower on their reserves than has been their wont for many a day. Yet even with the freight reduction wiped off the boards as an excuse, they are more than hopeful that the President's conference is going to send the men back to work.

So far as surface conditions are discernible the railroads are going along as usual, but underneath there is no denying that rail movement is not all that it should be. The consumer would like to have more coal if the rail strike is going to be prolonged, but he does not want to pay too much for it. Progressive action is expected as soon as mined, although considerable shrinkage in tonnage was experienced on account of the two-day holiday.

Prices have further increased, with quotations barely being made except on the unclassified coals, as all other grades are quickly moved on previously entered orders. Quotations have greatly increased of late and while a very large percentage of them can be placed in the curiosity class, quite a goodly number are productive of actual orders.

**CENTRAL PENNSYLVANIA**

Production reached the strike peak in June. Figures show 15,535 carloads, as compared with 11,015 in April and 12,122 in May. This is about a 15 per cent production in comparison with March, when the expectation of a strike led to an unusually high tonnage.

Prices were raised slightly. Pool 1, the best grade, is selling at $4.50, while Pool 10 is $4.25. Other grades are around $4.

The strike situation is very quiet throughout the field. President John Brophy of District No. 2, U. M. W., attended the Washington conference. There was no disorder over the holiday season.

**UPPER POTOMAC**

After enjoying a period of peace for a few weeks, the Upper Potomac saw further strike demonstrations last week. This resulted in the arrest of at least a hundred miners and their wives. Notwithstanding the efforts of the union to prevent operations, production continues to grow. There are approximately 35 mines now producing. There is also a brisk demand for coal, which is commanding fancy prices.

**BALTIMORE**

As the rate cut of July 1 was just about offset by tighter prices due to the fact that shipments to this point had fallen considerably just prior to that date, the price of coal failed to develop. Local consumers are buying in strictly limited quantities and no effort at storage is noted. While some 30,000 tons of coal from Hampton Roads has recently been barged to this city, as a relief to the scant movement of B. & O., and particularly Pennsylvania, several leading producers believe that the large movement of coal will be curtailed. In coal circles it is felt that a move recently made through the C. A. T. from mines direct to Baltimore will allow delivery of New River coal at a price which will prevent active water-borne competition as has been going on recently.

The all-rail tariff established to run from July 5 to Oct. 31, is $3.65. The barge-borne coal is also under an increasing handicap, as when this movement began charters were available at 50c.00 @ 60c. While at present the demand rate is between 80c.00 @ 90c.

There is a tight market evident, and little quibbling by purchasers when they actually need coal. While the export situation has been abruptly stagnant since April 10, there is now a steady growth of the use of bunkers.

**FAIRMONT**

Less mines were working during the last week of June than during the previous week and yet production was not as high as a level. With the approach of July there was much more violence and disturbance on the part of strikers than had been the case up to that time. The strike. It became necessary to swear in hundreds of deputy sheriffs for the protection of life and property.

While the supply of coal has been cut off considerably, the supply of fuel has been cut off by the strike. No special attention was paid to grades or preparation, mine-run and washed coal being loaded at the same time. The figures show the prices basis being about $2.50. Some contracts have been closed for the remainder of the coal year with railroads that formerly used western Kentucky coal, and new industrial contracts have been made in the Mississippi Valley. Inquiry from home territory is still comparatively light. Domestic demand has not improved materially.

Big Seam mine run is quoted at $2.25, washed at $2.50 @ $2.50, the prices on all other grades of mine run being around $2.50 @ $2.60, washed at $2.50 @ $2.75.

Quotations on lump and egg follow:

- **Carbon County**: $2.75 @ $3.00
- **Catharine**: $2.50 @ $3.00
- **Hiawatha**: $2.50 @ $3.00
- **Corona**: $2.50 @ $3.00
- **Montana**: $1.50 @ $1.75

Production during the week of June 24 was the highest for any similar period since 1917, the record year, a total of 300,000 tons being reported. A number of mines have been idle but the report for the past twelve to eighteen months are now active again on full time.

**SOUTH**

**BIRMINGHAM**

The market was very active last week, and there was a strong demand for all the free steam coal available. The anticipated production for the next thirty days being sold up. Railroads were the principal purchasers, most of the coal going into sections where the supply of fuel has been cut off by the strike. No special attention was paid to grades or preparation, mine-run and washed coal being loaded at the same rate. The figures show the same prices, the price basis being about $2.50. Some contracts have been closed for the remainder of the coal year with railroads that formerly used western Kentucky coal, and new industrial contracts have been made in the Mississippi Valley. Inquiry from home territory is still comparatively light. Domestic demand has not improved materially.

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**VIRGINIA**

Output is averaging 225,000 tons a week as against a potential capacity of 250,000 tons. In other words, production was averaging about 90 per cent of capacity and in some parts of the field was on even a larger scale. "Now that the fire about the mines direct to Baltimore will allow delivery of New River..."
Anthracite

Consumers Show No Concern As Domestic Stocks Dwindle

Buyers Ask Early Delivery, but Orders Are Small—Scarcity of Hard Coal Moves Storage Pea—Booking of All Steam Coal at Mines Brings River Barley to Forefront.

DOMESTIC supplies are running down, with little interest being shown by consumers. What orders the retailers do receive are being listed for delivery at the earliest possible moment, but the volume is not large. The impending State tax on coal looms as a factor which may offset the saving made possible by lowered freight rates. The freight re-
duction, of course, will not be applicable to coal now in storage, such tonnage being considered as in transit.

Storage pea is about all that is being offered now and the scarcity of hard coal is moving much old tonnage of this size. River barley is in the limelight, as practically all steam coals at the mines have been moved or booked on order.

NEW YORK

Most city dealers have nothing but pea and buckwheat in their yards. Buckwheat is fast disappearing and wholesale dealers predict that with the movement of pea coal continuing a few weeks longer on the present basis it too will soon be cleaned up.

The order books of producers are being rapidly filled, retail dealers following their usual custom of placing or-
ders for their requirements. With three months' production already lost producers and wholesale dealers are realizing that the principal question to be decided when mining is resumed will be that of distribution.

Consumers are now looking at the situation differently than they did a few weeks back and many have placed their orders, knowing they must not expect deliveries in whole.

Coal moved prior to July 1 and now in storage is considered to be in transit and will carry the old freight rate of $2.61 for domestic sizes and $2.47 for pea and smaller sizes until delivered to the purchaser. The new freight rates to this tidewater are $2.34 for the larger coals and $2.22 for pea and smaller.

PHILADELPHIA

The principal occupation of the re-
tailers during the past few days has been to list their customers' requirements for delivery at such a time as fresh-mined coal may be available. For the present the greatest pressure of this kind comes from the fellow who in the spring was absolutely cer-
tain that retail prices would drop se-
veral dollars a ton. A trip to the mining regions reveals that the miners are buoyed up by the hope that the Washington conference will be successful and are actually anxious to get back. In the matter of lower prices there are some who feel that even the advantage of lowered freight—which for P. & O. deliveries are $2.30 and for $2.14 on pea and smaller—will be lost in the imposi-
tion of the state tax on coal. While no company has made any decision in the matter, it is not expected that at least some of them add the tax as a separate item, pending a final decision by the highest court.

There is no coal left in the city but pea, and this is selling fairly well. In the steam trade the only offer-
ing is in river barley, which is moving well, with the top price still at $2.75.

Dredgers are seeking an outlet among local shippers and even yet the offer-
ings are considerably heavier than the sales.

BOSTON

There is dearth of news here on hard coal. The retail dealers in the larger cities are practically stopped taking orders for spot delivery. Res-
erves are at a low point, and these are being kept for hotels, hospitals, and other necessary summer and early fall requirements. The only fill-up orders being taken at all are in the form of memoranda for delivery later on if and when the dealer has the coal and at the price current at time of delivery. This seems to satisfy a remarkably large number of householders.

At wholesale the only merchandising is in pea and buckwheat. A fair volume of pea is being shipped at prices that are practically the same as those ruling last month. A few of the producing companies still have a supply of this grade and although bag holes have been made in the reserve.

BALTIMORE

With New England and the North-
west growing more insistent for hard coal there looks to be scant prospect of any material receipts in this terri-
tory in the near future, even should the strike come to an abrupt end. Lo-
cal yards are now almost without any stocks, but the public remains ap-
parently without great fear of short-
age. There are few inquiries for fu-
ture deliveries.

BUFFALO

No coal is coming in, as all that was held at the mines appears to have been moved and sold. A few concerns still have a little coal, but the de-
mand for it is small. It is estimated by dealers to have from 80,000 to 90,000 families in the city that have little or no coal, yet they are mak-
ing no effort to get any. The general advice is to buy substitute fuel if it is to be had. It is expected that natural gas, including the byproduct gas from the local coke

ANTHRACITE FIELDS

All interest is now centered in Wash-
ington and everyone is anxiously wait-
ing some action to be taken there. The field was quiet last week. The main question on the lips of everyone in the coal field is when it will be over. There is, however, a great deal of restlessness being displayed.

Coke

CONNELLSVILLE

The coke market has taken a stiff jump, being now quoted at $9, with higher prices talked of. There is usually no distinction between “fur-
nace” and “founding” grade. Most of the coke is in the oven 72 hours or longer, and as to selection there seems to be little if any of that, so that op-
erators offer their product merely as “coking coke.”

The advance, however, is a sort of tempest in a teapot. The amount pass-
ing through the open market is hardly large enough to operate the furnaces of moderate size. Occasionally a blast furnace may buy a little coke, but most of the sales are to foundries and miscellaneous dealers.

Consumers normally tributary to the Connellsville region are turning their attention still more to cokes from other districts, particularly West Virginia and Alabama. There is no movement to displace Connellsville, though the price redu-
tion July 1 helps as well. The by-
product ovens are the mainstay of the furnaces now.

The Courier reports production dur-
ing the week ended July 1 at 55,040 tons by the furnace ovens and 15,170 tons by the merchant ovens, a total of 70,210 tons, an increase of 2,180 tons.

UNIONTOWN

The shopmen’s strike has affected fuel movement in the Connellsville region only on one road, that of the B. & O., and there are now orders on the books for coke which the carrier is making some progress in re-
organizing repair crews. So far the Pennsylvania has been able to supply maximum requirements for coal and coke loading and to move the fuel freight promptly.

While uncertain delivery due to the shopmen’s strike has joined curtailed production to “bear” the coal market, prices have not yet commenced to soar. Steel interests are receiving de-
creases on orders placed 60 days ago but are not placing new ones. The railroads today are the principal coal buyers. There is not enough free coke being produced for blast furnace re-
quirements and the odd lots offered are being grabbed at sky-high prices.

BUFFALO

The demand has suddenly improved, on account of the discovery that some-
thing was needed to take the place of anthracite for use in the canning fac-
tories and evaporators, which cannot use ordinary bituminous. Besides the city experts are advising consumers of anthracite to buy coke. The local ovens have a supply and will sell it about on a par with the others. The regular furnace demand is still small.
Chicago and Midwest

Shortage of Coal Rules Market in Middle West

It is Now a Case of “Anything Black” Instead of “What’s Your Price?”—Disabled Transportation Plays Main Role—Market Freaks Common.

COAL trade in the Midwest region has reached a point where price is not the controlling factor. Nowadays the main struggle is to get the coal. During the past few days this region has been almost cut off from eastern Kentucky and other Eastern fields by transportation failures of one sort or another and in western Kentucky, the other principal producer, the situation was not much better. Concerns which have been jobbing coal since the strike began are now actually turning away business, informing customers that car jams and locomotive failures on the L. & N. and C. & O. have reduced the eastern Kentucky fields to 25 per cent production and western Kentucky to about 50 per cent. With stocks everywhere running low and railroads beginning to suffer, everything salable is selling, freaks of the market are common, and prices are pushing steadily upward.

“Coal men might as well take theirs now while they can,” commented one of them who has weathered many such years as this, “because this condition is absolutely unstable. Just let some definite plan for possible resumption of wages go through, it left the Washington and these prices will flop to the bottom overnight.” However, there is no unanimity of opinion on this point. This is a trend that will be so slow that the chance to change course, even if such a course is desired, is best missed.

The shortage is such that within the past two weeks railroads in Chicago have bought screenings from retail yards by the wagon load and since “anything black” will sell, slack piles in Indiana have been opened up and their contents loaded and sold at $2.50 and even $2.75. In one case a pile at a mine which was closed down years ago was selling day by day at that figure.

CHICAGO

Demand is keen, supply short and the general upward trend of prices continues. At the end of the week just closed, western Kentucky had reached $8.25 and operators in eastern Kentucky were giving distinct evidence of getting ready to break over the Hoover maximums which most of them have been observing. Reports have been current of less active companies selling at figures past $4. Unless the Washington conference produces some definite effect upon the strike at once, eastern Kentucky will get out of hand and bound upward.

The greatest difficulty is getting deliveries. The car jams and motive power shortages around the working fields may cause coal to a point where, at the end of last week, the arrival of 25 cars here was enough to stir up quite a good deal of animation. A number of railroads are getting so hard put for fuel that the fuel committee of the Western lines has fallen far short of supplying the demand and practically every road is buying whatever it can get, wherever it can get it.

Practically no smokeless is reaching here for the open market, although contract customers are getting small deliveries. Dealer demand is refreshing fast. There is a strong tendency to boost the price, although it has not crossed the $3.75-mark yet.

SOUTHERN ILLINOIS

The last 12 or 15 cars of storage coal held since March in southern Illinois moved out last week and brought $3.50@$3.75 on the market for lump, egg and nut. Nearly all mine fields are now entirely free of members of the United Mine Workers, most of the work being done is by mine foremen who are not union men.

Nothing unusual transpires in Doquin or Jackson. Storage coal in the Mt. Olive field is pretty well cleaned out and nothing is left in the Standard Coal Field except in one advance, the southernmost, which is now being loaded.

INDIANAPOLIS

Retail prices of Pocahontas have advanced 50c, prices ranging $8@$8.50. The higher retail prices have followed the advances in the mines. The decreased freight rates will lower prices on West Virginia coal about 20c, per ton, but local dealers in the last increase say they anticipated this slight cut in fixing the new prices.

Coal stocks in Indianapolis are getting toward bottom, but evidently there is sufficient of the non-union mined coal being offered to prevent any serious shortage for a time. Local jobbers say that from now on coal will be more difficult to obtain in view of the competition. Wholesale rates are only slightly high, which is creating an extra demand.

WESTERN KENTUCKY

Demand is now so heavy that the railroads are having much trouble in supplying cars. With industrial conditions as well as railroads steadily increasing their requirements as old stocks are reduced, the demand is increasing and carrying prices with it. Many buyers are in the field, grabbing all available production.

During the past few days retail inquiry has been heavier and some business has been placed. Consumers who have available cash are beginning to think about their winter needs. Prices on all coals are jumping.

In view of the fact that at the Hoover conference the request of western Kentucky operators for a maximum of $4.25 was refused it left the field under no agreement as to price, and it looks as if we were operating on an open basis of accepting the highest bid for its production.

ST. LOUIS

As a result of the storage piles being nearly wiped out, in a great many instances, Kentucky coal is in fairly good demand, for steam only. It takes from 10 to 20 days for coal to come through on the L. & N., and while the Illinois Central service is better, the operators fear that railroad cannot ship promptly.

Lump, egg, mine run and screenings from Kentucky are quoted $4.50@$5, depending upon the quality, the promptness of shipment and the preparation.

 Dealers, however, still refuse to buy Kentucky coal for domestic and even the steam buyers are going slow for the next three weeks or more.

Some Alabama coal has been moving in, but part of it has proven unsatisfactory. Some West Virginia smokeless is moving in for domestic.

LOUISVILLE

General demand continues strong, with railroad consumption steadily increasing. Retail buying is heavier. Prices in western Kentucky are shooting up, and are now $4.25@$4.50 for all sizes. Eastern Kentucky is making an effort to stay with the $3.50 maximum, but in so doing is beginning to object to paying brokerage.

Prices, except a little on the stronger freight rates, are still in the light. Further rapid increase in freight rates, more inquiries are being received, and indications are that higher markets will result, and that some operators in the East will start operating will be in the swing again.

The shopmen's strike is threatening production as a result of further congestion of already overloaded terminals and shop tracks, with cars to be repaired, and shortage of motive power to move cars.

Canada

TORONTO

Demand for anthracite is increasing and dealers find it impossible to fill orders. The call for bituminous continues light, with sufficient on hand and carrying forward and filling all demands. In addition to shipments from the non-union mines, some consignments from Nova Scotia are being received by water. Prices for bituminous are showing an upward tendency.

Quotations are as follows:

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<th>Description</th>
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<tr>
<td>Anthracite, stove and nut</td>
<td>115</td>
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<tr>
<td>Pen</td>
<td>90</td>
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<td>Bituminous, stove and nut</td>
<td>120</td>
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<tr>
<td>Lump</td>
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<tr>
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COAL AGE

Vol. XXII, No. 2

West

Panicky Feelings Run Through North Region

Country Cries "Coal! Coal!" When There Is No Coal—Industries Have Not Yet Suffered—Anti-Boarding Move Is on—Prices Tend Upward.

PRACTICALLY all of the Northwest is enjoying the same nightmare: Will there be enough coal for next winter? A panicky sensation fills most breasts, for the dock storage is about gone, little coal is coming in, and wholesalers are carefully portioning out contract coal to the most needy and turning away practically everybody else. A rush of orders is swamping the coal trade, especially since the drop in freight rates failed to have any effect on coal prices. In some sections, notably around Milwaukee, an effort is being made to prevent hoarding of anthracite.

Industries thus far have been able to get just enough coal to run on but none for storage. The feeling is that they will not suffer if a strike settlement comes soon. However it will have to come very soon if the Northwest as a whole is to have coal this winter at a reasonable price.

MINNEAPOLIS

The coal market in this section of the Northwest is getting panicky. Consumers are piling in orders upon coal merchants, and fill but a small percentage of them because the dock surplus which once this summer seemed so large, has been absorbed by contracts until a small supply is now gone and little is arriving. A number of wholesalers are refusing to accept business for the future because of the uncertainty. The July 1 reduction in freight rates, upon which some consumers banked for a drop in coal costs, came like a paper dividend—it is practically valueless because there is no coal.

The Washington conference between operators, miners, and the government has come plenty late enough for the Northwest’s comfort of mind. It is generally feared here that the negotiations there will lead to some sort of compromise instead of a clear cut settlement and that no marked reduction in coal prices will result in this region.

MILWAUKEE

Milwaukee is worried about coal. Dealers have plenty of orders but little with which to fill them. The situation is particularly acute in the case of hard coal. There is a small supply of egg, pea and buckwheat on hand, but most consumers want stove and chestnut sizes. At a public meeting of representatives

Northwest

of coal companies and civic organizations on July 5, a member of the trade held that if the strike is settled by Aug. 1, enough coal can be mined to supply the needs of the winter. Steps were taken to prevent hoarding of hard coal.

Manufacturers have been able to get enough soft coal thus far. Dealers think there will be no great inconvenience to industries.

Hard-coal prices remain unchanged.

Following is the schedule of prices on soft coal and coke, established July 1:

Pitts. Hooking & Yough, screened. $9.75
Pile run. 7.75
Screenings. 6.75
West Virginia screened. 8.00
Pile run. 7.00
Screenings. 6.00
Pocahontas screened. 10.75
Mine run. 9.25
Screenings. 6.50
Smoothing. 10.75
Kanawha Gas mine run. 7.50
Ill. & Ind. screened. 6.50
Pile run. 5.50
Screenings. 5.00
Coal, large sizes, Pea and nut. 10.00

Receipts of coal by Lake up to July 1 aggregate 760 tons of anthracite (screenings) and 606,261 tons of Pocahontas coal, against 392,200 tons of the former and 1,167,170 tons of the latter during the same period last year.

DULUTH

Shortage in coal has developed at the Head of the Lakes, and it is authoritatively stated that there are not more than 550,000 tons of bituminous coal and 250,000 tons of anthracite free on the docks. Matters are not yet at what will be termed a crisis, but the general outlook is far from encouraging.

One of the greatest contributing causes to the present situation are the terminal costs which have been made on the supplies here. Normal markets have taken but a small portion of the coal which has been shipped from here. Much has been sent by boat to Lake Michigan points, and even more has gone by rail to out-of-territory points.

Since last week two cargoes have been shipped to Lake Erie, and one has arrived here from Lake Erie. One more is reported as on the way. This will bring the total arrivals to 300,000 tons.

Dock men have adopted the two or three car policy here. They will not take orders for more than this amount and are endeavoring to allocate the supply as evenly among anxious customers of long standing.

The anthracite situation is even more stringent. Forty per cent of all hard coal is anthracite. A large portion of the remainder is pea. Local dealers are known to be well taken care of, but country dealers are far below their requirements.

Prices on all coals are firm with some dealers showing a disposition to raise 5c.

Unlooked For Improvement Noted in Market Conditions

Mild Reaction Surprises Trade in General—As Shipments From Some Quar- ters Rise, Others Shrink—Quotations f.o.b. Norfolk Up 20c@25c.

A MILD reaction has set in and the market shows a degree of improvement that was hardly looked for by the trade in general. While a few of the larger non-union operations are shipping coal in somewhat larger quantities, there are a good many others where local labor troubles have cropped out again. Production in the New River field, for instance, is now nearly 50 per cent, but in Somerset and other sections of Pennsylvania there is enough interruption to make output quite undesirable. Apprehension of railroad troubles also has been a factor during the past week, and taking everything together the range of quotations f.o.b. Norfolk and Newport News is up 20c. @ 25c.

At Hampton Roads on July 5 the tonnage actually available for dumping was about 100,000 tons less than on June 26. The holiday would account for some of the difference, but on the other hand more sales were made and the 25c. reduction in tolls had already been discounted.

At handling points inquiry is only relatively better, for the tonnage in request is by no means large, but buyers who waited for the freight reduction and to see if coal would not sell for less are now obliged to enter the market for current requirements. The railroads and large mills still have comfortable reserves when slack operation and reduced traffic are considered, and it is still hard to see where any broad market can develop during the summer.

Coastwise freights share the improvement that is noted in the demand for coal. On large vessels for spot loading there is a small premium being paid, a few having been chartered at 95c@$1 to Boston or Portland.

There is little change in the Pennsylvania grades, at least with respect to the amount of coal offering. Pair grades, when available, are quoted rather higher, due to improved demand at Hampton Roads and higher prices in consequence on the smokeless grades for delivery in New York harbor. Washington and New River being shipped from Tide-water re-handling points as far inland as Springfield and Holyoke, however, there is little slack. Michigan ports and Pennsylvania grades on any high range of price, even though the smokeless factors are now asking $8@$8.25 on cars at Providence, Boston, and Portland.

New England
Eastern Inland

Supply Inadequate to Meet Enormous Demand for Coal


DEMAND is enormous and the supply inadequate. Producing mines are handicapped by car jams and shortage. Prices have advanced above the Hoover level and $3.50 now represents the low of the range. Consumers eagerly take any tonnage that can be obtained. Reserves have been allowed to run down to such an extent, awaiting lower freight and the possibility of union resumption of mining, that immediate replenishment is necessary. The shortage will be serious if production cannot be increased at an early date.

Lake buyers are growing very anxious. The local demand is so if production cannot be increased at disadvantage. Much Lake tonnage must be crammed into the remainder of the season if a troublesome scarcity is to be avoided.

BUFFALO

The holiday set a slow pace for the week. Prices are a little stronger week by week. While consumers declare that they are not able to pay big prices they at the same time allow them to go up slowly. All the while the supply is rather in excess of the demand, though probably not greater than consumption. Everybody feels that the crisis is near and yet nobody is ready to express an opinion as to what is likely to be done. Consumers as a rule have coal enough for the present. Some of them report that they are offered more coal than they want and some have bought little or none yet. Others have looked for bargains and so have kept up their stocks. Prices are strong on the basis of $4.50 @$4.50 for 2-in. and $4.25 for mine run and slack, with slack most in demand. Add to this $2.69 for Allegheny Valley and $2.54 for Pittsburgh and No. 8, with various intermediate amounts for Bessemer, to cover new freight rates.

Receipts by water have run pretty uniform for the past few weeks. For the last week they were 54,980 tons; for June, 266,500 tons and for the season, 775,750 tons.

CLEVELAND

The long expected famine conditions have arrived. Demand in the last few days has been enormous and persistent, but unavailing. The railroad shipper’s strike has been a factor of importance in cutting down mining operations. Car shortages have developed and coal which was taken from the mines in the latter half of the past month passed the scales yet in many cases.

Consumption continues at an uniminished pace, despite the summer weather which has lull in business operations. As a result dealers are being bombarded with inquiries, in sharp contrast with the indifferent attitude of buyers a few weeks ago when hopes ran high for a settlement of the strike before July 1. The present condition bears out the prognosis that when the country’s total stocks fell below 20,000,000 tons the danger point would be reached. Consumers are no longer pinning any hope for immediate relief in strike settlement, believing roads and to mining production is improbable within the next few weeks, in any event. In the meantime they need coal urgently. Prices are rising, the range being $4@$4.50.

The scene on Lake is beginning to look serious. This year’s record is below the 1920 showing, when shipments were restricted early in the season by the outlawing of railroad stocks. A pooling plan for Lake shipments similar to that employed to meet the needs of the Northwest in 1920 is possible this fall.

COLUMBUS

A stronger demand has developed since July 1, when freight rates were reduced. The movement is heavier. All classes of purchasers are now coming into the market. Prices have advanced to the Hoover levels with point quotations made slightly above to cover jobbers’ commissions.

The best buyers at this time are the utilities and those who are rather long on their reserves. Railroads are buying rather briskly. Retailers are also placing orders. One of the features is the demand for threshing coal. Lake prices are progressive as well as could be expected. The H. V. Docks at Toledo loaded 170,160 tons during the week ended July 5, making a total of 1,301,650 tons for the season.

EASTERN OHIO

Consumers appear to be in imminent danger of facing a coal shortage. Due to traffic congestion on originating railroads and to intimidation and other interference with stripping mine operations in eastern Ohio, the quantity of coal available in the spot market during the first week of July was reduced to a point where the supply is having difficulty in meeting the demand.

Inquiries are noticeably more numerous and to a few shipments plants will be in dire need of coal within 30 days. Along with a more widespread demand for coal, prices have stiffened. However, local prices are cut to minimum, with steam coal quoted up to $4.15.

There has been quite a let up in receipts at the lower Lake docks during the past few days as the demand in other trades is increasing. It is quite evident that the bulk of cargo coal will have to be sent out of the Lakes during the last 60 days of the regular shipping season in view of the fact that for the current season up to July 4, including $16,080 tons sent to Buffalo and other Lake Erie ports, shipments were only 3,684,465 tons. Movement for the same period last season was 9,635,780 tons.

Receipts of bituminous coal at Cleveland during the week ended July 1 show a slight increase over the preceding week, the total being 1,747,026 cars, 1,026 to industries and 119 to retail yards.

PITTSBURGH

A policy of silence is maintained by coal operators as to the details of contracts at West. Partial admission is not made that there was something in the rumors prevalent before the President called the conference that Wellington coal operators intended to attempt a combination of the mines, on an open shop basis.

Nothing came of the proposal of the Pennsylvania state department of conciliation that a conference be held July 6 between operators of No. 2 and No. 5 districts, in Pennsylvania, of the U. M. W. and officials of the district organizations. The time was fixed at the appointed time and place and the miners’ representatives did not.

Trading is still confined almost wholly to Connellsville steam coal, which has strengthened to $6.50 at some points now at $4.75. The market is still well below the $4.50 maximum the Connells- ville operators wished. Secretary Hoover to countenance. There is a larger number of buyers in the market, while the big consumers are hardly as active as formerly, with the reason of demand is not materially changed.

One large consumer has refrained from buying spot coal for a fortnight or more in the last 60 or 90 day contracts, indicating a continuance of the belief, that after the strike coal will be far from plentiful. As a whole, the non-union strikes in the Connellsville region have not waned any in the past fortnight, as they had been doing previously.

DETROIT

Prior to July 1, it was supposed that consumers were withholding orders to be in position to take advantage of whatever saving might be possible with the application of the reduction in railroad freight rates. Now, the resumption of demand is not materially changed.

One large consumer has refrained from buying spot coal for a fortnight or more in the last 60 or 90 day contracts, indicating a continuance of the belief, that after the strike coal will be far from plentiful. As a whole, the non-union strikes in the Connellsville region have not waned any in the past fortnight, as they had been doing previously.

NORTHERN PANHANDLE

Steady gains are being made in output during the last week of June and at the outset of July. Nearly all the mines are in operation, the effort of the United Mine Workers to interfere with production having proved to be a flat failure. Mines find a ready market for their output, a large proportion of which is being utilized by transportation companies.
COAL

LOW-VOLATILE FIELDS

The strike is no longer having any material effect in curtailing New River production, which has been above 350,000 tons this week, with all mines working on a basis approaching normal, although some are without full crews. Some loss of output is due to a car shortage. Coal has accumulated at the Tidewater piers and there has been a slow movement of empties back to the mines.

POCOHONTAS AND TUG RIVER

The same factors which have been responsible for retaining production to some extent in other smokeless fields have also handicapped Pocahontas producers, although the output toward the close of June was about 450,000 tons per week, which represented the peak of production for the month. The advent of July, with lower freight rates, has brought heavier batches of orders and more inquiries.

Tug River mines slipped a cog or two during the latter part of June but were still producing in the aggregate more than 110,000 tons, not all of which however was available for commercial purposes, since a large proportion of this output was going to industrial concerns, including steel mills who control a number of the mines in this region. The demand to Western markets was particularly heavy.

HIGH-VOLATILE FIELDS

KANAWHA

The field at the outset of July began to feel a quickening of demand as a result of the lowering of freight rates. There is a ready market for what tonnage is available, further gains having been made in the output toward the close of the month despite threatened trouble on Paint and Cabin creeks which necessitated calling out two companies of militia.

LOGAN AND THACKER

All previous production records in the Logan field were smashed during June, the output reaching nearly 400,000 tons during the last fortnight of the month. This fuel produced is going to steel centers and the Lakes, with railroads also securing a large tonnage. At the beginning of July there was a better demand for domestic.

In the Kenova-Thacker field mining activity is marked as a result of the excellent demand. This field is now producing in excess of 200,000 tons a week with nothing to curtail production except the difficulty of securing more men and congestion on railroads, owing to the heavy movement.

NORTHEASTERN KENTUCKY

After holding back on account of the reduction in freight rates consumers were more conspicuous when the lower rates did become effective. This limited to increase production insofar as was possible in view of the difficulty in securing empties. There was also a better demand for domestic fuel than had been observed during the greater part of June. With buying on a heavier scale, prices stiffened somewhat.

WEST

KANSAS CITY

The one thing that stood out prominent last week was the decision by the vote of the Howat followers to return to work. As they were expelled by the miners' union and are no longer members of the U. M. W., it is not clear how the mine operator's can employ them, and as Kansas industries want coal, what will the Industrial Court Law of the state have to do if they open their mines and give the men who apply for work, their old jobs back? It looks like a shrewd move on the part of Howat to check on the operators and at the same time get back at Lewis.

One of the companies that opened two of its mines by leasing them to the miners and selling the coal on a cooperative plan, is getting out about 25 cars per day and is considering putting all of its mines on the same basis. It is said that all the men necessary to operate, have applied for work, but what they will do after the other mines open up and pay on a regular agreement basis remains to be seen. Will they continue to work for a unknown wage (which depends on the price received for the coal) or will they desert and go to the mines where a stated wage is paid?

Prices are getting very ragged. Some mine run from the Kansas field is selling as low as $3.75 and as high as $4.75 and what little slack there is available is selling for as high as $3.75, while the list is $2.85. Lump coal is bringing $5 and there is very little demand.

SALT LAKE CITY

Pacific Coast buyers are again looking to Utah for their supplies as a result of the reduction in freight rates. It is many months since local operators did any business with them and the local market has not changed much. Domestic consumers are not buying, except a little for immediate needs, with the result that the market is low. Some of those who are in touch with strike conditions are getting a little anxious. Coal is being mined today at about half the rate that was necessary if there is to be a good supply in consumers' bins next winter, according to one prominent operating official.

Some weeks ago the operators made a slight reduction to the retailers of 25c.@50c., according to grade. This was a sort of unofficial reduction and old prices—which include $4.50 for lump—are in effect again.
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district,
announced
by
William
Loch,
Jr.,
vice-president
of
the
company.

MINNESOTA
R.
H.
Salter,
for
many
years
head
of
the
Western
Weighing
&
Inspection
Department,
has
resigned
to
go
into
the
general
business
for
himself
at
Victoria,
Minn.
Mr.
Saltor
is
prominent
in
coal
matters,
as
he
has
lived
and
worked
in
Duluth
for
many
years.

MONTANA
More
exhaustive
determinations
with
re-
gard
to
the
flow
of
air
in
restricted
passages
and
the
ventilation
of
the
workings,
before
they
have
been
measured,
will
be
begin
in
the
coming
months.

NEW YORK
Wesley
Lieb,
who
was
associated
with
W.
A.
Marshall
&
Co.,
for
some
time,
has
been
employed
by
The
Western
Coal
&
 Coke
Co.,
1
Broadway,
and
will
be
sales
manager
for
the
firm.

OHIO
Eight
coal
companies
in
Ohio
will
lose
the
money
for
coal
sold
the
state
institutions
under
illegal
contracts
against
a
year
ago
as
was
recovered
by
special
ap-
peals
of
the
legislature.
This
is
the
substance
of
decisions
rendered
by
Judge
Sowers
in
Common
Pleas
Court
in
which
it
is
held
that
none
of
the
coal
sold
under
these
contracts
was
in
fact
sold
by
the
companies.
The
companies
in-
volved
are:
Jenkin
Coal
Co.,
Columbus,
$21,851;
Kinwood
Coal
Co.,
Columbus,
$2,758;
Jenkins
Creek
Coal
Co.,
Columbus,
$2,414;
Jenkins
Creek
Coal
Co.,
Columbus,
$3,413;
Caster,
Vickery
&
Dundie
Coal
Co.,
Columbus,
$1,000;
Mr.
Vigor
Coal
Co.,
Cleveland,
$16,323;
H.
S.
Oakes,
Cleveland,
$15,439;
F.
T.
Taggart,
Massillon,
$3,986.

The
Kinwood
Coal
Co.,
Orton,
is
making
extensive
improvements
in
its
local
mining
district.
Seam
No.
2
is
being
opened
and
a
number
of
entries
prepared.
The
leading
coal
strike
from
the
line
of
the
Hocking
Valley
and
a
new
coea-

tiion
has
been
installed.
G.
K.
Woodward,
of
Columbus,
is
the
head
of
the
coal
company,
which
controls
about
1,000
acres
of
coal
lands
at
Orton.

Pennsylvania
An
appeal
has
been
taken
by
the
Lehigh
Valley
Comus,
Co.,
the
owner
of
coal
lands
in
Northampton
County,
and
the
county
commissioners
have
placed
a
moratorium
on
their
lease
for
the
three
years.
In
the
case
of
$6,748,439,
an
increase
of
$1,908,914
for
the
previous
three
years.

The
original
ap-
peal
was
for
$4,887,885.

Stockholders
of
the
Brier
Hill
Coke
Co.,
attained
a
meeting,
held
at
Brier
Hill,
selected
the
following
officers
for
the
coming
year:
Thomas
McCaffrey,
vice-president;
N.
R.
Folsom,
treasurer; W.
B.
Phelan,
sec-
ty.

The
United
States
District
Court
in
Philadelphia
has
affirmed
the
reading
segregation
case
before
the
latter
body
with
that
the
lower
court
has
concluded
the
appeal
of
the
Supreme
Court
issued
upon
the
same.

The
Burrell
methane
indicator,
developed
by
Col.
G.
A.
Burrell
in
1913,
was
modified
by
the
mine
director
and
is
being
used
as
a
general
indicator.
This
instrument
has
been
issued
by
the
Mine
Safety
Apparatus
Co.,
Pittsburgh.
Approval
has
been
granted
by
this
company
covering
the
device
in
the
form
approved.

The
final
cleanup,
old
coal
mines
of
Allegheny
County
are
being
reopened
with
a
sizable
undertaking
of
the
Railway
from
the
valley
of
the
old
diggings
is
noted
near
Car-
negite
&
Oakeley,
Oakdale,
Chartiers
Creek,
the
South
Hills
and
Mount
Lebanon
district,
and
in
the
Turtle
Creek
Valley,
and
along
the
lower
Monongahela.

Virginia
An
official
has
authorized
the
statement
that
the
virginian
Railway
will
build
a
new
road
through
the
state
by
doubling
the
capacity
of
the
plant
to
dump
coal.$3,000,000
in
an
order
for
pre-
paration.

Construction
of
the
new
pier
will
be
finished
by
the
end
of
the
year.

According
to
present
plans
of
the
156
miners
who
continue
to
work
in
the
pier,
will
be
dumped
onto
carp,
leaving
bunkers
and
other
coal
to
the
pier
now
in
use.

Washington
Senator
Myers,
Montana,
in
a
second
speech
on
the
Herrin
coal
riots,
scored
the
horrible
outbreak
and
those
guilty
of
the
outages.
He
declared
that
the
government
of
the
state
would
be
disgraced
and
would
not
be
fit
to
remain
in
the
Union.

West Virginia
An
injunction
has
been
granted,
restraining
the
United
States
Coal
company
from
mitting
unlawful
acts
or
from
interfering
with
those
interests
of
the
Shanrock
Fuel
&
Transportation
Co.,
at
Hollum.
The
injunc-
tion
is
patterned
after
the
Hollum
case;
in
detail.
The
Shanrock
company
applied
for
and
ob-
ained
injunction
at
Hollum.
It
had
been
by
strikers
to
close
down
the
mine.

The
England
Fuel
Transportation
Com-
pany,
in
who
were
in
danger
of
losing
their
jobs.

The
company
had
been
operating
in
the
area
since
its
former
employees
started
to
make
trouble.
It
had
inhibited
the
effort
to
get
of
the
system.
Traffic News

By a judgment just issued by the Railroad Commission of Colorado, the rates for carrying throughout the state of Colorado 2000 tons of coal, at $1.00 per ton, are held to be just and reasonable.

The decision was rendered by the commission in the case of the Kansas City, 1200 ton, vs. the Kansas City, 1200 ton, in which the railroad company was charged with the transportation of coal from Kansas City, Missouri, to St. Louis, Missouri.

The commission found that the rates charged by the railroad company were not excessive and that the transportation services rendered were adequate.

The decision will undoubtedly have a far-reaching effect on the transportation of coal throughout the state of Colorado.

Obituaries

John H. McEwan, Provo, Utah, who was associated with the late Joseph Knight in the development of the Spring Canyon coal mining properties, was sentenced to prison for embezzlement.

The sentencing was held in the United States district court in Provo, Utah, and the defendant was sentenced to ten years in the penitentiary.

The case involved charges of embezzlement and fraud in connection with the Spring Canyon coal mining properties.

Association Activities

Colorado and New Mexico Coal Operators' Association

The board of directors of the association met at Denver on July 21 and elected the following officers:

President: W. D. Brennan, Volunteers Coal Co., Denver, Col.

Vice-President: J. C. donors, Los Angeles, Cal.

Secretary-Treasurer: R. H. F. Stevens, Volunteers Coal Co., Denver, Col.

The annual meeting of the association will be held in Salt Lake City, Utah, on the 20th day of November next.
Tiding Over a Crisis

BITUMINOUS-COAL operators meeting in Washington this week were able after twenty-four hours of spirited debate to unite on only a partial acceptance of the President's proposal looking to the adjustment of the strike. On but one broad phase of the plan submitted to them, that of willingness to arbitrate and to participate in an investigation of the bituminous-coal industry, were they able to make an unanimous report to the President. Three important areas, embracing all of the unionized fields of Pennsylvania, save a few individuals, and the State of Indiana told the President they could not agree with his proposal. Some thirteen other districts, from the Rocky Mountain region east to Ohio made unqualified acceptance, as already had the anthracite interests. Those taking such affirmative position represent a majority of the districts involved and a majority of the tonnage.

The split in the ranks of the bituminous-coal operators is serious and extremely unfortunate. The President had placed the operators in a serious predicament, not only in his original proposal but by the terms of his subsequent interpretations of that statement. To all intents he asked them to return in every respect to a position of status quo as of March 31. They were asked to pay the peak wage scale, grant the check-off and, it is unofficially reported, reinstate the four-state agreement until such time as a commission could investigate and make recommendations and awards. In other words it was asked in the interest of national welfare that practically every point and principle for which the operators had held forth against the miners' union be subverted. On this general statement there is and was no apparent disagreement.

Where the councils of the operators divided was on a matter of policy—whether to go along with the President regardless of personal opinion as to the propriety or adequacy of his plan or to refuse. So deep is the feeling engendered by the division that all hope of unity on labor matters in the bituminous-coal industry is for the time being lost. The mine owners have proven no match for the mine workers.

The time for recrimination is past. The incomplete acceptance by the operators of the President's plan and its tentative rejection by the United Mine Workers as it were wipes the slate clean. As the President says, the point has been reached where the "good offices of the government in seeking a voluntary adjustment of the dispute between the operators and mine workers are without avail." It is now in order to put forth some other plan of action to get new coal production.

It is quite clear now that the uncompromising attitude of the Pittsburgh operators as set forth in their letter to the President and the equally unbending attitude of John L. Lewis absolutely precluded and still precludes all hope of getting both sides together unanimously. Pittsburgh and those like minded among the operators intend to carry to a conclusion at once the issues joined in the strike of 1922.

There are left the anthracite area and a substantial portion of the soft-coal areas where the President has a prospect for resumption of production on a normal basis. It is in these areas also where the issues must again be brought to focus and settled in 1923.

The Import of the Union's Position

THE United Mine Workers on July 15 declined in principle the proposal of President Harding looking to the termination of the coal strike. Hidden in much language, evidently written for home consumption, one finds that two reasons are definitely assigned for this refusal. One is that the union is opposed to arbitration of wages in any form whatsoever and the other is that, every other consideration aside, the fact that not all union and non-union areas on strike are to be included in the arbitration is a bar to their participation.

The position of the union on the second point is decidedly weak. "The only effective way," they say, to settle the strike and to get the men back in the mines is "by meeting with our representatives in interstate conference." In other words they profess to be ready to follow the deep-rutted path of a Central Competitive Field conference and settlement, which must carry with it, as in the past, subsequent working agreements in the outlying fields based on the results of the larger conference. Yet they refuse to consider a proposal for arbitration that is not national in scope. "The mine workers cannot," they say, "lightly consider the utter abandonment of more than 200,000 of their members to the whims and caprices of hostile employing interests who are publicly committed to the policy of destruction of collective bargaining in the industry."

The real import of the miners' contention here is a thinly veiled challenge to the President to force certain fields into negotiations with them—fields that otherwise are now or are seeking to be free from their yoke. In the bituminous areas there are three separate and distinct strike situations. One, and the most important from a tonnage standpoint, includes the old-established organized areas, as Ohio and Illinois. A second is represented by Kanawha, which is in the process of throwing out the union, and the third embraces districts, as the Connellsville in Pennsylvania, that were non-union before April of this year but where the union has recruited large numbers of the men and greatly curtailed production.

The union leaders are quite well aware that once they resume work on any basis in the older and more important fields their fight for recognition in New River, Kanawha and Fairmont in West Virginia and in the non-union areas of central Pennsylvania will cease to be a matter of national concern and will become instead a local irritation holding for them slim, if any, chance of victory.
What Is Americanism?

Well aware that what we term Americanism neither is nor can be restricted to America we may be assured that what we have regarded as a most cherished possession in America is the right of the American to work when he will and for whom he will without fear of intimidation, to render service to none but to the American Government and to those to whom he is under contract under the terms of that contract, to run his factory, his shop, his mill or his mine subject only to the laws of the country to which he owes allegiance, to be protected by the laws in performing such acts as the government does not proscribe, and not to be browbeaten, insulted, assaulted or robbed by any person or by any body of persons.

Since the strike of April 1 the operators of mines in union districts and the workmen they would employ have been prevented under threats of violence from performing such acts as the law approves, and this restriction has been imposed by an irresponsible body of men known as the United Mine Workers of America.

It is true no great number of acts of violence have been committed. The Herrin massacre and destruction of property is an outstanding example. There have been others which the newspapers quite generally omitted to mention, feeling that disorder was so inevitable around the mines that the violent acts committed were not worthy of notice. Dynamiting, fires, murders, violence and threats have been frequent. That they have not been more numerous is due to the fact that operators and their workers have assented by inaction to this domination—one entirely adverse to the Constitution and not contemplated by the founders of the Republic.

Meantime what has the Government of the United States, and especially of the individual states, done? A few governors like Allen, of Kansas, and Morrow, of Kentucky, have done well. The others have done nothing, and they have asked nothing of President Harding. Wherever there has been intimidation and consequent idleness this should be said to their everlasting condemnation.

In Pennsylvania the work of keeping order has fallen to the state police. The governor knows that this force is inadequate. This has been abundantly proved. Under the intimidation which that official organization has been unable to restrain, men have been afraid to work, operators have been ill-disposed to open their mines. Here and throughout the union mining regions a greater power than the state governments and the United States has arisen—the United Mine Workers of America.

President Harding has been hampered by states' rights. He is restrained by the Constitution. Thus he might be excused for taking no action. But is he disposed to remain silent and to recognize constitutional restrictions? Not at all; if indications are to be believed he prefers rather to take action still less lawful than that from which he has refrained. He is said to propose the conscription of labor and to be preparing to seize and use private property—two things utterly alien to the spirit of the Constitution.

For him to maintain order may be unconstitutional in the absence of invitation by the governors, though many authorities on constitutional law do not believe so. They hold that the lack of order by preventing the free use of labor and the free operation of the mines has impaired the social life of the United States and raised up a power which usurps the authority of our nation and its parliament, which upsets democracy and which gives to a minority a control over the Republic. The nation therefore is in danger, they contend, and action by the President is justifiable.

President Harding's alleged preference for the seizure of properties may be popular with certain noisy voters, but if consummated such a sequestration would be an utter abridgment of individual rights. It is socialism rather than democracy or Americanism, but no one will condemn the President if he tries to restart the mines by enforcing order.

Conscription to work if adopted will be much more difficult to enforce than prevention of interference with those who would work. If conscription is merely a device to give the worker a chance to deny he is a "scab," if it is merely a permissive conscription, then it is weakening to the Republic, for he who would break faith with one kind of conscription is emboldened to defy another. Having done it in peace, it will look less heinous in war.

We are short some three or four millions of tons of bituminous coal per week. Perhaps we should have five million more than we are now getting to feel perfectly safe. A small proportion of the men now idle could supply that quantity. With assurance of safety many workers—probably more than are required—would return to the mines. Even in the anthracite region many would take up their duties if duly protected; not enough at first, it is true, to furnish the coal we need but probably enough to bring the strike—a combination in restraint of trade and openly designed as a means to increase wages above that for which men are offering to work—to an end. Even if it failed of that end, the keeping of order is an action well worthy of the Executive. The first duty of this or any other government is to maintain the peace and to defend the constitutional rights of its citizens.

President Harding has failed to exercise the boldness that is expected from one in so responsible a position—except in regard to capital. When the railroads were failing to earn the interest provided by law, when the Interstate Commerce Commission showed a disposition to maintain the freight schedule in order to produce at least part of the interest which Congress has permitted, he boldly enough called for a reduction in freight rates, declaring they were too high and an impediment to commerce. He was not afraid to announce without any prior elaborate inquiry that freight rates must be reduced.

But after almost all wages had come down, after the Railroad Labor Board had reduced the wages of most of its workmen, after costs of living had been lowered, President Harding declared that he did not know whether the wages of mine workers should stay up or come down. Surely he knew that they had been fixed by a prior government commission with full knowledge and consideration of the cost of living. Undoubtedly he knew that the day workers had struck against the award and had obtained a further increase. Unquestionably he knew that the living cost was lower than when the government commission made its award and that the contract period having ended another contract recognizing the change in the cost of living was imperative. But, nevertheless, when the time came to discuss matters with the mine workers and operators he tried to make it appear that he knew none of these things.
Plan for Shaft Mine Giving Large Capacity and Saving In Stoppings, Overcasts, Doors and Air Costs*

Intakes and Returns Are Driven as Such to a Predetermined Point and Then Both Are Made to Carry Air in the Same Direct'on, So That Temporary Stoppings May Be Broken Down

BY O. J. PLESCHNER†
Westville, Ill.

Said to have originated in the coal field around Westville, Ill., the plan accompanying this article has been used for the laying out and planning of new mines in that field for many years. The general layout has a double-track storage road for loads and two single-track storage roads for empties, one being placed on each side of the main bottom. The loads pass to the bottom from each main haulage road by curves of large radius. The empty cars are pushed off the cage by the loads and from this point until they come to rest in their appropriate storage track they are moved by gravity.

Rolling from the cage to the car lift at A they are automatically raised to such a level that they will run through a spring switch into a kickback at B. The main purpose of this kickback is to give the cars the requisite speed. It handles the cars much better at this point than an "upgrade" would. This kickback can be raised sufficiently to allow a car needing repairs or oil to pass through into the car-repair shop beyond.

The empties are coupled together on the storage track, and the locomotives bringing in the loads pass from the loaded to the empty tracks either through cutoff C or D, the loads continuing toward the shaft by gravity over variable grades from one to three per cent, the latter being the grade provided at the cages.

The four main entries are driven in two pairs, a pillar 50 ft. thick being provided between the two inside entries. This plan affords several advantages both in haulage and ventilation; the first of these latter is the saving of all stoppings between main intakes and returns, except at points where panel entries are broken

*Article entitled "Description of Shaft Layout and Four-Entry System for Large Tonnage Production," read at meeting of Illinois Mining Institute on board "Golden Eagle" during a trip on the Mississippi, June 9, 1922.
†Mining Engineer, United States Fuel Co.
In Idaho Tests Are Being Made of Certain Small Semibituminous Coal Beds

BY HENRY M. PAYNE
New York City

WHERE the freight rates on coal are high all indications of coal are regarded as of great importance. Consequently much interest has been exhibited in some thin beds, or bands, of coal recently found in Idaho, despite their irregularity of thickness, their contorted character, the presence of faults and the temporary stoppings on this and the haulage entries up to this point are beginning to settle and leak.

The absence of practically all crosscuts and stoppings between the main intakes and main haulageways, or returns, fills a long-felt want and should save much of the labor and materials expended in the building and maintenance of permanent stoppings. Furthermore it should provide for a more satisfactory distribution of the air at the face of the workings. Experience has shown that these benefits greatly offset the additional expense of driving the fourth entry.

This system has a further distinct advantage in the ventilation of the mine if the crosscuts between the two entries forming intakes and returns are opened up after the permanent ventilation has been arranged. In case of a heavy roof fall in the intakes the crosscuts and intake airways will provide a detour around the fall until the rock can be cleared up. The system also prevents the air in the return from being baffled by the passage back and forth of the trips of cars. It may readily be seen how the air can circulate around a trip if the crosscuts are open.

This baffling of the air is extremely noticeable also at the hoisting shaft, which is used as an upcast in the ventilating system. In the accompanying plan provision is made to correct this baffling by having an auxiliary upcast adjacent to the downcast and separated by a concrete wall. This upcast is used also as an auxiliary hoisting shaft for the raising and lowering of men, materials, etc.

In mines giving off gas, which would make it dangerous for electric haulage to be on the return, the system can be reversed, using an exhaust instead of a force fan.

![Diagram](image_url)

**FIG. 2. DIAGRAMMATIC CROSS-SECTION OF COULEE AND HILLS**

Note the basalt dyke on the right which forms the small cliffs in Fig. 1, the quartz dyke on the left and the line of a sharp anticline or possibly a fault which causes the coal to be either bent over or sheared, lying between the right face of the left hill and the quartz intrusion.

Igneous rock. The coal, though found above rock of the lower Miocene period and therefore in measures quite recent, has been converted by heat into a semibituminous coal containing about 26 per cent of volatile matter in the pure coal substance.

The high cost of fuel in southern Idaho has led to extensive prospecting along the Snake River and the organization of at least one coal company to develop the islands of sedimentation which occur in the basaltic formations along the north bank of that river near Cobb, on the Union Pacific Ry. Cobb is in Washington County near the line of the State of Oregon.

A general idea of the topography may be obtained from Fig. 1, which is a view looking up the coulee. A
basalt cliff is seen high on the hill to the right, and across the coulee from the wagon road are a number of old prospect holes. In none of these, however, is there any evidence of more than carboniferous shale badly interstratified with fireclay, dipping from 30 to 45 deg. northeast toward the basalt cliff. In the roof rock of one opening a partly carbonized stump is seen.

About a half mile farther up, a tunnel was driven in the left or west side of the coulee for about 750 ft., bearing around to the right and dropping on an incline, like a letter "J." The reason for this will be seen in the cross-section, Fig. 2. The "coal" bed when encountered, was rising rapidly, with the roof rock varying from draw slate to rotten sandstone. This formation suddenly appears as a violent anticline, but from surface examination probably is a fault extending along a general north-south line.

A crosscut was made at this point. The coal in this cut is shown in Fig. 3. It consists of irregular layers of coal, slate, shale, fireclay and other extraneous matter, the broadest coal bands being about 6 in. thick, but irregular and never wholly clean. About 400 ft. from the mouth of the tunnel a winze has been sunk to a depth of about 120 ft., at the bottom of which was found a rhyolitic sandstone with white quartz contacts. The general dip of the strata and a quartz outcropping on the hill above the tunnel would indicate the intrusion of the quartz at this point.

About 30 ft. below the level of the tunnel a crosscut was turned off the winze for a distance of 60 ft. to the north. Here the lesser lamina tions appear to have combined, but only one of them is worthy of note, being 8 to 12 in. thick and wavy, dipping to the northeast.

Frequent masses of fireclay intervene, the roof rock is badly broken, and all development at this point has been stopped. The workings are ventilated, as seen in Fig. 4, by a furnace fed from a pipe extending into the tunnel and down the winze a distance of approximately 450 ft., thus drawing out the air by ascensional ventilation and leaving the whole entry as an intake.

At the left of the wagon road in Fig. 1 may be seen an outcrop opening which is reproduced in Fig. 5. At this point slightly below the level of the tunnel mouth the coal bloom appears about 3 ft. thick, but was not driven to roof rock at the time of the examination. This seam dips to the northeast and probably is the same one encountered in the tunnel, extending to the fault indicated in Fig. 2.

On the south point of the hill, overlooking Snake River, is an old prospect hole showing 7 ft. of badly broken coal interstratified with fireclay and volcanic ash and dipping, like all the other exposures, to the northeast. From this point on around the hill to the west, a clearly defined bench is found, and on the west side, directly opposite the tunnel, is an abandoned prospect hole extending horizontally for about 100 ft. to an intersection with a coal seam said to have shown 18 in. of coal and dipping 45 deg. northeast. This incline is now filled with water, but the formation evidently is the same as that shown on the south hill. Below this formation occurs a stratum rich in fossils of the lower Miocene period.

Analyses of the coal taken in the tunnel crosscuts and various other exposures show volatile matter from about 11 to 20 per cent; moisture from 1.3 to 1.5 per cent; fixed carbon, 52 to 57.8 per cent, and ash, 22.8 to 33.6 per cent. The entire hill appears to contain irregular pockets or lenses corresponding to islands of sedimentation, upon which the effect of igneous contact is shown in the low moisture and volatile content of the coal. Interspersed among these are beds of ashy shales, coarse clays, coarse sandstones and lava.

The owners of the property, in their desire to exhaust all the possibilities of obtaining coal for domestic purposes, are considering core drilling. Tests also are being made of the various clays on the property for industrial uses. Inasmuch as all tertiary coals of importance have been formed in the presence of extensive sedimentation, and free from igneous metamorphic action, such deposits as exist under the conditions enumerated must necessarily be subject to irregularity in occurrence and paucity of vol-
atile matter. The coal, though of comparatively recent deposition, cannot be classed as sub-bituminous, but is rather a semibituminous, owing to the ripening effect of heat and pressure.

Pneumatic Tools Replace Pick and Shovel

IN MANY jobs involving the removal of earth the material encountered is too soft to render drilling and blasting necessary yet is too hard to permit penetration of spade or shovel. Such ground heretofore has required picking. This, as everyone knows who has ever attempted it, is hard, laborious and fatiguing work.

Mechanical picking methods now appear about to supplement manual operations, as an air-operated digger, with which one man can loosen as much soil as five men with picks, has been perfected and placed on the market. The rate at which soil can be dug with this equipment will in most instances exceed this. With this tool a man maintains a more uniform rate of work than does one equipped with a hand pick and stops much less frequently to rest, as his work is far less fatiguing.

Furthermore, danger of accident resulting from careless handling or swinging of the pick is entirely eliminated. Men are thus enabled to work closer together in trench, tunnel or shaft. This new device and its manipulation are shown in Fig. 1. The machine itself weighs only 23 lb., and a man will handle it standing upright. Essentially this device consists of an air hammer with a heavy spade at one end and a cross handle containing the throttle at the other. The over-all length is 34 in. The spade or digging blade is held in the end of the hammer mechanism by a suitable retaining device. Blows delivered in rapid succession to the upper end of the spade drive it rapidly into the earth, which may then be readily pried loose.

For work in clay the blades measure approximately 6 x 8 in. and are slightly concaved. For use in dirt they are made 8 x 9 in. and rectangular in cross-section. The face is thus flat, the thickness being 2 in. at the top and ½ in. at the point, the cutting edge being beveled from the back. Conveniently located in the handle the throttle lever may be readily pressed or released as the tool is pushed down or lifted. A buffer is provided to take the blow of the hammer if air is not shut off while the tool is being raised. An operator, however, soon learns to shut off the air automatically as he begins pulling up on the handle. This tool, known as the No. 56-H Little David clay digger, is manufactured by the Ingersoll-Rand Co., 11 Broadway, New York. As the name implies, it is a development of the tools already extensively used for tunneling through clay. These tools have in some instances reduced the cost of such operations in clay as much as 40 per cent. It is only natural that they should now be applied to the closely allied operations of trenching and shaft sinking.

A somewhat similar spader, known as DE-361 compressed-air spader or pneumatic clay-digging tool, but somewhat lighter, weighing only 16 lb. and 17 in. long, is being manufactured by the Sullivan Machinery Co. It requires a ½-in. air hose. This is recommended for the excavation of stiff clay in trenches, open cuts, caissons and tunnels where the ground is not sufficiently hard to be drilled and shot and yet is too hard to be handled readily by pick and shovel. It, like the tool just described, takes the place of the hand pick as well as of the hand spade or shovel.

In tunneling in blue glacial clay, very dry and hard, in the Chicago district these spades increased the output per man from 3 to 4 cu.yd. per eight-hour shift to from 8 to 10 cu.yd., the work being limited by the ability to get rid of the mud instead of by the rate of digging, as formerly. Any air pressure from 45 to 100 lb. can be used. The spades are made 4, 5 and 6 in. in width.

In this connection may be mentioned the Boyer clay digger, a modification of the clipping hammer of the same name, manufactured by the Chicago Pneumatic Tool Co. This spader makes 1,100 blows per minute and uses 20 cu.ft. of free air per minute at 80 lb. and 25 cu.ft. at 100 lb. pressure. The blade of the digger is 5 x 9 in. and with the shank is 14 in. long. Its weight complete is 16 lb., half that weight being accounted for by the blade. The over-all height is 34 in.

None of these spaders is electrical. They would have a broader field around the coal mine if they were. It is not at all impossible that such machines as these would be invaluable in lifting clay bottom or bottom coal left by undercutting machines as well as in surface excavation of all kinds, of which the mines have much to perform in the course of a year.
Laying Out Mine for Coal-Loading Shovel Operations

By Using Sixty-Degree Turns in Place of Right Angles
Twenty-Foot Radius Curves Can Be Installed Though Curves of Twelve-Foot Radius Can Be Negotiated by the Shovel

By William Whaley
Knoxville, Tenn.

Shoveling machines can be used with the usual system of mining coal, but to get the best results the work should be developed and transportation arranged so as to keep the machine employed to the fullest possible extent. This means concentrating the transportation so that in every working place the empty cars will be supplied to the machine and loads removed therefrom with promptitude. A system or methodical plan of working is therefore desirable. Fewer rooms are required for given tonnage, and they, therefore, can be better equipped at the same or less cost. Track should be standardized; curves, rails, turnouts, etc., should be supplied to the underground force ready to lay.

The following suggestions are advanced as a practicable method of standardizing the work: The radius for curves should be not less than 20 ft. The shoveling machine will negotiate curves as short as 12 ft., but a 20-ft. radius is an easy curve for the machine and for the locomotive and cars and makes derailment less likely. Moreover, the shovel can load on such a curve with satisfaction.

The room necks and crosscuts should be turned off the entries at an angle of 60 deg. Room crosscuts should be turned at a similar angle, thus making it possible to lay easier curves and enabling the machine to reach all of the coal that is to be loaded at any time in the room necks as well as in the rooms, crosscuts and entries, practically eliminating all hand loading.

Plate I shows a general layout of an advancing section of a mine using single-track rooms and shows standard turnouts of 20-ft. radius. Plate II illustrates the method of driving a pair of entries. The crosscuts are turned at 60 deg. and the track is connected through in such a way as to form a run-around for cars, the empty cars coming in through one crosscut and going out through the other. When the machine is loading in the haulageway the empties would be stored in the first crosscut as shown and shifted one at a time back of the machine for loading, and then dropped past the switch point for storing until a trip has been made up. This sketch is self-explanatory.

Plate III shows the arrangement of single-track rooms with track through crosscut, all curves being of 20-ft. radius and the angles of the tracks being 30 or 60 deg. Plate IV shows method of loading coal when robbing and Plate V illustrates how the shoveling machine is enabled to reach all of the coal at every shot from the first shot off of the entry, as shown in Fig. 1 of this plate, until the machine is entirely straightened out in the room neck, as shown in Fig. 3. Fig. 4 illustrates the machine passing around the curves of the crosscut and Fig. 5 illustrates the practicability of operating the machine through a 90-deg. crosscut with 12-ft. radius curves. While such sharp turns in the track and

PLATE II. TRACK LAYOUT FOR ENTRY DRIVING
Tracks are laid in two half crosscuts and one acts as a run-around to the other. With this plan shifting of cars is unusually rapid.

PLATE III. SUGGESTED LAYOUT FOR NARROW ROOMS
Rooms are connected in pairs by track through crosscut, facilitating storage and shifting of cars. Turnouts and curves should be standardized for facilitate quick laying of good track.

PLATE I. ADVANCING SECTION OF MINE
PREFERRED PLAN
The rooms are not opened at right angles to the roadway but 30 deg, therefrom. This makes it easier to negotiate the turns, though it is not absolutely necessary to put in a crooked neck of the kind shown, for machines can, if needful, make the right-angled turn. Crosscuts in rooms and entries have a similar slant.
not recommended the illustration shows that the machine can be used and moved around in an old mine with crosscuts and tracks laid in this manner.

Plate VI illustrates proposed arrangement for double-track rooms, the system of operation being similar to that previously described. Plate VII illustrates the flexibility of the shoveling machine, showing how the rear conveyor and shovel can be shifted into different positions, enabling the machine to reach into curves, across the face of a room, to discharge upon a parallel track and to pass around short curves in the mine.

In reference to Plate I, as soon as a crosscut between rooms is completed the track is connected, as shown, between rooms 5 and 6. This track forms a run-around for cars when the machine is loading in room 6, the empty cars being stored in the crosscut, as shown on Plate III, which is an enlarged detail of development as it has progressed in rooms 5 and 6. When the rooms have advanced to the stage shown in rooms 3 and 4 of Plate I, the track through the first crosscut is removed and the track in the second crosscut connected up. This brings the switching point for cars within a short distance of the face at all times and eliminates delay in removing the loaded car and bringing in the empty. This crosscut track also is well laid and entirely sufficient for moving the shoveling machine from one room to another. Therefore in moving from room 3 to 4, for instance, the machine has to run back only to the nearest crosscut and through it to the face of the adjoining rooms.

In Plate I room 1 has reached its limit and a crosscut has been driven at the end of the room. The track end is fitted with a curve and brought across the face of the pillar. The pillar is drawn back, as shown in Plate IV, the curve and track across the pillar are moved up after each cut, the cut being connected with the room track by means of inverted rail jumpers. The distance between crosscuts should be made such that the entire pillar can be taken out in this way with the exception of a protecting stump, as shown on this sketch. This protecting stump is the only part of the coal that will have to be drawn by hand.

**Arrangements Have Been Made for the shipment of two 1,000-lb. samples from the Deep River coal field of North Carolina to the central experiment station of the Bureau of Mines at Urbana, Ill., for coal washing tests.**

**A Special Study is being made by the Bureau of Mines at Pittsburgh, Pa., looking to the development of grates and furnaces to utilize lignite char, to be used in heating and cooking stoves. James Neil, fuel engineer, and M. L. Orr, assistant mechanical engineer, have been assigned to the investigation.**
Self-Dumping Cable-Bottom Mine-Refuse Car Builds Its Own Inclined Track

BY ALPHONSE F. BROSKY

Pittsburgh, Pa.

In dumping the slate, sandrock and clay that come from a mine the topographic features of the surface have a direct bearing on the choice of method. Many schemes are in successful operation for the disposal of such refuse, each working to advantage under the particular conditions that the location imposes. The problem is simplest where the surface is broken by gullies or ravines that are near enough to the tipples to make it practical to haul the slate to that point and large enough to insure dumping capacity sufficient for the life of the mine. In such cases an electric slate larry is desirable.

Slate disposal becomes more difficult, however, where the ground is level. Either of two methods may be chosen under that condition. Where a large expanse of level ground is available for dumping, an electric larry may be used here also, the slate bank rising on a slight grade. When the dump area is limited, however, it may be wise to make the inclination steeper than the use of a larry will permit and radiate dump piles away from the tipple structure.

Under these circumstances each dump somewhat resembles a miniature mountain, its height rising rapidly in the direction of its major axis. To dispose of slate in the fashion noted it is necessary to raise the car by a rope hoist.

Several of the larger companies have adopted the aerial cableway for the disposal of mine refuse on level ground. An inclined cable rises from the rock bin to a lofty tower. A rock carrier, or bucket, suspended from a pulley travels along this cable and is raised by means of a rope passing over a sheave located on the tower and leading thence to a hoist conveniently placed on the ground. When the dumping point is reached the contents of the carrier are discharged by the action of a trigger. The great disadvantage in this device lies in the erection of the tower, the weight of which is appreciable. After a slate dump of this kind has been completed the tower must be moved, and this is difficult because of its height and weight.

The H. C. Frick Coke Co. has adopted a method of slate disposal that builds a pile comparable to that constructed by the aerial cableway. The principle indeed is by no means new. The idea in fact came from the Illinois field, but since its adoption the method has been improved. It has now been accepted as standard by the company.

A self-dumping car is drawn up the steeply graded slate dump which it has gradually accumulated. At the top of the dump is an open-rail platform from which the slate is discharged. This dock is supported at its rear end by the slate pile and at the forward end by a single trestle bent.

The car is saddle-backed, or gable-bottomed. It is of a composite steel-and-wood construction. It has a capacity of 75 cu.ft. and opens and closes automatically, so that no attendant other than the hoistman is needed. The general plan of this car is shown in Fig. 1, while Fig. 2 is a photograph of the same piece of equipment. The side gates are hinged at the top and secured in place by latches. When these are released the doors fall from an inwardly inclined to a vertical hanging position. The first position, which is that assumed when traveling, is shown in the left-hand elevation of Fig. 1. The arms of the latches are end pivoted in the center of the car. Suspended from the midway point of these arms are vertical push rod bearing rollers on their lower ends which on passing over lifter tracks release the latches. The doors then swing out into the vertical position and the slate discharges onto the dump.

If conditions are such that dumping from one side only is advisable a single lifter track is placed between the rails. In that case a large sheet-iron floor plate may be inserted on the side opposite that where dumping takes place, thus making the car bottom or floor one plane. This arrangement is not shown in the drawing but has been adopted at one of the company's mines. One disadvantage entailed in discharging from

*Bituminous editor, Coal Age.

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**FIG. 1. MINE-REFUSE CAR WITH PUSH RODS TO OPEN LATCHES AND RELEASE DOORS**

The front push-rod rollers are made higher than the rear ones so that they can pass over the first part of the lifter tracks, only to come in contact with the second part at the time when the rear push-rod rollers begin to rub on the lifter track. Thus the side gates are released at both ends at the same time. The rollers at the side of the car engage two converging cam guides which force the doors to close. The latches, being free, fall and hold the doors in place.
one side only is that the capacity of the car is much decreased.

When the car passes between two converging cam guides they force the doors to the closed position. These guides are firmly mounted on masonry piers or posts set in the ground between the bottom of the dump and the tipple. The gates are provided with contact rollers placed level with the cam guides.

It will be noted that the truck is not of standard mine-car design, being rather proportioned to suit the requirements of the body. Standard loose wheels and fixed axles are used. The inner axle collars are shrunk on and the axles are fastened to the longitudinal members of the 6 x 6-in. truck frame by means of §-in. bar-iron brackets. The design and attachment of the drawbar is such as is adaptable only to a car that operates alone. As the drawbar always is subjected to a pull, the bar is rigidly fastened and has no buffer. It consists solely of a hook bar 1 in. in diameter that passes down the center of the car and pierces the two end members of the frame. Thus there is no danger that the truck will be sundered by the pull of the drawbar. The car bottom is supported by four 3 x 6-in. oak rafters which are notched and bolted together at the peak. Insets are cut in the lower ends of these members, which rest on the truck frame and are through bolted to it.

Little difficulty should be experienced in building such a car. The one here shown is well designed and will indefinitely withstand the work for which it is intended. Through use, weak points have been overcome, and a superintendent need not hesitate in adopting the general design shown, if the conditions for its operation are favorable. It will readily handle 200 tons or more in 8 hours.

Heavy, well-joined rails are requisite where slate is dumped on the ascent. From the rock bin to the edge of the brick company uses a 70-lb. rail spiked to wood ties on the roadbed. The dumping platform consists of a pair of 30-ft. 85-lb. rails tied together by heavy angle irons bolted to the rail bases. The journal boxes of a 24-in. sheave at the outer extremity of the dock are securely bolted to an angle-iron anchorage. The farther end of the platform rests on an oak bent 16 ft. in height which is hinged to the rails. The legs of this bent are of 6 x 6-in. oak, diverging to a 9-ft. base, where they are bolted to an oak sill of similar dimensions. Tie bands of § x 2-in. strap iron add rigidity to the bent.

The bent is substantial and compact and rests on a footing in the slate pile lower than the crest. When the slate reaches the level of the platform the track may be moved outward with ease. The slate is first removed from around the bent, it being thrown forward along the line of the dump. In this way a mound is formed the crest of which is at a greater elevation than the base level of the bent. The rise is such as to correspond with the predetermined grade. The bent is jacked up and its foot moved out to the new position, the frame itself being thus held obliquely. The fishplates are removed at the joint where the 70- and 80-lb. rails meet, a rope is attached to the heavier section and the frame is pulled out over the dump until it again forces the bent to a vertical position. In accomplishing this shift the rope is carried forward parallel to the rails and passed through a snatch block, from which it returns.

Four men do the track shifting, each move advancing the dumping point 10 ft. Three pairs of 70-lb. rails, respectively 10, 20 and 30 ft. in length, are kept on hand. At the first move beyond a 30-ft. rail a 10-ft. length is inserted. On the second move this is taken out and a 20-ft. rail length put in its place. On the third move the 20-ft. rails are replaced by 30-ft. pieces, which remain permanently. The cycle is then repeated.

The four men who are employed in this work can make a shift in five hours. At an elevation of 45 ft. it is estimated that 1,200 tons of slate may be dumped from a single set-up.

A §-in. steel-wire rope is utilized for hoisting the slate car. The size of the engine needed at a dump of this kind will depend entirely upon existing conditions, particularly on the space available for dumping. The horsepower requisite for a hoist used on any par-

FIG. 2. MINE CAR AND FORWARD BENT

Doors are shown hanging vertically. Note the lifter tracks for raising the push rods, and the hinges which attach the bent to the rails.

FIG. 3

Two of the Dump Piles

At Hecla No. 1, Southwest, Pa., of the H. C. Frick Coke Co. It is difficult to obtain height so long as the grade by which the dump grows is that up which an electric jerry can climb. For this reason a ropeway is used at South- west.
Pipes are so little suited to the economical transportation of large volumes of air and so liable to accidents of many kinds that it is inadvisable to use them in regular coal-mine ventilation where, as a general rule, a cheap and superabundant air supply must be provided.

For temporary and local ventilation within reasonable limits of distance and volume, however, air pipes have advantages the possibilities which do not seem to be fully appreciated by coal-mine engineers. Instances where pipe ventilation is resorted to in coal mines undoubtedly are numerous, but in practically every case a special fan is employed to force or draw air through the pipe, when the desired result could be automatically accomplished by taking advantage of the pressure exerted on the atmosphere of the mine by the outside fan. How this is done in the simplest possible way I explained in *Coal Age* many years ago.* I now desire to treat the subject more fully, showing the possibilities of the air pipe as a practical, cheap and most efficient means of ventilation, one permitting headings and single places of comparatively great length to be driven through the most gaseous of seams with a safety and a rapidity made possible by no other known method of ventilation.

Fig. 1 shows the most efficient way of ventilating automatically by means of pipes the several faces of a heading. A temporary stopping, A, built across the aircourse is provided with two openings in which are tightly fitted the ends, B and C, of pipes 1 and 2, the other ends of which are D, near the aircourse face, and E, near the haulway face, respectively.

If the air current set in motion by the fan travels in the direction indicated by the single-point arrows, pipes 1 and 2 will discharge air toward the faces they are intended to ventilate, the tubes in this case being termed "blowpipes." If the ventilating current moves in the direction indicated by the double-point arrows, air is drawn into both pipes through their mouths.

FIG. 1. AUTOMATIC AIR PIPES WITH STOPPING ON AIRWAY

This will work with exhaust or pressure methods, the double-point arrow showing the exhaust system where the air is drawn into the pipes and the single-point arrow the pressure system where the air is forced into the pipes.

D and E, the tubes then being called "exhaust pipes."

In the former case, where the air enters the face through the pipes, if the total distance from B to E does not exceed 600 ft. and if the water gage at A is not less than a half inch, and if, moreover, 16-in. round galvanized-iron pipes are used with discharge ends D and E within 15 or 16 ft. from the faces, the air will be discharged from the pipes with such a velocity and in so great an abundance that every square inch of face will be completely swept by fresh air. Thus explosive mixtures cannot be formed, and the use of naked lights at all times will be permissible.

The pipe generally is laid on the floor against one of the ribs, the last joint being deflected a little toward the center of the place. To increase the velocity of the outflowing air without reducing its volume a conical cap 4 to 6 ft. long is placed at its extremity, one end fitting the main pipe and the other being of a diameter 12 in. less. Thanks to this cap the velocity of discharge in general is so much increased that the pipe orifice can safely be kept so far from the face that the pipe will not be injured when bursting.

In limiting, as I have done above, the ultimate length of pipe 2 to 600 ft. I have taken into account the necessity of tapping pipe 2 at F for the purpose of ventilating crosscut G by means of a secondary pipe, 3. So long as the width, X, does not exceed 50 or 60 ft., pipe 3 will be of ample size if of 12 in. diameter. Butterfly regulators, made like ordinary stove-pipe dampers, are placed in the air pipes at H and K. Moderately open at first, these regulators are gradually opened wider as the air pipes grow longer. In the case illustrated in Fig. 1 and with the length of heading, diameter of pipe and water gage given, regulator H would not require to be opened in full until after pipe 3 had been installed and put in commission. The driving of crosscut G will not retard the extension of the haulageway, for there is plenty of air for both of them. But after the new crosscut, G, is through and rail communication with the aircourse is established in that manner, stopping A is transferred to A., the base of the pipe system is advanced 500 ft. and all unnecessary steel is removed from the aircourse and crosscut L. The latter is then stopped tightly by a cement wall, thus clearing the ground for another continuous advance of 500 ft. Were it not for the necessity of placing a tee at F to ventilate

crosscut G, the haulageway could be driven in perfect safety through gaseous coal at least until the length of pipe 2 became 800 ft.

Besides providing for safety to an extent unapproachable in any other way, the ventilation system just described necessitates the driving of only one crosscut through the pillar, whereas if the ordinary method is followed, eight must be cut through. Thus the cost of laying and taking up switches and building stoppages is reduced in the proportion of eight to one. The cost of installing and maintaining good pipe systems is less than that of erecting and keeping up wood and canvas air-conveying contraptions, not, it is true, those of the flimsy, cheap, make-believe kind too often seen even in $25-called big mines but the more substantial and effective sort that is obligatory if the headings in gaseous seams are to be driven in comparative safety and with any degree of rapidity.

Continuous, never-failing safety, the kind miners soon learn to trust without question, in itself makes for rapid driving. Speed is further accelerated considerably by doing away with the delays and lost motion that would accompany the driving of numerous crosscuts and the never-ending laying of switches and building of stoppages.

In nine mines out of every ten the men who drive the two straight places of a heading insist also on driving the crosscuts, thus stopping work in the former while busy in the latter. How can headings be driven fast under these conditions, if a new crosscut has to be made every 60 ft.? No immediate profit is derived from driving headings. The longer it takes to complete them the longer the capital they absorb remains unproductive. Hence all means leading to their rapid completion and utilization will save money.

Exhaust Pipes Unsuit to Gas Removal

Referring again to Fig. 1 and assuming that the ventilating current travels in the direction indicated by the double-pointed arrows, suggesting that the mine is ventilated by an exhaust fan, it will be easily understood that, before entering the pipes at their mouths, D, E and M, the air travels through places of comparatively large cross-section. Hence it moves slowly—too slowly to have enough energy to sweep away the gas instantly as it comes out of the coal.

Even if the mouth of a pipe is kept only a few inches from the face, which cannot be done in actual practice, the suction will be insufficient to remove the gas fast enough to make the place safe for operation with naked lights. Only the gas coming out of the seam in the immediate neighborhood of the mouth of the pipe goes promptly into the latter. It is unnecessary to say that no conical cap of the kind just mentioned is used with exhaust pipes.

In mines ventilated by exhaust fans the arrangement shown in Fig. 2 is used. The operation of this system requires no lengthy explanation. That it works in all particulars as efficiently as the blowpipe arrangement fully described above is easily understood from a comparative study of Figs. 1 and 2. The door, O, constitutes a drawback, but it is inevitable when the blowpipe system is used in combination with exhaust ventilation.

Ventilation of the kind herein described is not used as extensively in this country as in Europe. I have installed with great success automatic blowpipes in a viciously gaseous West Virginia mine where work had been suspended and where serious contemplation was given to abandoning the mine, the time-honored brattice system of conveying air having proved a costly failure, practically all the men having left, being rendered apprehensive by reason of the frequency of explosions.

I have employed the same method, also in West Virginia, to drive a single heading to the outside, a distance of 1,440 ft., using without restraint the worst kind of smoky, ill-smelling dynamite and cleaning three 51-ft. cuts daily.

In Belgium a single place driven in the coal between workings in preparation at a new low level and old workings in the level immediately above is termed a "montage." In such places blowpipes with exhaust ventilation are the recognized means whereby air is supplied to the men at work. Places are driven by this means often on extremely steep pitches between levels having a difference in elevation seldom less than a thousand feet.

Weight Saved and Stiffness Added to Cars by Use of Pressed Steel Units

Stamping or pressing a tin pan or other kitchen utensil from a single piece of metal, giving the finished top a rolled edge, is an old process the product of which is familiar to everyone. The accompanying illustration shows the result of applying the same or at least an analogous process to the manufacture of mine cars.

The body of this car, which is of the "solid" type, consists of three pieces—the bed and the two ends. These are bolted together, the ends being flanged for that purpose. In the center of the bottom an inverted longitudinal groove is pressed which receives a wooden stringer that forms the bumpers at either end. These, of course, are covered and protected with a suitable forged steel plate. A through drawbar bolted to the stringer and car bottom furnishes an efficient means of coupling. The top of both the bed and ends is flanged over to afford stiffness.

Trucks of any desired type may be applied, also any of several attachments such as the car-haul lug shown in one of the accompanying illustrations or other variations which may happen to suit local conditions. In
UNDERSIDE OF Pressed STEEL CAR
An inverted longitudinal groove is pressed in along the center line of the car bottom. A wooden stringer is set in this channel and it forms the bumper at each end.

this respect, as in all others except details of construction, this car is exactly like any other of similar shape and capacity.

Although the dies for making these cars are somewhat expensive, once these are made a car can be turned out at small cost and with great rapidity. Cars of this type may be shipped knocked down, to be assembled at the mine. When thus shipped the space required is small, as the various pieces will nest readily. Should a car be disabled in a wreck the various pieces can be returned to the factory, where they can be passed through the forming press and restored to their original shape. This car will soon be manufactured to such shape and dimensions as the customer may specify by the Johnstown Steel Car & Supply Co., of Johnstown, Pa.

Wood Pipe vs. Cast-Iron for Large Lines

SO MANY large water mains are laid to mines for domestic uses and for quenching coke, as well as for draining away mine water, that a paper by J. W. Ledoux, consulting engineer of Philadelphia, Pa., read at the annual convention of the American Water Works Association will be of interest. It will be remembered that he is talking of permanent pipe, whereas mining engineers usually regard 25 years as looking far enough into the future. He says, among other things: For all water main of ordinary size, cast-iron pipe generally is regarded as standard. More cast-iron pipe is used for the carriage of water than all other pipes combined, the reason being that cast-iron pipe can be made absolutely tight under all circumstances and will remain so under all variations of pressure. For very large sizes, however, it is too costly as compared with wood or steel, and under many situations the reduction in capacity due to tuberculation is so serious that engineers will prefer a reinforced-concrete or wood pipe.

Undoubtedly wood pipe comes next to cast iron in the generality of its use. It may be conservatively stated that cast-iron pipe will last one hundred years. Although there are many modern wood pipes that have been giving good service longer than 25 years, when we compare wood with cast iron it is best to assume a short life for the wood pipe.

As an example, let us take 24-in. continuous redwood pipe and assume a life of 25 years. Say the wood pipe will have to be renewed four times in 100 years and cast-iron pipe will last indefinitely. Let us take the average discharging capacity for the wood pipe as 20 per cent greater than that of cast iron. Table I shows the details and results of a cost comparison, computed on the basis of present worth.

For machine-banded Eastern pipe (also 24 in.) the initial cost would be $28,900 as against $41,900, but after making the same calculations as are shown in Table I the present worth figures obtained for wood pipe would be $50,125 and for cast-iron pipe $86,650, a saving of $36,525.

WOOD Pipe DECLARED CHEAPEST Now and in End

For 12-in. machine-banded Eastern pipe the initial cost would be $14,900 for the wood pipe and $26,900 for the cast-iron pipe. Making the same calculations as before, the present worth of the total cost of the wood pipe would be $25,847, and of the cast-iron pipe $34,027, or a saving of $8,180, 28 per cent of the initial cost of the cast-iron pipe.

When a financial comparison on a rational basis shows such a material advantage of wood over cast-iron pipe, the question naturally arises, why is cast iron so universally preferred by most of the leading engineers? It is, no doubt, because there have been so many unfortunate experiences with wood pipe.

From our knowledge of water pipe, it may be said that the best pipe that could be obtained for any purpose would be cast iron with some sort of non-corrosive and indestructible inner lining, but in ten years from now this statement may be obsolete, and Mr. Ledoux is of the opinion that we are on the eve of great and fundamental improvements in water-pipe manufacture. However, it is believed that it will be many a decade before the use of wood pipe will be unwarranted.

### TABLE I—SAVING BY USING WOOD RATHER THAN CAST-IRON PIPE

<table>
<thead>
<tr>
<th>Initial cost of 24-in. pipe</th>
<th>Wood</th>
<th>Cast Iron</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$41,900</td>
<td>$67,600</td>
</tr>
<tr>
<td>Increase in cost of cast-iron pipe to obtain 20% increased capacity</td>
<td>6,450</td>
<td></td>
</tr>
<tr>
<td>Initial cost for equal average capacity</td>
<td>$41,900</td>
<td>$74,050</td>
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<tr>
<td>Present worth of $41,900 at 5% for renewal in 25 years</td>
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<td>Present worth of $41,900 at 5% for renewal in 50 years</td>
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<tr>
<td>Present worth of $41,900 at 5% for renewal in 100 years</td>
<td>13,400</td>
<td></td>
</tr>
<tr>
<td>Present worth of $670 per year for 100 years at 5%</td>
<td>12,600</td>
<td></td>
</tr>
<tr>
<td>Total present values</td>
<td>$72,725</td>
<td>$86,650</td>
</tr>
<tr>
<td>Saving (about 20%)</td>
<td>14,485</td>
<td></td>
</tr>
</tbody>
</table>

### TABLE II—COMPARATIVE COST PER FOOT INSTALLED OF WOOD AND CAST-IRON PIPE FOR 65-LB. PRESSURE

<table>
<thead>
<tr>
<th>Nominal Diameter</th>
<th>Machine-Banded Wood Pipe</th>
<th>Continuous Wood Pipe</th>
<th>Cast-Iron Pipe</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In.</td>
<td>Foot</td>
<td>Per Ton</td>
</tr>
<tr>
<td>6</td>
<td>0.96</td>
<td></td>
<td>$1.26</td>
</tr>
<tr>
<td>12</td>
<td>1.49</td>
<td></td>
<td>2.69</td>
</tr>
<tr>
<td>20</td>
<td>2.29</td>
<td></td>
<td>5.07</td>
</tr>
<tr>
<td>24</td>
<td>2.89</td>
<td>0.76</td>
<td>6.71</td>
</tr>
<tr>
<td>36</td>
<td>6.13</td>
<td></td>
<td>9.90</td>
</tr>
<tr>
<td>48</td>
<td>6.56</td>
<td></td>
<td>12.02</td>
</tr>
</tbody>
</table>

The following weights of pipe are taken in pounds per lineal foot:

<table>
<thead>
<tr>
<th>Machine banded pipe</th>
<th>15</th>
<th>30</th>
<th>60</th>
<th>120</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous redwood</td>
<td>15</td>
<td>30</td>
<td>60</td>
<td>120</td>
</tr>
<tr>
<td>Continuous fir</td>
<td>15</td>
<td>30</td>
<td>60</td>
<td>120</td>
</tr>
<tr>
<td>Cast iron</td>
<td>31</td>
<td>60</td>
<td>120</td>
<td>240</td>
</tr>
</tbody>
</table>

Hauling taken at $2 per Ton.
Advantage of Electric Hand Lamp, One Type Of Which Contains Solid Electrolyte

Although the utility of the electric cap lamp in mine illumination is well recognized and it fills a need that has long existed, the hand lamp possesses advantages found in no other type of illuminator. Among these might be mentioned the equal diffusion of light in all directions rather than its concentration on one point or a comparatively small area, and a light flux of at least twice the volume of that emitted by the cap lamp. Furthermore, the hand lamp is hung upon a rib or timber, leaving the miner free to work unencumbered by any harness, battery or lamp. In addition to this the hand lamp is less delicate in construction and consequently less liable to derangement or injury than the cap lamp.

A new electric hand lamp, known as the Ceag RMC and embodying many innovations and advantages hitherto not employed, has recently been placed on the market by the Concordia Electric Co., of Pittsburgh, Pa. Two of these lamps, one fitted with a white dome and designed for miners' or foremen's use and one fitted with a red dome and a detachable bracket for attaching to the end gate of a car and intended to be used as a tail light, are shown in the accompanying illustration.

These lamps are, as usual, made in two parts—a lower and an upper. The lower portion consists of the battery, its container and the necessary contacts. The battery container is of pressed steel heavily tinned and fitted with an extra bottom cap welded in place. The negative battery element is placed directly inside the case, which is lead-lined, while the positive element, which is a hollow cylinder, is placed concentrically within it. Both elements are held in position at the bottom by means of celluloid crosses and rubber washers.

Probably the greatest innovation embodied in this lamp is the electrolyte employed. This is neither acid nor alkali; in fact it is not a liquid. Solidifying the electrolyte results in many advantages, chief of which is that all possibility of leakage is obviated and that turning the lamp in any position whatsoever in no wise affects the amount or brilliancy of the light emitted. Thus the lamp may be turned completely upside down without either spillage or diminution of light. The upper portion of the lamp is made of brass, which assures freedom from corrosion. It is joined to the battery case by means of a square thread and a magnetic lock. This latter will operate only when in proper contact with the magnetic unlocking device, and it thus is impossible for any unauthorized person to separate the two portions of the lamp. The light bulb is held in place within a heavy glass protecting dome by means of springs. Upon fracture of the globe these springs immediately break the electrical connections without the formation of a spark.

Specifications for this lamp are as follows: Average discharge voltage, 2; mean candlepower, 2; rated capacity in ampere-hours, 11; burning hours per charge, 12 to 13; normal charging rate, amperes, 14; length of charge period, hours, 7 to 8; total weight of complete lamp, about 5 lb. This lamp has been tested and approved by the Bureau of Mines. In addition to its applicability to underground operations it is being used in powder plants, arsenals, on battleships, submarines, in lighthouses, by municipal fire departments, in gas works, oil refineries and the like.

Mine samples of coal from the Chickaloon field in Alaska, submitted by the Naval Alaskan Coal Commission, have been analyzed at the Pittsburgh (Pa.) experiment station of the U. S. Bureau of Mines. The analyses show a high ash, low volatile coal, but it is hoped that washing will greatly reduce the amount of ash. The Department of Interior has recently taken charge for the navy of the Chickaloon mine, the Coal Creek mine, and other prospects on government reservations. Operations were placed in charge of the Alaskan Engineering Commission, the inspection, however, remaining under the Bureau of Mines. The Naval Alaskan Coal Commission mined during the month of April from the Chickaloon mine 2,352 tons and from the Coal Creek mine 33 tons. This coal was mined for the purpose of obtaining a large sample for naval testing. The Alaskan Engineering Commission is prospecting for coal with a diamond drill at Chickaloon.

In answer to questions by members of Parliament as to the coal supply of the Canadian railways, information was given by the government that the Canadian National Railway management has a contract with the Youngbrown & Ohio Coal Co., of Cleveland, for approximately 1,000,000 tons per annum, which expires Dec. 31, 1923. This tonnage covers railway requirements for western and northern Ontario and lines to Winnipeg and East, the basis of the price per ton, including duty, being substantially lower than the price at which Canadian coal can be obtained within the area mentioned. Preference is given to Canadian coal and more Canadian than American fuel always is bought by the management, but where American coal, including duty, can be delivered at Canadian points more cheaply than the domestic product, the management will continue to buy to the best advantage. The Canadian National Railways purchased 1,000,000 tons from Nova Scotia collieries between April 1, 1921, and April 1, 1922. E. C. Vaughan, vice-president of the lines, told the Public Accounts Committee of the House of Commons recently. Mr. Vaughan declared that it was hardly fair to ask the National Railways to purchase coal in Nova Scotia for Ontario lines when American coal could be delivered at Cobourg, Ont., cheaper than Nova Scotia operators were charging at the mine mouth.

At Benrush, W. Va., a 16-year-old boy who had just started to work in the mines was trained in first aid by the crew of U. S. Bureau of Mines Car No. 8. The local mine superintendent reported that a few days later this boy found drowning in a spring a three-year-old child. The boy rescued the child and performed artificial resuscitation, thus saving the child's life.
Continuous Operation of Mine Ventilating Fan

Safety the First Consideration—Expense Heavy in Idle Time
—Conditions in One Mine Afforded Satisfactory Natural Ventilation—No Fixed Rule Can Apply to All Conditions

SINCE reading the excellent letter of "Mine Foreman," Coal Age, Mar. 30, p. 537, regarding the stopping of the mine fan in idle times, we have discussed this question from every angle. It is one on which all mining men do not agree, further than to allow that safety first is the main consideration.

Personally, I have always felt that good mining practice required the continuous operation of the fan during the entire twenty-four hours of the day, under ordinary conditions. In a mine generating gas in any considerable quantity, men believe that the fan should be stopped, except in case of breakdown or urgent need for repair.

In that case, the men should be notified and withdrawn from the mine and not permitted to re-enter, until after the fan has been running a number of hours and the mine examined and reported safe for work. To guard against such emergencies a very gassy mine should be equipped with duplicate fans that can be operated alternately, one being held in reserve in case of accident to the other.

Expense of Running Fan Needlessly Must Be Considered

While I have never advocated and do not now advise the shutting down of a mine fan during a period of idleness, this question was put up to me a while ago when in charge of a mine where the equipment was entirely electrical. The fan was located at a distance of about a mile from the power plant and operated by an electric motor.

It can readily be understood that the running of this fan during a period of idleness, when there was no need for power for other purposes, involved a heavy expense that the company was anxious to avoid. At the same time, they were unwilling to provide any other equipment for running the fan independently.

Under these conditions, I began to investigate in order to ascertain what effect the shutting down of the fan would have in the mine. My surprise can well be imagined on finding that there was almost enough natural ventilation to keep the mine safe when the fan was shut down, provided the air could be carried to the face of some of the more distant workings.

After making a few needed repairs on the stoppages, however, we were able to obtain a volume of 11,000 cu.ft. of air per minute in that district, which was sufficient to keep the mine cool and safe. It should be stated here, however, that there was no explosive gas and very little gas of any kind generated in this mine. The principal object was to secure a sufficient circulation to keep the workings cool and avoid the danger of spontaneous combustion.

VENTILATION NOT WHOLLY NATURAL

Neither must it be thought that the condition I have described was wholly the result of natural ventilation. The heat from a steam pipe in the hoisting shaft, which was the upcast of the mine, greatly assisted the circulation. The steam was used to operate the pump at the foot of the shaft. Also a considerable amount of water was falling in the downcast shaft, which was another help.

The practice of shutting down the fan during an idle time has now been followed for over two years at this mine, and has proved satisfactory. The experience has taught me that no hard-and-fast rule can be applied to suit all conditions. What is safe practice in the mine just mentioned would be far from safe under other conditions and these conditions must be carefully studied, before deciding the question of stopping the fan on idle days.

Central City, Ky.: Ostell Bullock.

Speed of Fan at Firing Time

Shock ventilation and black powder cause explosion in mine—Decide to run fan at normal speed when firing.

A n instance that occurred not long since and which might have proved a fatal disaster, brings to my mind the subject of whether a mine fan should be slowed down, run at normal speed, or have its speed increased, at the time when shots are to be fired in a mine.

This subject has been widely discussed by able men and the general conclusion seems to be that there are conditions when the fan should be run slower and others when it should be run faster, at the time of firing shots.

The instance to which I refer occurred in a mine where thirty-six men were shutting coal off the solid with black powder. All shots were fired twice a day, at noon and again at 4 p.m.

The mine in question had much in its favor that would seem to render it almost immune from explosion. It is a wet mine and the 9 ft. seam has a fireclay parting about the middle, which should assist in rendering inert any dust that might accumulate.

With these conditions in its favor, however, the mine exploded at noon, one day, flames coming out of the drift in large volume. The fan was so badly damaged that new parts had to be secured before the mine could be again operated. Fortunately, no one was in the mine at the time.

In this mine, it was the custom for all the men to come outside for lunch, at the noon hour. When word was given to fire, the men would all light their shots and run for the entrance and, on this occasion, every man was safely outside of the mine when the explosion took place. The damage done inside of the mine, the force of the explosion being wholly outward, the inner workings acting as a cou de sac. Not a post was knocked down or a car displaced; but everything remained as the miners had left it a few moments before.

Lack of Ventilation the Cause

Speculation as to the cause of the explosion resulted in the unanimous conclusion that it was the natural result of insufficient ventilation at the time of firing. It can readily be imagined that the condition of the mine atmosphere would be if from fifty to one hundred shots, charged with black powder, were exploded, practically at the same time, or within a few minutes of each other.

All holes in this mine were charged with black powder; and the hot gases set free when the first shot fired furnished a highly combustible atmosphere to be ignited by the flame of the later shots. Everybody apparently knew and realized this condition and reached the same conclusion as to what was necessary to avoid another catastrophe.

It was decided by all that there was not enough air moving at the working face to dilute and render harmless the gases produced in firing. On the other hand, it was argued that to increase the speed of the fan beyond the normal would cause a dangerous velocity of the air sweeping through the workings. In view of these facts, it was the unanimous conclusion that the fan should be run regularly, at its normal speed. In addition, it was decided to
repair all stoppings and use nothing but permissible explosives in blasting. This, it was hoped, would render the mine immune from further explosion.

Pikeville, Ky.  ENGINEER.

Labor on Tonnage Basis

Economy of mine labor—Practical effect of putting mine foremen on tonnage basis.

Speaking in regard to economizing on mine labor, a mine foreman of Madisonville, Ky., in his letter, Coal Age Apr. 20, p. 660, advocates putting all mine employees, including the mine foremen, on a tonnage basis, as the best means of securing a full day’s work for a full day’s pay.

I have been wondering if our friend has stopped to consider for a moment, what would be the result of putting the mine foreman on a tonnage basis. Without reflecting any discredit on the honesty of mine foremen in general, let me ask if this proposition would not throw a temptation in the way of the average foreman.

Think for a moment what the rightful province of a mine foreman is and how he labors in a different way from the miner and other daymen working in the mine. While miners and daymen are chiefly interested in increasing the output of the mine, assuming they are all working on a tonnage basis, the foreman is responsible for looking to the future interests of the company, as well as increasing the daily tonnage. Then a mine with regard to the future and the conservation of the coal often makes present interests secondary to the future requirements. For example, areas of low coal must be worked out at once or lost; there is deadwork to be performed there, while the thorough abandonment, abandoned places made safe and the working places properly ventilated.

Responsibility of Foremen

It is up to the foreman to see that these and other matters are constantly given attention, though he knows that it means a certain curtailing of the possible output of the mine. The question is will the average foreman set aside his own personal interest in securing a heavy tonnage whereby his pay will be increased.

Now it is the nature for every man to look to his own interests first and mine foremen are no better than other men in this regard. That being true, what would be the natural result of a mine foreman being paid on a tonnage basis. Would it not result in the following conditions?

There would be the temptation to work out cheap coal; rob entry pillars and take out blocks of coal that should remain until they can be removed with greater safety and economy a little later. A place would be put to work in places that should stand idle, for a time, in order to avoid undue pressure being brought on the pillars in other sections of the mine. Finally, the work of repairing stoppings, timbering airways and keeping up the roads would often be sadly neglected.

Without going into further details, is it not true that every man’s heart, including that of the foreman himself, would be wholly set on putting out a large daily tonnage, without proper regard for what that would mean to the future welfare of the mine and the best interests of the company.

Mayport, Pa.  JAMES THOMPSON.

Importance of Checking System

Accident revealed only by failure of men to return home—Prompt rescue saves lives of two men caught by a fall—Checking system needed in every mine.

One reads with deep regret reports of fatal accidents such as that found in the news columns of Coal Age, Apr. 13, p. 641, recording the deaths of two miners, working in the Woodward mine of the Glen Alden Coal Co., at Edwardsville, Pa.

While the report states that both of these men were probably instantly killed, their necks and backs being broken, it is not known at what time the fall occurred and how long a time may have elapsed before their bodies were found. The fact of the accident was only made known by the failure of the men to return to their homes, and a search was then made to ascertain the cause of their delay.

Importance of Checking System

Reflecting on these reports that come to our knowledge from time to time, one is forcibly impressed with the importance of a thorough checking system being installed in every mine. Allowing it to be true that, in this case, such a system would not have saved the lives of these men, it still remains that there are numbers of instances occurring daily in which it would be effective.

In the present case, an investigation would have been made immediately following the time when all the men should have been out of the mine, and this instance recalls to my mind the experience some time ago of two men working on a pillar when a fall of coal and rock caught and held them fast until rescue finally came.

That accident occurred in mine 201 of the Coal Mines of the Commonwealth near Jenkins, Ky. Had it not been for the prompt report of their plight, these men also would have been killed, as shortly after their rescue another fall occurred that would have crushed out their lives.

Personally, I am strongly of the opinion that an adequate checking system should be installed in every mine, and that this should be made compulsory by law. There are numerous systems of this kind in use; but to be effective there should be a check on every man who enters the mine, and the evidence of his going in should again be, withdrawn on his coming out, whether his stay is for short or long.

Edwight, W. Va.  J. W. POWELL.

Abandoned Workings in Mines

No fixed rule possible—Many abandoned areas ventilated to advantage—Other areas dangerous if left open—Confined bodies of gas always dangerous.

In giving my views on the question of ventilating or sealing abandoned areas in mines, I must confess to having no fixed conclusion in this matter. In my opinion, it is a thing in which no hard and fast rule can be laid down.

After carefully turning over the question in my own mind, I feel that any law covering this subject should place it wholly at the discretion of the state mine inspector, who must be able to determine the method of procedure in any given case that will promise the greatest degree of safety in the operation of the mine.

No Arbitrary Standard

To say that all abandoned workings shall be sealed, or all shall be ventilated, would be too much like setting up an arbitrary standard, without regard to the particular case, or giving a proper solution to the problem in hand.

Considering the diversity of coal-mine methods and systems, as we find them in the principal coal-producing states, I believe it is generally agreed that what will apply to the conditions in one district will fail to suit conditions in another district.

While there are undoubtedly districts where abandoned areas can be ventilated in a manner to prevent the accumulation of dangerous quantities of gas, the conditions in other districts and the methods of mining employed will hardly permit of this proceeding.

Standing Gas Dangerous

On the other hand, it is quite generally agreed that a standing body of gas, even though confined in a tightly sealed area, may prove a menace to safety and the security of the property. In other words, it is a hazard that invites a catastrophe and should not be permitted if it is humanly possible to prevent it.

In general, let me say that large abandoned areas in mines should only be sealed as a last resort; when it has been finally decided that such procedure will make the mine safer, but less subject to disaster, by reason of the gaseous condition of the workings.

Pikeville, Ky.  GEORGE EDWARDS.

Maintaining Tracks in Airways

Ventilation inefficient in many mines—Airways practically neglected when tracks are drawn—Main airways blocked by falls, owing to lack of timbering.

I HAVE read many references, in Coal Age, to the insufficiency of ventilation at the working faces in mines. Almost invariably, investigation will show that the cause is neglected airways that are choked by
falls of roof which prevent the free passage of the air current.

In a few instances, no doubt, the fault will be found in long lines of brattices, many of them in bad repair and leaky stoppings on the roads, which prevent the air from reaching the working faces.

In my own experience, I have found that whenever the track is drawn from a main head or return air-course the result is that far less attention is given to the timbering of that airway; and it is not long before heavy roof falls occur, which obstruct the flow of the air and there is trouble.

SMALL FALLS OFTEN DISREGARDED

At first, these falls are small and of little consequence. But it should be remembered that they are the forerunners of larger breaks that will extend eventually several feet in height and length. Because the track has been drawn no attempt is made to clean up the falls and, for the same reason, little timber is taken into the place and set. Had the tracks been allowed to remain, the condition would be quite different and there would not be the same objection to cleaning up the airway and keeping it properly timbered.

DANGER OF REMOVING TRACK

In my judgment, the removal of track from main air-courses means their practical abandonment to the consequences just mentioned. In many instances, I have known main airways to be almost completely blocked for several hundred feet, to the extent that it was almost impossible for a man to get through them.

One can readily imagine what the effect of this condition is on the ventilation of the mine. It is a matter that needs careful consideration. In my opinion, no main air-course should be left without a track on which refuse can be hauled out and the necessary timbers taken into the mine.

Hillside, Ky.
O. KENNETT.

Inquiries
Of General Interest

Use of Carbon Monoxide Detector in Mines

Device Depends on Color Test—Absorbent Material Contained in Steel Tubes—Extra Tubes and Charge of Absorbent—Practical Tests Prove Instrument Useful

KINDLY explain the use and construction of the device known as the "Carbon Monoxide Detector," which I have heard has been used with success and is a more practical means of detecting this dangerous gas in mines, than by observing the effect of the gas on small birds and mice confined in a cage.

Safetv Inspector.

This device, as developed and manufactured by the Mine Safety Appliances Co., Pittsburgh, Pa., is illustrated in the accompanying figures. It consists of a small metallic tube or barrel A, to one end of which is screwed a headpiece B, containing two valves C, C, an inlet and an outlet valve, which control the flow of the air-charged gas in its passage through the instrument.

To the headpiece B, is attached, as shown in Fig. 1, a rubber bulb D, the compression and expansion of which first draws the air into the instrument and then forces it out through the detector tube E, which contains a highly acid substance that changes to a green color, under the action of carbon monoxide gas. The depth of the color depends on the percentage of gas present in the air passing through the tube.

As shown by the arrows in the figure, the air to be tested for gas is drawn through the metal tip or nozzle attached to the other end of the barrel A. In this barrel is contained, between two plate screens, a chemical substance that is capable of absorbing and removing from the air any gas it might contain, except carbon monoxide.

This absorbent material has been called "gasorbent." The material becomes saturated by use and must be replaced, from time to time, one extra charge being furnished with the instrument. In order to test the efficiency of the gasorbent, it is only necessary to take a fresh detector tube and make a test in the regular manner in a gas-free atmosphere. Any color appearing in the tube, after twenty squeezes of the bulb, shows the gasorbent must be replaced by a fresh charge. This is done by unscrewing the head piece B, removing the screen and pouring out the charge, refilling the barrel and replacing the screen, and head.

The detector tubes E, are made of heavy glass and filled with a specially prepared chemical solid called "holonaumite." Each end of a detector tube is sealed, by being drawn to a fine point, which is scored and easily broken off when about to make a test and before inserting the tube in place on the instrument.

When making a test with this instrument, both ends are broken off from a detector tube, which is then inserted in place on the instrument, side by side with another tube that furnishes a color scale for determining, by comparison, the percentage of gas present in the air tested.

When all is ready, squeeze the bulb ten times (Fig. 2) and compare the color produced in the detector tube, if any, with the color scale by sliding the latter along until a correspondence is reached in the color of the two tubes. The original color of the chemical is a grayish white, which changes to green, the intensity of the shade being an index of the percentage of gas present.

If no green color appears in the tube, after ten squeezes of the bulb, there is

FIG. 2. MAKING A TEST FOR GAS

less than one-tenth (0.1) of one per cent of gas in the air tested. Again, no color showing in the tube, after twenty squeezes of the bulb, indicates that there is less than five-hundredths (0.05) of one per cent of gas in the air. Should more than one-tenth per cent of gas be present, coloration of the material will result from several squeezes of the bulb.

A single detector tube will last from eight to ten tests of ten squeezes each, before being exhausted, which is determined by the color failing to fade out after a test is made. Owing to the fading of the color after a test, it is important to determine the percentage of gas quickly. The slight smoke or fumes sometimes observed coming from the end of the tube when making a test is harmless.

Rubber tubes one-eighth of an inch in diameter are supplied with the instrument, to be attached to the tip end of the barrel, for the purpose of drawing the air from some high point in the roof, if desired.

FIG. 1. LONGITUDINAL SECTION SHOWING CONSTRUCTION OF DEVICE
Examination Questions Answered

Bituminous (Pa.) Mine Foreman’s Examination Held April 11-13, 1922

(Selected Questions)


**Answer**—1. Foreman must sign reports of firebosses and assistants; make daily and weekly reports of conditions of mine and air measurements; report all accidents and fatal accidents to mine inspector; and report to the superintendent in writing any failure to remove gas from inaccessible places.

2. All working places must be examined each day by foremen or assistants.

3. Foreman or assistant to measure air at inlet, outlet, last breakthrough in last room and at face of entry, in each split, and report same once a week.

4. See that every working place is securely timbered and a plentiful supply of timber for that purpose on hand, or remove the workmen where timber is wanting.

5. Foreman must see that stoppings are built where necessary to carry the air forward to the face of the working; all stoppings on main entries and airways to be substantially built of concrete or masonry.

6. Foreman must see that accumulations of dust are kept damp, by suitable means or a sprinkling system. All dust accumulated at working faces must be loaded out of the mine.

7. Foreman must see that all dangerous places are promptly fenced off and danger signals placed to warn persons not to enter. He must see that all dangers reported are promptly removed or safeguarded.

8. The foreman is made personally responsible for all matters pertaining to ventilation and must see that a sufficient air current is kept in circulation and made to sweep all working faces throughout the mine.

9. In case of accident to fan, the foreman must remove the men from the mine and not permit them to enter again, until the mine has been examined and reported safe.

10. Foreman must attend to the drawing of all pillars in a safe manner and employ only experienced men for that purpose.

**Question**—In an entry 9 ft. wide and 53 ft. high, the anemometer reads 225 ft. per min.; what is the volume of air passing in, therefore, 49.5 x 225 = 11,137 cu. ft. per min.

(b) Show the formula by which this problem is worked.

**Answer**—(a) The sectional area of the airway is 9 x 53 = 49.5 sq. ft.; the volume of air passing is, therefore, 49.5 x 225 = 11,137 cu. ft. per min.

(b) Calling the quantity of air in circulation, Q; sectional area, a; velocity of air current, v; the required formula is \( Q = av \).

**Question**—State why, in your opinion, the pressure or water gage increases as the workings are extended, other conditions remaining the same.

**Answer**—The pressure or water gage is a measure of the mine resistance, which is determined by the extent of the rubbing surface and the velocity of the air current. As the mine is extended, the rubbing surface is increased, which increases the mine resistance and the water gage.

**Question**—(a) Name and give the symbols and specific gravities of the non-explosive gases. (b) What are their effects on life and combustion?

**Answer**—The non-explosive mine gases are carbon dioxide (CO2); specific gravity 1.529; and the nitrogen of the (N2); specific gravity 0.967.

(b) Carbon dioxide, though not a poisonous gas, has a distinctly toxic effect on the system. It is an incombustible gas that will not support life or flame, but causes death by suffocation when breathed in sufficient quantity. In less quantity, it causes headache and nausea.

Nitrogen, also, is an incombustible gas and will not support life or flame, but causes death by suffocation.

**Question**—In mine ventilation: 1. What is the minimum quantity required by law? 2. What are the advantages derived from splitting the air? 3. What is the effective limit in splitting the air current? 4. Why is it necessary to use a regulator? 5. What are the requirements of the law in regard to principal doors? 6. What does the law require in regard to checking the air current into the working places?

**Answer**—1. In non-gaseous mines, the law requires 150 cu. ft. per min.; and in gaseous mines, 200 cu. ft. per min., for each person employed and as much more as one or more of the inspectors may consider is required.

2. Splitting the air current gives a larger quantity of air circulated by the same power, at a less velocity. Each district is provided with a separate air current that isolates it more or less from other sections of the mine and the ventilation of the workings are under better control.

3. Splitting reaches the limit when the velocity is so far reduced as not to dilute, render harmless and carry away all noxious and dangerous gases.

4. A regulator is required to proportion the quantity of air to the need in each split.

5. Principal doors must be so placed that when one door is open another having the same effect on the current will remain closed. An extra door must then be provided to be used in case of necessity.

6. The law requires the mine foreman to see that cut-throughs are provided in all room and entry pillars and, in such cases with suitable stoppings, so that the air current will be made to pass through the last cut-through next to the working face.

**Question**—A siphon pipe is 4 in. in diameter and 1,000 ft. long, with a rise of 15 ft. and a fall of 23 ft. How many gallons of water will be discharged in 24 hr.?

**Answer**—Without knowing the separate lengths of the suction and discharge ends of this pipe line, it is not possible to determine if the siphon will work satisfactorily. In order to obtain the best results in siphon drainage, the diameters of the two respective parts of the siphon must be proportioned to their respective lengths and the effective head in each. However, in a general way, the flow in this pipe may be estimated from the total effective head and length, according to the following formula:

\[
G = \sqrt{\frac{800d(h_1 - h_2)}{l}}
\]

where:

- \( G \) = gallons per min.
- \( d \) = diameter in inches
- \( h_1 \) = suction head in feet
- \( h_2 \) = discharge head in feet
- \( l \) = length of pipe in feet

On this basis, the total flow in a 24-hr. day would therefore be \( 81 \times 60 \times 24 = 116,540 \) gal.

**Question**—The inlet air current of a mine has a temperature of 60 deg., and at the outlet the temperature is 65 deg., barometer 30 in. What is the difference in weight of 100 cu. ft. of air between the inlet and outlet?

**Answer**—The weight of a cubic foot of air at a temperature of 60 deg. F. bar. 30 in. is 1.2373 x 30 = 0.076575 lb.

Likewise, the weight of a cubic foot of air at a temperature of 65 deg. and the same barometer, is 1.2373 x 32 = 0.075845 lb.

Then, for 100 cu. ft. the difference in weight would be 100 (0.076575 - 0.075845) = 100 x 0.00075 = 0.073 lb.
President Harding "Invites" Operators to Return to Mine Properties and Resume Operations

BY PAUL WOOTON
Washington Correspondent of COAL Age

LATE Monday night the chief topic of speculation among coal operators was the meaning of the President's invitation to the operators "to return to your mine properties and resume operations." In the opinion of some this was taken to mean that the President intends that the production of coal must be resumed at once and the means is left to the operators to work out, but whether with a guarantee of protection is not clear.

While the President expressed disappointment at the lack of unanimity, the point was emphasized in a White House statement that all operators had subscribed broadly to the principles to which the American people are entitled.

The President's statement is Operators 385 Pennsylvania, the left the White House after his recent conference with the President, has shown the President's resume to his own properties and resume operations. But they say to you and to the American people that each and every one of them stands ready in this crisis to put his properties and his own services at your disposal and command at any instant.

When the President has received the several replies, he said:

"I have heard your decision. I would not be frank if I did not confess a disappointment in your lack of unanimity. To the large majority of you, who have pledged readiness to resume activities under the government proposal, I must express my own and the public's gratitude.

"We have now reached a point, owing to the refusal of mine workers and a minority of your operators to accept the proposed arbitration, where the good offices of the government in seeking a voluntary adjustment of the dispute between mine operators and mine workers are without avail.

"I cannot permit you to depart without reminding you that coal is a national necessity, the ample supply of which is essential likewise to common welfare and to interstate commerce.

"The freedom of action on the part of workmen and on the part of employers does not measure in importance with that of public welfare and national security. Therefore, invite you to return to your mine properties and resume operations."

After the conference, the following statement was given out at the White House:

"At five o'clock this afternoon the coal operators made extended verbal and written reports to the President. All of them subscribed broadly to the proposal to arbitrate. The majority of the districts represented in the conference accepted the President's proposal unconditionally. A minority of the districts in the conference joined in subscribing to the general principles of arbitration and collective bargaining."

Objectors to Anthracite Tax Must File Exceptions and Furnish Bond

SAMUEL S. LEWIS, Auditor General of Pennsylvania, has notified all coal companies that have not made returns or paid the anthracite coal tax to the state, pending appeals of the constitutionality of the act of 1921, that they must file specifications of objection to the tax determined to be due and furnish bond in double the amount of the tax contested and make cost provisions for the collection. The tax in question is on production for the last half of 1921, and more than $3,100,000 is due for that period, according to the records of the Auditor General's department.

After the State Supreme Court had declared the act constitutional the Auditor General informed the companies which had taken appeals from the decision of the Dauphin County court that he expected notice whether the appeals were to be withdrawn or further contested in the United States courts because of the interstate complications arising from the anthracite tax. Operators and companies not paying pending the determination of the constitutionality of the anthracite tax were told that they must pay promptly or incur the penalties provided for the non-payment of any state tax within the time limit.

In a statement by Auditor General Lewis it is shown that 161 operators have settled their tax so far. He said: "Reports have been filed by 197 operators of the 385 collieries, washeries, or operations, and accounts have been settled against 161 operators at this date. Of the concerns mentioned, eighty-five showed no production during the period referred to, or from July 1, 1921, to Dec. 31, 1921. The aggregate amount of taxes, as shown by reports of anthracite coal producers filed, is $3,164,189.02, and accounts have been settled for $2,256,778.11 of this amount, although only payments have actually been made in most cases."

Coal Consumed by Public Utilities.

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<th>Year</th>
<th>Jan</th>
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<tr>
<td>1919</td>
<td>3,000</td>
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<td>2,813</td>
<td>2,682</td>
<td>2,847</td>
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<td>2,573</td>
<td>3,142</td>
<td>3,169</td>
<td>3,058</td>
<td>3,156</td>
<td>1922</td>
<td>35,100</td>
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<tr>
<td>1920</td>
<td>3,594</td>
<td>2,984</td>
<td>2,813</td>
<td>2,682</td>
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<td>2,729</td>
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<tr>
<td>1921</td>
<td>3,192</td>
<td>2,932</td>
<td>2,731</td>
<td>2,893</td>
<td>2,565</td>
<td>2,858</td>
<td>2,789</td>
<td>2,573</td>
<td>3,142</td>
<td>3,169</td>
<td>3,058</td>
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Rate each monthly average to total: 1922

Members of the Mine Inspectors' Institute of the United States, in convention at Chicago, July 11-13, missed the friendly and helpful presence of James T. Beard and re-elected him editor in chief of the Institute's proceedings.
Acrimonious Conferences of Operators Fail to Agree Unanimously to Harding Arbitration Plan

AFTER a series of conferences, described as having been the most acrimonious in the history of operators’ meetings, the representatives of the various bituminous-coal producers’ associations in unionized territory failed on Monday, July 17, to agree unanimously on the acceptance of the President’s arbitration plan. A majority report, drafted by a committee headed by H. N. Taylor, was signed by all but three of the associations. This report accepted the President’s proposal “without reservation or qualification.” The three associations which submitted dissenting replies were the Pittsburgh Coal Producers’ Association, the Indiana operators and the Central Coal Association of Pennsylvania. The text of the majority report is as follows:

“We have approached the earnest consideration of your proposal of July 10, 1922, for arbitration in the coal situation, with that degree of solemn earnestness that is due a subject that is so fraught with grave and far-reaching consequences to the whole American people that no private interests of ours can weigh in our considerations.

ACCEPT PROPOSAL WITHOUT RESERVATION

“Therefore, on behalf of the bituminous-coal operators who have been in conference with you and who represent associations producing in 1921 somewhere near 90 per cent of the bituminous coal, which was covered by collective bargaining with the United Mine Workers of America, we beg to state that we accept your proposal of July 10 without reservation and qualification. While making this unreserved acceptance we think that it is due to the public and to the industry that we should point out not only some suggestions which we believe would be helpful in the consummation of so great an undertaking but also some of our difficulties in acceptance.

“Inasmuch as the old machinery for making scales based on the Central Competitive Field has broken down, proven entirely inadequate to meet the changed economic conditions of the country, and is therefore now irretrievably abandoned, and inasmuch as the great varied technical and economic situation of the various districts makes it almost impossible for a national arbitration board to satisfy these differing situations, and inasmuch as the operators here assembled are anxious to maintain the principle of collective bargaining, we suggest that scales be made possible under a national arbitration for negotiating purposes and not taken by states or other large groupings of districts, subject to the general direction of the arbitration commission of the major issues involved. This is in the mutual interests of both operators and workers, because of the many technicalities and varied economic conditions differing in the various sections of the country.

RECENT WAGE SCALES ABOVE COUNTRY’S AVERAGE

“The wage scales expiring March 31, 1922, in the unionized industry based upon an inside day wage of $7.50 per day for mine labor, are far above the wage levels of the country. They are far above our competitors in the non-union fields. They impose a burden upon the consuming public and the whole of industry. They affect the freight rates, the costs of manufacturers, the interests of our creditors and our work people in every direction. We have no doubt that in your proposal that the miners should return to work upon this scale even temporarily, you had in mind the more essential question of immediate return to production, in order that industry should not be paralyzed, that the proper wage levels to be determined would not thus be prejudiced, and that we and the public at large could afford to make this sacrifice in your effort to secure the return of the men to work, even though it did lean entirely to the side of the miners rather than to that of equity and general public interest.

“We had thought that the scale of November, 1917, based upon $5 per day for common labor, would furnish a better medial line between the contentions of the two parties. The largest part of the non-union coal production of the country at the present moment is carried on below this level.

“We welcome an exhaustive inquiry into the functioning of the industry, as we believe any exposure of the truth of the situation will show the intolerable and wasteful conditions under which the mining is carried on under the present labor regime, and the penalties that are imposed upon the public by the inability to secure the enforcement of contracts and the thousand other ills. We suggest that it would be desirable to separate the problems of anthracite and bituminous coal. We see no objection to separating again the investigation problems from those of arbitration of the present disputes into different commissions, pending the development of some plan of stability.

“Inasmuch as the old machinery for making scales based on the Central Competitive Field has broken down, proven entirely inadequate to meet the changed economic conditions of the country, and is therefore now irretrievably abandoned, and inasmuch as the great varied technical and economic situation of the various districts makes it almost impossible for a national arbitration board to satisfy these differing situations, and inasmuch as the operators here assembled are anxious to maintain the principle of collective bargaining, we suggest that scales be made possible under a national arbitration for negotiating purposes and not taken by states or other large groupings of districts, subject to the general direction of the arbitration commission of the major issues involved. This is in the mutual interests of both operators and workers, because of the many technicalities and varied economic conditions differing in the various sections of the country.

In addition the statement was signed by the following associations: Pittsburgh Vein Operators’ Association of Ohio, Cambridge District, Fifth and Ninth District Coal Operators’ Association of Illinois, Jackson (Ohio) District, Illinois Coal Operators’ Association, Central Illinois Coal Operators’ Association, Iowa Coal Operators’ Association, Southwestern Coal Operators’ Association (Missouri, Kansas, Arkansas and Oklahoma), Oklahoma Coal Operators’ Association, Bergholz-Amsterdam District of Ohio, Montana Coal Operators’ Association, Southern Wyoming Coal Operators’ Association, Central, North, Marshall and Concho Districts of Ohio; New York coal companies’ interests in southern Ohio and Crooksville districts and some thirty individuals in various Eastern fields.

Washington, July 15.—That federal intervention in the coal strike was a great mistake is becoming increasingly evident, according to a widely held opinion in Washington. It is conceded, however, that since such a policy has been initiated there now can be no turning back. As a result of what is regarded by many as its ill-timed interference, the arbitration board is confronted with a task almost comparable in intricacy and dangerous possibilities with the Irish problem. The step having been taken, however, it is believed it would be nothing short of a public calamity were some basis of arbitration not worked out. As a consequence, it is believed that some means will be found for reaching an adjustment for the present coal year. Each side to the controversy, however, fully expects to see the government take over certain mines and operate them in the interest of those localities threatened with a shortage of fuel.

An analysis of the so-called miners’ refusal of the President’s proposition reveals that it is not a rejection of the arbitration proposal at all. The position of the policy committee of the United Mine Workers simply is to withhold their acceptance of the arbitrage, however, fully expects to see the government take over certain mines and operate them in the interest of those localities threatened with a shortage of fuel.

While it is believed that some form of arbitration is going to be brought about, no one sees how any decision can be reached that will be equitable or that can result in anything more than a truce. Arbitration, especially in view of the President’s explanatory letter, can mean little more than a Central Competitive Field agreement. More than 8,000,000 tons of annual output were not represented at the final meeting of operators when the deadlock was reported to the President. There is no way whereby the federal government can force the non-union operators to fix wage scales. It is quite apparent that operators in the Kanawha field or even in a smaller subdivision, such as the Windber district in Somerset County, Pennsylvania, are
not going to throw away large investments made in efforts to stay non-union, even if the majority of their workers have affiliated with the labor organization.

As the strike enters its sixteenth week it is evident that various events have strengthened the union position. Principal among these is the success which has attended the efforts of the railroad strikers, which has had a telling influence on the coal miners. That there is joint action between the striking miners and the striking shopmen cannot be doubted. Efforts have been concentrated on the weak spots of the coal distribution system. The movement of coal has been seriously interfered with at junction points on the Louisville & Nashville and on the Chesapeake & Ohio. The L. & N. was recognized as a weak spot and the success which attended the efforts of the shopmen to block it did not occasion great surprise, but when the better situated Norfolk & Western and the C. & O. were involved in serious difficulties before the shopmen's strike was two weeks old, it became apparent that the railroad strike is going to be a major factor in the coal strike. Students of the situation are at a loss to understand why the administration did not use its influence with the Railroad Labor Board to prevent the striking of a second crisis on the government. At the very least the railroad strike is resulting in a loss of 2,000,000 tons of coal supply just at the time that it was most needed.

The text of the reply of the Pittsburgh Coal Producers' Association, dated July 17, is as follows:

Mr. President: Your proposal for the settlement of the present bituminous-coal strike has been given most thorough and respectful analysis and consideration by the operators of the Pittsburgh district. We are very conscious of the gravity of the situation and the importance of the interest of the American public in the navigation of the waterways which can be made possible by the continued operation of the American coal industry, and we beg to say that we are not unmindful of the responsibility which is thus placed upon us, not only to our public and to the operators of the coal industry but to the American people.

We regret to say that we regard your proposition as one that will not meet the issues of the dispute or, at least, to the ultimate injury not only of the industry, miners and shopmen, but to the country as a whole.

The concession requests that we consent to arbitrate a basic wage scale for the union mines of the United States by a National Commission. We will treat it first from the economic standpoint. In the first place, we believe that you are not acquainted with the facts of the country, which are, and we believe should not be, involved in your proposition. We have not only new needs, but also new demands of our people for coal, and are able in peak times to produce 50 per cent more than the present demand. Therefore, be the function of your commission to fix a basic wage and working conditions for perhaps 50 per cent of the coal producers of the country, the privilege, from time to time, of establishing for itself such wage scale and working conditions as may best be accorded to employer and employee to meet changed economic conditions. This means that the union operator is tied to fixed standards, while the non-union operator may at any time deal with his men on a scale that suits the immediate advantage of both. The result inevitably will be to put the non-union operator in a better position. This scale will vary to give the non-union operator the business and therefore, the non-union miner will take largely the business that is left. Your plan cannot operate otherwise.

The National Wage Commission appointed by President Wilson, which had larger scope due to the war powers of the President, wage them the severest effect, and many operators in the Pittsburgh district were compelled to concede at a loss for the last year under it. We cannot conceive how we can concede out of our power to the National Commission which covers only approximately one-half of the coal industry, the very important condition of the non-union mines. The non-union miner will not be turned out of work where the union miner will take largely the business that is left. Some other solution must be found.

I propose to put the mines back to work at wages which were paid under the scale which expired March 31, 1922. This was the highest paid in the country and in the mining industry. It was to be but a temporary one, which operations were to be carried on with the aim of making the chances of getting back the higher cost of his coal in the face of an increased production. The present union scale is a sacrifice.

Is this proposal from the government fair to the non-union operator who has already liquidated his wages and who in many fields was already working at 1922 wages? Is it fair to the strikes of the United Mine Workers of America? Can he hope to keep his mines at work on the wage scales now being paid if the non-union operator may at any time deal with his men on a scale that suits the immediate future? Must the wages he offers his men be paid down to the level of the minimum which the public will require? Is it not fair to him if he pays anything that he does not pay it? If it will result otherwise than to cause dissatisfaction among his employees his wages must be increased. The public is dissatisfied with this scale and its terms are not fair. The miners have been entirely neglected. The government for the last four years has been seriously questioned in judicial proceedings, and we believe, regardless of legislative action of the Congress, the institution is so unquestionably vicious and un-American that it must be eliminated.

The check-off practice in the coal industry means more than the merely economic adjustment which has been taking place during the past years which was predicated upon a single union organization. It has become the dominating influence of the industry which is leading us to join the United Mine Workers of America and agrees to subject himself to their arbitration for the settlement of all strike orders and commands in all matters pertaining to the affairs of the union and its members.

Under this practice the operators are compelled by the United Mine Workers of America to collect for wages their due, and found and proven in many judicial records in the courts of the country, are then used by the labor organization for its own ends and purposes. All union operators have already been charged with being parties to the practice of mining and non-mining. This would include the participation in this check-off system, and the operators of the Pittsburgh Coal Producers' Association refuse voluntarily to be connected with a union organization which is so unfair and unjust.

In 1920, before the Wilson arbitration board, we earnestly asked for the elimination of the check-off system on the ground of its condemn or eliminate it. Your proposal asks us again to submit this practice to arbitration: this we cannot do. We ask you to submit this commission a bill which we have serious doubts as to whether we could be protected in the courts if you insist upon it. If your proposal is based upon it we shall refuse to eliminate it.

We come now to a consideration of the doubtful legality of making a basic wage scale for the union mines of the United
States with the check-off feature. We express no opinion as to the

It is pertinent, however, to observe that in this overdeveloped
day of our industrial life, the factors which are engan-
gaged in sharp competition in interstate commerce. The mines
in each district compete in the same market and, as a matter of

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President Harding Interprets His Statement of July 10

To A. M. Ogle, president of the National Coal Association;

Wariner, president of the Anthracite Coal Association, and

To John L. Lewis, president of the United Mine Workers of America:

The policy committee of the United Mine Workers of America met at the Red Cross Building to adopt an answer to President Harding’s arbitration proposal. Members of the anthracite scale committee held a separate meeting earlier in the day and decided to reject the proposal. These members had participated in the general consideration of the subject.

By unanimous vote the policy committee rejected the proposal of the President, and a letter signed by the International officials and all of the district presidents of the United Mine Workers delivered to President Harding at the White House. The letter sets forth the reasons for rejection of the arbitration proposal and is as follows:

Dear Mr. President: We are in full accord with your proposal for the establishment of a commission, which, as you state, shall investigate exhaustively every phase of the coal situation and every cost of production and transportation. The President will ask Congress to confer authority for the most thorough investigation of the matter. We are appropriations necessary to do such work.

The fundamental interests of the mine workers are so directly dependent upon such action being taken. It is our belief that a thorough and impartial investigation of the entire situation is necessary.

During the past two years it has been very apparent to the mine workers that such an investigation as you now propose should be made. We have been of the opinion that every proper occasion, recommended that the work be done. When at the hearings the existing control representatives were called upon to testify before the Commission, we formally urged the creation of a commission and submitted detailed suggestions as to its composition and powers. We are, therefore, indeed gratified to accept your proposal for a comprehensive investigation of the coal mining industry by a commission representative of the mine workers, the operators and the public, and to assure you that it shall have our most earnest support.

The actual completion of the work of such a commission and the application of the findings is the practical and immediate necessity. It is, therefore, a necessity that preliminary and a necessary prerequisite, that all parties to the dispute be brought to the bar of arbitration and that the workers in the coal mining industry be brought to a just and equitable contribution toward the burden of the industry.

In my opinion, labor is only one factor in the production and distribution of coal. Labor costs are only a part of the total costs involved in the mining of coal and its transportation. The labor factors and the other cost factors are closely interrelated and independent. One factor, such as labor, cannot be condemned into a mere part of it alone. Among other things, the relation of the cost of labor to its returns and prices must be understood. Industry must also be made as to the degree of regularity of compensation of operators. At the present time, a coal miner working in the anthracite field is not receiving an adequate income for himself and his family.

By way of concrete illustration, it is stated on the basis of the facts and figures that the bituminous coal industry functions fairly and efficientluy only when the wages paid are sufficient to determine to approximmately $1 per ton on each ton of coal produced and that the industry is doomed to be unprofitable if the industry is not paid a just wage.

On the question of the cartel, it has long been evident that a close relationship has existed between the parties in the anthracite field. The President brings to the public the facts which indicate that the anthracite industry is the responsibility of the public.

We will not enter into the discussion of the facts which indicate that the anthracite industry is the responsibility of the public. It is the public interest that this question be decided without further delay.

By way of conclusion, we are of the opinion that the President’s proposal is practical and just.

July 20, 1923.

C O A L A G E

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The coal miners have brought to the public the facts which indicate that the anthracite industry is the responsibility of the public.

By way of conclusion, we are of the opinion that the President’s proposal is practical and just.

July 20, 1923.
matter of heated and bitter controversy. The primary duty of the committee of real service, must be to collect the facts and give consideration to broad matters of principle. It would involve the recognition of a huge industry, which in itself is a prodigious undertaking.

In the face of this tremendously important issue, no wage questions should be injected.

We believe that there will be no difficulty in securing union agreement through conferences with the operators if the facts and conditions be correctly set forth on a proper basis, and that therefore, if the commission is successful in establishing proper conditions and principles of operation, and that the industry, the fixing of detailed wage scales can properly be left to the usual conferences.

The mine workers desire to point out that no such discussions have been in attendance at the recent conferences as a result of which the tentative plan of settlement for the quarter strikethroughs with the operators that these interests be represented on a basis which would in the future be submitted to them by any governmental agency. We are further advised and pray that a tender of participation in the conference be given, that these interests have not in the past been represented, that it be given at the earliest possible date.

On this plan of settlement we believe that any general settlement can be reached. It is manifestly unfair to attempt to reach a settlement which is fair and just to the operators and representatives of the contributing interests, employing hundreds of thousands of men directly and indirectly, and be free to their own selfish impulses and escape responsibility in the premises. We feel assured that your Excellence transmitted this plan of settlement with the without reservation that the strike could be adjusted upon a basis of national scope. We find upon examination and analysis, without qualifications. It is evident that the acceptance of the provision of the law, by the basis of compensation, stating only after the settlement, leaving the public to be embarrassed and industry to be jeopardized. With the present strike situation in areas coal producing areas and under these circumstances, lightly consider the utter abandonment of more than $200,000 of the provisions of the wages and working conditions, of hostile employing interests who are public representatives of the companies involved in the production of collective bargaining in the industry.

For these reasons, you are respectfully urged by the representatives of the United Mine Workers to compel their reception of acceptance of the settlement proposal submitted by you.

The mine workers are alive to the necessity of immediate resumption of coal mining operations. Already, and with no indication of a serious coal shortage next fall and winter. Industry and the public is now facing the problem of price extensions before the coal requirements are fully met. There is every moral and economic reason for the prompt resumption of the present strike in the mining industry, and the public will be demanding an immediate and fair settlement at the earliest possible date.

The development of this emergency has been constructive of an issue since last April, and we have repeatedly warned the operators and laboring interests, the futility of its approach. It would have been obviated if the operators and laboring interests had fully understood the contract obligations and made it in the usual way to adjust wage and working conditions, in the end to escape the legal and practical burden of the present strike. The only thing that will cure this situation is the early and effective way, at the present time, to escape the futility of the current strike. For these reasons, we believe the settlement proposal to be repudiated and the settlement returns in favor of the settlement proposal.

We feel confident that your attitude will command itself to your sense of right and justice and that its issue will be a reason and wisdom of all thoughtful men who love justice and humanity.

Anthracticee Operators Express Sympathy with Proposed Plan of Settlement

Dear Mr. President: On behalf of the anthracite operators and workers, we are pleased to make the following reply to the proposal of arbitration submitted to us on June 31.

We are deeply appreciative of your effort to end the present suspension of anthracite operations. It is fair to all concerned. After conferences with the representatives of the operators and workers from March 15 to June 2, it appears no agreement satisfactory to both sides could be reached.

The operators then proposed that the "Practical Mining Plan" be submitted to a commission or tribunal to arrive at a settlement. The plan was to determine the questions concerning wages and working conditions of the men. We were unable to find a practical method by which prompt operators and workers in conference to determine these questions. An added difficulty is the fact that the plan would extend to the temporary wage scale.

We are, therefore, committed to arbitration, and are entirely in sympathy with the prompt action which you have proposed.

And, under other conditions, that certain modifications of your proposal are desirable. The anthracite operators are willing that the settlement shall be speeded up and be binding upon both sides of the country.

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Throughout the fruitless negotiations which have occurred, the operators and workers, the anthracite operators have had two proposals in view. First—An agreement on a scale wage scale, such that adequate should be at the same time be given by the operators to the anthracite mine workers have in the past and which would be willing to settle the conditions for the product can assure. It has been the position of the anthracite operators that this is economically necessary operating anthracite, in line with adjustments which have been made with respect to other commodities.

Second—That any agreement reached should be durable for a long time and provide reasonable means of wage adjustment, in the light of changing economic conditions of the country. The operators are willing to make such a provision in the contract, the only condition is that it be effective, at the present time, to escape the futility of the current strike. For these reasons, we believe the settlement proposal to be repudiated and the settlement returns in favor of the settlement proposal.

We feel confident that your attitude will command itself to your sense of right and justice and that its issue will be a reason and wisdom of all thoughtful men who love justice and humanity.

In the anthracite situation we again emphasize that the operators recognize the principle of the eight-hour day for all men in the industry, the union, and the that the existing rates of pay. If we are aiming for a starting point for future joint negotiation and the establishment of the additional demands of the anthracite workers, we believe the settlement proposal will so simplify matters that a basis of agreement may be easily reached. In the anthracite industry the human factor in the coal industry and human con-
Fifteenth Week of the Coal Strike

EDITORIAL REVIEW

T
e principal developments in the fifteenth week of
the strike were the fruitless effort of the President
to get the operators and miners together on a
voluntary basis of settlement, and the curtailment of pro-
duction from non-union fields and from western Kentucky
caused by the strike on the railroads. Opinion is divided
as to whether the real crisis in the coal strike has been
passed, with a majority feeling that it is yet to come.
Much depends on the stand the President takes, now
that the situation created by his proposal of July 10 has
been wiped off the slate. Beyond doubt the next week will
see some turn in affairs that will point the way out.

Six Killed and Many Wounded in Attack
On Non-Union Mine in West Virginia

H. DUVAL, Sheriff of Brooke County, W. Va., and
five other men, said to have been union coal miners,
were killed Monday, July 17, at Cliftonville, W. Va., and
more than two dozen men were wounded when an armed
band of about 300 men made an attack on the tipples of
the Richland Mining Co.'s Clifton mine. After a battle lasting
an hour and a half, in which thousands of shots from
revolvers and rifles were exchanged, the attackers were
driven off and more than forty prisoners were captured
and placed in the county jail.

Production in Connellsville Region Takes
Rebound Following Holiday Slump

W
ith the passing of the July 4th holiday output in the
Connellsville coke region is on the rebound. The
H. C. Frick Coke Co. is gaining at practically all its op-
erating mines, especially at the Trotter plant, which is
working about 50 per cent of normal, most of the men
working there being old men who have returned to work.
The Hillman Coal & Coke Co. is gaining all along the line
also, shipping two or three cars of coal a day from nearly
all of its plants and a car a day of coke from Crystal plant.
W. J. Rainey, Inc., the American Coke Corporation,
the American Manganese Co. and the Connellsville Central Coke
Co. continue to improve slightly. Other operating com-
panies are holding their own or gaining.
Railroad coal shipments from the region are about 25
percent higher than a week ago and coke shipments about
the same. The Southwest branch of the Pennsylvania R.R.
and the Monongahela R.R. handled more coal July 11 than
at any time since the strike started. The former hauled
359 cars of coal that day and the latter 255 cars, and
shipments on the 12th were probably larger. The condition of
the Baltimore & Ohio R.R., due to the railroad strike, has
somewhat hampered operators who are entirely dependent
on that road for the dispositions of their product. That
condition, however, is improving.

Union Heads "Pass Up" Pittsburgh Parley;
Operators Discuss District Settlement

A
n unexpected conference between Pennsylvania Com-
missioner of Labor Connelly, coal operators, and heads of
District No. 2, District No. 5, and the United Mine
Workers in Pittsburgh on Thursday, July 6, did not ma-
teralize, at least as far as the United Mine Workers were
concerned. The meeting was attended by ten representa-
tives of the Pittsburgh Coal Producers' Association, nine
from the Bituminous Coal Operators of Central Pennsyl-
svania and twelve from the Central Coal Association. None
of the United Mine Workers heads attended. The meeting
resolved itself into a discussion of the coal-strike situation
with special reference to the feasibility and desirability of
settlement of the strike by districts.
Mr. Rose for the Pittsburgh, Mr. Clark for the Clearfield
and Charles O'Neil for the Central, separately presented
the following to Commissioner Connelly: "That it is to the
interest of the operators, the miners and the public that a
wage scale and working conditions be negotiated between
operators and the miners in each district, and that the
mining of coal is a state matter in accordance with a recent
decision of Chief Justice Taft."

The operators also made it known that they are opposed
to the check-off system as being unlawful in Pennsylvania
and it is evident that they will not consider an agreement
with the miners that would involve a continuance of the
check-off system.

The central Pennsylvania operators laid great stress on
the fact that they had a contract with the U. M. W. of District
No. 2, guaranteed by the officers of the national organiza-
tion, providing that in the event of a new scale agree-
ment not having been signed on or before March 31, 1922,
the U. M. W. of District No. 2 would continue to work for
thirty days under the wages and conditions of the agree-
ment then in effect.

Middle West Ready to Go Back to Work;
Price Level Is Subject of Speculation

H
arassee beyond measure by the strike situation as
it has been developing of late, the Midwest region sent
its operators' representatives back to Washington Saturday
to accede on Monday to President Harding's plan to resume
negotiating operations at once at last winter's wages. The
operators of Illinois and part of Indiana met in Chicago
Saturday forenoon and discussed the situation, deciding
that it is necessary to line up with the President.
It will be with mixed feelings of relief and deep concern
that the great mining region above the Ohio goes back to
work at union wages—if it does. Most operators are
anxious to produce coal with the market in its present
state of high absorbtion, but they are morally certain that if
the President's commission works out a new and lower
scale of wages there will be another strike—probably in
the middle of the winter, when the country will need fuel
more keenly than ever, thus giving the miners the buoyant
feeling that they have the world by the tail. It is generally
felt among operators that prices will remain high enough
to all winter to permit operation at a profit even with wages
at the new level.

One great question of the immediate future is: "What if operations are resumed; the railroads will be unable to haul
enough coal to supply more than half the country's demand, with the result that most mines will get very little running time." This means, without doubt, that coal prices are going to stay in the clouds. A series of questions to
operators on the probable price at which they will start their
sale elicits a few vague replies. Some set the figure for southern Illinois coal as low as $3.65. Others declare they must recoup the losses occasioned by the shut-
down and the attendant expense of building up their or-
ganizations again after resumption. These mention $4.50
and $5. Others are for getting all the market will stand.
They boldly declare the country needs coal so badly and
will be able to satisfy so little of its demand that Illinois
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and $5. Others are for getting all the market will stand.
operating head of the company, said. Last week the company ordered its union engineers back to work at the union scale of wages, so that the gigantic Zeigler mines could devote the next few days to getting ready for work. The engineers demanded full pay for every day they have been off since April 1 or they wouldn’t work.

“Naturally we refused,” said Mr. Zoller. “That little item would have amounted to several thousand dollars.” So the company is doing nothing to get ready beyond keeping up the operation of pumps and the like. Quiet has reigned generally over the Illinois and Indiana fields except for threats against Indiana wagon mines by masked gangs of visitors. In one southern Illinois town the miners’ local got together and voted to remain on strike. This is open to various interpretations, one of which is that miners opposed to the policies of Frank Farrington, state president of the possible developments at Washington might open a way for Farrington to negotiate for a state settlement in Illinois, and they merely wished to speak their little piece against such a deal.

“There’s no possibility of Farrington making a separate deal,” states a well-informed Illinois operator. “He has been doing a lot of talking about it for a long time, but he knows better than to try it. He knows he couldn’t deliver, and he’s afraid of a test of strength on that issue.”

Kentucky Has Severe Railroad Handicap But Hopes to Produce Heavily Soon

For ten days or more the Harlan, Straight Creek and Fellico fields of southeastern Kentucky have been shut off as a result of a eight strike of railroad workers at Corbin, Ky., which has tied up movement of freight trains on the three divisions of the Louisville & Nashville in that section. The strikers at Corbin have intimidated the merchants, who have refused to sell food to strike breakers, and boarding houses have refused to harbor them, while the authorities have ordered imported workers to leave town when sent to Corbin or within railroad property. However, 150 men were sent to the Corbin shops on July 12 and the railroad is establishing a tent colony and commissary to take care of them. Corbin is in the mountain district, a lawless section, and difficult to handle.

Other sections of the state are not having much trouble as a result of the rail strike, and tonnage is moving freely. Hazard has had a fair supply of men, but the Chesapeake & Ohio, in eastern Kentucky, has been along giving good service. Western Kentucky also reports fair service. If the Corbin trouble is settled much heavier production will result.

Is the State of Illinois in Earnest, or Is Herrin Probe “Merely a Gesture”?

ATTORNEY-GENERAL Edward J. Brundage of the State of Illinois has made two moves giving the impression that Illinois is going to delve into the Herrin murders and prosecute the men guilty of the slaughter of a score of non-union strip miners and guards June 22. Early last week he publicly offered $1,000 “for information leading to the conviction of persons who committed murder and assault” in Williamson County on the day which the county openly exulted in having made “bloody.” Later in the week he spent two days in the county and came away declaring he had some information of value which would not be revealed now but would be used to obtain further information. He said that no action would be taken before the present session of the Williamson County Grand Jury, but he indicated the state would have its case ready for the next session, which convenes in September.

“Just a gesture” was the comment of one of the best known Illinois coal operators who has a mine in southern Illinois. “Nothing much will ever come of it. The state has no intention of going to the bottom of this thing. It only wants to go through a few less idle motions to calm the general demand that the bloody-handed gang down there be punished.”

Visitations of Coal “Ku Klux Klans” Scare Indiana Workmen from Wagon Mines

MAKED men have been making flying visits to Indiana mines warning workers there to quit and not come back if they wish to retain their good health and chances of longevity. Late last week 25 such mysterious visitors dropped in for a pleasant call at Dr. Sample’s wagon mine near Booneville, held up two men in charge, gave the warning against operation, damaged the machinery and departed. The owner has appealed to both county officials and Governor McCrory for protection. A bigger gang visited Lunenburg’s mine near the same town and ordered work there to stop.

Sees Calm in Utah a Prelude to Storm

NATIONAL GUARD rules regarding the recruiting of men to take the place of Utah mine strikers have not been strictly adhered to during the past week. There is, however, no campaign by the operators for strike breakers, as the strike leaders are opposing loudly against the action of the authorities in allowing the companies to send the few men that have been permitted to work. All is quiet but there are indications that would seem to point to another storm.

Some of the newspapers are outspoken in their disapproval of the Governor’s policy of forbidding the operators a free hand in recruiting workers to replace the strikers. One editorial asks: “Is Carbon County a Part of the State of Utah or Is It a South European Dependency?” This question was prompted by the fact that a large proportion of the men out are Greeks, Italians or other foreigners, a large number of them unnaturalized. It is believed that these attacks will compel the Executive to allow the companies to send as many men as the coal fields as they can get, and if this is done there is bound to be bloodshed.

West Virginia Mines Beat Records, Though Half Were Union at Inception of Strike

Since the coal strike was declared, on April 1, West Virginia has taken the lead in the production of soft coal, as previous production records in many fields have been broken, notwithstanding the fact that about half the mines of the state were in the union category at the outset of the strike. All this is pointed out in a statement issued by the West Virginia Coal Association, in which it is said:

“Since the strike was called the coal-mining regions of the state wherein the men were hampere by union restrictions began producing coal in a manner that surprised the buying public and astounded union officials, who had counted on endangering, according to their own statements, the nation’s fuel supply to such an extent that the government would be forced to step in.

“The Logan district, which before the strike called produced about 50,000 tons daily, now produces about 65,000 tons daily; during some weeks the output is 100,000 tons more than before the strike. The Pocahontas field, which had a normal weekly production of 360,000 tons before the strike, produced 455,000 tons last week. Tug River district, which had a normal weekly average of 90,000 tons, shipped 111,000 tons a week ago. The Kenova-Thacker district, which before the strike loaded 108,000 tons a week, now ships well above the 200,000-ton mark each week.”

Issuance of Injunctions in northern West Virginia became more frequent during the latter part of June and the first part of July owing to the difficulty operators in some instances have experienced in keeping their mines running in the face of organized interference. Among the companies which have recently obtained an injunction is the D. T. S. Coal Co., this injunction being against Louis Carpiel and other members of the United Mine Workers. It was granted by Judge W. S. Meredith, of the Marion County Circuit Court, and enjoins Carpiel and other officials of the United Mine Workers from interfering or attempting to interfere with the mining, shipping and selling of coal at the Thorn No. 1 mine in the Salt Lick Run section.
Production and the Market

Weekly Review

The long-heralded coal shortage seems to have arrived. An embarrassing lack of production, caused by the mine strike, has been increased by the railroad shopmen's strike. Normal transportation of freight has been impossible, mines which have been running have been forced to curtail operations and the slow movement all around has brought car shortage to the fore.

The coal market has reacted strongly to the combination which has limited much-needed tonnage. A general scramble for coal has resulted, in which Mr. Hoover's price list has been definitely outdistanced in the bidder's market which exists today. Large consumers are the most active purchasers, snapping up every available load on wheels. The steel industry is threatened with partial reduction of operation by the inadequate supply; railroads are insistent that a large share of the mine tonnage be turned over to them and shipping on the Great Lakes is menaced by the lack of vessel fuel.

Spot-Price Index Rises Twenty Points

Coal Age Index of spot bituminous prices reached 321 on July 17, an increase of 20 points when compared with July 10. This week's index figure represents an average price at the mine of $3.89, as compared with $3.64 a week ago.

Western Kentucky coal was the mainstay of the Middle West last week and prices were not long in reflecting the strong demand. At this writing western Kentucky is being quoted around $6.25, a full dollar over the last quotation carried on these pages, with every indication that it will go still higher. Eastern Kentucky operations were curtailed by rail troubles, as were West Virginia loadings, while western Kentucky mines were affected to a much lesser degree.

The market around Chicago continues to be the strongest of any section. Rail congestion has so delayed regular contract shipments that large consumers are buying car numbers on the spot market. Railroad supplies are on the verge of exhaustion and large consumers are forced to buy currently, as their reserves have declined below the danger mark. The same market conditions appear to be moving eastward—Cleveland and Cincinnati are hungry for coal, while the dwindling tonnage at the Hampton Roads piers and the meager all-rail receipts from Pennsylvania are being felt with increasing force in New England and the North Atlantic section.

The Northwest is on the verge of a critical fuel situation. Receipts by Lake have been pitifully low. Dock stocks at the Head of the Lakes are now around 1,500,000 net tons, as compared with 4,842,000 tons at this time last year. The railroads own 600,000 tons of the present dock stocks, 409,000 is under contract or owned by industrials, and the small balance is being doled out to old customers only under the most careful restrictions.

Retail dealers continue to ration their remaining supplies of anthracite. Consumers are placing more orders but are not at all insistent about early deliveries. Most of these orders are being filed for attention when coal is again available.

Estimates of Production

<table>
<thead>
<tr>
<th></th>
<th>1921</th>
<th>1922</th>
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</thead>
<tbody>
<tr>
<td>BITUMINOUS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week ended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 24th</td>
<td>7,784,000</td>
<td>5,381,000</td>
</tr>
<tr>
<td>July 1st</td>
<td>7,586,000</td>
<td>5,227,000</td>
</tr>
<tr>
<td>July 14th</td>
<td>6,196,900</td>
<td>3,916,000</td>
</tr>
<tr>
<td>Daily average</td>
<td>1,231,500</td>
<td>782,000</td>
</tr>
<tr>
<td>Calendar week</td>
<td>202,625,000</td>
<td>191,784,000</td>
</tr>
<tr>
<td>Daily ave. per</td>
<td>2,572,000</td>
<td>1,092,000</td>
</tr>
<tr>
<td>ANTHRACITE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week ended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 24th</td>
<td>1,947,000</td>
<td>24,000</td>
</tr>
<tr>
<td>July 1st</td>
<td>1,864,000</td>
<td>25,000</td>
</tr>
<tr>
<td>July 8th</td>
<td>1,525,000</td>
<td>23,000</td>
</tr>
<tr>
<td>Calendar week</td>
<td></td>
<td></td>
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<tr>
<td>July 14th</td>
<td>47,000</td>
<td>114,000</td>
</tr>
<tr>
<td>July 8th</td>
<td>36,000</td>
<td>92,000</td>
</tr>
<tr>
<td>Calendar year</td>
<td>1,412,000</td>
<td>1,388,000</td>
</tr>
</tbody>
</table>

*All figures subject to revision. Figures are not exact. No data is available for the last report.*
Fresh labor outbreaks have occurred in the Connellsville region following the Washington conference and production of coke has been affected. Demand for coke has increased, but the amount offering is too slight to induce blast furnaces to resume until conditions improve.

**BITUMINOUS**

“...a new cause has arisen to limit the production of coal,” says the Geological Survey, “namely: local congestion of traffic associated with the strike of the railway shopmen. Because of the uncertainties of the situation it is difficult to forecast production for last week (July 10-15), but the record of the first four days suggests that the output of bituminous coal can hardly exceed 4,200,000 tons. Production of anthracite continues practically zero. Final returns on the week of Independence Day, the fourteenth of the strike, show that 3,936,000 net tons of soft coal were produced.

“The trend of production in the fifteenth week of the strike (July 15-20) may be gaged from the following table of cars of coal loaded daily. Monday’s loadings (14,952 cars) were lower than those of Monday in other recent weeks, yet on Tuesday loading dropped to 12,829 cars, and on Thursday they fell to 11,594, the lowest on any Thursday since mid-April.

DAILY CAR LOADINGS DURING THE STRIKE

<table>
<thead>
<tr>
<th>Week</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
<th>6th</th>
<th>7th</th>
<th>8th</th>
<th>9th</th>
<th>10th</th>
<th>11th</th>
<th>12th</th>
<th>13th</th>
<th>14th</th>
<th>15th</th>
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</thead>
<tbody>
<tr>
<td>Mon.</td>
<td>11,445</td>
<td>14,592</td>
<td>15,474</td>
<td>15,211</td>
<td>16,047</td>
<td>11,809</td>
<td>14,972</td>
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<tr>
<td>Tues.</td>
<td>11,039</td>
<td>15,269</td>
<td>15,849</td>
<td>16,622</td>
<td>15,746</td>
<td>13,344</td>
<td>12,859</td>
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<tr>
<td>Wed.</td>
<td>11,437</td>
<td>15,999</td>
<td>14,705</td>
<td>17,031</td>
<td>15,656</td>
<td>11,978</td>
<td>13,364</td>
<td></td>
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<tr>
<td>Thurs.</td>
<td>11,090</td>
<td>16,323</td>
<td>14,864</td>
<td>16,432</td>
<td>16,492</td>
<td>16,421</td>
<td>11,534</td>
<td></td>
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<tr>
<td>Fri.</td>
<td>11,296</td>
<td>15,864</td>
<td>13,533</td>
<td>16,073</td>
<td>15,980</td>
<td>14,631</td>
<td></td>
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<tr>
<td>Sat.</td>
<td>8,191</td>
<td>17,991</td>
<td>13,465</td>
<td>17,993</td>
<td>12,663</td>
<td>12,323</td>
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“The cause of the decrease was congestion of traffic resulting indirectly from the shopmen’s strike. The first districts to be affected were Logan and eastern Kentucky, but in western Kentucky and southwestern Virginia also loadings soon began to decrease, and by Wednesday even the Pocahontas, Tug River and Kenova-Thacker districts were producing far below normal.”

An additional lot of British coal was received in New England last week and it is understood that several charters for the shipment of Welsh coal to this country have just been closed. Should the present transportation difficulties continue, cargoes of British coal will be a common sight in North Atlantic harbors.

Hampton Roads dumpings for all accounts were 435,674 net tons during the week ended July 13, as compared with

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

**Low-Volatile, Eastern**

<table>
<thead>
<tr>
<th>Market Quoted</th>
<th>June 19, 1922</th>
<th>July 19, 1922</th>
<th>July 3, 1922</th>
<th>July 10, 1922</th>
<th>July 17, 1922</th>
<th>July 24, 1922</th>
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<tbody>
<tr>
<td>W. Va. screens.</td>
<td>Columbus</td>
<td>$3.65</td>
<td>$3.45</td>
<td>$3.20</td>
<td>$3.00</td>
<td>$2.60</td>
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<tr>
<td>W. Va. screenings</td>
<td>Pittsburgh</td>
<td>3.25</td>
<td>3.05</td>
<td>2.80</td>
<td>2.50</td>
<td>2.20</td>
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</table>

**High-Volatile, Eastern**

<table>
<thead>
<tr>
<th>Market Quoted</th>
<th>June 19, 1922</th>
<th>July 19, 1922</th>
<th>July 3, 1922</th>
<th>July 10, 1922</th>
<th>July 17, 1922</th>
<th>July 24, 1922</th>
</tr>
</thead>
<tbody>
<tr>
<td>W. Va. screens.</td>
<td>Louisville</td>
<td>4.00</td>
<td>3.80</td>
<td>3.60</td>
<td>3.40</td>
<td>3.20</td>
</tr>
<tr>
<td>W. Va. screenings</td>
<td>Pittsburgh</td>
<td>3.50</td>
<td>3.30</td>
<td>3.10</td>
<td>2.90</td>
<td>2.70</td>
</tr>
</tbody>
</table>

**COAL AGE** Vol. 22, No. 3

Coal Age Index 521, Week of July 17, 1922. Average spot price for same time period 93.89. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the total output of the United States, weighted in accordance with first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second with respect to the tonnage each normally produced. The average thus obtained was compared with the average for the twelve months ended July 1914, as 100, after the manner adopted in the report of "Prices of Coal and Coke, 1915-1917," published by the Geological Survey and the War Industries Board. (Pittsburgh District, Illinois, Indiana and eastern Ohio prices not included in figures for last week.)

* bituminous coal dumped at Hampton Roads by weeks

*Imports, f. o. b., Hampton Roads.

*Indicates not available.
338,600 tons in the week previous. The heavier dumpings have reduced the pier accumulations materially, as car movement from the mines has been hard hit by the rail shippers' strike. The movement from the Southern fields was so heavy that it had taxed transportation facilities to the utmost, and with local labor troubles the railroads could not be counted on for a continuation of the heavy volume of coal freight.

New England buyers have awakened, at least in part, to the advisability of making some additional commitments. The increase is not heavy but is particularly noticeable coming just at the time when the easy movement to Hampton Roads has been interrupted. All-rail shipments were 481 cars during the week ended July 8, as compared with 642 cars in the preceding week. The light movement is confined almost entirely to railroad contracts.

TIDEWATER BITUMINOUS COAL SHIPMENTS IN JUNE, 1922

(Thousands of Net Tons)

<table>
<thead>
<tr>
<th>Destination</th>
<th>York delphia</th>
<th>Baltimore</th>
<th>Hampton</th>
<th>Charles-June</th>
<th>May</th>
<th>Total</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastwise to New England</td>
<td>10</td>
<td>2</td>
<td>687</td>
<td>826</td>
<td>837</td>
<td>35</td>
<td>823</td>
</tr>
<tr>
<td>Exports</td>
<td>6</td>
<td>2</td>
<td>104</td>
<td>352</td>
<td>321</td>
<td>7</td>
<td>362</td>
</tr>
<tr>
<td>Bunker</td>
<td>109</td>
<td>12</td>
<td>164</td>
<td>302</td>
<td>323</td>
<td>7</td>
<td>352</td>
</tr>
<tr>
<td>Inside cases</td>
<td>31</td>
<td>26</td>
<td>233</td>
<td>291</td>
<td>2,337</td>
<td>35</td>
<td>1,723</td>
</tr>
<tr>
<td>Other tonnage</td>
<td>150</td>
<td>12</td>
<td>614</td>
<td>764</td>
<td>767</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total, June</td>
<td>269</td>
<td>32</td>
<td>1,945</td>
<td>2,337</td>
<td>2,434</td>
<td>35</td>
<td>2,337</td>
</tr>
<tr>
<td>Total, May</td>
<td>264</td>
<td>84</td>
<td>1,723</td>
<td>2,337</td>
<td>2,434</td>
<td>50</td>
<td>2,337</td>
</tr>
</tbody>
</table>

Lake dumpings were 150,655 net tons during the week ended July 17—153,516 tons cargo and 6,139 tons vessel fuel—as compared with 252,105 tons in the previous week. Nearly 900,000 tons of this season's dumpings to date have gone to new destinations on Lake Erie and the Head of the Lakes apparently faces a distressing shortage of fuel next winter. Total Lake tonnage handled this year now stands at 4,233,772; in 1921 it was 11,907,210.

COKE

Beehive coke production during the week ended July 8—92,000 net tons—felt the effect of the Independence Day holiday. The labor situation in the Connellsville region was not so satisfactory last week. Demand is exceedingly strong but is mostly from foundries and miscellaneous users, as the available spot tonnage is too slight and costly to interest blast furnaces.

June production of beehive coke was 458,000 net tons; byproduct, 2,580,000, a total of 3,038,000 tons, as compared with 2,969,000 tons in May. This output consumed 4,429,000 tons of coal; 3,707,000 tons in byproduct ovens and 722,000 tons in beehive ovens.

How the Coal Fields Are Working

<table>
<thead>
<tr>
<th>U. S. total</th>
<th>Jan. to May</th>
<th>June to July</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Union</td>
<td>45.6</td>
<td>55.7</td>
</tr>
<tr>
<td>Alabama</td>
<td>63.5</td>
<td>64.6</td>
</tr>
<tr>
<td>Somerset</td>
<td>35.5</td>
<td>54.7</td>
</tr>
<tr>
<td>Panhandle, W.Va.</td>
<td>55.3</td>
<td>51.3</td>
</tr>
<tr>
<td>Westmoreland</td>
<td>54.9</td>
<td>58.8</td>
</tr>
<tr>
<td>Virginia</td>
<td>54.8</td>
<td>59.9</td>
</tr>
<tr>
<td>Harlan</td>
<td>53.3</td>
<td>54.8</td>
</tr>
<tr>
<td>Hazard</td>
<td>51.7</td>
<td>58.4</td>
</tr>
<tr>
<td>Panhandle, Ohio</td>
<td>49.8</td>
<td>60.9</td>
</tr>
<tr>
<td>Tug River</td>
<td>41.8</td>
<td>63.7</td>
</tr>
<tr>
<td>Logan</td>
<td>47.0</td>
<td>61.0</td>
</tr>
<tr>
<td>Cumberland-Piedmont</td>
<td>46.6</td>
<td>51.6</td>
</tr>
<tr>
<td>Winding Gap</td>
<td>47.5</td>
<td>63.4</td>
</tr>
<tr>
<td>Kenova-Thatcher</td>
<td>36.2</td>
<td>54.3</td>
</tr>
<tr>
<td>N. E. Kentucky</td>
<td>32.9</td>
<td>47.7</td>
</tr>
<tr>
<td>New River</td>
<td>24.3</td>
<td>37.5</td>
</tr>
<tr>
<td>Union</td>
<td>63.9</td>
<td>59.6</td>
</tr>
<tr>
<td>Louisiana</td>
<td>32.9</td>
<td>46.7</td>
</tr>
<tr>
<td>Ohio, Eastern</td>
<td>50.7</td>
<td>66.8</td>
</tr>
<tr>
<td>Missouri</td>
<td>44.8</td>
<td>54.5</td>
</tr>
<tr>
<td>Illinois</td>
<td>42.9</td>
<td>54.9</td>
</tr>
<tr>
<td>Kansas</td>
<td>41.4</td>
<td>53.8</td>
</tr>
<tr>
<td>Indiana</td>
<td>41.2</td>
<td>39.8</td>
</tr>
<tr>
<td>Central Pennsylvania</td>
<td>39.1</td>
<td>50.2</td>
</tr>
<tr>
<td>Fairmont</td>
<td>35.5</td>
<td>44.0</td>
</tr>
<tr>
<td>Western Kentucky</td>
<td>32.3</td>
<td>37.7</td>
</tr>
<tr>
<td>Pittsburgh*</td>
<td>30.4</td>
<td>31.9</td>
</tr>
<tr>
<td>Kanawha</td>
<td>26.4</td>
<td>34.5</td>
</tr>
<tr>
<td>Ohio, Southern</td>
<td>22.9</td>
<td>24.3</td>
</tr>
</tbody>
</table>

*Rail and river mines combined.

Car Loadings and Surpluses

<table>
<thead>
<tr>
<th>All Cars</th>
<th>Coal Cars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cars loaded:</td>
<td>876,096</td>
</tr>
<tr>
<td>Previous week:</td>
<td>877,856</td>
</tr>
<tr>
<td>Same week a year ago:</td>
<td>776,079</td>
</tr>
<tr>
<td>Surplus cars:</td>
<td>239,225</td>
</tr>
<tr>
<td>June 30:</td>
<td>253,685</td>
</tr>
<tr>
<td>Same date a year ago:</td>
<td>164,000</td>
</tr>
</tbody>
</table>

ANTHRACITE

Production of hard coal, which is confined to river barley, was 23,000 net tons during the week ended July 8. Shipment continue to go forward from the storage yards, being 4,101 cars during the week. Aside from pea coal, there is very little free tonnage to be had.

New England stocks of hard coal have dwindled to 315,927 net tons as of July 1. On April 1 these were 726,011 tons. Since then there have been receipts of 425,920 tons and deliveries of 295,049 tons.
British Wage Question Nears Crisis

British production during the week ended July 1 was 4,550,000 gross tons, according to a cable to Coal Age, as compared with 4,354,000 tons in the previous week. The South Wales export market is unimproved and entry is softer. Rail freights have been reduced, those applying on coal by 15 per cent, and this may have a stimulating effect on the trade.

The audit of the colliery books for the month of April showed that there would be practically no profits for the industry as a whole, and that consequently wages would not rise above the minimum anywhere. It was apparent that wages would continue at the minimum throughout August and much dissatisfaction arose among the miners.

The president of the South Wales Miners' Federation, addressing the annual conference said the executive thought it quite impossible that the men could continue another six months under the conditions which had prevailed so long. It had agreed to recommend that the national executive be urged immediately to approach the coal-owners and endeavor to induce them to increase wages to not less than 60 per cent above pre-war wages, and if they failed to then meet the government and make it clear that it was quite impossible to expect miners to continue any longer under the present wage system.

A decision has been arrived at by the Nottinghamshire Miners' Association in favor of terminating the National Agreement.

French Coal Prices Slightly Lower

The French market was rather inactive during the last days of June, purchasers of industrial coal having postponed their orders pending the issue of the new price-list, effective from the 1st.

The new prices show but slight modifications—a few francs at the most—on the old schedule.

The French Minister of Public Works and Labor had a second conference with the miners' delegates, to whom they gave, at their request, more details on the cost prices of the collieries. On the other hand, the miners' delegates declared that the Eight Hour Act could not, in their opinion, be held responsible for the considerable decrease in individual output, which they ascribe to other causes.

The ministers then asked the delegates to state exactly by writing what are these other causes.

Export Clearances, Week Ended July 13, 1922

From HAMPTON ROADS:

<table>
<thead>
<tr>
<th>Country</th>
<th>Price (f.o.b.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>£1.32</td>
</tr>
<tr>
<td>Ecuador</td>
<td>£1.32</td>
</tr>
<tr>
<td>Peru</td>
<td>£1.32</td>
</tr>
</tbody>
</table>

Hampton Roads Pier Situation

N. & W. Pier, Lambert Point:

Cars on hand: 2,481,000
Tons on hand: 19,128,321
Tons dumped: 18,290,000
Tonnage waiting: 30,000,000

Virginia Ry. Pier, Newport News:

Cars on hand: 1,421,000
Tons on hand: 12,000,000
Tons dumped: 9,000,000
Tonnage waiting: 25,000,000

C. & O. Pier, Newport News:

Cars on hand: 1,150,000
Tons on hand: 12,000,000
Tons dumped: 9,000,000
Tonnage waiting: 25,000,000

Ruhr Mine Strike is Averted

An agreement was reached on the eve of a general strike of coal miners in the Ruhr Valley after a conference between the Minister of Labor and the miners' leaders and mine owners. This, however, will require final ratification by the miners' district convention before it becomes effective.

The Ruhr coal output, including that of the collieries left of the Rhine, in May amounted to 8,081,951 metric tons (7,512,646 tons in April), or 310,844 tons (326,617 tons) per working day. In the same period, 2,075,235 tons (2,032,679 tons) of coke and 208,964 tons 302,657 metric tons of briquets were produced.

The price of unwashed coal has been raised to 1,205 m. per ton. In June, 2,000,000 tons of English coal were imported. Unless the Reparations Commission grants an added period of grace to enable her to catch up in coal deliveries, Germany will be obliged to make heavy purchases of English coal for distribution among the Allied States. The Cabinet discussed the situation in the course of a special council meeting at which it was admitted that Germany is heavily in arrears in her deliveries.

Production of coal in the Ruhr district during the week ended July 1 was 1,920,000 metric tons, according to a cable to Coal Age.

Rail Strike Cuts Supply at Roads

The strike of railway employees has spread to the clerks of the N. & W., and C. & O., with the result that the movement of coal from the mines to piers, impeded when the shopmen went out July 1, is being more seriously held up.

Less than 200,000 tons was on hand at the local piers at the end of the week, and the N. & W. notified shippers it will accept coal only for indefinite delivery.

The coal trade is in a state of mild activity with prospects of further unsettled conditions next week. Prices quoted at the local piers went up to $6.50 & @ for all grades, no distinction being made between them.

Coal Paragraphs from Foreign Lands

ITALY—The price of Cardiff steam first is now quoted at 36s. 6d., according to a cable to Coal Age.

BELGIUM—The c.i.f. contracts are being put into stock and only the classified descriptions continue to be sold in proportion to the production, the greater part going to France and Holland. The industrial market seems to be working at a slightly better half-tone. Half-burned and steaming coal is in demand, in particular slack for making briquets.

Pier and Banker Prices, Gross Tons

<table>
<thead>
<tr>
<th>Country</th>
<th>Price (f.o.b.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>£1.32</td>
</tr>
<tr>
<td>Argentina</td>
<td>£1.32</td>
</tr>
<tr>
<td>Brazil</td>
<td>£1.32</td>
</tr>
</tbody>
</table>

BUNKERS

<table>
<thead>
<tr>
<th>Country</th>
<th>Price (f.o.b.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>£1.32</td>
</tr>
<tr>
<td>Argentina</td>
<td>£1.32</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Country</th>
<th>Price (f.o.b.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>£1.32</td>
</tr>
<tr>
<td>Argentina</td>
<td>£1.32</td>
</tr>
</tbody>
</table>

Note: The quotations are based on the assumption that the coal is shipped in heavy type of coal carloads in bulk.
North Atlantic

Stronger Demand, as Usual, Follows Curtailed Receipts

Shortage Conditions Prevail, with Less Than 500 Cars at N.Y. Piers on Monday—Rail Trouble Hits Flow of Southern Tonnage—Carriers Take Large Share of Pennsylvania Fuel Mined.

SHORTAGE conditions have followed the curtailed receipts which have prevailed for the last ten days. On Monday there were less than 500 cars at the New York piers, while the flow of Southern coals via Hampton Roads was reduced by the transportation disability caused by the railroad labor trouble. So far, the Pennsylvania mines have been given a good car supply, but the carriers have insisted on a large share of the loadings to meet their requirements.

Coincident with the reduced movement of coal has come a stronger demand, as reserves have been depleted to a point where replenishments are imperative. Prices have advanced, especially on liner business and if the scarcity continues price will be no object.

NEW YORK

Coal is becoming scarcer here. There were less than 500 cars at the loading piers on July 14 and most of it was Pool 11 or poorer quality. The line trade was strong although spotty, and quotations were higher than on the Tidewater basis.

It is reported that plenty of empty cars are at the various railroad distributing points but that the companies refuse to put them in at the mines unless assured they would secure a large percentage of the tonnage loaded.

Buyers are buying "coal" in most instances, ignoring the pool number. The poorer grades of low-volatile coals were quoted $4.25,$4.25 f.o.b. mines and the better grades $4.50.$5. High-grade gas screened coals were scarce but were held at around $5. B. R. & F. coals were quoted $4.25,$4.50.

Southern coal was being brought here in large tonnages, most of it on consignments. Free lots of these coals were quoted $8.80.$8.50. The number of loaded boats in the harbor is being steadily reduced, quotations ranging $7.40.$7.80.

PHILADELPHIA

Users of fuel are more anxious recently, especially those who have had coal on the run for some time and are finding delivery retarded. Inquiries have increased greatly during the last few days but with hardly enough coal available to meet the spot demand. The railroad situation is such that even when orders are placed no one would give any kind of assurance of time of delivery. In this respect shipments originating on the B. & O. have been particularly hard hit, and as a result gas coals for Fairmont district are difficult to purchase.

There is much dissatisfaction among the operators over the suggested plan for reclamation and there is much adverse comment heard. This feeling has been communicated to the consumer and has in itself added much urgency for more coal. The chief objections to the President's tender are from union mine owners, who say if they accept they will be at a distinct disadvantage, because the mines in non-union territory, working at the lower wage schedule, will be able to produce coal at a much lower cost and will practically have the entire market to themselves.

Prices have stiffened considerably and very little talk is heard now about an agreed price for this State. High-grade coals remain extremely difficult to procure.

CENTRAL PENNSYLVANIA

The daily output is now averaging 600 cars. Production was somewhat curtailed by the July 4 holiday and the organization of the miners at Colver, where the Davis Coal Co. had been in full operation until last week. United Mine Workers were successful in forming a local union at Colver on July 9, and called out a majority of the miners.

Prices are slightly higher. Pool 1 is ranging $4.25,$4.75; Pool 10, $4.25,$4.50, and Pool 11, $4.40.$4.25.

There is no enthusiasm among operators in this field over the President's proposal. They express the thought that if accepted, it will be only because of a sense of duty. Operators generally think the plan would only continue the high prices.

BALTIMORE

With the stocks of the larger industries here at last depreciating at a rate that has caused alarm, there has developed a rush of buying which has quickly wiped out the available coal away. At present it is not a question of price, although the advance is not marked as compared with a week ago. Even barge coals, which are almost wiped out, when available at all are under $7.30 at the piers. The major of general cargo vessels loading here are now going to Hampton Roads for barge coals.

There is practically no Pennsylvania line coal offering at this point, all-rail and blue, easy for the collieries to transport, mines when such coals are offered. Even B. & O. coals which have been in better supply since the start of the coal strike have fallen much in grades in difference in grade quotations, as had been the case for some time.

Shipments of Pocohantas and New River continue to be received from Hampton Roads by barge. Total receipts under this method have probably been close to 100,000 tons during the past six or eight weeks. While the move for a new tariff on New River coal has been averted, shipments direct from mines to Baltimore and all-rail, no considerable movement has taken place in this direction as yet.

UPPER POTOMAC

The Davis Coal & Coke Co., having secured an injunction to restrain strikers from interfering with the operation of its plants at Thomas and Henry, this company has made preparations to resume operations. Field conditions approached those nearer normal, with many of the plants in operation, some of them on a normal basis. Shipments were not affected by the striking of some employees such as the Western Maryland has had a force of strike breakers at work for some time.

FAIRMONT

Reduced operations before and after the July 4 holiday tended to lower the output. Train service was not as smooth as it had been before July 1. More coal was being sought by industries, the demand exceeding the supply. Prices were well above maximum, particularly on mine run.

South

BIRMINGHAM

While the steam demand is not quite as strong from outside territory, industrial coal goods originating from foreign and local consumers are sufficient to move all the free coal obtainable. Industries in Arkansas, Mississippi, Louisiana and Georgia bought a good deal of coal in the aggregate, nearly all business, both railroad and industrial fuel, being for prompt shipment. Quotations range from $2.25 to $2.50 per ton.

Domestic coal is moving fairly well, slightly better demand being reported for Carbon Hill grades and other medium qualities, the better grades being well sold up for several months ahead. As a rule sales were made on basis of the July schedule as given last week.

Production is holding up well, although interfered with to some extent by car and labor shortage and inability on the part of the railroads to give prompt service. Production for the week of July 1 was 360,000 net tons, as reported to the Alabama Mining Institute. Preparations are being made to start several new furnaces in the district, which will necessitate increased production in this direction.

VIRGINIA

Production continues in an upward direction, insofar as quantity and the car loadings are concerned. With coal in strong demand, little effort is being made to increase the coke output, which is now averaging about 280,000 tons a month. There are few idle mines in this territory. Prices are stronger as the result of a better demand, the steam market being especially active.
Wholesale Orders Flow In; Householder Still Apathetic

WHOLESALE dealings are confined to pea coal and river barley. With so much being heard of the strike situation in Washington, there are many orders flowing in, as the feeling prevails that mining may be resumed before long. This attitude of placing "applications" is shared, but to a lesser degree, by the retail consumer.

Some of the late business is attributable to the effect of the rail strike upon the buyer. However, the old attitude of the householder has been jarred but little from the indifference he has shown all summer. Retail stocks are being watched more jealously than ever and unless there is urgent need for the coal, retailers are not making deliveries.

NEW YORK
Dealing in anthracite is confined almost wholly to pea and river barley. The other coals have nearly all disappeared from wholesale market. Retail dealers outside of Manhattan and Brooklyn have fair stocks of all sizes while most of the dealers in the two boroughs mentioned are entirely out of the larger sizes.

Those in short supply are deeply interested in the outcome of President Harding's conference to the operators and miners. They realize now that there is bound to be a scarcity of coal this fall and winter and that they will be forced to take in their needs piece-meal.

Storage piles of pea coal are rapidly disappearing, and in Pittston, the heart of the anthracite fields, it is being sold for $8.50 per ton, as compared with $7.40 previously to the suspension. Some independent pea was reported as being quoted here at $8.75 f.o.b. mine, during the past week.

There was some river barley quoted during the week $2.50, and it was also reported that an offer of silt at $2.10 f.o.b. place of loading had been made to local dealers.

BALTIMORE
The principal feature of the market at present is that consumers are now growing restive and are calling up their retail supply connections in an effort to assure deliveries. The fact that a number of dealers are telling their customers that they can give no assurance of supplies, even when cold weather arrives, is causing a stir. The sudden turn of interest of the public was undoubtedly the result of the rail strike of shopmen and its complications.

ANTHRACITE FIELDS
The main topic of conversation in the region is the President's endeavor to secure a resumption of mining.

There is a feeling among the men that they will soon be at work again. Recently it was reported that the railroads were distributing empties, which the miners take as a sign of early resumption. There was no disorder in the region last week.

PHILADELPHIA
Retailers are quite confident that the resumption of mining is not far off, although it cannot be and their feeling of confidence is shared to the same degree by the producing end of the trade. The public also seems to feel that it will soon be at work again, which is shown by the number of orders which the dealers are asked to accept for future delivery.

There is a belief among some that even though the mines do get back to production under the President's plan, there is every chance of another suspension should the report of the commission be unfavorable to the men. With this in mind there is no question that every dealer will order in as much coal as his yard can possibly hold.

There is still considerable effort to lay in supplies, caused by the more serious aspect of the rail strike. As all dealers have pea coal, and can easily replenish their supplies, this is the one size that is being sold. A number of the larger dealers are replacing their stock of pea almost car for car. The slippers are carrying a large amount of pea for steam use, but this demand has not developed to such extent so far.

River barley remains the only steam coal on the market, with prices inclined to become firmer, $2.75.

BUFFALO
The belief that the strike is to be lifted soon may be the reason for the continued light demand. A little more call for it exists than formerly, but it is nothing remarkable. Consumers have not been accustomed to buy much coal in summer and they don't realize how much as if nothing had happened.

The complaint now is that if the government is able to propose or to force a measure to lift the strike it should have done so months ago.

BOSTON
The public continues apparently quite indifferent to the prolonged suspension and all its implications. Householders seem content to buy "applicants" and set out for their vacations with little thought for next fall and winter. Some miners in the hands of retail dealers have now dropped so low that the Massachusetts Fuel Administrator has decided to attempt nothing of a regulatory nature for the present.

Meanwhile, the originating companies have nothing but pea for shipment. For this size there is a reasonably steady demand among some of the larger cities, but there is no special inquiry that would in any way justify an advance in price.

COKE
CONNELSVILLE
Offerings of coke have decreased further, chiefly on account of some fresh striking, commonly attributed to the proposal at Washington of a plan for ending the coal strike, which the workers in the Connellsville region consider decidedly in their favor. There is also an increased demand from foundries and miscellaneous consumers. There is practically no demand for Connellsville coke for blast furnace use, both because prices are altogether too high to justify furnaces in taking hold and because the offerings are in quantities too small to interest a blast furnace.

Even $10 seems now to be out of the question, reports being of recent sales at $10.50@$11.00. The coke is usually sold simply as "coke," since selection is difficult nowadays, but the buyers include foundries.

The advance in prices is of little practical importance, on account of the small tonnage involved. Production of the region is light, 80 per cent is by furnace ovens and of the remaining 20 per cent much is moving on old contracts.

The Courier reports production during the week ended July 8 at 43,790 tons from the furnace ovens and 10,139 tons by the merchant ovens, a total of 53,929 tons, a decrease of 16,290 tons, the decrease being attributed to the holiday.

UNIONTOWN
The shopmen's strike is an active deterring factor upon coal production only upon the B. & O., where no cars have been placed for loading since the strike began two weeks ago. The Pennsylvania and Pittsburgh & Lake Erie continue to supply maximum car demands to operators in the lower Connellsville region. The conviction is slowly sinking in among striking miners that the Washington conference gives all appearances of ending the strike without considering what grievances they may have. Operators have taken advantage of the low morale of the strikers and have issued a general "work or quit" order. The county court is flooded with eviction notices, more than 400 being served this week.

The coal market is reacting strongly to the combined coal and shopmen's strike. Buyers are numerous, with steel and railroad interests the big purchasers. The car shortage is hovering over the life situation. Prices quoted are steam, $4.50@$4.75; byproduct, $4.75@$4.90.

BUFFALO
The supply is still less than the demand, but it appears to be met by the recent order for a sort of fuel that can be made to answer the purpose. Anthracite consumers are looking at it, as something that may have to be put into the place of hard coal.

ANTHRACITE
Western Kentucky Coal—Is Market’s Headliner

Chicago and Midwest

Western Kentucky coal remained the unbroken headline on the Chicago market during the past week. Almost every transaction ascended a little more than a dollar to a height of $6.25 by Saturday. And not satisfied with that, this coal was poised at the close of trading Saturday for a further flight into more rarefied market atmosphere. “We’ll have seven dollar coal right away” was the flushed prophecy of the few favored jobbers who were able to get a firm contract. Tonnage is mounting on the Kentucky field, and almost everybody in town seemed to agree with them. But few if any actual sales had crossed the $6.50 level by the end of the week, in spite of the hectic reports which fluttered around Chicago. While the market level on western Kentucky coal was astonishingly buoyant, the volume of coal was insignificant so that the total amount of money changing hands was small. Demand was keen enough at one time or another during the week in spite of the rise and fall of hope that a strike settlement was coming out of Washington, but the delivery of fuel from the field was greatly reduced by all sorts of transportation obstacles.

Eastern Kentucky operators have, in some instances, stuck to the Hoover levels of $6.50. A miner from that region got out of hand as to price so that the average quotations on this market, for what little coal changed hands, is just above $4. Smokeless and half fuel has attained about the same level. Practically no coal from any other fields was heard of on this market during the week.

ST. LOUIS

The storage piles at the smaller steam plants in St. Louis are getting dangerously thin. There is some coal moving in every day but very little and the demand continues to grow. The market is quoted at $5.50 to $5.75 for all sizes of western Kentucky. Prompt shipment cannot be promised on any road.

Some coal is moving from Alabama, but it is unsatisfactory. The prices range from $2.25 on mine run up to $5.50 on screen coal, with a freight rate of $3.57. A little Missouri coal is coming in from Monticello County to St. Louis switching limits at $5@5.50 at the mine, with a rate of $1.87.

The domestic situation is quiet locally but country demand for steam is good. Throughout the central part of Missouri, the territory is being supplied in a way by local mines and strip pits.

LOUISVILLE

Louisville sees a general improvement of transportation conditions in the eastern Kentucky fields which have been a source of great trouble and motive power. In Louisville the railroads are making progress toward better service, which has a vital effect upon the coal market.

Reports received indicate that some of the eastern Kentucky mines are sold out to August or later, but investigation shows that most concerns can fill dealing on hand quickly if they can get cars. Other than Lake and a little railroad, there has not been much contract business accepted. Demand is chiefly from public utilities, railroads, and, increasingly, from retail and general industrial buyers, while Lake movement is steady. Prices throughout the state show an increase of about a dollar a ton over last week, as eastern Kentucky is ranging from $4@$4.50 and western Kentucky, $6.00 @ $6.25 a ton, according to size. Screenings are carrying a premium.

INDIANAPOLIS

While there appears to be a fair coal supply in the city and a reasonable amount being offered, prices have broken loose from the Hoover maximum and are heading the large demand rules the prices. Public utilities and big consumers in Indianapolis have been offered both Kentucky and Western coal at $5 a ton for mine run. This with the recent quotation of $2.16 from Kentucky and slightly higher from West Virginia, brings the price close to $7.50.

Indianapolis is far from being short and while some of the larger consumers who did not buy far ahead are being compelled to pay for their experience, they have sufficient coal on hand to keep running for some time.

SOUTHERN ILLINOIS

“Calm” is the shortest word to describe the conditions here in the southern Illinois field at present. Throughout Williamson and Franklin County things are unusually quiet. The United Mine Workers’ officials are silent word to the miners in this field that the reputation of the entire organization has been damaged too much already. As a result the miners in this section are trying to avoid themselves as long as possible within the law, although a little local trouble develops occasionally when a miner meets one of the men employed in pumping out or keeping up the mine, but nothing serious has happened.

All the coal in the southern Illinois field is cleaned up and both sides are making time until the trouble is over. There is still some poverty at places but in the last few weeks the miners seem to be able to get more credit than formerly when it was clear that the merchant feels normality is near.

Much the same condition prevails in the Du Quoin, Jackson County and Mt. Olive districts. In the western district there are places where the miners are having a hard time making both ends meet.

WESTERN KENTUCKY

As a result of the railroad strike stopping production in some other fields, demand on western Kentucky has been greater than usual in this district, not being checked much by the rail strikes, is producing at a good clip, while prices are climbing. Orders have been coming in from all parts of the North and West, with some tonnage moving East as well. Today it is a question of getting any kind of coal at any price with market consumers.

Operators of western Kentucky are quoting prices over a dollar a ton higher than quotations of last week, and with the current climate of the market ranging as high as $8.35. It is reported that car service on the I. C. lines has been good.
Eastern Inland

Acute Market Conditions

**Intensified as Stocks Shrink**

Rail Strike and Congestion Further Entangle Situation—Prices Boom, $5 for Non-Union Coal Likely Soon—Lake Situation Is Critical.

MARKET conditions are more acute. Coal stocks are either dangerously low or entirely depleted and fresh supplies are extremely difficult to obtain. Rail congestion and strike troubles are delaying coal deliveries. Prices are booming and non-union coals will soon go over the $5 mark unless the strike can be settled and much needed production released. The market belongs entirely to the bidders and the urgency for fuel is daily growing more pronounced. The Lake situation is critical, and priorities are likely later on this summer as the only solution to safeguard the Northwest's winter supply.

**PITTSBURGH**

There is no operation at any of the union mines in the Pittsburgh district. Late in June plans were completed for an attempt at resumption at several mines, but President Harding's inaction of efforts to end the strike caused the operators to postpone their efforts, while it stiffened the attitude of the miners. The Washington proposal also had the effect of strengthening the non-union striking in the Connellsville region. The President's proposal of terms for a resumption of mining has been roundly criticized. The non-union operators have also joined in, under the belief that the proposal is not clear, leaving it as a possibility that the non-union operators who have strikes on their hands are expected to participate in the union settlement. As the United States Steel Corporation is notoriously on an open-shop basis an important factor is involved.

“Trading” has been lighter in the past week, offerings being diminished. Prices are higher. Westmoreland gas has been going at $1.75 and Connellsville steam coal at $4.25@4.50. Demand, in general, is greater on account of reduced deliveries of West Virginia and Kentucky coal arising out of railroad congestion, which has been accentuated by the strikes of railroad workers.

**BUFFALO**

As a rule consumers have lost out by failing to buy a little more generally, but they cannot be made to understand and are only buying a little, to enable them to wait until coal is in full supply again. A jobber reports making sales lately at $4.55 for 2-in. lump to a consumer who in April refused to pay him $1.90. The popular idea is that President Harding's reported plan, to have the men go back to work with the operators. The idea is that it would be preposterous to go back to war wages, paying the men $7.50 for eight hours’ work.

Quotations are hard to make, as there is really no regular price. Sales as high as $4.25 @ $4.50 for 2-in. and $4 @ $4.25 for mine run and slack have been made.

Only three cargoes of bituminous coal have come in from Ohio in the past seven days, total 17,600 net tons. The Buffalo furnaces have bought 200,000 tons more of this coal.

**CLEVELAND**

Conditions are becoming more acute. Railroads, brick plants and industrial users of all descriptions are flooding the market with inquiries. The main bulb of the industrial situation is the Cleveland Electric Illuminating Co. This company supplies about 75 per cent of the factories in this community with power. It demands sufficient coal to last until Aug. 15. Plants not buying power, however, are suffering. As a result prices are advancing, with every indication of higher prices if the strike settlement is not made soon.

A survey made of coal supplies in public utility plants in Ohio shows that the electric railroad companies have sufficient stocks to last to the middle of August. Artificial gas plants are virtually barren of stocks, while electric power plants have sufficient stocks to run until the last of July. The Cleveland municipal water works is inquiring for coal. The school board of Cleveland has asked for bids for 21,000 tons of slack and smaller amounts of other grades. Specifications are so exacting for this business, however, that operators are going slow in offering bids in view of the uncertainties of the situation.

The Lake situation is getting daily more acute. Shipments are not increasing and priorities loom as the only method of solving the problem later in the summer. Another phase of the matter which is worrying operators in this district is the possibility that Illinois and Indiana rail coal will be drawn upon largely to meet the needs of the Northwest. This will contribute to the car shortage.

**COLUMBUS**

With the strike continuing unabated and the situation getting worse, there are many indications of an acute demand for fuel. Hoover prices are being disregarded more and more and operators and jobbers to a certain proportion are asking as high as $4@ $4.25 for lump and mine run. But in the main a large number of the producers are asking the Hoover levels only and with the jobbers' commission this is slightly higher to the trade.

Retailers have cleaned up pretty well on stocks and as a consequence are coming into the market more and more. This, together with steam and railroad demand, will make a big market for the market entirely. Pocahontas lump is retailing around $7.75@8$, while West Virginia splints are quoted $7.25@$7.75. Only a small amount of Ohio-mined coal is available at present.

During the week ended July 12 the H. V. Docks at Toledo loaded but 95,600 tons as compared with 170,160 tons the previous week. The total tonnage handled by these docks since the opening of navigation is 1,398,338. The T. & O. C. Docks at Toledo have not opened for Lake loading.

**EASTERN OHIO**

Reports reveal an impending fuel scarcity, especially among the larger consumers. The ultra conservative stocks laid to prior to April 1, notwithstanding additions made to them by purchases of non-union coal, are nearing the point of absolute depletion. For example, it is asserted that Lake shipping may shortly be curtailed because of the acute supply situation for fuel purposes at the various docks. Within the past few days, the Detroit & Cleveland Navigation Co. is said to have wired Mr. Hoover with a view to obtaining relief.

The quantity of coal available in the spot market has precipitously declined during the past two weeks. Jobbers who have been slow in safeguarding their fuel requirements now find themselves in a position of considerable apprehension.

Another deterrent factor is the curtailed operation of eastern Ohio striping mines because of labor difficulties. It is estimated that the aggregate output of these mines at present is between 30,000 and 35,000 tons per week, as compared with 50,000 tons 30 days ago. Spot prices during the week rose to the Hoover level.

Receipts of bituminous coal at Cleveland during the week ended July 8 were the smallest in 10 weeks. Total quantity arriving was 3,972 cars; 227 cars for industrial use and 117 cars for retail yards, as compared with a total of 1,145 cars the preceding week.

**DETROIT**

Buying is proceeding very slowly. Jobbers are inclined to regard as fortuitous the fact that a greater disparity between supply and demand does not exist, in view of the circumstance that the quantity of coal available for the Detroit market has been greatly reduced within the last few weeks.

Many of the factories and industrial plants are reported to have a fair supply of coal remaining in reserve piles. Quotations are on all descriptions holding at about the level fixed by Secretary Hoover, with lump and egg at $3.75, run of mine $3.50, nut and slack $3.25.

**NORTHERN PANHANDLE**

Production continues on a large scale. There are only about three plants in this region now inactive. Not only is there a strong demand for railroad fuel but the buying of commercial coal is on a large scale. The rail strike greatly stimulated the demand. Prices are firm with mine run bringing the maximum.
Minnesota in Traval May Seize Trusty Axe

"Cut Timber" Is One Emergency Scheme That Fuel Surveyors May Propose—Whole Region Fears Future Prices Climb—Receipts Pitiful.

Reports indicate this week that part of the Northwest is getting more and more flighty over the coal crisis but that around Milwaukee there is still some confidence that the situation nationally will straighten itself out and that enough fuel will reach the region to hold down prices and prevent anything like a famine. Receipts by vessel at upper docks continue pitifully small and in Minnesota they are taking an official state canvass of the coal status which may result in a recommendation that the state turn to the forests for much of its fuel.

Prices are steadily advancing in most parts of the Northwest though so little coal is on hand that few except old customers are getting any, and delivery to even those is carefully restricted.

DULUTH

The coal situation at the Head of the Lakes is indeed serious. Free stocks on docks are at the low ebb. Orders are being refused by local dock companies and coal is allotted to old customers.

An official statement of the soft coal on docks shows that railroads own 600,000 tons and industries 400,000 tons and that first-coal totals 478,900 tons.

Shipments from the local docks for the month of June aggregated 29,654 cars. In June of last year but 9,557 cars were shipped and in May of this year only 18,587 cars went out. The shipments last month were the heaviest in eighteen months, with the exception of last October, when 28,722 cars were shipped.

Receipts have been pitifully small. In June there arrived 155,934 tons of bituminous. The season's total is 4,562 tons of anthracite and 284,174 of bituminous. This is 445,516 tons of anthracite and 3,510,971 tons of bituminous less than last year. An anthracite shortage this winter seems impossible to avert.

Prices have advanced. Lump is quoted at $7.50 by the majority of docks, coals up to 50c. less and screenings as high as $6.50, with the level around $6.

MILWAUKEE

The coal business is at a standstill. Wholesalers and retailers are filling their spikes with orders which they cannot fill until coal begins to be mined again and the railroads resume running.

Milwaukee is receiving coal by Lake almost daily, but the coal goes out as fast as it comes in. Dealers are optimistic, however, and are inclined to cry down all talk of a coal famine and high-priced coal the coming winter. President R. H. Aishton of the American Railway Association wired the Milwaukee Association of Commerce that if the coal strike is settled by Aug. 1, the railroads will have sufficient cars to carry the necessary coal from the mines to Lake Erie to meet the demand without a deficit on the docks in the Northwest.

There has been no disturbance of prices since the recent advance of 50c. in soft coal.

Thus far in July, 14 cargoes of soft coal aggregating 88,570 tons have been received, making the season's receipts to date 694,831 tons, against 1,375,653 tons last year up to this time, a shortage of 700,822 tons from last year's record. No hard coal has been received as yet, the 700,000 tons of anthracite screenings being of little account as fuel. Last year 435,200 tons of hard coal had been received up to now.

New England

Buying Interest Shown, Spot Prices Tend to Stiffen

Business Improving, Trade Is Less Inistent That Consumers Take Deliveries—Rail Strike May Mean Trouble, but Local Traffic Has Not Been Upset—Cars Disabled and Delay in Repairs Reported.

Buyers have shown more concern over purchases by the past week than at any time for several months, and to a degree spot prices have stiffened. Rehandlers at this end have had reasonably good business the past week and in the trade there is less disposition to press deliveries on the consumer than was the case a fortnight or so ago. It is realized that the striking shippers can cause trouble somewhere along the route, although in New England the men who walked out were replaced to a considerable extent without much difficulty. Traffic here has been unaffected, but reports are coming through of disabled cars in transit from the mines and of indefinite delays in repairing them.

At Norfolk and Newport News there has been a notable change in the situation, especially at the Norfolk & Western terminal. On July 15 it was stated that only about 26,000 tons of Navy standard coal was available for dumping, and that this tonnage belonged to twenty-three different agencies. On top of holiday suspension the shops troubles have further cut down output that had been kept for a considerable period on a 110 per cent basis.

Prices for spot delivery have already responded to the reduction in tonnage available and as high as $6.72 has been rumored as a sales figure, f.o.b. vessel at this point. Orders for higher figures have been refused in some instances.

Outside contracts with the Government are being canvassed and it is indicated that the price situation may be improved by the tender of a large order. The base line of $6.10 for the month of July has been gained and this has been extended to the month of August.

The mill is receiving coal by the slow boat from the West and during the past week has purchased only 2,530 tons, but 11,000 tons are under contract and are due soon by the same vessel. This vessel will be expected early this week and will decay coal and 14,000 tons will be received. There is no record on the mill's dock of any coal from the Gulf.

MINNEAPOLIS

General public apprehension over a coming coal famine grows throughout this region. The Northwest has started a fuel survey which may result in a recommendation that wood be cut as a coal substitute and distributed all over the state. Coal experts, naturally, would be an extreme measure for in few cases could wood take the place of steam coal; but it indicates the straits in which the state feels itself to be in with the Lake season so far advanced.

Many eyes are turned toward the lignite fields of North Dakota. It has been suggested that these fields could deliver to Minnesota 200,000 tons—a mere drop in the coal bucket. However, Dakota has its own fuel troubles and this source of supply is considered decidedly unstable. One expert has estimated that 6,000,000 tons of soft coal are needed here this winter. This region, always dependent upon outside sources for its fuel, probably will have to depend upon the national settlement of the coal strike, for its salvation.

Lower freight rates effective July 1 have given 20c. reduction in the cost of hard coal at the Twin Cities, this being the reduction on the haul from the docks to these cities. But that is on the basis of the old rate.

What is the cost of new coal will be, when it comes, is very uncertain.
Cincinnati Gateway

Buyers Hot After Tonnage, Prices Take Sharp Ascent


The strenuous days that coal men associate with the war and the months that followed were vividly brought back in Cincinnati and the non-union fields adjacent thereto during the past ten days. The handy deviation from the Hoover prices by applying the “premium” process having led to the exaction of larger profits, smaller operators and a class of jobbers and wholesalers are now out in the open and $5 coal has been chalking up.

The strike of the shopmen and other employees of the railroads has played a part, in that it has offered an excuse for pyramiding the price. The buyers, principally steel men, have been hot after any or all tonnage that was available and since the beginning of the week prices have shot upward. The tonnage hauled through this gateway has dropped fully 50 per cent recently, and from a transportation standpoint the situation is the worst in years.

CINCINNATI

The vast majority of the direct sales offices, old line wholesalers and others were freed of the Hoover process and are going without spot business rather than engage in evacuations. The result is that there are two separate and distinct price lists on the market, one for the coal that is in transit and close enough for connecting line delivery, and the other for coal that must take its turn in order to start moving.

All three lines engaged in heavy coal traffic, the L. & N., the N. & W., and the C. & O., have been failing in their ability to cope with the transportation problem. The tonnage passing over the bridges here has dropped fully 50 per cent from the peak that was established three weeks ago. The strike of the N. & W. clerks at Portsmouth has called a number of clerical coal men from the Pocahontas field in order to keep some of that tonnage moving to the West and the Lakes.

The situation admittedly has resolved itself into the worst state of affairs that has been known in this point for years and there are those who profess to believe that $5 coal isn’t a marker to what it may be a few days farther along. Cincinnati is holding to her faith in the river transportation for her own immediate needs. Even with the upturn to the wholesale market the retailers have shown no disposition to take advantage of the flurries except that where $8.50 was quoted as high for Pocahontas and $5.50@6 for mine run and the bituminous lump, and $5.50@6 for screenings last week, these are now the minimum prices. In other words, where a few retailers were undercuts the prices a week ago, they are now all to that level. Mine prices are steadily rising and are shown in the Weekly Review. The market is extremely sensitive.

HIGH-VOLATILE FIELDS

KANAWHA

July 4 tended to curtail production. Furthermore, congestion in yards and on sidings has tended to restrict the car supply to some extent, but as the car supply in this region is not as urgent as in some other fields where more coal is being produced, the supply has not affected the output to an appreciable extent. There was a brisk demand for steam coals in Western markets and Lake demand was reaching larger proportion.

LOGAN AND THACKER

Logan production was affected by inability to secure empty cars, production falling behind at the rate of 300 cars a day as others have been buying on a larger scale and have been urging prompt shipment for fear of the rail strike may affect delivery. There is also a growing demand at the Lakes. Shipments to the steel centers are large.

The heavy movement of Kenova-Thacker coal is preventing capacity production, owing to the difficulty of getting empties back to the mines. However, labor shortage losses are still running higher than those from car shortage. There is a ready market for all the steam coal produced. A large tonnage is being sent to the Lakes.

NORTHEASTERN KENTUCKY

Since July 1 the demand has been augmented not only by lower freight rates but also by the favoring of consumers having shipments curtailed at any time by the rail strike. Prices on all grades are at the maximum. The greatest obstacle in the way of capacity production is the difficulty of getting more equipment to the mines, congestion delaying the delivery of empties.

LOW-VOLATILE FIELDS

NEW RIVER AND THE GULF

There would have been additional gains in the New River output in the first week of July but for the intervention of the holiday. A congestion of traffic has made it almost impossible to make an unusually large production. With rates reduced, Tidewater is taking a little more coal but much of it is going to New York, Baltimore and Philadelphia instead of New England. Mines continue to increase their output as more men return to work.

Gulf mines are being handicapped by a serious congestion in the Virginias, there being more than 5,000 cars awaiting unloading at various points owing to the failure of the public to purchase. Car shortage losses are now twice as large as labor shortage losses, which for a time were the principal factors in holding back production. Much of the product is consigned to Tidewater.

POCOHONTAS AND TUG RIVER

There is an ample market for the large output of the Pocahontas region, which continues in excess of 400,000 tons a week, despite certain handicaps, such as a labor shortage and the difficulty of securing equipment, due not so much to any shortage of cars but to the impossibility of moving loads and empties with more celerity. Yards and trackage facilities are taxed to the utmost. When Tidewater became congested there was a heavy movement westward for which there is now a better market than there was before July 1. Prices have stiffened again.

Tug River mines are still producing in the order of 110,000 tons a week, not having been bothered much by a shortage of mine labor, although now beginning to feel the effect of a shortage of equipment. The principal movement from this field is to Western points.

West

SALT LAKE CITY

Business is still quiet. Probably nothing short of filling up the bins free would arouse the public to the necessity of getting in winter coal now. There is likely to be a rather serious car shortage this year and anxiety is felt in operating and retail circles.

Salt Lake City has today about 30,000 tons of coal in its yards.

Figures showing the coal produced in the state for the first half of the present year show a gain over the same period of 1921 amounting to 370,795 tons, the total tonnage being 2,106,251. Production, however, is well below that of the first half of 1920.

KANSAS CITY

The coal situation is more unsettled than ever due to the railroad shopmen’s strike, which has curtailed transportation to some extent and caused a spirited demand for such coal as is available. Prices have gone up as a result. Kansas mine run is selling as high as $5 per ton for the better grades and production appears to be on the increase with the strike.

Local dealers are advising their customers to put in coal now and as the prices are higher than last year, it is hard for the users of coal to understand, but no doubt will be made plain to them if last year’s wage scale for the miners is continued, as the prices will be based on the wage scale. This year, if wages are high, they will have to get more for the coal they handle or continue to lose money.

There is a little coal being mined now in Arkansas and while as a rule there is little demand for this grade at this season, it is moving freely. In fact the storage coal is about all used up and anything that will make steam is in demand.
ALABAMA

State convicts will be used in mining coal at Aldrich for another three months under a contract between Aldrich and David Roberts, trustee of the Montevallo Mining Co. Announcement of the contract was made recently by Mr. Roberts, who said that the contract had been agreed upon and had been approved by Governor Ford. An experimental contract for one month was made recently at the price paid to the Montevallo company for convicts labor before the company passed into the hands of the bankrupt court.

In the case of the experimental lease was the Lens Coal Co., with offices at Henry Ellen, capitalized at $2,000,000, with $1,172,600 paid in, partners to whom C. Payne, W. L. Simmons and John R. Boyle.

COLORADO

The Leyden mine, near Denver, is operating normally, according to officers of the Leyden Coal & Iron Co., at the average on the open-shop basis for 20 years. Miners on the payroll now in most instances have been with the company a good many years and do not appear to pay attention to the political fields.

The Colorado Fuel & Iron Co. has been able to increase its output half a ton per man per day this summer as a result of a campaign to stimulate men to do their best. The campaign methods include schemes of bonus, parties and prizes and pitting them against each other with daily reports "from the front" which are posted where men can see them frequently.

ILLINOIS

The Groveland Mining Co. has sold an issue of $300,000 first mortgage 7½ per cent gold bonds to John Burnham & Co., Chicago, Ill., and John H. Lumley, stories owner of the Peoria & Pekin Union Ry, which is a belt line connecting eleven railroads serving Peoria.

Horace Clark, of the Clark Coal & Coke Co., Chicago, Ill., has been appointed, D. W. Buchanan, of Chicago, president of Old Ben Coal Corporation, spent several days last week in Woodford, Ky., attending the Fourth of July, at Oconomowoc, Wis.

George B. Harrington, of Chicago, president of the Harrington & Franklin Coal Co., has returned from an Eastern business trip.

The Dixie Fuel Co., of Louisville and Nashville, has arranged to open a branch sales office at 424 Washington, Chicago, which will be in charge of John H. Rhodes, A. C. Lackey, producer and vice-president of the Dixie Fuel Co., and H. H. McElraine, vice-president of the Dixie Fuel Co., were in Chicago recently, arranging for the opening of the office there.

The Orchard Coal Co., of Marion, of which Charles Gent of that city is general manager, recently acquired the mine and property of the former Strong-Gray Co., near Dorrsville, Saline County, The Harrissburg Fuel Co., a company composed of R. A. Parks and John W. Gray.

James Forester, general superintendent of the Forest, Coal & Oil Co., of Paradise, has been on a long vacation in the West.

KENTUCKY

J. B. Bills is now superintendent of the Mountain Coal Co., formerly owned by J. P. Allen, which was formerly with the Collins Mining Co., of Lafferty. Mr. Bills, formerly with the McWebb Coal Co., is now mine superintendent of the Harlan Fuel Co., Harlan.

The Douglas Coal Co. is on the lines serving the coal fields of Kentucky and Tennessee, and is in the process of reorganizing to tie up the entire mining industry, as a result of the severe congestion at terminals where freight trains have been stopped with no prospect of continuing. There are many dead engines in the L. & W. yards at Corbin, the Eastern Kentucky, Cumberland Valley and Knoxville divisions, and the roundhouse men are out. Western Kentucky has been hardest hit so far as trouble as the eastern section.

The production of the Lewis Coal Co. at Waverly, as well as the coal and equipment, have been sold at public auction. The coal is in the market for $1.25 to $1.30 a ton, and the sale was held June 25, 1921, and has not been operated since. The property consists of 400 acres of coal rights and a mine electrically operated.

NEW YORK

D. C. Ashwood, anthracite editor of Coal Age, is broadcasting a talk on the anthracite situation from the following stations: July 21—3:45 p.m., Philadelphia, Pa.—John Wannamaker—WOC.

July 18—7:45 p.m., Springfield, Mass.—Westinghouse Elec. & Mfg. Co.—WIBZ.

July 15—2:45 p.m., Medford, Hillsdale, Mass.—American Radio Corp.—WAKV.

July 14—2:45 p.m., Schenectady, N. Y.—General Electric—WXV.

July 21—2:00 p.m., Pittsburg, Pa.—Westinghouse—WPG.

July 31—2:00 p.m., Newark, N. J.—Westinghouse Elec. & Mfg. Co.—WJW.

After an association of twenty-two years with the Steel Co., Charles H. Atwater, vice-president of the Ohio Fuel & Coke Co., has been appointed as the sales manager for George H. Lachnicht.

Announcement is made of the appointment of Vinegar J. W. C. Bowater, Inc., 66 Broadway, New York City, as the manager of the company.

The Rome Wire Co. announces that it has taken an interest in the Atlantic Insulated Wire & Cable Co., which will continue to manufacture high rubber covered wires and cables.

OHIO

The Cincinnati branch of the American Wholesalers Association has appointed Fred Leder, president of the Logan & Kenton Coal Co., E. F. Bardin, of the MacBard Coal Co., W. T. Francis, of the Tidesley Coal Co., R. H. McCormack, of the Kebo Coal Co., and Walter Welchman, of the Kentonia Coal Co., a committee to cook up some plans for the benefit of the coal miners.

Announcement is made of the appointment of J. E. B. Heilborn, Senator J. F. Bosworth, and J. D. Fitzpatrick, owners and operators of several mines in Bell County, Ky., and large acreage there were in Cincinnati recently going over the details of a big merger that will take in several of the going operations in that section of Western Kentucky. The plans call for the consolidation of eight mines and the opening of others.

Pennsylvania

The Anthracite Oil, Gas & Coal Co. of Northumberland, has notified the State Department at Harrisburg of an increase in its capital from $5,000 to $20,000.

The State Department of Mines has just compiled figures showing the production of coal in the Anthracite district of Pennsylvania. The total production of coal was 114,447,132 tons for the year ending Sept. 30, 1920, compared with 117,257,200 tons in 1919. The total value shipped to market was $71,851,896 compared with $71,370,123 in 1919. The largest consuming states were New York, New Jersey, New England, Ohio, and Maryland, with Delaware, Maryland, and Ohio, respectively, in the next three places.

The miners at Colver employed by the Ebensburg Coal Co. have been pretty thorougly organized and the new union men have struck. Eviction notices are being served on those living in company houses by the company. Evicted workers will be allowed to remain in the tent colonies.

The tipple of the Shade Coal Co., at Hagvo, was destroyed by fire recently, causing a loss of $10,000. The origin is thought to be incendiary.

Notices of dissolution of the Basin Coal Co., a furnishing company secretary of internal affairs, Harrisburg.

Cosgrove & Co., with headquarters in Johnstown, and branches in Jersey City, St. Louis and Minneapolis, have been named by the distributors of the Pennsylvania Coal Co., a Guggenheim subsidiary. The plants producing this low-volatilite coal are in the Greater Johnstown and Connellsville, Fayette counties, and are in the heart of the greatest anthracite mining area in the world, which the Cosgrove company will sell the coal as "Admiralty," and has gained such a reputation of high quality in the Eastern part of the country, and used largely by the Navy during the war.

The territory over which the Cosgrove company will sell the coal extends from Ohio, Indiana, Illinois, Michigan, and Wisconsin to组织 organized and operated by the Canadian Coal Co., of Groveland, Il., a large mine in Western Pennsylvania, and is used largely by the Navy during the war.

The territory over which the Cosgrove company will sell the coal extends from Ohio, Indiana, Illinois, Michigan, and Wisconsin to Wisconsin, and has been closed down since April 1 as the result of the strike. Resumption of operations at this mine is regarded as a favorable development owing to the fact that the union has held its ground at Thomas, the largest mining center in the Upper Potomac region.

The United Mine Workers' organization has been used for $1,000,000 by the Willis Branch Coal Co., in the New River field, to represent the miners during the strike of the U. M. W. during which period the miners were employed by the Commonwealth of West Virginia, Sept. 1, 1918, when it started to operate on an open-shop basis. The mine is a completely mechanized outfit, and it is claimed that it is the most modern coal mine in the United States. The mine is located in the town of Seneca, W. Va., and is operated by a company which is owned by the United Mine Workers' organization.

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Traffic News

The Anaconda Copper Mining Co., in a brief filed with the I. C. C. in the Western coal area, states that the rate on coal between points in Wyoming, Colorado, and New Mexico and states west thereof, and destined to markets in the Pacific Ocean, is, in the opinion of the company, too low, and that the rates on coal between points in the Middle West and markets in the vicinity of the Pacific Ocean, and the rates on coal between points in the Middle West and markets west of the Rocky Mountains, is too high.

In this case the Kemmerer Rock Springs operators ask that the commission on its own motion fix on the line between Kemmerer and Rock Springs a rate of $1.25 per ton less than the rates from those points to Chicago, St. Louis, and other points to the east. The Western States Convention of mining engineers has also secured a rate of $1.25 per ton less than the rates from those points.

The Northern States Convention of mining engineers has secured a rate of $1.25 per ton less than the rates from those points.

Joseph Hallier, a well-known mining man in the Hills, was killed recently in Baltimore, due to a fall from a coal car. The coal, according to the police, was being loaded in the coal yard at Baltimore. The coal car was moving at a slow speed, and the man was attempting to reach the coal car from another car. The coal car ran over the man, and he was killed instantly.

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Comer Meetings

American Chemical Society's annual fall meeting will be held Sept. 4-9 at Pittsburg, Pa., at the Carnegie Institute of Technology and general meetings at Carnegie Music Hall.

American Mining Congress. Twenty-fifth annual convention of the mining and metal trade will be held at Pittsburgh, Pa., Sept. 1-3. The meetings will be held at the University of Pittsburgh, and the sessions will be held at the Hotel New Yorker, the Hollenden Hotel; E. C. Porter, connection, and the Scottie coal companies St. Lawrence shipment was approximately 2,000,000 tons.

Quebec

As a result of the American coal strike, fuel is now being brought to Montreal from the Cape Breton mines by steamers owned and operated by subsidiary companies of the Canadian Pacific Railway, and the coal is being unloaded at the Tidewater Exchage at Baltimore, where it is being processed and shipped to the industries of the United States.

In the complaint of the United Paperboard Co., an examiner of the I. C. C. recommends that the rate on coal from group A, B, and C mines in Pennsylvania to Thomson, Mo., be declared reasonable.

The Illinois Coal Traffic Bureau has filed a brief in the I. C. C. case brought by the Northern States Paper Co. It requests that it be allowed to make no changes in the rates of the Illinois Coal Traffic Bureau and that it be allowed to continue to supply on flow coal as well as on large coal.

In the complaint of the Grasselli Chemical Co., the company claimed that the rate for the reasonableness of the charge for the use of its railroad connections and the power of the railroads in the conveyance of coal and coke from the plant stock pile, is not within the jurisdiction of the commission.

Obituary

Joseph Hallier, a well-known mining man in the Hills, was killed recently in Baltimore, due to a fall from a coal car. The coal, according to the police, was being loaded in the coal yard at Baltimore. The coal car was moving at a slow speed, and the man was attempting to reach the coal car from another car. The coal car ran over the man, and he was killed instantly.

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The Vital Aspect of Price

SECRETARY HOOVER'S plans to distribute current coal production and to hold the price within reason are as timely and will be as well received as the conferences on prices in May that resulted in holding quotations in check from June 1 until last week.

Necessity for some control over distribution has been increasingly evident since the first week of July, and as always when acute distribution problems arise price troubles begin. Mr. Hoover again stepped in at a critical juncture. With truly remarkable foresight he anticipated the details of the approaching crisis and when the time to act arrived he was ready with a fully developed, workable plan. He has co-ordinated the Interstate Commerce Commission, the departments of Justice, Interior and Commerce, the railroads and the coal operators. He has so laid his plans that the usual protesting voices in the Senate are quiet. His plans will produce results, for he is of the type that will shape the details to the practical objections as they arise.

As to the urgency of directing the restricted flow of coal in the direction of transportation, public utilities and certain other essential users there can be no question. On the equally, if not—to the operators—more important question of prices some would hold back approval. The two cannot be separated in any practical working program. Price has been directing distribution, as for instance last week when the more than doubling in price of western Kentucky coal in Chicago acted as a magnet for large consignments of Pennsylvania high-volatile coal, the offering of which on that unusual market served to check the upward rise in quotations. When the government takes over, in effect, the current production of coal it must have a great deal to say as to the price that will be charged for that coal.

There is a larger and more vital aspect of this price question. Price is the evidence to the public of how the industry is functioning. The public is interested in wages of coal miners only as these wages are interpreted into prices of coal. The public has stood on the side lines while this strike has been in progress, quite apathetic at first, then patiently tolerant, now aroused. It has put up with the inconvenience of the strike (and will if necessary put up with more than inconvenience) because it has appreciated that the operators are trying to liquidate wages of union coal-mine labor and that the basis of the policy of the United Mine Workers is opposition to wage reductions. But what is the public saying about an industry that stages a strike to lower the wages of its workers and at the same time extorts huge prices for coal? There is no fairness in that.

An indication of how the people feel on this question is found in the action this week of the Governor of Colorado, who, when advised that certain operators in that state had increased prices one-third, warned them that he would withdraw the support of the National Guard at once unless prices were restored to their former level. He said that he had put troops at the mines in the interest of the consuming public that needs the coal and to provide work for willing miners, and not to protect anyone's pocketbook.

Price is the sore spot. The race for coal may be largely responsible for the flight of prices last week, but if the coal operators are not able—and they are not—to save themselves from this source of condemnation, the government is more than warranted in stepping in. Whether some producers like it or not they must be protected from themselves, and those producing the greater part of the current tonnage who have and will continue voluntarily to maintain a fair price are entitled to protection from those who will not.

Unreasonable wages and unreasonable prices are in the same category. The country wants neither and the government is looked to for protection from both. Mr. Hoover has said that no operator intent on robbing the public can get a car in which to load coal. And he has taken the responsibility of saying what price is reasonable. He is right. And with his usual decisiveness he has not temporized with the situation. The administration might consider the same line of policy with respect to union coal-mine wages when planning a resumption of mine operations.

A Sympathetic Strike
In the Hard-Coal Region

WHAT the anthracite operators have always feared has come to pass. The union is using the suspension in the anthracite region as a club to hold over the bituminous operators. Unless the demands of the union for the old-time four-state conference in the bituminous region are granted the strike in the anthracite region will be allowed to continue indefinitely.

There is a part of the public that is not in industry and that sympathizes but little with the woes of the manufacturer (who uses soft coal) but has, nevertheless, a keen interest in the filling with anthracite of its own domestic coal bin. The union is desirous of so sorely distressing all the people of the United States, soft-coal and hard-coal users alike, that they will be driven to give the miners what they ask—an interstate conference in which union and non-union regions will be conjoined and a check-off that will make the operators in every part of the country pay dues to the union.

When the union talks high prices it trots out the hard-coal field, because hard coal is expensive to mine, to pump and to prepare and has a wider and stronger appeal: when it talks strike it calmly forgets the anthracite mines and introduces the bituminous region, where it wants a renewal of the old conditions—the con-
tract with the Central Competitive region or something even more in restraint of trade. It asks no change in the districting of the anthracite region. There it already makes a 100-per-cent collective bargain embracing all three districts, but it is nevertheless as ill-disposed to bargain there as it is elsewhere. Loudly as it calls for the collective bargain, it would have none just at present in the anthracite region, where what might be termed a sympathetic strike is going on.

The anthracite operators have asked for arbitration. The miners reject it because, forsooth, they cannot get a restatement of the Central Competitive agreement in an entirely different and relatively non-competitive region. They give no reason for their rejection of Mr. Harding's proposition as to the arbitration of the anthracite difficulty, and Mr. Harding apparently lumped the anthracite and bituminous fields together in his thinking and makes no effort to direct public opinion to the vast difference in the two or to the game John L. Lewis is playing.

The anthracite region has become a vassal to the bituminous districts. The operators in it are permitted to make no treaty with their own men till the union wins or loses in the soft-coal field.

An Acceptable Settlement

POINTEDLY and forcefully the New York Tribune asks why Washington does not drive the miners and operators, either or both, into the open and make them face the square issue of what sort of settlement is acceptable. The miners are assailed because they ask "not arbitration but prejudgment." The operators' offer of arbitration by districts instead of on a national basis is characterized as absurd. "The coal industry is a national one. Every operator competes to some extent against every other. There must be a national wage base if there is to be industrial peace," says the Tribune.

This is all true as far as it goes, but it should go farther. What is a national wage base? Does anyone conceive for a moment that a national wage base means that a miner who undercuts the coal, shoots it down and loads it into cars, whether he work in a 9-ft. bed or in 3-ft. coal, whether he gets 300 days or but 150 days' work per year as a regular thing, whether in one mine he must lay room track, push cars and dig ditches and another not, must have the same compensation per ton of coal regardless of conditions? Does anyone maintain that the day laborer at a mine in a community where living costs are low should receive the same wage per day as one working where living costs are relatively high? Of course not. That would be absurd. The miners' union would be the last to agree to such a scheme, for the necessity and opportunity of fighting for more favorable differentials has given the union life and many an official a job.

What the Tribune is thinking about is indicated by the wording: "Suppose the arbitral board in one district decided wages should come down and in the adjacent district that wages should go up!" it says, adding "Divergent decisions would make district arbitrations no arbitration at all. As matters stand they are for arbitration in words but against it in fact."

What the Tribune really is arguing for is a national wage policy for the bituminous-coal industry—that is to say, such unified control by the operators on the one side as is exercised by the miners through the United Mine Workers on the other. Such in fact was the practical effect of the old Central Competitive Field conferences and agreements. The interstate contracts broadly set a general rate of increase—they were never successful in producing a decrease—a percentage to be applied to existing rates. The contracting parties were obligated to return to their respective districts and write the terms of the general conference into district contracts, but in no case could any provisions be added to the agreements that would increase the cost of production or decrease the earning power of the mine workers. In other words, no opportunity was offered—in fact it was expressly denied—that differentials between fields be changed. Marginal organized fields awaited the outcome of the negotiations in the Central Competitive Field before setting their wage scales. Their decisions were largely but not entirely influenced by the larger decision to which the operators were not a party though the miners were, through their international officers.

The outstanding advantages of a method of determining broad changes in wage levels such as resulted from the old interstate conference are self-evident. This process tends to work even-handed justice and to stabilize the coal industry. But a national conference is no place to solve local problems. So long ago as March 8, 1916, Mr. Moorshead, a scale committeemen from Illinois, introduced a resolution into the joint conference pointing out that "serious inequalities between the four districts" had been disclosed in years of negotiations, and that these had caused "serious conflicts, because of the many inequalities and injustices that have been forced on miners and operators alike," and asking that a commission be appointed to inquire into the setting up of new machinery for determining differentials.

A large part of the record before the President's Bituminous Coal Commission in 1920 is occupied with discussion of differentials. Both sides sought changes. The commission pleaded lack of time for consideration and instead suggested a new commission of miners and operators to take up the problem. Nothing has ever been done about either of these recommendations. Why? Because the operators East and West are wide apart in their desires and necessities and the miners see no advantage in raising the question, especially as it usually has the check-off problem pinned to it.

Sitting with Illinois and Indiana and the miners, Pittsburgh and Ohio, having but two votes in eight, have no chance in the Central Competitive conference to adjust their differentials to meet the more potent competition of West Virginia. Central Pennsylvania follows the lead of Pittsburgh as the Southwest does that of Illinois. A regrouping of districts with the State of Pennsylvania and Ohio in one; Illinois, Indiana, and western Kentucky in another, and the Southwest, Iowa and Texas a third, would give modern expression to the group idea, wherein differentials could find their proper solution and the miners lose nothing in strength and power as compared with the older and—from the standpoint of competitive conditions—obsolete Central Competitive Field. The largest of these groups would set the pace for the others, until very soon a way of getting together nationally would be found.

Why do the United Workers refuse to consider any group save the old one? Because John L. Lewis set that as his policy in this strike, and he dare not deviate a hair's breadth from the letter of his first dictum, else Frank Farrington find excuse to break away for a separate settlement in Illinois.
Belt Conveyor Supported by Suspension Bridge Used To Bring Coal Across River in Logan Field

Coal Is Dropped from Drop-Bottom Cars Into 500-Ton Bin, from Which It Is Fed to Retarding Conveyor—Coal Is Picked Clean and Fed to Belt Conveyor, Which Carries It to Tipple

By A. D. Carr*
Cincinnati, Ohio

Two seams of coal are operated by the Guyan Mining Co., a subsidiary of the Jewett, Bigelow & Brooks Coal Co., of Cincinnati, Ohio, at Wilbur, Logan County, W. Va.—the Eagle seam, a gas coal which lies approximately 100 ft. above the level of the Guyandot River at that point, and the No. 2, or Island Creek, seam, which is about 200 ft. higher in the hills. Both coal beds cover a large area.

As will be seen on the left in the frontispiece, a 500-ton storage bin has been erected on the side hill, and coal is discharged into this by the drop-bottom cars from the workings in the Island Creek seam. This bin is 200 ft. long and 20 ft. wide and over it passes a double mine-car track. Thus two trips of cars can be dumped at the same time. There are two slots in the top of this bin. These are made about 60 ft. long and consequently the cars can be and are dumped without stopping. Thus they are promptly returned to the mines. The readiness with which they are discharged makes possible a large output with but few cars.

A feeder shown at the foot of the conveyor pulls coal out of the bin and discharges it onto a retarding flight conveyor, the shed of which can be seen on the side of the hill. This conveyor is 365 ft. long and has a pitch of 35 deg. It carries the coal down to another bin that has a capacity of 100 tons, where coal from the Eagle seam is dumped from the mine cars.

The coal is removed from this bin by a 36-in. x 15-ft. plate feeder and is discharged onto a single revolving disk screen that removes the slack or fine coal, which falls directly onto a 30-in. belt conveyor, 504 ft. long. This conveyor passes under the full length of a 54-in. x 15-ft. picking table. Here the coal is well cleaned, the freedom from slack making inspection easy.

The coal discharged from the surface of the picking table falls on the same 30-in. belt. Thus the coarse coal is delivered on the top of the fine, and in this manner the belt is protected against cutting. The conveyor line and shed are supported by two 21-in. lock-coil cables which have a combined capacity of 200 tons safe load.

The belt operates on gradual-troughing ball-bearing carriers. It has a capacity of 250 tons per hour when running at the present speed, which is 250 ft. per minute. This can be increased to about 350 ft. per minute, thereby increasing the hourly capacity of the belt from 250 to 350 tons per hour. It is operated by a 30-hp. motor which is wired so that it can be controlled from either end of the conveyor. The structure that supports the belt is suspended from the cables by means of 3-in. steel rods at intervals of 5 ft. To these rods is fastened a 4 x 6-in. crosspiece on which the conveyor or gallery is built. This, of course, is made of light material and is bolted together. It has

*Chief engineer, Jewett, Bigelow & Brooks Coal Co.
BELT CONVEYOR AND SUSPENDED SHED COVERING IT

The shed slopes in the main toward the direction in which the heaviest winds come. The belt is 594 ft. long and 30 in. wide. Its capacity can be raised to 2,800 tons per eight-hour day if needed. At present it is delivering about half that quantity.

A walkway on the up-river side which is used in crossing the river and in inspecting and oiling the machinery. The roof of this gallery slopes toward the down-river side, the purpose being to lessen the wind pressure, all the heaviest wind storms coming from down the river. The gallery is covered with corrugated iron of No. 20 gage. There are windows at intervals of about 20 ft. in this gallery. At this point the river is 300 ft. wide, and the conveyor is 75 ft. in the clear above the stream. Reinforced-concrete blocks each containing 60 cu. yd. of concrete and weighing 100 tons serve as anchorages.

The discharge tower is 87 ft. high. At this point the coal falls into a chute down which it slides into a 75-ton receiving bin. This tower also serves as a support for the cables.

From this bin the coal is drawn by lift gates and loaded into cars. At present a bar screen is being used which separates the steam coal from the lump, the two being led to different tracks. The plant now produces 1,500 tons per eight-hour day, but the purpose of the company is to raise the output to 2,000 tons soon.

The erection of the suspension bridge saved the owners of the mine the high cost of a steel bridge, and the success in operating the flexible structure is believed fully to justify the substitution.
Considerations Which Should Govern When Deciding Whether to Generate or Buy Power*

BY W. C. ADAMS†
Chicago, Ill.

Groups of Mines Should Be Able to Generate Electricity for 1.8c. per Kilowatt-Hour Power-Plant Expense—At Some Mines Home-Generated Power Costs 25c. per Ton

It is impossible to make a general classification of mines which should or should not purchase power because so many variables enter into the problem. Mine power requirements depend upon the tonnage produced, the depth of the shaft, the underground conditions, the system of working and the equipment installed. The power consumption per ton of coal mined varies with the number of days during which the mine is operated, but it must not be forgotten that the fan, pumps and some of the hoisting and general work require power irrespective of the coal output.

Fully electrified mines using electric hoists, a motor-driven fan, tippers equipment and miscellaneous mechanical appliances, pumps, locomotives, gathering motors, mining machines, etc., will have a power requirement under average mining conditions when working 180 to 200 days per year of from 2.75 to 3.5-kw.-hr. per ton. The effect of additional idle days will be to increase the power consumption per ton, which during extremely slack periods may reach 150 to 160 per cent of the normal rate.

All mines, however, are not provided with mechanical equipment for performing every one of the operations noted. Such plants may use steam surface equipment, gather coal with mules or dig coal with hand picks. The power requirements obviously would depend upon the number of operations for which power is furnished and may vary from 2 to 5 hp.-hr. per ton for average mining time, with increases for additional idle days.

Mines in Midwest Have 25c. Power Charges

Most of the mines in the Middle Western coal fields that operate on power generated at the mine have extremely inefficient plants. The power costs for fully equipped mines with such generating stations is as high as 25c. per ton when fixed charges are taken into account.

Mines that have similar power requirements and use central-station current under similar conditions have a total cost of 7 to 14c. per ton of output. This includes all items chargeable to power, such as investment in, and operation of, auxiliary equipment made necessary by the installation of purchased energy. This estimate is based on Illinois power rates.

With this possible saving of from 6 to 11c. per ton in view it is evident that if the coal operation is to use power generated at the mine, the plant to produce it should be designed with a view to economy.

Some of the larger operators have rehabilitated their plants, and the resulting operations are provided with power equipment suitable for economical operation. These plants will furnish power at a cost comparable with purchased energy and ranging from 6 to 12c. per ton, depending largely on the tonnage produced. When such plants are suitably situated and arranged to furnish power for two or more large mine operations, the cost per ton can be brought well below that paid for purchased power.

Power Costs as Low as Two Cents a Ton

Generating stations at operations having a capacity of approximately 5,000 tons per day, when economically designed and with a mine operating time of 200 days per year, should produce power at a total cost chargeable to mining of from 2 to 2.5c. per kilowatt-hour when coal is charged at $2.25 per ton. Stations serving two or more such operations would have a lower cost and with mines having an aggregate capacity of 8,000,000 tons per year the total power-plant expense should be approximately 1.8c. per kilowatt-hour, including all plant charges. To this figure should be added investment costs and charges for lines, substations and such auxiliary equipment as are made necessary at those mines which are remote from the station and receive energy over a transmission line.

Some operations have been laid out with a view to using not only purchased electric energy but also steam power generated at the plant, the purpose being to avoid the investment necessary for an equalizing hoisting unit. This arrangement does not take advantage of the lower power increment of either system and cannot be recommended for general installation except in cases where the life of the operation is short. The power costs at such an installation will always be higher than could be obtained by generating all the power at an economical power plant at the mine or by purchasing all the current necessary from a central station.

*Paper, entitled "The Use of Purchased Power for Coal-Mine Operations," read before the joint session of the Western Society of Engineers with the Chicago branches of the American Institute of Electrical Engineers and the American Institute of Mining and Metallurgical Engineers, at Chicago, May 22, 1922.
†Vice-president of Allen & Garcia Co., Chicago.
With mines having a life of 20 to 25 years or even more and a daily output of 3,500 tons or better, it is generally justifiable to expend capital enough to provide such a generating station as will lower the power cost to that charged for electric energy by Illinois central stations. Mines of shorter life or lower outputs almost without exception will show operating economies in favor of purchased power.

The source of power chosen should not affect the output of a coal-mining operation provided the available sources of supply are equally reliable. Coal production costs, however, do depend on the source of energy, but the difference is not directly proportional to the costs of power delivered from the several sources, because with certain of these special equipment is made necessary and the fixed charges on this investment modify the costs that must be borne and, furthermore, direct and indirect costs inevitably result from the interruptions which arise when certain sources of supply are used.

Alternating current should be used for distributing energy from the delivery point to the converter substations at load centers except where the operations are small and are expected to have a short life. Whether the power is furnished by a central station of a public-utility company or by a generating station at the mine and operated by the mining company does not alter the design of the system by which the power should be distributed, except in the case, possibly, of small existing operations having direct-current generating stations. In such installations some advantage might be gained in the distribution system by an arrangement of underground converter substations made possible by the purchase of power. In a discussion of the proper source of electrical energy, however, only mines having reasonably efficient distribution systems should be considered, as it is impossible to classify or give general estimates of power consumption or costs for operations that waste a large part of the delivered current.

**POWER COSTS NOT THE SOLE CONSIDERATION**

Whether the power required for a coal-mining operation should be generated at the mine or purchased from a central station of a public-utility company can be decided only after a study of each individual problem, if the decision is to be based solely on a comparison of operating economies. There are, however, certain other facts and conclusions in connection with such an analysis that should be taken into consideration. Their proper evaluation may render a decision possible without making a comparison of the power costs.

It is not always good policy to place a coal-mining operation in a position where the operator cannot control the power supply. Especially is this true if a doubt exists as to the reliability of the public-utility power available, for it is not logical to consider making the output of any industrial enterprise dependent upon a power supply that is liable to frequent interruptions of uncertain duration.

Opinions as to what degree of continuity of service should be expected from public-utility plants may vary. We know, however, that it is possible to design and build power plants for mining operations in which interruptions are rare, and it would seem that an operator has a right to expect the same service from the public-utility company. There are, of course, certain interruptions which lightning, heavy storms and the like are apt to cause and which no commercial type of construction can prevent. With interruptions of this character included, however, such shutdowns should not occur on an average more than once a month.

Furthermore, the power supply must have uniform characteristics. Voltages, frequencies or steam pressures that vary are not conducive to satisfactory and economical operation of equipment and must not be permitted if the best results are to be realized.

If real service were demanded by all operators who use central-station power, or contemplate its purchase, it doubtless would be supplied, for though coal-mine loads may not be the most attractive from the central-station viewpoint, yet for the utility company operating in most coal fields such a load aids in obtaining the operating characteristics favorable to economy.

Such a demand by the power users would force the utility company to restrict its connected load to the capacity of its plant and system instead of seeking to secure all the load possible in the hope, and with the promise, that at some time, more or less remote, both would be developed to meet all requirements.

The operations at the plant are regulated by a schedule, expressed or implied, and any delays or interruptions of even short duration cause confusion and affect the morale of the men. The return of power often causes secondary interruptions which are due to the heavy combined load arising when pieces of equipment are started simultaneously. Such interruptions aggravate a situation already bad and slow up operations. The resultant loss of tonnage always equals the production of a period many times as long as the duration of the actual shutdown.

**MINERS LEAVE MINE WHEN POWER GOES OFF**

Where an interruption is unduly extended the miners as a rule leave their places and quit for the day. This dereliction of duty may not appear reasonable but it is one of the conditions with which a coal operator has to contend. All interruptions therefore reduce the coal output but do not remove the necessity of paying wages, operating and fixed charges during such shutdown periods. This results in an unproductive expense that increases the cost of coal getting. Interruptions not only reduce the margin of actual profit but deprive the operator of the profit he would have made had he produced a full run of coal. This applies to mining operations with greater force than to any other industry except, perhaps, those where a shutdown means ruin of product.

There are many instances where mines have failed because the car supply has not been reliable. An uncertain power source can produce the same result. Power sources that cannot be relied upon result in an undependable mine production. This handicaps the operator in obtaining contracts for time delivery, or if such contracts are carried the quantity of "free coal" is cut down, and upon this the mine owner often depends for his profit.

Mining operations, to be assured of power supply from a central station, should be provided with a loop system of transmission whereby power can be furnished from two or more sources. Some line trouble must be expected with any transmission system, but failure of supply from two sources because of such difficulty should be exceptional.

When central-station energy is used at a mine it is advisable to insure the steadiness of the supply of power for the fan and hoist by installing auxiliaries.
which can be put in operation when the purchased power fails. This is especially true in gaseous and deep mines, for under such conditions it is not advisable to allow the ventilation to cease, even temporarily, and means must be provided for bringing men out of the mine.

Where the record of service given by the central station in the particular field in which the operation is located has not been satisfactory and where it appears that a station and transmission capacity will not be maintained ample enough to insure a continuous power supply in times of stress the purchase of power is not justified and not advisable, provided, of course, it is possible to install a generating plant at the mine.

HAULING WATER NEGATIVES POWER ECONOMY

Where an adequate water supply for plant operation cannot be obtained it is impractical to provide an isolated generating station. It is just as unreasonable to equip a mine with a generating plant that must depend during dry months on water being hauled to it as it is to put one's trust in a public-utility company which cannot be relied on to furnish a continuous and satisfactory supply of power.

The financial condition of the operating company may not permit or justify the installation of such a generating station as will afford desirable economies. The investment necessary for such a station would increase the capital expenditure for a modern, well-equipped mine from 20 to 45 per cent, depending on the capacity of the mine. If this capital is not available and if, in order to have power generated at the mine, it is necessary to erect or continue to operate with a plant such as is found at many mines—horizontal-return tubular low-pressure boilers, non-condensing engines and similar equipment—the only excuse for not purchasing power would be its unreliability.

Hoisting equipment may be affected by the power source, as it must conform to the requirements of the public-utility company which furnishes current. In some cases these companies have a ruling that regulates the maximum size of induction-motor hoists, and this imposes a heavy investment burden on mines of small or medium capacity which require from 200 to 500 hp. Equalizing equipments between these sizes entails a cost which may run from three to four times that of the induction motor and its control.

Mixed operations using steam hoists in addition to purchased power for the purpose of avoiding this additional investment have proved highly unsatisfactory both in operation and resultant power cost. In considering the energy supply for existing mines having a remaining life of from 20 to 25 years the choice should be based on the results of an analysis of the problem presented. This choice lies between the rehabilitation of the existing power plant to meet the total requirements of the mine and the purchase of power from a central station. If decision is made in favor of a generating plant at the mine the retention of the steam hoist and the employment of mixed-pressure turbines with regenerators probably would entail the least investment. With purchased power the hoist should be electrified. The only justifiable deviation from this course would be in the case of mines having the prospect of only a short life.

A comparison of the operating cost as calculated for the two systems, other factors being equal, should determine whether a mine should use purchased power or energy furnished by a generating station at the mine site.

Knowledge of general underground conditions and the details of mine operation usually will give sufficient data to determine the power requirements with a reasonable degree of accuracy. This forms the basis for calculation of the power costs based on central-station current or on a generating station of any particular design.

Installations at the mine using purchased power usually are simple. They consist of a transformer substation and the connection to the distributing buses. The purchase of power makes necessary some auxiliary equipment that would not be required or embodied in the plant design if power were generated at the mine. In any comparative power-cost statement the investment, fixed, operating and maintenance charges in connection with such equipment should be included as a charge against central-station power.

Included under this item would be the general heating plant, auxiliary man hoist and fan drives, as well as such other equipment as would be ordinarily embodied in the power plant but required as separate installations if current is purchased.

Charges for interest and depreciation on the investment and for fixed and maintenance expense should be included as a charge against central-station power to offset similar charges included in generating-station costs.

The cost chargeable to purchased power should include: (1) Cost of power delivery, calculated on the basis of established rates of the central station; (2) interest on investment required for lines, substation and other equipment necessary to power delivery; (3) maintenance and fixed charges on lines, substation and other requirements up to the point of delivery; (4) operating labor chargeable to purchased power up to the point of delivery; (5) interest on investment for auxiliary equipment made necessary by the purchase of power; (6) maintenance and fixed charges on auxiliary equipment made necessary by the purchase of power; (7) labor chargeable to auxiliary equipment made necessary by purchasing power; (8) interest on investment for hoisting equipment; (9) maintenance and fixed charges on hoisting equipment; (10) interest and fixed charges on abandoned equipment.

SOMETIMES RAISES LOAD FACTOR 300 PER CENT

Public-utility power plants serving numerous mines, delivering energy to industrial enterprises and supplying current for lighting throughout the territory over which their systems extend have a varied load, resulting in an annual load factor seldom less than 40 per cent. The annual load factor of a single mine varies between 11 and 25 per cent. This can be increased by combining two or more mines so that both may be served by one power plant. This is advisable where a group of mines is operated under one management.

Larger capacity and its better load factor give the central station an operating advantage which offsets any superiority that the generating plant at the mine may enjoy as a result of the elimination of the freight and handling charges on coal.

A generating station at the mine cannot make power at a cost comparable with a central station unless special attention is paid to so design and operate such a plant as to obtain economies in operation such as are usually attained at central stations. The power plant
should be designed to give such economies as are justified by the character of the load, but in general the investment should not exceed 40c. per ton of annual capacity.

Consideration should be given the possibility of burning such low-grade fuels or sizes of coal as can be sold only with difficulty in the commercial field. Capacity of units should be so selected as to give economical operation under low and idle-day load requirements, as such periods normally constitute not less than 65 per cent of the total operating time. The hoist should preferably be electric, although there are cases, especially in the rehabilitation of a power plant for an existing operation, where a steam hoist with regenerator and mixed-pressure turbines is justified.

In calculating the operating cost of a generating station at the mine it is necessary to understand fully the operating conditions imposed. The low yearly load factor increases the cost of power generation materially. This being the case it is necessary to give this factor careful consideration if the expense of actual operation is to meet the calculated cost.

Coal operators differ much as to the proper method of charging fuel to their power plants. It would seem that the only proper charge is the prevailing market price of the class of coal used. The cost chargeable to power generation should include:

1. Power-plant cost. This embraces under (a) operation: Coal, (charged to the plant at the prevailing market price), water (including cost of treatment and labor), engine-room labor, boiler-room labor, coal-ash-handling labor, ash removal, electrical labor, miscellaneous engine- and boiler-room supplies; (b) maintenance costs: charges for engine room, boiler room, coal- and ash-handling apparatus, electrical apparatus; (c) fixed charges, which covers investment cost, amortization cost, administration cost, insurance and taxes.

2. Interest and fixed charges on disposed equipment.
3. Interest on investment for hoisting equipment.
4. Maintenance and fixed charges on hoisting equipment.

As has been pointed out, frequently, the production of coal and the generation of power are two distinct enterprises. Coal-mining officials generally are men having coal-mine experience and little knowledge of the economic generation of power. It is essential, therefore, that a separate department with proper talent be instituted if power is to be generated economically. This adds to the burden of the management. There is a tendency, moreover, among most coal operators to defer appropriations for plant improvement in favor of those for mine operation. This makes it difficult to maintain a low power-production cost.

In general, from an economic standpoint, if the cost of purchased power exceeds the calculated generated-power cost by 10 per cent it would still be advisable to purchase power. In other words, it is believed that the value to the operator of eliminating the necessity of building and operating a generating station at the mine can be capitalized at 10 per cent of the calculated power cost.

Dust Off the Leather Medals;
Here's a Winner

IN THE old days out on the baked plains they used to attempt "rain making." Somehow it didn't work so well. Elsewhere at various times humanity boomers have striven to create perpetual motion. Results: Ditto, if not more so. But why be discouraged? "In perseverance there is a curse," or something like that. So now comes F. F. Affelder, assistant to the president of the Hillman Coal & Coke Co., with a double-backaction case-hardened grown-on-grandpapa's-farm-in-Virginia form of contract to be used in the purchase of electric power for coal mines. It is guaranteed to be squabble-proof. With it in effect, violence cannot arise concerning quantities of power delivered, rates, meter accuracies or anything else.

Mr. Affelder has had lots of fun with it at dry engineering meetings here and there. It won eight full octaves of guffaw on May 22 in Chicago at a joint meeting of the Western Society of Engineers with the Chicago branch of the A. I. E. E. and the American available, for it is not and Metallurgical Engineers. It output of any industry D. F. (three guesses at the in-power supply that is half, respectfully submitted: uncertain duration.

Opinions as to what dep the Sale of Electric Power We know, however, that it is to furnish power to the coal-con- build power plants for mining and conditions: interruptions are rare, and it would contained herein to the has a right to expect the same a the producer such a utility company. There are, of e producer. This amount apt to cause and which no commerl constitute any and all futile requests on the part of the consumer whereby he shall request better service or lower rates. The consumer shall pay to the producer the full amount of the producer's demands and in addition thereto shall pay for the power consumed at the rate of 8c. per kilowatt hour when the crooked line on the meter chart forms a convex curve, 6c. per kilowatt hour when the line forms a concave curve, and 4c. per kilowatt hour when the line is so badly blurred that neither the producer nor the consumer is in a position to bet real money on the shape of the line, it being specifically understood and agreed that under no circumstances shall the consumer question the accuracy of the producer's meter or other apparatus.

4. The diversity factor shall be anything that shall divert the attention of the consumer from making complaints to the producer. If, for instance, the consumer's electrical engineer shall make presentation to take the form of playing golf and his average score on the four Saturday afternoons in any one month shall be less than par for the course on which he plays, a reduction of 1 per cent shall be made in the producer's bill for power in that month for each stroke that the aforesaid average shall be under par.

5. In recognition of the fact that the consumer could produce his own power more economically with a poorer grade, the producer agrees that a test shall be made four times a year of the heat value of the consumer's coal. If such tests shall show that the consumer's coal is of higher heat value than that which the producer uses at his power plant, the producer may, if he feels so inclined, make such a rebate to the consumer per 100 B.t.u. as to convince the consumer that it is more economical to buy power than to make it.

6. Recognizing the fact that the rates per kilowatt hour, as stated in the third paragraph, are entirely too high, the producer agrees to rebate 5 of the first $100, $25 of the next $100, $50 of the next $200 and as much of the remaining amount of the bill as is necessary to make the net cost to the consumer equal to an amount of between 12c. and 2c. per kilowatt hour, the producer agreeing that he will get all he can without giving the customer any real cause to figure on generating his own power.
Study of Stresses and Design Of Head Sheaves For Coal-Mine Shafts

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Excessive Weight, Especially in the Rim of Head Sheaves, Causes Slip in Rope—Effect of Lead—Cooling Action of Spokes in Casting Rim—Design of Bosses—Fit of Hub

SHEAVES used on the headframes of mine shafts to support the hoisting rope ordinarily are made with a cast-iron rim and hub, and wrought-iron or steel spokes cast into place. This type of construction is practically universal. It affords a neat and economical pulley and has proved very successful with the low speeds and light loads formerly used. Unfortunately the stresses imposed on the various parts are not well understood and have not received the consideration that they require.

This has resulted in pulleys being used for speeds and loads that soon wear out both themselves and the rope. In the past small pulleys, intended for light loads and low speeds, could be designed with more or less success by rule of thumb, but now that the ropes used are becoming much larger, and consequently require pulleys of greater diameter, it is necessary to reduce the rotating weight of the pulley to the lowest safe limit consistent with the strength required, in order to decrease the inertia.

Even when a pulley of the type described is made as light as is consistent with safety the high velocities and rapid acceleration and retardation now demanded sometimes render it impossible to prevent the rope from slipping a little on the pulley at the beginning and end of each trip. The hoist is brought to rest so quickly that the inertia in the rim of the pulley is sufficient to keep it revolving after the rope has come to a stop. Unless this inertia can be reduced, by cutting down the weight in the pulley rim, this slipping cannot be prevented.

The evil effect of this slippage is obvious. It wears the rope always at the same point or at any rate so long as the rope is not moved on the drum of the hoist. The wear on the pulley rim is continuous and rapid, as it occurs four times during each round trip—that is, during both the acceleration and braking periods.

Some engineers have attempted by fitting wood, leather or other soft material into the groove of the pulley to prevent this wear on the rope. This expedient doubtless reduces this wear, partly by reason of the increased friction between the rope and the pulley and partly because the softer material takes all the abrasion. Nevertheless, it has been found that this packing wears out so rapidly that it must be replaced frequently, making a sheave thus packed costly to maintain. Only in the event that the weight of the pulley cannot be reduced sufficiently to eliminate this slippage should this expedient be adopted.

By careful calculation it can be determined whether the rope will slip on the sheave. To avoid this slipping the energy in foot pounds stored in the rim of the pulley when revolving at the maximum velocity must be less than the force required to overcome the friction between the rope and pulley, in pounds, multiplied by the distance travelled by the rope, in feet, during the braking or acceleration periods. The energy in the pulley rim in foot-pounds will be \( Wv^2 \) 64.32 where \( W \) = the weight of the rim in pounds, and \( v \) = the maximum peripheral velocity of the rim in feet per second, this latter being practically equal to the speed of the rope.

**Sheave Travels Slower or Faster than Rope**

During the acceleration period the rope must supply this energy to the rim through the friction between the two and it must be returned from the rim to the rope by the same medium. This friction will equal \( LfS \) pounds. Where \( L \) = the load on the rope at the pulley during the period under consideration, \( f \) = the coefficient of friction between the rope and the pulley. The distance through which this force acts equals the length of rope wound or unwound during the acceleration or braking period under consideration. This expressed in feet we will term \( S \).

To prevent slipping, therefore, \( Wv^2 \) 64.32 must not exceed \( LfS \), or the maximum weight that the pulley rim should have, if slippage is to be avoided, is \( W = 64.32 \frac{L}{fS/v^2} \).

The coefficient of friction, \( f \), may be taken as 0.1, the rope usually being greasy and the groove in the pulley smooth. Care must be taken in using the above formula
to select figures applicable to the worst condition or that usually existing when the cage is being lowered empty.

If the weight of the rim as designed by this calculation proves to be much too heavy, it may be reduced most readily by decreasing the diameter. This reduction, however, increases the wear on the rope, which suffers severely when bent around too small a pulley. The velocity, \( v \), is not altered by reducing the diameter as it must perform be the same as that of the rope.

**Finding Diameter That Will Reduce Wear**

The point to be decided, then, is with what diameter will the sum of the wear due to slipping and that due to bending be a minimum. In general the diameter should be as large as it can be made without danger of slipping. Consequently the rim should be as light as the load will permit because when such is the case the allowable weight may be used to increase the diameter of the sheave as much as possible. The wear and tear on the rope that slipping causes will be much more destructive than that resulting from bending. The total wear will be at a minimum when the pulley is as large as it can be made, still keeping the weight below the point at which slippage would commence.

The procedure, therefore, to be followed in designing a new pulley should be to determine the maximum weight from the above formula and to calculate the section of the rim. Then, ascertaining the weight of this section per foot, we can arrive at the maximum diameter desirable.

If it proves impossible, under the speeds and loads specified, to obtain a pulley of reasonable diameter without inevitable slipping of the rope, an effort should be made to lengthen the periods of acceleration and retardation, because as the allowable weight of rim increases so does the length of these periods.

Generally speaking, this slipping of pulleys has been given little consideration by those responsible for their design, although its effect upon the rope and upon the sheave is extremely destructive and therefore deserves to be classed as the main consideration.

Sheave-rim sections are generally "designed" by rule of thumb or in proportion to some other dimension previously selected. I purpose to show later that they are almost always made much too heavy, and it is important to recognize that this excess weight merely shortens the life of the pulley.

**Rim Should Be Designed to Meet Conditions**

The shape of the rim as usually constructed is as shown in Fig. 1 and is evidently not susceptible of much improvement. The dimensions are dependent upon so many variables that it is impossible to give any empirical rules by which they may be calculated, meanwhile keeping the weight to the minimum. It is common practice to use the same pattern under any and all circumstances. This is, however, obviously a mistake, considering the higher speeds now in vogue.

Where the speed is so low that no slippage occurs, the weight of the rim is not of great importance, but under modern conditions it is essential that this weight be reduced as much as is safe. Each pulley, therefore, should be designed to suit the actual conditions under which it is expected to work. As the rims are swept in the foundry, no pattern is necessary and consequently the expense of casting a rim of new design is little more than that involved in using an old one.

The considerations which determine the section of the rim are as follows: The bottom of the groove should be machined to a radius slightly greater than that of the rope section. To avoid undue wear on the rope, even when it does not slip, the grooves should be smoothly machined from the bottom to a point about half way up the sides. Another good reason for machining this groove is that the rough casting always will warp and run somewhat out of true sideways. If this is not corrected by machining it may cause rope sway and result in the cage vibrating and rubbing hard on the guides.

The depth of the groove as well as its width at the top and the slope of the sides must be such as entirely to remove all danger that the rope will leave the groove, as such an eventuality, of course, would be disastrous. The width of the groove at the top and the slope of its sides must be such as to provide for the maximum lead angle of the rope. This is a function of the width of the hoisting-engine drum and of the distance from its center to that of the pulley.

This also usually determines the depth of the groove, but in cases where the cage is landed, and all stress taken off the rope, the groove must be deep enough to prevent the rope when slack from getting out of place. When the hoisting engine is well removed from the pulley, an additional allowance must be made for a possible swaying of the rope in windy weather.

**Side of Rim a Casting Problem in the Main**

The determination of the thickness of the metal in the sides of the rim is not based on strength but on the thinness with which it can be cast satisfactorily. The bead on the edge is for the purpose of insuring that there will be a rim in every part of the circle. If this bead were omitted and the flange of the rim run out to a comparatively thin edge, the metal would be quite likely to fail to fill the mold all around. In consequence the inequalities in the casting thus resulting would catch the rope and soon destroy it. The bead also stiffens the rim and reduces its liability to damage when being machined and erected. The size of this bead usually is left to the discretion of the foundryman, who decides how light he can make it and yet be sure of a good casting.

To determine the thickness of the rim at the bottom of the groove we must calculate the stresses imposed upon it and, if necessary, add metal at this point over that essential for the making of a good casting. The additional weight may be added with less injury at this point because most of the wear that takes place will occur here and also because weight at this point will have less energy when revolving than that located further from the center of the sheave.

At the same time the practice of making this thickness much greater than is required, in order to allow for wear, is wrong, as it defeats its own purpose by adding to the inertia of the pulley. Furthermore, it commonly causes sponginess in the casting, due to the thickness at this point being so much greater than that elsewhere. This sponginess does not usually become evident until the groove is slightly worn. Whenever it appears on the surface, however, the wear on the rope becomes so rapid that the pulley must soon be condemned.

The rim is subjected to the following stresses: A tensile stress due to centrifugal force, a compressive stress resulting from the load on the rope and tending to crush the rim, and a bending stress caused by the rope tending to take a straight line from the top of one
spoke to the top of the next. The centrifugal force is
\[ C = \frac{W^2}{32.16 R} \] where \( R \) = the radius of the rim in feet. The stress due to this force will be \( C_t = C/A \) where \( A \) = area of rim in square inches.

The compressive stress due to the load on the rope will be \( L_t = L/A \).

The tensile and compressive stresses due to the bending moment can be calculated from the formula for a beam uniformly loaded and supported at each end. This is:
\[ W = 8B_tZ/l \text{ or } B_t = \frac{Wl}{8Z} \]

Where \( B_t \) = the stress due to bending moment \( Z \) = the modulus of the section of the rim and \( W \) = the load imposed by the rope, which is determined from the triangle of force, as indicated in Fig. 2, where, as will be seen, the rope tends to take a straight line from one spoke to the next, but is prevented from doing so by the curvature of the rim. The downward thrust on the rim, \( w \), is equal to the pull on the rope, \( L \), multiplied by \( b/a \). (See Fig. 2.)

Centrifugal stress opposes the compressive stress when the pulley is running, but not when it is standing. The two compressive stresses \( B_t \) and \( L_t \) must be considered together. The two tensile stresses \( B_t \) and \( C_t \) also should be so treated, and whichever pair is the greater in proportion to its safe working stress will be the one that will govern the design.

The stresses \( B_t \) and \( L_t \) vary from maximum to zero during each revolution, and are therefore live loads. \( C_t \) is a stress gradually applied and gradually removed. The safe working stress for a cast-iron rim, under these conditions, may be taken at 4,000 lb. per square inch in compression, and 1,000 lb. in tension. The spokes should be calculated to carry their respective loads as columns fixed at both ends. This calculation needs no further comment here.

**If Spoke Enters Rim Bubbles Are Formed**

The connection between spokes and rim is often made as shown in Fig. 3, and is ill-advised, as the molten iron will almost always, when it comes into contact with the cold spoke, bubble and boil, and on solidifying, that portion around the end of the spoke will be full of blowholes. These do not show in the finished casting, but a little wear in the groove soon brings them to the surface. The effect of such flaws, in wearing out the rope, is disastrous, and will compel the scrapping of the pulley after only a short period of usefulness. Blowholes are caused by moisture from the molding sand, being deposited on the spokes. This turns to steam when the molten iron strikes it.

Polishing and tinning the spokes will reduce this deposition of moisture, but it is practically impossible to escape having blowholes at these points, and therefore the spoke should not project into the rim, but stop at its lower edge, as shown in Fig. 4. Even if there were no danger that blowholes would be formed at these points, the iron will be chilled at the end of the spoke, and when the groove is worn down to the hard spot thus formed undue wear on the rope will result. The shape of the spoke end is not of much importance, as it carries little load in tension. Probably the nearest way of insuring a mechanical hold is to swage grooves around the ends of the spokes as shown in Fig. 4.

The function of the boss cast around the spoke is to hold the end firmly, the spoke being considered as a column, fixed at each end. The boss must be rigid in order to do this. The actual stress that will come upon the boss is indeterminate, but as the total weight of the bosses can be only a small percentage of the weight of the pulley, an excess of metal at this point will do little harm. To make certain that the spoke will be held as a column, fixed at the ends, the end connection must be made sufficiently rigid to prevent any movement between spoke and rim at this point. This condition will be met if the connection is made such that its strength will be equal to the tensile strength of the spoke.

**Boss Must Embed Spoke for Ample Distance**

First, the bearing surface of the spoke in the boss must be made ample. Taking the crushing strength as twice the shearing, this condition will be fulfilled if the bearing area of the spoke in the boss is equal to one-half of the sectional area of the spoke—that is, the spoke must enter the casting for a distance equal to 0.5 of its diameter. In use this length would be insufficient to resist vibration, and it would be wise to make the connection strong enough to develop the full strength of the spoke in tension. Tests that I have made show that if the spoke projects into the casting for a distance equal to twice its diameter the grip of the casting on the spoke will be greater than the strength of the spoke in tension, even without any grooving of the end.

The diameter of the boss should be such as to give it the same strength in tension as the spoke. Taking the safe stress in tension for cast iron as 1,000 lb. and for steel as 10,000 lb. the area of cross-section of the boss must be ten times the area of the cross-section of
the spoke. This will require that the diameter of the boss be 3.3 times the diameter of the spoke.

The boss, for constructional reasons, into which it is not necessary to enter, should taper from 3.3 to 3.6 times the diameter of the spoke. The same dimensions, of course, will be necessary for the connection of the spoke to the hub.

Head sheaves frequently fail because the pulley becomes loose on the shaft and travels sideways along it. The cause of this difficulty is the side pull of the rope imposed as a result of the rope leading off the pulley at an angle when it is coiling on one or the other end of the drum. The side pull on the pulley rim is small, but it has a leverage equal to the radius of the pulley and, being reversed as each layer of rope is wound on the drum, it has the cumulative effect of a reversing stress.

This will be more clear from a study of Fig. 5, where it will be seen that any resultant force sideways on the rim has to be resisted by a reaction at the end of the hub on the shaft. Unless the hub is comparatively wide and the fit of the shaft in the bore is practically perfect the metal in the hub will crush slightly, the bore will become bell-mouthed, and ultimately the pulley will become loose on the shaft. If the shaft deflects under the load even if only a few thousandths of an inch, this crushing of the hub will be accentuated. Shaft diameters, therefore, should be carefully calculated to carry the load as a beam, with a stress not exceeding 6,600 lb. per square inch. As this stress on the shaft reverses during each revolution from a maximum compressive to a maximum tensile quantity any stress greater than that above mentioned will cause too great a deflection and ruin the fit of the shaft in the pulley.

For these reasons the hub of the pulley should be as long as possible and great pains should be taken to make certain that the bore of the hole be parallel out to the very ends. The tendency in machining a hole of this kind is to bell-mouth it slightly, and unless the bore is a good fit at each end of the hub at the start the pulley will soon become loose.

An effective method of preventing a movement of the sheave along the shaft which may happen even with a fair fit is to leave a collar turned on the shaft at one side of the pulley hub and to provide a split collar bolted to the hub and fitting into a groove in the shaft at the other side. On the other hand if the pulley is split a solid collar may be left on the shaft at both ends of the hub. The first of these methods is shown in Fig. 5, and the second does not need any further explanation.

Disk Coal Cutters Installed at Windber Mines

BY A. S. BROSKY*

Pittsburgh, Pa.

At Eureka No. 35 mine of the Berwind-White Coal Mining Co., at Windber, Pa., a cutting machine has been placed in operation which differs radically from those in use in other mines of the United States. It is an adaptation of the rotary-disk coal cutter which is extensively employed in Great Britain for longwall mining. This rotary cutting machine was designed by Harris T. Booker, mine manager of the company, and his son, R. E. Booker. At present other machines of this type are being built in the shops of the Eureka No. 35 mine.

The rotary cutter is a compact, wheel-mounted machine that weighs about 500 lb.—a surprisingly small weight for a machine of its class. Electric or air-operated coal punchers, adaptable to the same working conditions as this machine, weigh far more. Like the coal puncher, this cutter is adaptable to thin seams, especially those with rolling bottom, where chain machines cannot be used. No claims are made of its being practicable for use in thick beds except where the roof being bad timber must be set close to the face or where ribs and stumps in squeezed sections are to be withdrawn.

**MINIMIZES LOST MOTION AND VIBRATION.**

The principle of the mechanism is simple and the moving parts have ample bearing surface, so that there will be no unnecessary lost motion or vibration. Motive power is furnished by a standard 2-hp. series-wound direct-current motor inclosed in a cast-iron housing and controlled by a standard boxed-in snap switch. Although the motor covering is not provided with air ducts the temperature of the machine within has never risen beyond a safe limit. The motive power is transmitted through a 1-in. steel shaft incased in a substan-

tial, finned bearing tube that is firmly secured to the motor housing.

Because the shaft is underslung, its center line being but a few inches from the contact point of the carriage wheels, the machine is well adapted to undercutting. The resulting vertical flexibility increases its possibilities on a rolling bottom. On the motor end the shaft is actuated through a small cut-steel pinion and gear. On the head end the rotary motion is transmitted to the cutter plates through a small cut-steel bevel pinion and two gears that rotate in opposite directions. These gears are centered and bolted onto the cutter plates.

The cutter head proper is secured to the shaft tube by means of a sleeve held rigidly in place by two setscrews. This arrangement permits the head to be set horizontally for undercutting or vertically for shearing, this change being accomplished in a few moments by loosening the setscrews, swinging the head through 90 deg. and retightening the screws. The cutter plates

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*Bituminous editor, Coal AGE.
are provided with bronze bushings that bear upon a heavy shaft and are held in place by washers and countersunk screws. This arrangement readily permits the removal of one or both cutter plates.

The bits used are similar to those of a chain machine and they are placed in the same relative position to one another. As shown in Fig. 1, the bits are secured by means of setscrews in radial slots of rectangular cross-section. Each cutter plate holds three outside clearance bits and two center bits. The bevel pinion imparting opposite rotation to the two cutter plates lessens the muscular effort on the part of the operator in directing the machine. The bits of the respective plates move toward each other and grip the coal.

Two marked advantages result from this action. The gripping tends to pull the machine toward the face, making the feed almost automatic. Practically no recoil is set up because the machine is held to the face by its own action. Consequently, as shown in Fig. 2, where the machine is set up for operation, no foot blocks are required. This removes one difficulty ordinarily encountered by the operator and enables him to concentrate his attention upon cutting. It must be conceded that hand-directed cutters may be handled more intelligently than those mechanically fed, and this advantage obtains to a greater degree where foot blocks are absent than when they are present.

CUTTER MOUNTED ON EIGHTEEN-INCH WHEELS.

When undercutting, the machine body rests upon a 1½-in. axle fitted with 18-in. truck wheels. Of course, for the purpose of shearing, wheels are provided that are of large diameter. The axle is located directly under the center of gravity of the body so that a perfect balance is obtained.

The designers of this machine contemplate several minor changes in the mechanism. These will include guards on the cutter head to prevent dust from getting into the gears, and a large shaft and supporting tube so that the depth of cut may be increased. The cutter plates will be made of larger diameter and the number of bits will be increased to eight on each plate. After these alterations the machine will cut with greater efficiency because of the increase in the number of blows or incisions per revolution of each cutter plate and the establishment of a longer fulcrum. The action then produced will more nearly approach that of a hand pick. The bits together with their slot arrangement also will be changed. The pronged center bit will be discarded and the pick-pointed cutter used exclusively. The bit stems will be straight instead of bent, the necessary side clearance being secured by slanting the bit slots.

LITTLE DUST, NO RECOIL AND LIGHT WEIGHT.

This machine has many merits hitherto unattained by other devices intended for the same purpose. These may be enumerated as follows: (1) It stirs up no dust and gives off no smoke or objectionable heat; (2) there are only four places to lubricate; (3) it makes cuttings similar to those produced by hand picks, there being no fine bug dust; (4) the control and operation is simple; (5) there is no recoil and consequently foot blocks are not required; (6) the weight is comparatively small.

By the aid of this machine headings may be driven with great rapidity, as the cuts can be made and loaded out in rapid succession, the loader of the coal also operating the cutting machine. In such work it will do the cutting about as fast as eight men with coal picks could do it. A simple construction and the entire absence of all electrical resistance, the motor being thrown directly across the line by means of a snap switch, render this machine peculiarly adapted to operation by unskilled labor, of which there is an abundance about the mines.

H. H. Stoek, of the University of Illinois, has been engaged by the Bureau of Mines to assist F. R. Wadleigh with the investigation of coal storage being made jointly by the Bureau of Mines and the Department of Commerce. While one of the objects of the survey is to have more exact data with regard to existing storage facilities, the main purpose of the work is to develop facts which will demonstrate the advisability of coal storage and thereby encourage it.
Practical Mine Ventilation

**MINING** ventilation has too often been treated from the point of view mainly of mine gases and of distribution of air, and the matter of production of air pressure has been left to the engineer. A few pretty pictures of fans have lightened the text of many former volumes on this subject, but the author, not being a fan expert, satisfied himself, or rather tried to rest satisfied, with the most meager details regarding the originating means for ventilation, mauger, it is true, of several pages on steam jets, furnaces and the trompe, which are wholly inadequate means of inducing an air current.

This book, written by J. R. Robinson, gives the fans its appropriate place without in any way being a catalogue of types. It supplies calculations in connection with the selection of fan size that will be of value to any reader who has to ventilate mines.

Interesting among his results are those on the correction of friction of air. Giving Atkinson's, Fairley's and Murgue's coefficients \( k \) as 0.0000000217, 0.00000001 and 0.000000009 respectively, Mr. Robinson adds: "These coefficients are the result of experience and are practical, but they can be used only by those who have a wide experience and knowledge of mining conditions. It will be observed that Atkinson's coefficient is nearly 2.5 times Murgue's coefficient. He does not know which coefficient to use on the particular mine that is the subject of the calculation. The author has had some mines come under his observation wherein the coefficient \( k = 0.000000069 \) and others where the coefficient \( k = 0.000000006 \), the last figure being less than 10 per cent of the former. The coefficient \( k = 0.000000006 \) will apply where a well lined shaft is present."

The book clearly shows the disadvantage of having a fan ill-fitted to the mine conditions. This is an important subject, and little has been written about it. It is fully time to get books written by manufacturers of fans to supplement those the authors of which are mine engineers, professors and theorists. The point of view is one that cannot be neglected with safety. Too often the manufacturer of mine equipment fails to publish what he knows about the practical problems of the mine, and the industry is the loser.

Interesting statements are that excessive quantities of air absorb the moisture of mine surfaces and make the mine dangerous, that large cavities in the roof of roadways simply result in baffling the air, that regulators are a great source of power loss, that the use of auxiliary fans is preferable and that these "boosters" serve to lengthen the life of primary fans. The use of regulators, so to speak, lays a tax on the whole mine so as to protect and make possible the ventilation of a split that is unusually difficult to ventilate. It is better to aid the air through that split than to burden the whole mine with an excessive water gage for that purpose.

In the case of the Federal Coal Co.'s mine at Grant Town, where it would have been necessary to use 11.87 in. of water gage to pass the 300,000 cu.ft. per minute needed in place of the 132,000 cu.ft. which 2.3 in. of water gage permitted to be passed, the management found a way to cut in an airway, and through this air current circulated, reducing the pressure 25 per cent. Other practical instances are given where attention to ventilation has made great economies.

A most valuable table is provided by W. H. Hall, of Coalwood, W. Va. He shows the most economical size of shaft, from 100,000 to 600,000 cu.ft. of air by 100,000 cu.ft. increments. Thus 100,000 cu.ft. of air calls for a 10 x 10-ft. shaft; 200,000 cu.ft., a 14 x 14-ft. shaft; 300,000 cu.ft., a 16 x 16-ft. shaft; 400,000 cu.ft., an 18 x 18-ft. shaft; 500,000 cu.ft., a 20 x 20-ft. shaft, and 600,000 cu.ft., a 22 x 22-ft. shaft. The depth of the shaft is taken as 100 ft., excavation is figured at $15 per cu.yd., concrete lining at $30 per cu.yd., life of mine at 50 years and power at 2c. per kilowatt hour.

Mr. Robinson has allowed himself to be a little discursive. He has several pages on the mechanical and historic development of the coal industry from its earliest beginnings. The story is well told and exceedingly interesting, for the coal industry is the mother of the mechanical arts. The steam engine, the pump, the railroad, the locomotive, and the fan were built largely for her service and by her engineers. The only misfortune is that having done so well in earlier years, mining engineering has been willing of late to be boosted from outside instead of by the exercise of her own activity.

This little volume, entitled "Practical Mine Ventilation," contains 225 pages measuring 5 1/4 x 8 3/4 in. and may be obtained from its publisher, J. R. Robinson, 6027 Jenkins Arcade Building, Pittsburgh, Pa.

Gas and Fuel Analyses

as part of the International Chemical Series appears a second edition of the book by Alfred H. White, professor of chemical engineering at the University of Michigan, on "Gas and Fuel Analyses," a book of 319 pages measuring 5 1/4 x 8 in. The main stress is placed by the author on gas analysis, liquid fuel having only 20 pages and coal, which is last in the train, having 86 pages committed to it.

Mr. White points out the difference in the heating value of coal which passes through the first instance of a furnace, that which goes through. The screenings gave, in all but one of the ten cases instanced, less heating value than the larger coal. In one instance—Blockton, Ala.—the screenings gave 1,646 B.t.u. less than the larger coal and in the Oak Creek (Col.) coal 1,366 B.t.u. more than the lump coal would give. The difference in each case is attributable to the impurity of the coal that has the lower heat equivalent. Screening the coal is therefore a practical method of raising the heating value of coal. In the second instance the lump had 15.07 and the screenings 6.97 per cent. Where the coal is cut in the clean part of the seam the fine coal is quite likely to be of superior purity, especially if floor and roof are of a character that they can be kept out of the coal.

The chapters on coal analysis give instructions regarding care of laboratory apparatus, sampling, analysis, drying, and the ascertainment of heating value, using Parr or other bomb calorimeters.

Housing for Coal-Mine Workers

Industrial housing has made large advances in recent years and the art of building suitable villages for operatives is a study in and by itself. Matter into it without any equipment for the work and may welcome a book by Morris Knowles on this subject entitled "Industrial Housing." The volume contains 408 pages measuring 6 x 9 in. It contains a historical review, chapters on fundamental preliminary considerations, on the selection of a site, on the development of the town plan, on streets and pavements, on water supply, on sewerage and drainage, on collection of town wastes, on gas and electric service, on houses for families, on other buildings, on the administration and supervision of construction and on the management of industrial towns.

The practice is to regard the cost of the house as the cost of housing. In three tables it is shown that the houses cost 70, 81 and 81 per cent respectively of the whole investment in three separate housing developments. Taking one instance—the first—the land cost 1.6 per cent; street grading, the same; street paving (tar-bound macadam), 3.7 per cent; concrete sidewalks, 1.7 per cent; waterworks, 3 per cent; sanitary sewers, 2.6 per cent; storm sewers, 1.1 per cent; supervision and engineering, 8.6 per cent, and interest during construction, 5.7 per cent—a total of 100 per cent. It is just as well to face the fact sooner or later that the house is only three-quarters of the problem.
Inspectors’ Institute Advances Art of Mine Safety

Proposes Uniform Underground Danger Signals—Urges Standard Methods of Sealing Off Abandoned Areas and of Gas Testing—Elects R. M. Lambie of West Virginia, President

BY E. W. DAVIDSON*

Some definite contributions to the art of making coal mines safe and to the business of keeping them so were made at the thirteenth annual meeting of the Mine Inspectors’ Institute of America, held in Chicago, July 11, 12 and 13. The Institute, after careful consideration in committee and after much earnest and expert discussion, made four recommendations for standardized methods which it hopes will be adopted and made uniform throughout the land. Also it adopted resolutions of sorrow upon the deaths, during the past year, of two charter members of the Institute, Thomas K. Adams, of Pennsylvania, and Walton Rutledge, of Illinois, father of Dr. J. J. Rutledge, mining engineer, U. S. Bureau of Mines.

Before final adjournment, the Institute selected Pittsburg, Kan., over Pittsburgh, Pa., as the place for holding the next meeting, July, 1923, and elected R. M. Lambie, chief mine inspector for West Virginia, president for the coming year, succeeding C. H. Nesbitt, chief inspector for Alabama. Twenty-two members of the Institute attended the meeting, many of them declaring at its close that the gathering had brought out its usual quota of good ideas and concrete results.

RECOMMENDS STANDARDIZATION OF METHODS

The four definite recommendations of the Institute of methods that should become standard were the following:

(1) That a new type of underground danger signal proposed be adopted.

(2) That worked-out and abandoned portions of mines either be thoroughly ventilated or sealed off with a masonry wall provided with a valve permitting periodic tests of the atmosphere within; and that such areas have vents drilled through from the surface.

(3) That tests for gas be made with a non-luminous flame, using a flame safety lamp of one of the types approved by the U. S. Bureau of Mines, and burning fuel also approved by the Bureau, for each specific type.

(4) That in cases where machine runners are equipped with electric lamps, men possessing certificates of competency as gas inspectors test every working place before a machine starts to work in the place, and make another test either during the machine run or immediately thereafter.

During the discussion that preceded the first recommendation much was said about the confusion which exists between parts of the country in the matter of underground danger signals. There are so many “codes” that men transferring from one region to another might easily misunderstand them, with disastrous results. There is a danger also in the effort commonly practiced to register the degree of danger that may exist, as “bad gas,” “little gas” and the like. Since gas is gas and since a man’s judgment of quantity may easily be in error and lead some foolhardy soul into deep danger where only slight danger is expected, the Institute held that the new signal proposed should be one that would make the nature of the danger unmistakable, but should not attempt to indicate its degree.

Hence the Institute recommended that in all mining regions an underground signal of the following description be made uniform: A square divided into four quarters by two lines drawn from opposite corners so as to cross at the middle. Each quarter of the square should be devoted to a single class of dangers: Thus, the upper left-hand quarter should be devoted to gas; the lower left-hand quarter to bad roof; the upper right-hand quarter to electric wires and the lower left-hand quarter to “blackdamp.” With this arrangement made uniform it would be possible for any man who is capable of making a cross to chalk up a danger warning that all would understand. If a man’s ability to write the English language was too limited to enable him to write “gas” or “bad roof,” or “electric wires down,” or “blackdamp” on the sign, he would merely need to put a cross in the proper quarter of the sign and the warning would be complete.

The sign could appear in any number of forms, either commercially manufactured or “home-made” of metal or wood, or merely painted or chalked or scratched on any prominent surface. The committee which brought in the recommendation for this sign consisted of V. E. Sullivan, of West Virginia; James Dalrymple, of Colorado, and Thomas Back, of Illinois.

In the discussion on how best to handle abandoned parts of mines the members of the Institute reviewed the laws and practices of various states and finally endorsed the present Pennsylvania practice, which is essentially that recommended to the whole country by the Institute. The committee which reported the plan for adoption was Dr. J. J. Rutledge, of Illinois; John G. Millhouse, of Illinois, and Frank Hillman, of Alabama.

The Institute continued its discussion of last year on standardization of inspection forms and received from a committee a model form containing a schedule of discounts based on the mining laws of Kansas. This schedule, of course, would have to be modified in accordance with the provisions of each state for use in that particular state. Ralph C. Becker, of Pittsburgh, Pa., told the Institute that the committee on standardization of coal-mine equipment of the American Mining Congress is advancing its work steadily and wants the wholehearted co-operation of coal-mining men everywhere. This committee, whose herculean job will last for about five years, will make an annual report at the next meeting of the Congress, to be held at Cleveland, Ohio, in October.

REAFFIRMS STAND ON USE OF MIXED LIGHTS

The Institute reaffirmed its position taken last year on the use of mixed lights in mines. It holds that portable electric lamps should be used for general lighting and flame safety lamps always for testing. C. L. Colburn explained a uniform plan for the collection of data on mine accidents and proposed a uniform report form for all states for the use of inspectors, compensation commissions and other such officials. After a discussion on the relative importance of subject matter in mine inspectors’ annual reports the Institute decided that statistics and conclusions on accidents and accident prevention were by all odds the most important, that production should take second place, and men employed, third.

A lengthy discussion on the relative merits of water and rock dust as preventives and restricters of explosions did not result in any definite recommendations by the Institute.

The full list of officers chosen for the year 1922-23 follows: President, R. M. Lambie, chief mine inspector of West Virginia; First Vice-President, W. E. Holland, district mine inspector of Iowa; Second Vice-President, James Sherwood, chief mine inspector of Kansas; Third Vice-President, James Dalrymple, chief coal mine inspector of Colorado; Secretary, J. W. Paul, mining engineer at the Pittsburgh Experimental Station of the U. S. Bureau of Mines, and who has been secretary since the conception of the Institute 14 years ago; Assistant Secretary, J. G. Millhouse, district mine inspector of Illinois; Treasurer, Frank Hillman, former district mine inspector of Alabama; Editor-in-Chief, J. T. Beard, associate editor of Coal Age, New York.

*Western editor, Coal Age.
Timbering in the Pittsburgh Seam in Ohio

Nature of Strata Overlying Coal—Avoid Breaking Topcoal—I-Beams Set in Hitches Cut in Drawslate Support Roof—Use of Concrete Blocks for Timber

Refering to the inquiry of "Mine Engineers," entitled "Timbering in the Pittsburgh Seam," published in Coal Age, May 25, p. 886, allow me to suggest a method of timbering that has been found satisfactory by some of the larger coal companies operating in the Pittsburgh coal, in Eastern Ohio.

Before proceeding, however, it would be well to specify more definitely the nature of the strata overlying the coal. The inquirer has given but a partial description of the character of the upper strata, which would hardly enable operators in other fields to fully appreciate the situation.

As has already been stated and as shown in Fig. 1, overlying the coal which averages 5 ft. in thickness, there is a 12-in. drawslate that is taken down as the working face is advanced.

Above the drawslate is a thin seam of coal varying from 4 to 27 in., in thickness. In most cases, this topcoal is marketable. It is overlaid with from 16 ft. to 18 ft. of limestone and shale, above which is the well-known "Redstone Formation." In working the Pittsburgh seam, what is of the first importance is to avoid breaking the topcoal, if that is possible. By that means, the air current is prevented from coming in contact with the shale and limestone. Experience has proved that if this thin upper coal can be held intact, the top will stay up without timbering from six to eight months. Where the mine is dry, indeed, the top has been known to stand for four or five years.

There are times, however, when the roof conditions are so bad that it is practically impossible to avoid breaking the topcoal and, in that case, it is necessary to adopt a suitable method of timbering on the roads.

A method that has proved most satisfactory is that shown in Fig. 2. As there appears, hitches are cut in the drawslate 8 in. wide and 6 in. deep. A 6 in. I-beam is then placed in these hitches and built up to the required height, by placing beneath each end of the beam one or more courses of common brick resting on top of the workable coal.

The use of steel I-beams in place of timber has proved to be the most economical, in the long run, although the initial cost is about one-third greater than for timber. But, it must be remembered that the life of timber, in this connection, is from six months to a year, while that of the I-beams is practically indefinite, as at least 50 per cent or more of these beams are recovered, on retreating.

Lagging to Support the Roof

As shown in Fig. 2, lagging is used above the I-beams to give better support to the roof. For that purpose, second-hand track ties are often used. Ties taken from low dump places are generally found to last longer than dry timber, under the same conditions.

Where the height to be timbered is greater than 12 in., it is necessary to use more brick under the crossbeams. In many cases, concrete blocks varying from 6 to 18 in. in length are made and brought into the mine to serve as legs for the support of the crossbeams. These blocks are usually made in large numbers so that a sufficient supply is always on hand.

In this method of timbering there is nothing to decay except the lagging, which is readily replaced when needed. Regarding a more satisfactory method of cutting the hitches than the use of a pick, it should be stated that the latter is commonly used. It is possible however, that the use of a "Little-Giant" chipping hammer, such as that manufactured by the Chicago Pneumatic Tool Co., and advertised in the eleventh Annual Equipment Number of Coal Age, p. 131 of the advertising section, may prove useful in that connection.

H. J. Griffith.

Piney Fork, Ohio.

Another Letter

Having had considerable experience in handling roofs under the conditions described in the inquiry relating to timbering in the Pittsburgh seam, kindly permit me to offer a few remarks that may be of interest.

In this connection, my first thought is that when contending with a soft roof of this character, it is not advisable to drive the entries 10 ft. wide, as indicated by the sketch presented in the inquiry.

Two Plans Suggested

My observation is, that, in cases of this kind, entries are never driven more than 8 or 9 ft. in width, and the timbers are set back into hitches cut in the ribs of the entry, where they will not be liable to be knocked out. I would suggest two methods, either of which would be applicable under the conditions described.

In the first place, steel I-beams could be used as crossbars for the support of the roof. Or, if available, heavy sections of old rails can be employed to advantage. These can always be recovered and used over and over again, when the road is to be abandoned.

A good plan is to make a hitch-hole, in the top above the coal, and a slip hitch-hole, in the slate in the opposite rib, using a good cap-piece on top of the coal, as a rest for the I-beam. Another method, which is commonly employed, is to cut hitches in the ribs for the posts on either side of the road.

Use of Jacks in Timbering

Where a large amount of timbering is to be done it would, no doubt, be convenient and greatly reduce the cost, if the timberman is supplied with two portable light jacks made out of pipes. These can be made by any handy blacksmith and will save time and labor in placing the beams or sets of timber, as the jacks can be made to hold the crossbars in place while the cap-pieces are being driven under the I-beams, or the posts fitted under the timber collars, as the case may be.

Regarding the suggestion of cutting the hitches by some other means than
Setting Post Timber

Need of setting posts firm—Conditions when roof and floor are hard—Effect of roof settlement.

REFERENCE was made in Coal Age some time ago, in answer to a question regarding the methods of setting post timber when both roof and floor are hard; and it was stated that one plan is to set the posts on a mound of dirt or other soft material that will yield when the post first takes the weight.

Long experience has taught me the need of setting a post firm. It strikes me that one of the possible reasons for this is that the timber is to be stood on any soft material such as dirt or slack. It has always been my practice to use a good cap-piece of soft wood that will enable the post to be driven tight and firm in its place.

THICK CAP-PIECES AND FOOT-BOARDS
AFTER reading the inquiry of "Mine Engineer" and his description of timbering in the Pittsburgh seam, I realize that his chief difficulty is the expense of cutting the hitches in the ribs, for the support of the legs forming a timber set.

The suggestion made by the editor in his reply, namely, to incline the short legs toward the center, has the advantage of reducing the work of cutting the hitches about one-half. In this case, the coal being 5½ ft. thick gives a headroom of 6 ft. under the collar, which eliminates what objection there might be to inclining the legs in this manner.

In my opinion, the cost of cutting hitches can be further reduced by making the cut wholly in the drawslate and resting the collars on top of the coal, instead of using the short legs mentioned. The collar should then be tightly wedged to hold it in place.

In Tennessee we have tried most of the different forms of timbering. One that we have found well adapted to conditions of this kind is to cut a good hitch in the drawslate just above the coal, on one rib. Insert one end of the bar in this hitch and rest the other end on a leg notched into the bar.


collars, wedged

AFTER the conditions stated as existing in the Pittsburgh seam, in Eastern Ohio, it is my judgment that different methods of timbering must be considered, and that form adopted which is found best suited to those conditions.

On all main and branch roads, I would recommend an electric mine-car compressor and air hammer, for digging the hitches in the drawslate above the coal. Coal should be placed in these hitches and tightened by driving small blocks or wedges in them and doing away with the posts.

On main roads, where the conditions might require or circumstances permit, I would use steel I-beams of a size suitable to carry the weight of the overlying strata. Where railroad ties were available, 6 x 8 in. or thereabout, these could be used for timbering on branch roads.

In every case, the distances of the timber sets or crossbeams must be determined by the strength and character of the roof to be supported. At times, I have used oak boards, for lagging above the collars. Where the width of the roadway will permit, it will often be found more economical to use full-length legs to support the collars, instead of cutting hitches and using short legs as mentioned in this inquiry of "Mine Engineer."

RICHARD MACDOUGAL
Pittsburgh, Pa.

Firebosses' Markings

Requirements of the Bituminous Mine Law—Purpose of making two marks in a place—Investigation made in absence of fireboss.

REFERRING to the discussion regarding the marks of a fireboss made on the face of the coal and destroyed by a fall of roof that occurred before the time for the men to enter the mine for work, allow me to refer to the Bituminous Mine Law of Pennsylvania, covering this point.

The law requires (Art. 5, Sec. 1) that the fireboss "shall examine for danger in all portions of the mine under his charge, and after each examination he shall leave, at the face and side of every place examined, the date of the examination as evidence that he has performed his duty."

The provision that a mark shall be made on the side of a place examined, in addition to the one made on the face, I believe is for the purpose of avoiding such a situation as is here presented. In my opinion, a fall of roof large enough to obliterate both marks could hardly take place within the three hours allowed, by law, for the morning inspection, without the place exhibiting some sign of danger at the time the fireboss made his visit.

Now, inasmuch as the law requires the fireboss to "examine for danger in all portions of the mine under his charge," no fireboss fulfills his duty, under the law, when he makes a test for gas and does not also make a careful inspection of the roof and the face of the coal and observe if any timbers have been discharged by the shots fired the night before, and note other dangers that may exist.

REPORT MUST SHOW DANGERS FOUND
In this instance, it may be assumed that a close inspection would have revealed broken timbers; or posts set contrary to the regulations of the mine; or an unsafe condition of the roof. As revealed, it shows the presence of slips in the roof. Any of these dangers, if found, should be entered on the report of the fireboss and prompt measures taken to avoid accidents therefrom.

Assuming that both of this fireboss' marks were destroyed, it is my belief that his report would reveal some form of danger such as I have mentioned, provided his inspection was properly made. The fact of any danger being noted in the report regarding the place would be sufficient evidence that the fireboss had been there the same morning.

While it is admittedly possible that a careful examination of the place did not reveal any apparent danger and the roof fell within the three-hour period following, such an occurrence would be unique, to say the least. In any event, justice to the fireboss demands that the circumstantial evidence there may be that he had examined the place in the regular routine of his duties.

The investigation that must follow such an occurrence should be made in the absence of the fireboss, who should not be permitted to enter the mine while the same is in progress. Every place in the district of which he has charge, should be examined in order, and his marks noted, as well as the condition of each place, in respect to danger. Assuming the investigation showed all other places properly examined and marked, I believe any jury of mining men would clear the fireboss of suspicion.

JOHN WALL, Sr.
Bayview, Ala.

ANOTHER LETTER

REGARDING the question of firebosses leaving their marks in each place examined, as evidence that they had inspected the place, allow me to refer to some incident in my own experience along this line. It may not be policy for a fireboss to place his mark on the roof, at the coal face, unless it is hard and firm, but I have known many such instances.
In one case, which was told to me a short time since, a miner who had been injured by a fall of roof at the face of his room, attempted to recover damages from the company, claiming that the fireboss had not inspected his place that morning and he was not warned of his danger.

It so happened that the fireboss had been accustomed to mark the roof of each place examined, instead of placing his mark on the face of the coal, as is often done. To prove his case, the fireboss got busy and cleaned up the fall. When a large rock, lying on the pavement, was finally reached and turned over the mark was found, showing the date and the initial of the fireboss.

Some will claim that the roof is not the proper place for a fireboss mark. Many place their mark on the timbers. I have known some to stand a shovel upside-down and hit the mark on the back of the blade. It is the custom of many firebosses and safety inspectors to mark a cross on a piece of loose top to indicate that it must be taken down or made secure with timbers. For this reason, if a fireboss should mark his inspection on the roof it may be confused with the mark indicating bad top, and it would be better to use other means of making the inspection mark.

BULLETIN BOARDS IN WORKING PLACES SERVE GOOD PURPOSE

Some years ago, while firebossing, I had bulletin boards prepared to facilitate and make legible my record of inspection. These boards were 12x18 in. and had a hole bored at the upper end so that they could be hung on a nail on a post. Each miner was made responsible for the keeping of his board. It was his duty to move the board back four or five posts before firing his shots at the close of the day, so that it would be out of danger from flying coal.

When making his rounds in the morning, the fireboss would move the board forward, mark the date and hang the board on a post next to the face of the coal to show that he had examined the place and it was safe for work. This method proved highly satisfactory to everyone. Whenever there is a hole in the roof or other place where gas might accumulate a mark should be made at the highest accessible point to indicate that a gas test has been made there.

Talk is cheap and life and health are valuable. Therefore, bad roof and other dangers should always be marked down in their presence.

Every fireboss should see that his mark of inspection is where a miner will see it on entering his place. Again, another mark should be made at the coal face or at any point of danger, to show that such point had been examined. Another fireboss must arrange to remove any danger found and prevent the men from entering the place until that is done.

Thomas, W. Va. W. H. NOONE.

Inquiries Of General Interest

Principles Relating to Post Timber

CONDITIONS in the mine where I am employed as timberman have been such as to require their special study. In one section of the mine recently developed, much trouble has been caused, owing to timbers being destroyed by the roof pressure, soon after the posts were set. The coal is 6 ft. in thickness and the seam generally flat and overlaid with a cover of shale, slate and sandstone, varying from 250 to 300 ft. in depth.

For some time, I have been seeking information regarding the essential properties of timbering rooms. My chief trouble lies in dealing with a hard roof and bottom. It has always been my practice to use good cap-pieces when setting post timber, but these do not seem to serve the purpose as fully as they should when the timbers take the weight.

TIMBERMAN.

One of the first principles that a timberman should learn to respect is the fact that when the coal is taken out from a portion of a seam, as in driving rooms and entries, there always follows a certain settlement of the overburden resting on the pillars. This is not a sagging of the roof over the opening, but a body settlement due to the weight of the overburden squeezing the pillars on which it rests.

This first or initial settlement of the roof is irresistible and no amount of

that post timber is never intended to carry the weight of the cover above it, which is far in excess of the strength of the timber. In Fig. 1, we have attempted to illustrate the condition that results from driving an opening in a seam of coal. The strain resulting from the taking out of the coal has the effect to crevice the strata above the opening, and the loosened material then overarches the opening, as indicated by the dotted line.

This overarchering of the roof acts to support the entire overburden above, throwing its weight on the pillars on either side of the opening, while the weight of the loosened material beneath the arch is held in place by the timbers set to support the roof. The height of the arching is wholly dependent on the character of the formation overlying the coal.

When setting post timber in a mine a practical timberman will never drive

a post tight, between the roof and floor, without providing a good cap-piece above, which will yield and prevent the crushing of the post, when the weight comes on the timber. This is particularly true when either the roof or the bottom, or both, are hard. If there is no yielding material provided to take up the first settlement of the roof, as here mentioned, the post will be destroyed by this irresistible pressure.

Some years ago, mine inspector Hepplewhite proposed a method of avoiding the destruction of post timber, by tapering the foot of the post. This method was very largely employed in England, but has never been used to any great extent in this country. A method that has been more commonly used in American mines, aside from providing a good cap-piece against the roof, is to set the post on a footboard placed on a low mound of

FIG. 1. OVERARCHING OF MINE ROOF WHEN DRIVING A ROOM

FIG. 2. MEANS USED TO PREVENT DESTRUCTION OF POSTS

Timber can prevent it. Its extent will vary with the depth of cover, thickness of seam, hardness of coal and ratio of pillar to opening. Calling the entire area, in a given section of a mine, A; and the area of opening, in the same section, a, the increase of roof pressure due to the taking out of the coal is in the ratio A : a, or A/a. One thing to be remembered is

...
dirt or slack, an inch or two in thickness. This method has a particular advantage in enabling the quick removal of a post when desired, by digging out the slack with a pick.

In the accompanying sketch (Fig. 2), is shown, at (a), the effect on a good cap-piece caused by the weighting of the roof. At (b), is shown the bottom portion of a post resting on a footboard placed on a thin mound of slack or dirt. Again, at (c), is shown the effect of tapering the foot of a post, when the weight comes on the timber. The furring of the tapered end of the post provides the necessary yielding that prevents the destruction of the timber.

A good rule to apply in post timbering is to make the diameter of the small end of the post, in inches, not less than its length, in feet. Thus, a 6-ft. post should have a diameter not less than 6 in., at the small end. This makes the post present an equal resistance to crushing and bending. In other words, the post will not be crushed by reason of having too small a diameter for its length, or bend by reason of being too long for its size.

It is important in setting post timbers in a flat seam to set all posts plumb. Otherwise, any movement of the roof has a tendency to discharge the post. In inclined seams, the right position of the post is nearly normal to the strata, the timber being slightly inclined up the pitch from the normal. This is done to counteract the tendency of the strata to slip downhill, and prevents the loosening of the post should that occur.

Examination Questions Answered

Bituminous(Pa.)Mine Foremen's Examination, Held April 11-13, 1922

(Selected Questions)

Question—(a) How many workable seams of coal are there in the district in which you are employed? (b) Give the local name of each. (c) What are the characteristics of the roof in each seam? (d) What name is given to the coal measures in which they occur?

Answer—(a, b, c) These questions must be answered according to the local conditions in any given district.

(d) The coal measures are known geologically as the "Carboniferous System."

Question—A ditch 18 in. wide and 12 in. deep is full of water. If the velocity is 2 ft. per sec., how many gallons are passing per minute?

Answer—The sectional area of the ditch is $18 \times 12 = 216$ sq.in. A velocity of 2 ft. per sec. is $2 \times 12 = 24$ in. per min. The quantity of flow is, therefore $(216 \times 1,440) \div 251 = 1,346.5$ gal.


Answer—1. No higher than medium voltage (300 to 650 volts) shall be used underground, except for transmission or for application to transformers or other apparatus where the high-voltage circuit is stationary. In gassy mines, high-voltage (exceeding 650 volts) transmission cables must be installed on intake airways, only; and high-voltage motors and transformers must be installed in suitable chambers ventilated by fresh intake air. All high-voltage lines and apparatus must be clearly marked to indicate their danger, the danger signals being placed at frequent intervals. Curves or signal wires must not exceed 24 volts.

2. Main and distribution switchboards must be made of insulating, incombustible material such as marble or slate and installed in as dry a position as possible. All switches or other instruments used in connection with motors or apparatus of more than 50-hp. capacity, shall be installed on a suitable switchboard with a 3-ft. passageway in front. Similar equipment, not exceeding medium voltage, or 50-hp., may be separately installed if mounted on an insulating base of slate or other material.

With high-voltage connections behind the switchboard, the passageway there shall not be less than 3 ft. clear, this space being properly floored and kept locked by a door, at each end, that can be opened from the inside without a key.

With higher than medium voltage, there must be no live-metal work on the frame of the main switchboard, within 7 ft. of the floor or platform, and the space before the switchboard must not be less than 4 ft. in the clear. Insulating floors or mats shall be provided for medium-voltage boards where live metal work is on the front.

3. Transformer rooms must be of fireproof construction. With higher than medium voltage, the entry circuit must be protected by an oil-break switch on each pole, equipped with an automatic overload trip. With medium voltage or less, each pole of the entry circuit may be protected by a switch and automatic circuit breaker; or fuses may be substituted for the latter, in case of lighting circuits and power circuits not exceeding 25-kw. All transformers must be provided with suitable ammeter, in either the primary or secondary circuits.

4. At the point where a branch leaves the main circuit, it must be provided with a switch of not less than 100 amp. capacity, on one side.

5. Where incandescent-lamp wires are connected to the trolley circuit, the lug of the trolley hanger must be drilled to receive the lighting wire, which is secured by a setscrew. The lighting wire must not be wrapped or tied about the stem or stud of the trolley hanger, and must be grounded to the track circuit. All lighting wires must be adequately insulated and stronged on porcelain or glass insulators, unless encapsled in pipes or other metallic covers. Separate uncased wires must be kept at least 3 in. apart, except where they enter the fittings and all metallic casings must be grounded efficiently.

6. All joints in conductors must be mechanically and electrically efficient and soldered, if possible; otherwise, a suitable screw clamp or other connector must be used. When the joint is covered, it must be of the same size as the same size as the rest of the wire.

7. All power wires and cables must be well insulated and firmly fixed in position, being supported at intervals not exceeding 25 ft. where their strength is not self sustaining. Unless protected by boxing, space must be maintained between them and the sides of the shaft.

8. Conductors other than trolley wires, on main haulage roads, must be protected by proper guards, unless kept at least 12 in. from any part of mine ear or locomotive. Unless provided with metallic covering, wire conductors must be hung on insulated fastenings.

9. On underground roads, trolley wires must be hung as far as practical to one side of the road and securely supported on insulated hangers, at points that will prevent a sag exceeding three inches, where the height above the rail is less than 5 ft. and the wire does not touch the roof when the trolley passes. All other wires except telephone, shotfiring and signal wires must be hung on the same side of the road with the trolley wire.

At all points where men must work on or near to the under trolley or bare power wires, less than 6 ft. above the top of the rail, such wires must be properly protected. All branch trolley lines must be provided with an automatic trolley switch, or section insulator and line switch, or a switch, other devices to cut off the current from the branch.

10. Both rails and main haulage roads must be bonded and cross-bonded, at points not to exceed 200 ft. apart.
Scenes at Salkeld Mine, Where Headworks Were Destroyed by Four Hundred Armed Strikers

At this mine, on July 17, four hundred well-armed foreigners attacked the men who were at work and killed the sheriff who, with deputies, was on guard. At least six of the attackers were killed. The mine is the property of the Richland Coal Co. and is located at Cliftonville, W. Va., near Avella, Pa., where most of the attacking party live. The picture on the top at the left shows the tangle and shed leading from the mine level. This was not destroyed. The illustration at the top on the right shows the drift mouth, which also apparently escaped injury. The two lower illustrations show the destruction wrought by the fire; that on the left shows the destroyed generator house. The attack was made on the sheriff, his deputy and twenty-one employees and deputy sheriffs, the first two having pistols and the others only riot guns and two rifles.

Pittsburgh Operators Announce Return to 1917 Scale Until Jan. 1, 1923

PITTSBURGH operators on July 20 posted notices announcing a wage scale effective until Jan. 1, 1923. The scale is that of 1917, known as the Washington scale, and is the one in effect during the months of 1919 prior to the strike of that year. In a statement given out by the association it is pointed out that under this scale loaders who worked steadily earned on an average $6.71 per day and that the average total earnings for nine months was $1,136.89. During the same period cutters had average earnings per day of $8.43 and the average total earnings for the nine months period was $1,491.16. These men worked 95 per cent of the time that the mine worked. Pick miners during the same period had average daily earnings of $7.60, and the average total earnings for the nine months period was $1,280.74. These men worked 92 per cent of the time that the mine worked.

Taking the first nine months of 1919 as a basis, it is found that for the corresponding period in 1920 the country produced 117.5 per cent while the Pittsburgh district produced but 83.8 per cent. In 1921 the country produced during the same period 85.4 per cent while the Pittsburgh district produced but 61.4 per cent, a great part of which was on contracts. The new scale will give the men steadier work and greater actual earnings at the end of the year than under the scale which was in effect during 1921, it is asserted.

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* Compiled by Ore & Coal Exchange, Cleveland, Ohio; H. M. Grigs, Manager.
Nearly All Coal-State Governors Pledge Aid to Harding

President Harding sent the following telegram at 6 p.m., July 18, to the governors of twenty-eight coal-producing states calling upon them to maintain order and protect reopened coal mines:

“The proposal of the Federal Government to the United Mine Workers and the various operators, whose mines are now open, to submit all questions in dispute to a national coal commission for arbitration, has been declined. The mine workers declined as a body. The majority of the bituminous operators pledged unqualified acceptance. The anthracite operators filed unconditional acceptance. A minority of the bituminous operators accepted the principle of arbitration but made specifications which could not be considered.

It was proposed that the operators and the mine workers in dispute should immediately resume coal production under the wage scales and working conditions which prevailed at the time of the strike on last April 1; that every question in dispute should go to a national commission to be composed of three representatives of the mine workers, three representatives of the operators and five representatives of the American people.

It was proposed to make the commission the final authority on all disputes until next March, and meanwhile the commission was to inaugurate a searching inquiry into every phase of the coal industry, in order to recommend the way to maintained understandings between workmen and employers, to promote steady employment and assure a continuous and ample fuel supply.

“The failure to secure the acceptance of this proposal for a voluntary adjustment left me no other course but to invite the mine operators to return to their mines and resume activities.

“I trust you will find it consistent to second this invitation, if you have not already done so, with the invitation to all miners and operators to resume their work. This invitation should be accompanied by such assurance of maintained order and the protection of lawful endeavor as will give assurance to everybody concerned. I want to convey to you in this message the assurance of the prompt and full support of the Federal Government whenever and wherever you find your own agencies of law and order inadequate to meet the situation.

“Your State Government and the Federal Government are jointly responsible for maintained conditions under which free men, willing to work, may work in safety. We are responsible for the production and the transportation of the fuel supply ample for the wants of the American people and the public utilities which serve them, particularly the railways engaged in interstate commerce. We must have ample coal to maintain industrial activity. We must have the coal necessary to the health, security and the activity of all the people.

“I recite to you these details because it is important to have them understood as far as the Federal Government and all going in seeking a voluntary adjustment. Thus far there has been no challenge of the right of workers to decline employment, or the right of the employers to hire as they elect.

“Our present duty is to guarantee security in the exercise of these rights, security in all lawful operations, and afford a safe opportunity for the production and distribution demanded by the necessities of the American people. A government can claim no part of a profit in the dispute between organized workers and organized employers. I do offer the only available agency which I know to effect a settlement, and these good offices have not availed.

“It becomes necessary, therefore, in the name of common welfare, to invite protection in the fulfillment of that obligation which attaches to an American industry engaged in providing any public necessity, and to afford security to all men alike who are ready and willing to work and serve the common need. No cause is so important as that of common welfare, and there must be the suppression of every unlawful hindrance to the service of that cause. To the task of lawful protection and the maintenance of order the Federal Government pledges to you every assistance at its command.”

In response to the President’s request for full protection to workers in opening and operating coal mines in their states, Mr. Harding received replies from nearly all of the twenty-eight governors promising the fullest cooperation. Governor Morrison of North Carolina and Governor Ritchie of Maryland were exceptions. Governor Morrison said that it would be vain for him to invite the miners to return to work, and he would not do so, anyway. Governor Ritchie declined to take the action suggested, declaring that the traditions of the state are “those of a people who settle such matters without bayonets or rifles.”

There is “no coal strike in Virginia,” Governor Trinkle telegraphed President Harding. “Our mines are operating,” the brief message concluded.

“Confirming my conversation with you,” Governor Sproul, of Pennsylvania, telegraphed, “I again beg to assure you of the full co-operation of the Government of the Commonwealth of Pennsylvania in your plans as outlined.”

“Indiana mine operators have been invited to resume operations,” Governor McCray, of Indiana stated. “Ample protection will be given to protect life and property.”

The message of Governor Morrow, of Kentucky, said: “Your position is unquestionably correct and should be unhesitatingly pursued. I will support and maintain it.”

“All resources of West Virginia,” wired Governor Morgan, of West Virginia, “have been and are available to afford protection to those who desire to engage in lawful employment.”

Governor Davis, of Ohio, telegraphed: “The full authority of Ohio has been and is ready to be marshaled into action, including the employment of all military or civil measures that are requisite.”

“All Kansas needs are being met,” Governor Allen, of Kansas, assured. “The Kansas Industrial Act forbids picketing of any kind, and there will be no difficulty in resuming full operations in the Kansas field.”

Governor McRae, of Arkansas, thought “the President’s message apparently requires no answer. Civil authorities seem to have the situation in the state well in hand.”

“Co-operation with President Harding and the federal authorities to the fullest extent” was promised by Governor Shoup, of Colorado.

Governor Kendall, of Iowa, pledged “every resource of the state to the support of the program you have inaugurated for the relief of the coal situation.”

“I am not apprehensive that any serious trouble will arise,” wired Governor Taylor, of Tennessee. “Should necessity require, we are absolutely able and will take care of the situation.”

Governor Robertson, of Oklahoma, said he would “co-operate fully” with the programme of the Federal Government.

“There is no trouble in this state,” Governor Hart, of Washington, telegraphed, “and I have faith in the operators and miners that no condition precipitating a demand for Federal interference will arise.”

“All coal mines are operating,” according to the message of Governor Mechem, of New Mexico, “and production is sufficient for all present needs.”

Governor Hardwick, of Georgia, pledged “full, prompt and wholehearted support.”

“Only one mine in North Dakota is affected,” the message of Governor Nestos, of North Dakota, stated.

Governor Hyde, of Missouri, promised “to take immediate steps to bring about production of coal in this state.”

“I am satisfied Utah will be able to handle the situation,” Governor Mabey telegraphed.

Governor Dixon, of Montana, wired: “There has been no disorder in Montana and I do not expect any.”
Ogle Urges Immediate Selection of Non-Partisan Commission to Investigate Coal Strike

The next important announcement on the coal situation expected from the White House is that covering the appointment of a coal commission to investigate the present strike and the coal industry in general. Decision of the President to name such a tribunal, notwithstanding failure of his recent mediation offer, was made by Mr. Harding in a letter to Mr. Sproul, of Pennsylvania.

Governor Sproul of Pennsylvania, sent the following telegram to President Harding on Thursday, July 20:

I wish to report strong public sentiment supporting my invitation to operators and union to a joint conference. I trust, however, that you are merely withholding the appointment of your commission because when arbitration was denied there was but one consistent thing to do, as I saw it, and that was to invite production. You may also have a reason of similar necessity as fuel and thereby jeopardize American life and happiness.

The President's reply, also dispatched July 20, was as follows:

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You are urged to select a commission now, and to proceed immediately with the work of investigation.

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Operators of Southwest Reiterate Readiness To Negotiate New Wage Scale

The southwestern interstate coal operators' association has addressed a letter to John L. Lewis and to George L. Pek, John Wilkinson and Arch Helm, district presidents of the union, asking for a joint conference. The letter, dated July 22, 1922, and signed by H. N. Taylor, president of the association, follows:

The southwestern interstate coal operators' association met your representatives in interstate conference March 23 and again on April 19, 10, and has reviewed the wages and conditions of working in the southwestern states. We have been discussing the南方的 wage scale for the southwest and the economic and competitive conditions of surrounding states.

We believe that the operators of the southwest have made every effort for the negotiation of a wage scale and have been called upon to bear the loss and suffering to due to which the operators, political and economic conditions that have influenced the United Mine Workers organization.

We have now conferred with the operators of the southwest and have met with them in conference, and we believe that the operators of the southwest and the economic and competitive conditions of surrounding states have been affected by the mining in the southwest and the economic and competitive conditions of surrounding states.

The operators of the southwest have not attempted to bear the loss and suffering due to the mining of the southwest and the economic and competitive conditions of surrounding states. They have not attempted to bear the loss and suffering due to the mining in the southwest and the economic and competitive conditions of surrounding states.

Farrington and Lewis Come to Parting Ways; Separate Settlement Seen

St. Louis, Mo., July 25—Frank Farrington, Illinois mine union president, has called a meeting of his executive committee to confer with operators in this city on Wednesday, July 26. It is rumored that a settlement is to be made with John L. Lewis, and that Farrington will arrange a separate settlement with operators in the Illinois field.

The Illinois operators' scale committee was in session in Chicago all day Monday. Rice Miller, president of the Illinois Operators' Association, said after the meeting that he saw no ray of hope for an early settlement. Farrington was in Chicago all day Monday but declined to make a statement.
Government to Control Prices and Regulate Distribution of Coal; Priorities Ordered

BY PAUL WOOTON
Washington Correspondent of Coal Age

Washington, D. C., July 25.—A plan for the settlement of the coal strike in the soft coal fields providing for the guarantee of a minimum wage to mine labor with a minimum of 280 days work per year has been offered to the miners and operators, it was stated by officials at the White House today.

It was not announced whether the miners or the operators had been given opportunity as yet to consider the plan and official announcement is withheld until both parties have been approached as to its workability. It will be recalled that a minimum wage guarantee was one of the suggestions made by John L. Lewis last autumn as a solution of the union miners’ troubles.

Senator Borah, chairman of the Senate Committee on Labor, today introduced a resolution calling for a commission to be appointed to inquire into and make report to the Congress on the advisability of nationalizing the coal industry.

The Interstate Commerce Commission this afternoon issued two priority orders affecting coal, both part of the program of the government to control distribution. One provides that priority be given coal in the distribution and loading of open-top cars and the other provides that in the movement of freight coal must be given preference and be shipped by the most direct route to its destination. Both orders follow the style of those of 1920 and are numbered consecutively with those of that year.

Extracts from Service Order No. 23, effective July 26, follow: “That in the supply of cars to mines upon the lines of any coal-loading carrier, such carrier is hereby authorized and directed to place, furnish and assign such coal mines with cars suitable for the loading and transportation of coal in succession as may be required for the following purposes and in the following order of classes, namely: Class 1—For such special purposes as may from time to time be specially designated by the commission or its agent therefor, and subject thereto. Class 2—(a) For fuel for railroads and other common carriers, and for bunkering ships and vessels; (b) for public utilities which directly serve the general public under a franchise therefor, with street and interurban railways, electric power and light, gas, water and sewer works, ice plants which directly serve the public generally with ice, or supply refrigeration for human foodstuffs, hospitals; (c) for the United States, State, County or Municipal Governments and for their hospitals, schools, and for their other public institutions, all to the end that such common carriers, public utilities, quasi-public utilities and governments may be kept supplied with coal for current use for such purposes, but not for storage, exchange, or sale. “Class 3—As to each coal-loading carrier which reaches mines in Pennsylvania, Ohio, West Virginia, Kentucky, Tennessee and Alabama for bituminous coal consigned to any Lake Erie port for transshipment by water to ports upon Lake Superior and subject thereto. Class 4—As to all such carriers by railroad, commercial sizes of coal for domestic use and subject thereto. Class 5—Other purposes.

No coal embraced in Classes 1, 2, 3, or 4 shall be subject to reclassification or diversion except for some purpose in the same class or a superior class in the order priority herein prescribed.”

DISTRIBUTION and rationing of the available coal supply by the government under the direction of Secretary Hoover and the Interstate Commerce Commission, along with plans to prevent profiteering by withholding cars from mines which charge exorbitant prices, having been declared legal by Attorney General Daugherty on Monday, July 24, the plan will be put into effect within a few days.

The plan tentatively drawn up follows:

(1) A committee in Washington, to be appointed by the President, will consist of representatives of the Department of Commerce and Industry, the Interstate Commerce Commission, the Department of Justice, and the Department of the Interior, to be designated the Presidential Committee. This committee will have general supervision of the measures to be taken hereunder and to authorize the execution of some of these measures as may be necessary from time to time.

(2) The Administrative Committee, comprising representatives of the coal-producing potential counties, will consist of operators, representatives of the railways, and, where necessary, representatives of the larger consuming groups.

(3) The President will appoint a representative in each coal-producing district.

(4) The President or the Committee will appoint a committee of operators in each district to be nominated by the district operators’ association or independent operators (in case of failure of the operators to take such action the Presidential Committee may appoint such operators as they see fit on such committee). The members of these district committees will be changed as determined upon by the Presidential Committee.

(5) The Presidential Committee will co-operate with the Interstate Commerce Commission and the preferential orders issued by the Commission.

(6) The governmental representatives in the districts with the co-operation of the district committees shall advise the agencies of the Interstate Commerce Commission as to local coal movement to effect the purposes of this plan.

(7) The operators will proceed with their usual business until they are affected by preference orders.

(8) It is expected that the district committees under authority of the Presidential Committee will recommend the allotment of cars of coal, to conform to the basis or basis of price determination shall be applied to all consumers, and those affecting the coal trade.

(9) The president of the order, or in his absence, pending further consideration by the Interstate Commerce Commission, the Department of Justice, of the Interior, and the Department of Commerce.

After agreeing to the government’s tentative plan the representatives of the operators returned on Tuesday to their districts, where an effort will be made to obtain their endorsement by a majority of the operators of the districts.

If a majority cannot be obtained a committee for each district will be appointed by the President’s committee. The plan will apply to all districts where a consequential amount of coal is being produced and will include anthracite, if any production is obtained.

Secretary Hoover stated on Tuesday that the Attorney General is positive that it is entirely legal to give preference to the public by a majority of the operators of the districts.

No coal can be obtained by a group of operators in the center of the western Kentucky field are adhering to the maximum price of $3.50, despite the fact that some of their fellow operators sold coal on Monday as high as $13.

Secretary Hoover pointed out that no money is available for the organization of which the government has set up. He intimated that legislation may be required to furnish the necessary appropriation. He called attention to the fact that the priority plan would displace contracts.

C. E. Bockus was elected chairman of the operators’ committee. The Department of Justice was represented at the conferences held at the Department of Commerce.

Mr. Hoover was present at the conference, which was attended by members of the Interstate Commerce Commission, and the Director General of Railroads Davis were parties to the conferences, as were officials of the American Railway Association. George Otis Smith, director of the Geological Survey, and A. H. Holbrook, acting director of the Bureau of Mines, also participated in the conferences.

Whether or not the administration asks it, there is certain to be an effort, before this session of Congress closes, to put through fact-finding legislation and possibly legisla-
tion giving the President special powers to be exercised in case of an emergency.

A question just now receiving the attention of administration officials is just how far the responsibility of the federal government goes in rationing coal. Some are of the opinion that when the needs of the domestic consumer, of the railroads, of the public utilities and of certain food industries are met there should be no further effort to apportion any remainder among other users, on the basis of their essentiality.

While regret is expressed that the President called the operators and miners together at the time he did, and that after getting them together he failed to outline definitely just what would be covered by his proposed action, there is general agreement that the situation since the first conference deadlock. Frequent claims were made during the conferences by some of the operators that the strike was about to begin to disintegrate when the federal government interfered, thereby giving the strikers encouragement. Some operators said they were just on the point of producing coal when the conference was called. Nearly all of them contend that production was all that was needed to start up their mines. Since arbitration had been declined it is believed by many that the President was justified in sending the operators home to give them an opportunity to make good their claims that they could produce enough coal to meet the situation.

It is admitted that the chances were much against the operators being able to produce enough coal in union territory to ride over the situation even if there had been no railroad strike. Some contend that the time was too precious to gamble any of it on such a hopeless plan. The tightening up of the rail strike dissipated any such chance as may have existed and incidentally gives the operators a good excuse for not trying to carry out the hazardous plan to which they were committed.

The responsibility of the state governors is the President but they give little indication that coal will be produced. The most encouraging reply was from the Governor of Michigan, who tried moral suasion, only to be told that the mines could not be opened without the consent of John L. Lewis. The only alternative is to take over the mines, so the Governor telegraphed the President asking his advice as to how this could be done. The latest advice indicates that the mines cannot be taken over until after the Legislature has been called into session. In addition, it would be necessary to have appropriations to furnish operating capital. If the Michigan mines were taken over the principal value of the move would be in the establishment of a precedent, since the state produces only 6 per cent of the bituminous coal it consumes.

Governor Sproul, of Pennsylvania, acted promptly and sent troops but he emphasized the necessity for keeping the arbitration proposal alive.

The responses from the governors indicate clearly that the strike cannot be settled by force. Even were the federal government to comply with the request of the Governor of Iowa that troops be sent to protect the state's mines, it would be a dangerous thing to do, all admit. Indiscretion on the part of an irresponsible federal soldier might precipitate a grave crisis.

Talk of taking over mines by the federal government has almost died out during the last few days. The realization that all the larger mines would have to be operated, if a sufficient quantity of coal were to be produced, brought up a train of problems in addition to that of policing the vicinity of those mines. If the government were to furnish the working capital, arrangements would have to be made for the use of several hundred millions of dollars and the setting up of a gigantic business operation. The only other way to handle such a situation is to co-operate for the time being, the mines are in private hands and the President now has no legal authority for the co-operation with one of the parties to the strike can be foreseen. Even the matter of protecting properties presents unusual difficulties in such fields as those of Illinois and Indiana, where there are no housing facilities at the mines. Before the federal government could even start to seize a mining property it probably would be necessary to declare martial law.

Production has been reduced to the point where the situation is hurrying to its climax. The one thing which might precipitate a settlement, and it is admitted that it is only the barest sort of possibility, is a separate peace in Illinois.

Even if there were no railroad strike, transportation troubles of a serious character would be certain to ensue in an effort to supply the territory north of the Potomac and Ohio rivers, which consumes 80 per cent of the coal output, from mines south of that line.

Bituminous coal must be mined at the rate of 12,000,000 tons a week for the next six months if all requirements of the country are met. It is evident, even if the effects of the shopmen's strike are overcome, that no such production can come from the non-union fields and from the weaker outlying union districts. The operators' pre-strike estimate of 6,000,000 tons of production from non-union territory has not been approximated, when one considers the average production during the sixteen weeks that the strike has lasted. The highest production obtained in a single week since the strike began was 5,360,000 tons, during the twelfth week. Production now has fallen to the point where it promises not to exceed 3,600,000 tons this week.

Deferr Assigned-Car Hearing Till Aug. 14;
Guthem and McAluliffe Testify

TO COMFORM with the desires of both the carriers and the operators of coal mines, the Interstate Commerce Commission has postponed further hearings in the assigned-car case until Aug. 14. This action was taken at the completion of the testimony of A. G. Guthem, principal witness for the carriers.

Mr. Guthem presented an imposing array of facts and figures intended to prove that assigned cars are essential to a regular and adequate supply of railroad fuel. He admitted that there is a human element to consider in the situation which does result in some misinterpretation of the rules and in some inequality of treatment, but he contended that the disadvantages are far outweighed by the advantages of the system.

Mr. McAluliffe testified briefly. He opposed any use of assigned cars or of private cars. He said cars should be distributed according to the ability of each mine to load. He took issue with the argument that assigned cars are necessary to keep the railroads properly supplied with coal.

Upper Potomac Operators Deny Car Shortage;
Intimidation Hampers Operation

SHARP issue is taken by operators of the Upper Potomac field with the statement of Governor Ritchie, of Maryland, to the President in which he said, "The Upper Potomac mining district continues partial operations but is handicapped by the railroad strike, which prevents coal being shipped from the mines."

"Governor Ritchie's wire to President Harding regarding Upper Potomac district being handicapped by railroad strike incorrect," John F. Palmer, secretary of the Upper Potomac Coal Operators' Association, says. "No car shortage in district since strike began. Five hundred surplus cars available today, also sufficient motive power."

To this Secretary Palmer has added the statement that "There never has been a car shortage in the Upper Potomac field since the strike began. It is not a question of car shortage but a question of intimidation of striking miners against men who want to work. There is a surplus of cars on the Western Maryland R.R.

Operators in the Georges Creek field, having had no protection against intimidation and violence, have engaged in no general effort to get back to a normal basis nor do they intend to do so in the absence of military protection, no matter what may happen, it is said.
Sixteenth Week of the Coal Strike

EDITORIAL REVIEW

Following the break-up of the peace moves of President Harding in the coal strike when on Monday, July 17, the announcement was made that the miners and a portion of the soft-coal operators had rejected the plan of Mr. Harding to put the mines back at work, there have been no important developments in the situation. On Tuesday the President sent a call to the governors of 28 coal-producing states saying that they give protection to such men as volunteered to return to work in the mines under the invitation that had extended to the operators to “return home and open the mines.” So far no mines are reported to have been opened under this program and as the days pass there is less likelihood of any important increment to production by this route. The hard-coal producers are not disposed to hazard their valuable top works in an effort to get out coal even if sufficient men could be induced to enter the mines. The Pittsburgh operators are said to be actively seeking to open a few mines and in the newly created “open-shop” areas, as Kanawha, progress would be more rapid than it is were it not for transportation disability on certain roads.

An investigation is being made by Attorney General Daugherty to determine whether the rail and coal strikes are sympathetic strikes. There appears to be a relationship between the rail and coal strikes, but whether it is conspired or instigated I cannot say,” said Mr. Daugherty. C. J. Albaisin, Commissioner for the Pittsburgh Vein Operators Association of Ohio, states that eastern Ohio operators intend to obey the mandate of the government to resume mining operations, but he qualifies this statement by adding that the policy of the eastern Ohio operators has not yet been definitely fixed.

Mr. Frank Ledvinka, president of the miners’ district for eastern Ohio stated that if any attempt were made to reopen the mines before a settlement is made he would call out the union pumpers and maintenance men who have been working since the strike began.

Two developments of the week served to stiffen the morale of the strikers in the non-union fields of central Pennsylvania. The first was the rejection of President Harding’s arbitration proposal by the mine workers because all operators in the county were not brought within its jurisdiction, after the strikers here had about reconciled themselves to be left “holding the bag” after the union miners and operators got together. The second was the calling out of the guardsmen. While that was done by the Governor to prevent any disorders it will be impossible to convince the strikers it is said that the soldiers were not brought into the coal fields in an effort to force them to go back to work.

As a possible solution to the coal difficulties Senator King, of Utah, on Friday, July 21, introduced a resolution in the Senate proposing the appointment of a commission of five members by the President to investigate the strike and related problems in the coal industry with a view to their solution. The Senator does not specify the manner in which the commission shall be appointed, leaving it to the discretion of the President.

At Hampton Roads the situation has shown little improvement over a week ago. Shippers who had steamers under charter have many of them exercised their option of cancelling, receipts of coal at the piers having become so undependable. The output of the smokeless fields has been very much affected, and since these districts were caring for the Eastern situation measurably well until July 4 buyers are quite apprehensive. A few interests have been offering spot coal. At low prices and freight charges, the Hoover level having been left far behind, once demand tended to exceed supply. Something of a fleet has accumulated at Hampton Roads, where a few weeks ago the accumulation was one of coal rather than of ships. Prices as high as $7.50 and $7.75 f. o. b. vessel at Norfolk are said to have been realized within a few days.

Sproul Calls Troops to Maintain Order
In Pennsylvania Bituminous Region

GOVERNOR SPROUL of Pennsylvania, signed an order July 20 detailing the 104th Cavalry, 52d Machine Gun Squadron and Motor Transport Co. 110, of the National Guard, to active service in the bituminous coal region of the state. The troops 1,110 in number, entrained July 20 for service at strategic points in Washington, Westmoreland, Cambria, Indiana and Somerset Counties, under command of Colonel E. J. Stackpole, Jr., of Harrisburg, commander of the 104th Cavalry. A proclamation was issued by the Governor calling upon the constituted authorities and the citizens to aid in seeing that order is kept.

Coal and Coke Production Suffers
Slight Setback in Connellsville Region

During the last week there was a slight falling off in the production of coal and coke in the Connellsville coal region, due to the action of the government in the coal strike and the condition of the Baltimore & Ohio R. R. brought about by the railroad strike, cars being scarce.

The following companies are operating, mostly on a considerably reduced output: Pittsburgh Steel Co., at about 10 per cent of normal; W. J. Rainey, Inc., about 10 per cent; American Coke Co., about 10 per cent; Western Columbus Coke Co., about 10 per cent; Locust Hill Coke Co., about 60 per cent; Reliance Coal & Coke Co., about 20 per cent, Consolidated Coke Co., Connellsville Central Coke Co., Hoover Coal & Coke Co. and Republic Iron & Steel Co. each at about 10 per cent; Poland Coal Co. and Redstone Coal & Coke Co., about 15 per cent each; American Manganese Co., about 50 per cent; Mather Collieries Co. and Crucible Fuel Co., about 30 per cent; Buckley Coal Co., Iron-Byrdsville Coal Co., about 25 per cent; Locust Hill Coal Co., about 50 per cent; Fancy Hill Coal Co., about 50 per cent; Walnut Hill Coal Co., about 50 per cent; Penn-Pitt Coal Co., about 25 per cent; Westmoreland-Fayette Coal & Coke Co., West Point Marion Coal Co., Atlantic Coal Co., Harrah Coal Co., Rich Hill Coal Co., Southern Connellsville Coke Co., W. J. Marshall and McIntyre Coal Co., about 75 per cent; Diamond Coal & Coke Co., Hillman Coal & Coke Co., Franklin Coal Co. and Forsythe Coal Co., about 50 per cent; Locust Hill Coal Co., about 50 per cent; Penn-Pitt Coal Co., about 25 per cent; Westmoreland-Fayette Coal & Coke Co., West Point Marion Coal Co., Atlantic Coal Co., Harrah Coal Co., Rich Hill Coal Co., Southern Connellsville Coke Co., W. J. Marshall and McIntyre Coal Co., about 75 per cent; Diamond Coal & Coke Co., Hillman Coal & Coke Co., Franklin Coal Co. and Forsythe Coal Co., about 50 per cent; Locust Hill Coal Co., about 50 per cent; Penn-Pitt Coal Co., about 25 per cent; Westmoreland-Fayette Coal & Coke Co., West Point Marion Coal Co., Atlantic Coal Co., Harrah Coal Co., Rich Hill Coal Co., Southern Connellsville Coke Co., W. J. Marshall and McIntyre Coal Co., about 75 per cent; Diamond Coal & Coke Co., Hillman Coal & Coke Co., Franklin Coal Co. and Forsythe Coal Co., about 50 per cent; Locust Hill Coal Co., about 50 per cent; Penn-Pitt Coal Co., about 25 per cent; Westmoreland-Fayette Coal & Coke Co., West Point Marion Coal Co., Atlantic Coal Co., Harrah Coal Co., Rich Hill Coal Co., Southern Connellsville Coke Co., W. J. Marshall and McIntyre Coal Co., about 75 per cent; Diamond Coal & Coke Co., Hillman Coal & Coke Co., Franklin Coal Co. and Forsythe Coal Co., about 50 per cent; Locust Hill Coal Co., about 50 per cent; Penn-Pitt Coal Co., about 25 per cent; Westmoreland-Fayette Coal & Coke Co., West Point Marion Coal Co., Atlantic Coal Co., Harrah Coal Co., Rich Hill Coal Co., Southern Connellsville Coke Co., W. J. Marshall and McIntyre Coal Co., about 75 per cent; Diamond Coal & Coke Co., Hillman Coal & Coke Co., Franklin Coal Co. and Forsythe Coal Co., about 50 per cent; Locust Hill Coal Co., about 50 per cent; Penn-Pitt Coal Co., about 25 per cent.


Midwest Region Seeks Ways of Getting
Back to Work; Michigan is About Ready

CoAL-MINING states of the Middle West are trying their level best to accept President Harding’s “invitation” to return to work and get out the coal the country needs. Michigan thinks it will soon be producing—at least for state and municipal use. Indiana and Illinois are hamstrung by the statutes on the books of each state, which, in effect, prevent the mining of coal by non-union men. The question is can these two states shake themselves free from those statutes? In Indiana Governor McCrory is making a try at a state settlement of the coal strike before action enters against the statute. He invited operators and mine leaders to confer with him in Indianapolis Tuesday, July 25, with the hope of getting somewhere.

In Illinois Lieutenant Governor Sterling, in the absence of Governor Len Small, is doing some talking, but little else.
He announced he had asked Frank Farrington, president of the state miners’ organization, to meet him. Mr. Farrington denied any such invitation, though he declared he would do anything he legitimately could to aid the Lieutenant Governor in any plan he might have to end the strike.

Business organizations of Illinois are loudly urging that a special session of the Legislature be called at once to repeal the miner’s qualifications act and that thereafter the operators open the mines with non-union labor under state protection. Letters asking for a special session have been sent by the Illinois Manufacturers’ Association and the Illinois Chamber of Commerce. They also suggest that the special session take up the question of establishing a state constabulary. The Chamber of Commerce, in its letter to Governor Small, requests him to demand that President Harding call a special session of the Legislature within 48 hours, to submit the strike questions to arbitration if they cannot settle them themselves, and to resume mining not later than Aug. 1 on some sort of temporary basis if no permanent one has been worked out by that time.

Michigan proposes to go ahead in spite of the solemn utterances of John L. Lewis, International mine union president, that miners there will not go back to work unless the state gets the permission of the union. Governor A. J. Groesbeck, having received no assurance from Washington that federal power will support him in a plan to seize the mines, has appealed to the miners to mine coal for public institutions if for nobody else. He gave them until Monday night the 24th to answer, implying in his message that the state would act if they did not.

Coal Shortage Begins to Strike Home

In Northwest and Middle Regions

At last the home folks are beginning to feel the pinch of the coal shortage throughout the territory west of Indiana. Heretofore the strike’s effect has been felt principally by railroads and large industrial consumers. But with transportation lines sagging—partly for lack of fuel—with electric light and water and gas plants all publicly figuring in the number of days they can run before shutting off service and with retail dealers turning away the first waves of people who want to buy their winter’s coal at once, the cold facts of the strike are sinking home.

In Missouri there is considerable quaking on the part of the public. St. Louis public institutions are within a few days of the end of their coal supplies. The Governor of Missouri is considering a coal apportionment board for the state and the Mayor of St. Louis is planning a coal service for the city. Throughout Illinois many a small public-utility plant is preparing to fall back on the large public-service companies. Railroads are cutting off more and more trains—because of coal shortage primarily, the officials assert—and boat lines on the Lakes, notably that operated by the Buffalo Steamship Co., have reduced schedules, thus cutting down the flow of shipping. Public institutions in Chicago, however, are supplied for at least 45 days and many of them longer.

Senator King Preparing Bills to Settle Strike; Mediation Commission Proposed

Senator King, of Utah, who was one of the Senators who conferred on the coal strike recently with Samuel Gompers, head of the American Federation of Labor, is preparing to introduce before the end of the month, unless the coal strike is ended, bills designed to meet the situation. One proposes an investigation of all the phases of the strike, with a view of determining which side to the controversy is at fault, and to expose it to the public with a view of bringing such public pressure as to force yielding on their part, which would operate to settle the issue. Another bill is prepared that a commission shall be appointed by the President to adjudicate the controversy. In connection with the strike it is said that the Shipping Board can operate vessels sufficient to import from foreign countries as much as 500,000 tons of coal a month if importation of coal has to be resorted to.

U.S. Commerce Chamber Members Asked To Support Harding Resumption Plan

Julius H. Barnes, president of the Chamber of Commerce of the United States, in a letter of July 20 called upon all members of the organization to take active steps in support of the program which President Harding has urged upon the governors of the coal-producing states.

Efforts at national arbitration in accordance with the proposal of the President having failed, Mr. Barnes points out that not only must law and order and the right of every man to work where he pleases without molestation be maintained by states and local authorities, backed up by the federal government, but that the settlement of the underlying controversy over wages and working conditions is now in the hands of governors and state authorities. Such settlements are imperative, he declares, if the country is not to experience suffering for lack of fuel when the cold weather sets in and industries are not to close down, thereby creating widespread unemployment.

Campaign of Frightfulness Unearthed Following Killing of Sheriff Duval

Simultaneously with the news of the trouble near Wellsburg, W. Va., when early in the morning of July 17 a mob of striking miners from Avella, Pa., attacked the Cliftonville mine of the Richland Coal Co., in Brooke County, and killed Sheriff H. H. Duval, announcement was made by West Virginia state officials that they had discovered and were investigating a statewide campaign of frightenedness planned by a secret organization, the dynamiting of a train of miners in Boone County being regarded as the first evidence of this plot. Under radical leadership and incendiary speeches, striking miners are being urged to tear down the flag and take the law into their own hands and the situation in West Virginia is a serious one.

Companies That Suffered in Herrin Riot File Suits Against Williamson County

The two companies principally involved in the June 22 massacre of non-union men working at the Southern Illinois Coal Co.’s mining area, Herrin, Ill., have filed suits against Williamson County to recover $217,000 for property damaged by the uncontrolled mobs of attackers. The Southern Illinois Coal Co. asks $200,000 and the Hamilton Lester Coal Co. $17,000 for its steam shovels blown up during the attack. None of the families of the 19 men killed by the mob has filed suit against the county. Under the law, as interpreted by an attorney for the coal companies, each family can recover up to $5,000.

Utah is Calm; National Guardsmen Stay On the Job; More Men Digging Coal Now

Things are very quiet in the Utah strike area, but nothing has been said so far in official circles about recalling the National Guard. Most of the strikers have been disarmed now, it is believed, and it would seem that the danger of the conflagration feared a short time ago has passed. More men are being taken on at the mines, but so far no concerted effort has been made to break up the strike, and the miners’ leaders profess to be confident of victory.

Announcement Was Made by the Pennsylvania Coal & Coke Corporation, with headquarters at Cresson, Pa., upon the return of the president, T. W. Watkins, that it has accepted the proposal of President Harding of July 10 for the resumption of operations at its mines which are located in various parts of Cambria County. Mr. Watkins has been the representative of the Central Coal Association in the negotiations at Washington and as the association has been against the acceptance of the proposal, Mr. Watkins has withdrawn as the association’s representative.
PRODUCTION

and the Market

Weekly Review

WITH a speed that takes away the breath, coal prices last week soared to levels no one ever expected to see again after the orgy of 1920. Consumer demand is now centered on a very small tonnage, for, of the coal that is getting over the strike paralyzed rails a large portion is going on short and to a lesser extent long term contracts. The majority of the spot coal reaching the market is priced at the level pegged by Secretary Hoover in June and it is a smaller portion that is rising to the bait of the long green held alluringly before the eyes of the operators by the hungry buyer.

Coal Age index of mine prices of bituminous coal rose sharply to 460 on Monday, July 24, a gain of 139 points in a week. The average spot price corresponding was $5.57, compared with $3.89 a week previously. Western Kentucky, a district that did not enter into a price agreement with Mr. Hoover, led the procession, prices for that coal reaching $11.50 on Saturday, July 22, after a series of sensational jumps averaging a dollar a day for a week. Eastern coals were but little lagged, high volatile registering $11 on Monday, July 24.

British Coal Bought Heavily for Import

The feature of the week was the wholesale purchase of British coals for importation. Not that the price on this side has been a bar to imports for some time past but that opinion suddenly crystallized in the belief that the strike had yet a long course to run and that the reserves in this country are so low that several months must elapse before demand dies down, prompted this stampede to the British Isles. Within a week after the run began not less than 500,000 gross tons of English coal had been bought and ships chartered. In fact it is lack of ships that has halted the movement. A short time only will be required, however, to condition and get into English ports all the ships that are required to carry over the coal that can expeditiously be unloaded on this side. Railroads, public utilities, industrials, jobbers and even steamship companies are now in the game, which promises for the free-lance all the excitement, profits, and chances of loss eventually found in the export game in 1920.

Production of bituminous coal lags with the blighting effect of the rail strike, which, according to John Lewis, has quite by coincidence been most effective on those roads serving the non-union coal fields which have been the mainstay of the country's coal supply so far throughout the coal strike.

To make as effective as possible what little coal is trickling through the rail strike lines and to hold down the price, the government at Washington is working out a scheme of rationing and price control that is planned to go into effect this week. The railroads and utilities are to be the first to get coal with certain other essentials. Beyond that the coal will not go far for the needs of some of these are becoming increasingly urgent. At the present rate there will be a sorry looking coal pile in Uncle Sam's back yard on Sept. 1. Coal shortages in the past in this country have been more or less myths existing in the minds of consumers,
but this time, unless the miners get to work very, very soon, the absence will be real. A shivering lot of citizens will be hovering around the gas range or warming their toes by some neighbor's fireside this fall. The coal industry will come in for a lot of verbal fixing by these same citizens.

BITUMINOUS

Traffic congestion on the railroads has so interfered with the movement of freight that the production of the non-union coal fields has been and still is shrinking. Preliminary reports to the Geological Survey for the week of July 19-22 indicate a new low record of around 3,600,000 tons, as compared with the maximum in the twelfth week of the strike of 5,363,000 tons. The Survey notes that "In comparison with normal years the present deficit in production is even more marked. Final returns on the fifteen week of the strike (July 10-15) show 4,114,000 tons of bituminous coal and 31,000 tons of anthracite, a total for all coal of 4,145,000 tons. In the corresponding week of 1921, a year of depression, the total quantity raised—anthracite and bituminous—was 9,280,000 tons; in 1920 it was 11,500,000 tons. In other words, considering anthracite and bituminous coal as a common source of supply, the present weekly output is from 5,000,000 to 6,000,000 tons below normal."

"The cause of the decrease was unmistakably traffic congestion on railroads serving the non-union fields. In Southern West Virginia and Eastern Kentucky from which the bulk of the country's supply during the strike has come, almost every field reported acute transportation disability. In Virginia, Western Kentucky and Tennessee the absence of coal support was less serious and in Alabama and the Far West it increased."

"The trend of production is shown by the following table of cars loaded daily. On Monday railroads reported loading 12,657 cars, a decrease of 2,437 cars below the preceding Monday. By Thursday loadings had dropped to 10,800 cars, the lowest on any Thursday since the strike began."

"The reports so far indicate no significant change in the number of men at work. Production in non-union Pennsylvania during the first half of the present week showed a slight decrease from the week preceding."

Some impatience is being shown in official circles in Washington by the action of New England and the Northwest in again demanding preferential treatment in the matter of coal supply. Until very recently, coal went begging at the Lower Lake ports and some 300,000 tons recently had to be shipped back from Upper Lake docks to other buyers because the Northwest would not pay the price required.

New England uses less coal than the Chicago industrial area, yet its demands are heard above those of all other sections. New England, sooner or later, will have to put up with the inconvenience of burning bituminous coal, one official said. He thinks it would be better for New England to burn a much larger proportion of soft coal this winter and send such reduced amounts of anthracite as are available to non-union sections which had not such a favorable opportunity of securing bituminous coal.

Lake dumping dropped last week to 138,438 tons, of which 16,038 tons were vessel fuel and 122,800 tons were cargo coal. This compared with 170,000 tons the week previous, 236,000 tons the week before and 370,000 tons the week ended July 2, indicates the rate at which the Lake movement is slumping. Vessel fuel is so scarce and so high-priced that boats in the ore trade are being threatened with a tie-up and passenger boat schedules are already cut. Of the slightly more than 4,000,000 tons of Lake cargo coal this year but 80 per cent has gone to normal destinations.

Movement of both hard and soft coal through the New England gateways continues at the low rate of past weeks, averaging around 400 cars of anthracite, nearly all steam Pits. A drop of about 50 cars of bituminous through the port of Boston will soon drop even below that figure. The full effect of the shortage in the East will show up as soon as canal en route has passed the gateways.
COAL

Production of beehive coke recovered after the July 4 holiday but is still below the rate of output in June. Blast furnaces are depending on byproduct coke coming from supplies of coal mined and stored before the present drop in production.

MONTHLY OUTPUT OF BYPRODUCT AND BEEHEIVE COKE IN THE
UNITED STATES (a)

<table>
<thead>
<tr>
<th>Month</th>
<th>Byproduct Coke</th>
<th>Beehive Coke</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>May</td>
<td>1,638,000</td>
<td>297,600</td>
<td>1,935,600</td>
</tr>
<tr>
<td>June</td>
<td>2,209,000</td>
<td>326,000</td>
<td>2,535,000</td>
</tr>
<tr>
<td>July</td>
<td>2,208,000</td>
<td>326,000</td>
<td>2,534,000</td>
</tr>
<tr>
<td>August</td>
<td>2,208,000</td>
<td>326,000</td>
<td>2,534,000</td>
</tr>
<tr>
<td>September</td>
<td>2,208,000</td>
<td>326,000</td>
<td>2,534,000</td>
</tr>
</tbody>
</table>

(a) Excludes screenings and breezes.

To make the coke produced, it is estimated, required 4,429,000 tons of coal, of which 3,707,000 tons was used in byproduct ovens and 722,000 tons in beehive ovens. The present monthly rate of consumption of coking coal is thus about 1,500,000 tons above the 1921 average but is still 2,429,000 tons below the average in the year of maximum demand, 1918.

ESTIMATED MONTHLY CONSUMPTION OF COAL FOR MANUFACTURE OF COKE

<table>
<thead>
<tr>
<th>Month</th>
<th>Consumed in Byproduct Ovens</th>
<th>Consumed in Beehive Ovens</th>
<th>Total Consumed</th>
</tr>
</thead>
<tbody>
<tr>
<td>May</td>
<td>1,638,000</td>
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<tr>
<td>August</td>
<td>2,208,000</td>
<td>326,000</td>
<td>2,534,000</td>
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<tr>
<td>September</td>
<td>2,208,000</td>
<td>326,000</td>
<td>2,534,000</td>
</tr>
</tbody>
</table>

(a) Assuming a yield in a marketable coke of 69.4 per cent of the coal charged in byproduct ovens and 63.4 per cent in beehive ovens.

WEIGHT WEEKLY SHIPMENTS OF BITUMINOUS COAL FROM PRODUCING DISTRICTS, AS REPORTED BY THE RAILROADS

<table>
<thead>
<tr>
<th>Week</th>
<th>Total Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 8</td>
<td>4,005,000</td>
</tr>
<tr>
<td>April 22</td>
<td>3,639,000</td>
</tr>
<tr>
<td>May 13</td>
<td>3,549,000</td>
</tr>
<tr>
<td>May 27</td>
<td>3,384,000</td>
</tr>
<tr>
<td>June 10</td>
<td>3,512,000</td>
</tr>
<tr>
<td>June 24</td>
<td>3,678,000</td>
</tr>
<tr>
<td>July 1</td>
<td>3,826,000</td>
</tr>
<tr>
<td>July 15</td>
<td>3,678,000</td>
</tr>
</tbody>
</table>

* Total for July 17, 18 and 19, multiplied by 2

COAL AGE

July 27, 1922

COKE

ANTHRACITE

Dealers in hard coal are rapidly clearing up their yards and in but few is there anything but pea coal. The supply of the unprofitable coke in swindling and two companies have withdrawn prices and longer take orders. When that stage is reached the boards are about bare. Nearly four months of production have been lost with no prospect of mine resumption and no opportunity of making up lost time, for the hard coal mines are normally run at full capacity for 12 months each year to supply the ordinary demands of the householder. The lack of steam coal will also prove embarrassing in the East.

A new weekly statistical service just inaugurated by the Geological Survey and appended herewith, shows weekly shipments from each of the major producing fields. The figures are based upon reports furnished by the railroads, giving the number of cars loaded for shipment at the mines on each railroad track. These figures of rail shipments are not identical with production, for they do not include water shipments, sales to local trade and mine fuel. Still more important, they do not include coke made into coke, which absorbs a large fraction of the output in the Connellsville district and a smaller fraction in other districts.

The grouping of railroad divisions corresponding with coal-producing districts was done by W. P. Ellis, of the Department of Commerce. The groupings used for the principle fields are shown by the footnotes, which apply to the table.
Buying of British Coal for American Needs Proceeds Rapidly; Price Reported at $9

BRITISH coal to relieve the shortage in the United States became a reality last week, when, following the refusal of the miners to arbitrate, it appeared a certainty that the strike in this country is not to be settled at once. Buyers and wholesalers here have hesitated to take a chance on bringing in foreign coal, with a two-week minimum haul, so long as there was any chance of early resumption of mining. Now that all hope is gone and the shortage produced by the railroad strikes has become acute, buying of British coal has been rapid.

In the first ten days not less than half a million tons were bought and within a few days all available bottoms had been chartered. The U.S. Shipping Board ordered all ships in foreign waters suitable for coal cargoes to the British Isles and promised to recondition and send abroad all boats needed for this trade. At present it is boats and not coal that is putting the brake on importation of coal, for Britain’s supply is ample and prices are easy.

The Shipping Board has set a price of 7s. per ton for freight and this with the current Cardiff price would put in New York Harbor for around $7.50 per gross ton. On Monday, July 24, there were reports that the price had mounted to $9 per ton.

A. S. Demand Aids British Industry.

Production in Great Britain during the week ended July 8 was 4,598,000 gross tons, according to Cable "Coal Age," as compared with 4,530,000 tons in the week preceding.

Considerable inquiries are being received in South Wales from the United States, Canada, and the West Indies. This is stimulating Continental buyers who recently have been holding back in hopes of lower prices. Newcastle reports business brisk on American inquiries for all descriptions.

During the earlier part of last year it was common assertion, and a true one, that the high cost of coal in Britain was retarding industrial recovery. Since then prices have been brought down to a point at which neither the miner nor owner is receiving adequate remuneration. The mining industry has done a great deal more than its fair share toward accelerating the revival of trade, and it can give no more.

For some months past the attention of producers and manufacturing has been directed toward the railways for relief in lightening the burden upon industry. They have submitted what is admittedly an overwhelming case for substantial reductions in transport charges, but unfortunately they have derived small satisfaction from their representations. The railway companies have so far conferred little more than their blessing on a war-stricken country. What reductions they have conceded, viz.: a 12½ percentage reduction and a lowering of the flat rate from 6d. to 3d.—amount to about a quarter of what is considered necessary to restart trade.

Publish French Prices; Demand Up.

Publication of the new prices of the Nord and Pas-de-Calais has momentarily increased the demand.

These prices, which particularly in the Paris area, are still higher than those of British imported coals—are provisional prices which were fixed pending the solution of the present conflict between operators and miners and the granting of lower transportation rates on coal.

It has been reckoned that to stem the rush of British coals French coal should be 20 frs. cheaper. One hour's extra work in the mines would decrease the cost by 10 frs. a ton. It is to be hoped that French miners will be sensible enough to listen to the dictates of reason and to agree to an increase of their effective underground working time from 61 to 71 hours.

Production was 2,588,000 metric tons in May, as compared with 2,479,000 tons in April; May output of coke was 82,000 tons, 2,000 less than the April figure. While briquette production was 212,000 tons, as compared with 190,000 tons in April.

Coal Paragraphs from Foreign Lands

ITALY—The price of Cardiff steam first was quoted at $86, $8 for July 21, according to a cable to "Coal Age." This is probably a revival of coal in the Ruhr district during the week ended July 8 was 1,629,000 metric tons, according to a cable to "Coal Age."

Hampton Roads Market in Turmoil.

The market was in a turmoil last week, with supplies rapidly diminishing and ships being diverted for lack of coal. The N. & W. piers are almost at a standstill because movement of coal over that road has been cut down to a minimum by the railroad strike. Schooners and barges pressed in service to carry coal coastwise when the rail strike began, are now lying idle in large numbers. As coal grows scarcer and quotations rise until the average price of coal this week lay between $7 to $9 for all grades.

The market was so nearly demoralized because of absence of coal to sell, that a fixed price list was impossible. Large supplies of Navy coal, held at the Naval Operating Base, were being considered for their availability to be released in the emergency to serve merchant ships.

Hampton Roads Pier Situation.

PIERS

End Week

July 13

July 20

N. & W. Piers, Lambert's Point

Cars on hand

593

567

Tons on hand

1,727

2,141

Tons landed

2,750

3,617

Tonnage waiting

20,000

20,000

Freight at Pier

Cans on hand

5,122

1,053

Tons on hand

83,950

95,460

Tons dumped

122,460

147,710

Tonnage waiting

38,000

62,825

C. & O. Piers, Newport News

Cans on hand

7,560

555

Tons on hand

71,800

27,750

Tons landed

9,729

9,633

Tonnage waiting

5,915

15,765

Pier and Bunker Prices, Gross Tons

PIERS

July 15

July 22

Pool 1, New York

$5.50

$7.10

Pool 8, Hartford

6.15

6.25

Pool 6-9, Hamp. Rds.

6.256

6.75

Pool 2, Hamp. Rds.

6.256

7.00

BUNKERS

July 11

July 21

Pool 1, New York

$8.00

$10.00

Pool 1, Hamp. Rds.

6.75

7.75

Pool 2, Hamp. Rds.

6.75

7.75

Welsh, Gibraltor

4.01 fob.

4.91 fob.

Welsh, Janeiro

5.01 fob.

5.91 fob.

Welsh, Lisbon

4.81 fob.

4.91 fob.

Welsh, La Plata

4.01 fob.

5.01 fob.

Welsh, Maine

4.01 fob.

5.01 fob.

Welsh, Messina

3.01 fob.

3.91 fob.

Welsh, New England

4.81 fob.

5.91 fob.

Welsh, Pernambuco

6.5 fob.

6.5 fob.

Welsh, Sabi

5.91 fob.

5.91 fob.

Welsh, Madeira

4.86 fob.

4.86 fob.

Welsh, Tenerife

4.96 fob.

4.96 fob.

Welsh, Malta

4.46 fob.

4.46 fob.

Welsh, Java

4.01 fob.

4.01 fob.

Welsh, Rosario

5.6 fob.

5.6 fob.

Welsh, Singapore

5.5 fob.

5.5 fob.

Welsh, Constantinople

5.6 fob.

5.6 fob.

Port Sabi

4.81 fob.

4.81 fob.

Aberdeen

4.81 fob.

4.81 fob.

Capetown

5.5 fob.

5.5 fob.

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

Foreign Quotations by Cable to Coal Age

Cardiff

Cable "Coal Age"

July 13

July 21

Admiralty, Large

24.50 24.75 24.75

Steam, Smalls

17.6d. @ 15.6d. 18.6d. 18.6d.

Newcastle

27 27 27

Best Steams

24 24

24

Best Cas.

21 21 21

22 22 22 26 24 24 24 24

Best Bunkers

20 20 20

26

26

Prices above previous week shown in heavy type: declines in italics.
North Atlantic

Big Buyers and Consumers
Ward Off Panic Prices

Scarcity at Piers Causes Small Users to Offer Any Price—Railroads, Utilities and Municipalities Order English Coal—First of British Product to Arrive in a Week.

NOTHING but the extreme care being exercised by the larger consumers and buyers of coal has so far prevented a price situation in this territory as panicicky as that in Chicago. There is so little coal at the piers at New York, Baltimore and between (238 cars at New York piers, for instance, on July 24) that small consumers in need are offering any price to get coal.

Last week was notable for the sudden turn to buying of English coal. Railroads, public utilities and large industrials placed orders through their connections and some steamship companies are now reported to be undertaking importation on their own account. It will be a week yet before the first of the English coal reaches these shores and it will not be available in quantity until well into August.

NEW YORK

Lack of cars resulting in a shortage of coal was in part responsible for a rapid advance in quotations during the week. It rose as much as $1.25 and the quality of the coal offered was hardly considered.

An additional feature was the placing of orders for tonnages estimated at 100,000 tons by local houses for English coal, some of it for immediate delivery and some for August. It was figured out that this coal would be brought into New York harbor at a figure close to $7.50 c.i.f.

Public utility corporations are well supplied with coal, according to reports filed with the governing commissions.

Southern coal, because of the low production due to the lack of cars, is not being brought here in large tonnages. Quotations ranged as high as $10.50, New York harbor.

On July 21 there were 376 cars at the local piers, much of which was on contract and quickly taken away. The great majority figured in purchases and quotations ranged around $10.

Quotations changed frequently and buyers were forced to act quickly if they wanted coal. At the end of the week Pittsburgh steam coal was quoted around $6.50 f.o.b. mine; and gas coal $1 higher. While Allegheny Valley coals were quoted $7.50, some purchases were reported as having been made at a much lower figure. Clearfield coals were quoted $6@$6.50.

Baltimore

As far as can be learned, no genuine attempt is being made to re-open the mines in Maryland under the protection plan of President Harding. Governor Ritchie, of this state, has refused to send men to protect the mines at this time, taking the ground that this action is not needed at present. In his communication to President Harding, he stated that one of the troubles of the Maryland situation is that the railroads were not supplying sufficient cars to the mines, but this has been vigorously denied in railroad circles. There is no export coal loading at this port, but some fuel is still being taken in bunkers; 11 ships took 2,921 tons in bunkers from July 1 to 20 inclusive.

Quotations of price for soft coal from mining regions show a sharp advance over a week ago. Quotations from openings in fields to the south of this point are all the way from $4.25 @6.25 per net ton.

Central Pennsylvania

Feverish activity characterized the market following the breaking up of the conference at Washington. Previous to that, the market was dull, many buyers holding off in the expectation that an agreement between the miners and the operators would bring about a resumption of production and a consequent reduction in prices.

B. & O. was being sold on July 18, at $4.75 and on July 19, went to $5, then to $5.25, with every prospect of going to $6.50. Coal is scarce due to the shortage of cars, there being none distributed by the B. & O. on any sidings during the closing days of the week. Prices on P. R. R. loadings range $4.75@5.25, more of which is being produced by small mines.

Just what move will be made to operate the larger mines remains to be seen. Several operators have posted notices that they will put into operation as soon as they can be gotten ready and a sufficient number of men employed to insure a steady output.

Philadelphia

The situation is pretty badly muddled. Little coal is coming to this market. Despite the scarcity it is somewhat odd to hear shipping houses advise that the number of inquiries are far less than they would expect under such a state of trade. However, there are many inquiries from mostly from the large consumer, and there are plenty of rumors of steel plants in this neighborhood about to close down.

Prices seem to have moved into the air during the latter part of the week; in fact, many houses are simply in a position where they have no coal to offer at all. Some of the coal they have put up given up trying to purchase fuel of any particular grade and is well content to take just coal. Despite the strongest kind of efforts to keep down prices, there is a tendency toward a runaway market.

Rumors of prices as high as $8 at the mines have been heard. However, even if sales are made at these figures they cover but a meager tonnage, as there is so very little free coal.

Largely users are making inquiries for prices on English coal, although some business of this kind has been placed. The price of the coal landed at the piers here seems to be between $8@9, and it is also stated that foreign coal is booked for arrival at local piers for delivery to interior points.

Fairmont

Mining was largely at a standstill during the second week of the rail strike owing to a general break-down of transportation facilities on the B. & O. Few cars were being placed except for railroad fuel purposes. Some of the work was reported to be done by the Western Maryland began taking loads at the rate of 75 a day from the Elkins Division of the B. & O. Inquiries for fuel were numerous but most operators were not in a position to make or assure deliveries.

Upper Potomac

Mines were not affected by transportation disabilities to as great an extent as in other parts of West Virginia, the Western Maryland being able to handle the tonnage originating on its own line as well some tonnage from the B. & O. A few more mines resumed operation. There was a heavy demand for coal in all pools.

South

Birmingham

General demand for all grades continues good and some difficulty is being experienced in placing some of the spot business coming in, as there is comparatively little free coal to be had. The buying movement has become more diversified. Inquiries come in from all general directions, both in home and foreign territory and sales are reported at a premium above the regular quotations.

Another consignment of 4,000 tons of gas coal was loaded at Mobile this week for Peruvian interests, going to Cali.

B. & O. is taking care of its own immediate needs, but the demand for good grade domestic coal is light. This is primarily due to the fact that the consumption of the hard grades has been conducted on a less vigorous scale than usual, and this has resulted in an increase of the inventory of such grades of coal on hand.

Output for the week of July 15, will probably reach 340,000 tons, although much time has been lost throughout the district account of poor car supply and transportation service.

Virginia

The rail strike has operated to reduce production such curtailment growing out of the inability to move large loads promptly. The rail strike is about capacity production since there is an excellent market. Producers are generally adhering to $5.50 for mine run.
COAL AGE
Vol. 22, No. 7

Anthracite

Clean-Up of Leftover Hard Coal Now in Sight

Withdrawal of Prices on Pea Fore-shadows End of Storage Piles—Householders Active in Market—Importance of Early Booking.

TWO of the larger companies are reported to have withdrawn prices on pea coal and others are expected to follow soon. When pea is no longer available from company storage the last of the leftover hard coal will be in the hands of dealers, and very soon thereafter, of householders.

Orders are being booked with assurances that when the mines resume the coal will be delivered in order of booking.

No attempt is being made, and none is expected to be made, by the operators in the hard-coal regions to resume work without the consent of the union, despite the assurance of the Governor that protection will be afforded to all who want to work.

NEW YORK

As the headlines in newspapers tell of a prospective coal famine consumers are aroused to the existing situation and are looking around for coal for the coming winter. Retail dealers are kept busy telling their customers there is no coal to be had, excepting pea, and that there is no telling when it will be produced.

While most dealers within the city limits are nearly out of the domestic sizes line dealers and those on the outskirts of the Greater City have a fair tonnage on hand.

Pea coal is moving rapidly. This is the only size the companies have and their large piles are rapidly disappearing.

Some independent buckwheat was offered here around $5, f.o.b. mine. River barley was quoted $2@2.25, a slight advance over the previous week. Because of the rapid increase in quotations for bituminous coal the demand for this size strengthened considerably. Loaded boats of buckwheat were reported at $7.50@$7.75, alongside.

BOURBON

Retailers' stocks in the large cities are being rapidly depleted. Practically no distributor in Boston is in position to make deliveries to householders of more than a ton or two at a time of either broken, egg, stove or chestnut. What small reserves there are the dealers are saving for hotels, hospitals and other necessary uses, rather than for dwellings, where no heat will be required for at least 60 days.

At wholesale the only size now being offered in any quantity is pea. Within a few days two of the large producing companies have withdrawn prices even on that size, and are no longer willing to obligate themselves for shipment. Certain of the anthracite roads are absorbing tonnages of pea for locomotive use and prices are likely to stiffen materially during the coming week.

BALTIMORE

The anthracite situation is tense. At this writing the city is about 250,000 tons short of the usual amount either already delivered to consumers or in the yards here. As the strike apparently is still a tight affair the dealers of Baltimore figure that there is going to be tremendous difficulty in supplying consumers even with moderate needs next autumn. Except for a small quantity of pea coal now in the yards, dealers have swept clear of supplies. Consumers are now growing restive and are calling up their retail supply connections in an effort to assure delivery of coal at present, then before cold weather sets in.

ANTHRACITE FIELDS

The mayors of Wilkes-Barre, Scranton, Carbondale, Pittston and Hazleton, accompanied by Senator Popper of Pennsylvania, called on President Harding at the White House, on July 22, and outlined a plan of settlement of the strike in the anthracite field. While not divulging its nature, the mayors stated that the plan has been discussed with John L. Lewis and will be the further subject of conference with the union leader and representatives of the operators.

BUFFALO

With the supply practically all gone it seems odd that so little is said and that nothing has been done about the resumption of mining. The inquiry for it increases steadily. Canadian dealers are anxious, but all that can be said to them is that they shall have coal as soon as it moves.

PHILADELPHIA

From a feeling of hopefulness the retailers have now fallen into a state of doubt of an early resumption of mining. There was a belief that the men would accept the arbitration plan, but this having been rejected, no definite date is set for the end of the strike.

There is a steady increase of consumers calling for coal, and as a result all retailers continue to move a fair stock of pea. Dealers from all sections are sending in moderate orders for this size.

Heavy orders for pea are coming in from the western points, as well as from Northern Pennsylvania. While the companies have now announced that it has no more for sale. Already it is reported that some of the railroads have taken some of the wheat for fuel.

River barley continues in strong demand and one of the railroads is reported as trying out a consignment of this size. Prices are firm, with an inclination to increase, a few sales being reported at $3, but the average is still $2.25@$2.75.

COKE

CONNELLSVILLE

Offerings of coke have decreased farther, partly on account of the fresh strikes that followed the assembling of the conference at Washington, and partly on account of insufficiency of transportation produced by the railroad shopmen's strike. Prices have been advancing, causing miscellaneous consumers generally to drop out of the market, as the furnaces, being long ago, while there remains buying by foundries. As coke is a small part of the cost of finished castings the foundries do not balk a price.

Connells ville foundry coke has sold at $14, and it is rumored one carload went at $15. For furnace, $13 has been quoted.

At least half a dozen furnaces have been banked or blown out in the past week on account of failure of supply, chiefly coke made at byproduct ovens there. Receipts of coke from Virginia and Kentucky coal are almost stopped by transportation disability.

The Courier reports production during the week ended July 15 at 52,300 tons by the furnaces owning, and 11,020 tons by the merchant ovens, a total of 63,920 tons, an increase of 10,000 tons, representing a two-thirds recovery from the decrease in the holiday week.

UNIONTOWN

Invitation of President Harding to operators to resume production of coal backed up by Pennsylvania National Guard has not as yet changed the situation in this region. It is expected that a more or less concerted effort will be made next week by a number of operators to bring a "showdown," although dealers are more or less guarded.

W. J. Rainey, Inc., has posted notices to the effect that it will comply with the President's invitation and resume production, but the timing has had no effect upon striking employees and no effort has been made to obtain outside labor.

Meanwhile the market is bounding upward like a skyrocket. At 25 and 50c. a ton hard-pressed consumers are pushing it upward until it is impossible to quote any price today with any certainty as to what it will be tomorrow. A price of $7.50 is generally quoted now, but there is no indication that that is the limit. Announcement from Washington that a coal-rationing plan is being considered is believed to have caused some consumers to scurry around, placing large orders before the rationing commences.

BUFFALO

The entire giving out of supply from the Connells ville district has not obliged dealers to give up quantities they may consider at this point an improvement, for byproduct coke is an uncertain quantity, and the fact that, as a rule such plants exist for the purpose of supplying nervy furnaces and the surplus is small. One jobber quotes a good byproduct at $11 for the lower grades and $11.50 for foundry, to which $1.31 must be added for freight.
Flight of Coal Prices Leaves Men Breathless

Western Kentucky Shoots Up More Than $1 a Day—As It Passes $11. Pittsburgh Coal at $9 Appears and Slows Ascent—St. Louis Suffers.

Hectic market conditions continued through the past week in the Midwest region. With Chicago always at the peak, prices soared dizzyly on every coal traded in in every market where any of it was offered. Western Kentucky reached $11.50 at Chicago Saturday night at the end of a drunken upward career—an ascent of $5 from the Monday before—and smokeless and eastern Kentucky attained $9.50, though very little of these two coals was available. The level had crawled so high that Pittsburgh coal appeared in considerable quantity and was bought greedily at $9. At the end of the week trading was in car numbers only.

Excitement in the fields tributary to this region continued at high pitch. There was no telling, from hour to hour, what coal would sell for in each succeeding period.

Even country trade has shown a noticeable pick-up, for dealers everywhere perceive the folly of expecting coal to sell at ordinary prices now winter and most of them are willing to stock right now at whatever figure the market dictates. Dealers are seeing many a consumer getting shorter and shorter of fuel and they can see plainly what is going to happen soon.

The shortage is getting so keen in the St. Louis territory that the Governor of Missouri is considering a coal apportioning plan for the state and the Mayor of St. Louis may attempt the same thing for the city. Municipal institutions there are said to be within a week of a boiler shutdown. In Illinois a number of coal consumers such as town lighting plants are suffering keenly—and without hope. In one or two cases they have shut down and are drawing power from bigger central stations.

CHICAGO

Western Kentucky coal went a long way this week toward spoiling its own game of aviation. Prices soared $5 or more on Monday morning and Saturday noon, causing consternation at times as the market made its dollar jumps each day. Many a jobber had his hands full with orders for an agreed price, only to have the coal hurdle his price before he could deliver it. That was at the first of the week. Later that practice stopped. Dealing was then altogether in car numbers and prices were never set until the coal was delivered.

The gay and hilairey of the dealers on the market up to a point finally where, by Friday, Pittsburgh coal began to appear. This newcomer, making its first appearance here in a long time, could, with a freight rate of $2.84, compete with prices $5; for by Friday western Kentucky had passed that gaggardly figure. By Friday night, in fact, western Kentucky had reached $11. But the next day its rapid flight appeared to be somewhat checked. It did not pass $11.50 in spite of herculean efforts of a few who tried to open the day at $13. The Pittsburgh coal—more than 100,000 tons of it—may have been responsible.

No other coals cut much of a figure on this market, principally because of difficulties incident to the railroads. A little smokeless and eastern Kentucky filtered into town a few cars at a time, selling readily at $9 and $9.50 at the well, but the quantities were small. A slight recovery of the Louisville & Nashville from its attack of general debility made it possible for a thin flow of coal to start from fields along its lines, but the volume which reached here was small.

SOUTHERN ILLINOIS

Peace appears to reign throughout all southern Illinois coal fields, though there is keenly felt among miners which might indicate either a willingness to go back to work at the first opportunity or a fear that the government is not going to do something to the union. The coal supply of the fields is exhausted and there is no production at any of the out-of-the-way wagon mines or strip pits.

ST. LOUIS

For the first time since last April the situation is becoming serious here. At many points in the state as well as in southern Illinois coal is unobtainable for municipal plants and other essential industries.

In St. Louis proper, another ten days will see the coal cleaned up excepting at the big utility plants and at the city water works, where there is about a month's supply ahead. The city institutions will be out of coal within a week unless relief from some unknown quarter develops. Domestic customers are making no demand for coal.

Kentucky coal, which was selling at the close of last week for $6, went up Monday to $6 and finished up the week at between $7.50 and $8 with no operators willing to take an order. They expect the price next week to be as high as $10 to $12 at the mine for mine run.

WESTERN KENTUCKY

An advance of easily $4.50 a ton in the price of western Kentucky coal was posted during last week. On Monday, July 17, the market jumped rapidly, closing at around $6.25 a ton, going to $6.50 on Tuesday, $7.50 on Wednesday. Prices are now at an unloading level with an upward tendency. Quotations (nominal as regards anthracite) are as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>Bituminous</td>
<td>$7.50-$8.50</td>
</tr>
<tr>
<td>Anthracite</td>
<td>$10.00-$11.00</td>
</tr>
<tr>
<td>Coke</td>
<td>$5.00-$6.00</td>
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</tbody>
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The railroads and public utilities are wild for coal. Such great companies as the Commonwealth-Edison Co. of Chicago offered $7.25 a ton, or 25c over first offers on Wednesday morning, in order to get the coal on the market.

During the past week the Harlan field got out a little tonnage for the first time since the rail strike started. The Norfolk & Western and the C. & O. are having some trouble in the Kentucky-West Virginia district, and the L. & N. has been having much difficulty, with the result that tonnage from the non-union fields of Kentucky and the Virginias has slumped badly, while surplus stocks have been reduced to a minimum and demand is increasing daily. Production is probably at about the lowest ebb since April 1.

INDIANAPOLIS

The skepticism with which the general public is viewing the invitation of Governor McCray to the operators to cease their miners' sit-downs on the coal market. During the past few days there has been a mad scramble for coal on the part of industrial users. The visible supply of shrinking and Indiana at the present time is faced with the most serious coal shortage for years.

Many industrial users have been holding off for two or three weeks and using their reserves in the forlorn hope that the strike would be over by this time. Regardless of all that is said and done, the average citizen of Indiana has but little faith in the ability of operators to successfully operate mines without the aid of the organized miners.

LOUISVILLE

Apparently the Kentucky operators have thrown all caution aside, and with this fact are figured in no danger of federal control, or that they should get every nickel possible while the getting is good. The market has been a genuine bonanza with large consumers' hands at the vanishing point, and coal must be had at any price in order to keep railroads and public utilities supplied. It is reported that at the advanced figures there will not be much Lake movement just now. Car supply has become very poor.

Canada

TORONTO

The coal situation is growing more serious every day. Domestic orders are coming in with a rush but dealers are unable to make deliveries as there is practically no anthracite in the yards—excepting a little pea coal. Soft coal is getting scarce as the railway strike prevents shipments from coming forward. Prices are much higher than usual with an upward tendency. Quotations (nominal as regards anthracite) are as follows:

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</tr>
</tbody>
</table>
Uncertainty Among Buyers
And Sellers; Prices Mount

Feeling is that Resumption Must Come Soon—Jobbers Wary of Being Caught with High-Price Product on Hand—Rumors Emanate from Pitts-
ough uncertainty prevails among consumers and sellers of coal in this area. Prices are steadily mount-
ing as each day new consumers come into the market in urgent need of coal, but there is a feeling that the situation cannot continue for long and that the mines will soon resume operation. No jobber wishes to get caught with high-priced coal on his hands and this type of dealer is proceeding with caution.

The price is being set by the buyer in his eagerness to get car numbers, and in the process the Hoover price level has long since been passed.

At Pittsburgh there are rumors of much activity in getting certain mines ready to operate non-union, or at least without the consent of the United Mine Workers, but no coal has come from these mines as yet.

BUFFALO

Plenty of uncertainty, plenty of people to say what should be done, plenty of operators ready to go to work if the machinery will run, but nothing done yet. Coal is giving out pretty fast and will be gone in some districts before there is more. The consumers know this and are bidding high for it.

Bituminous coal is about $1.50 a ton higher than it was a week ago and if no addition is made to the output it may go still higher. Reports of selling an allotment and of plants shutting down increase.

The grain movement keeps up well and ore is moving at a good rate, but for the present the best Virginia bitu-
minous coal that came in so liberally from Ohio ports early in the season has been shut off entirely. None has been reported for a week. Bunker coal is becoming so scarce that only small amounts are to be had at any port. If this shortage continues some of the fleet will have to tie up.

PITTSBURGH

Immediately upon President Harding "inviting" the operators to return home and produce coal, active work was begun in getting several mines ready for resumption. Many miners were dis-
posed, late in June, to return to work if given full protection, but whatever the intentions may have been the actual proceedings at Washington were followed by a stiffening of the backbone of the strike, and resumption will now be more difficult.

Two entirely separate efforts at re-
sumption are in progress, by certain operators in the Pittsburgh (union) dis-
triet, under the advice of the Pittsburgh Coal Producers' Association, and by operators, primarily styling up the H. C. Frick Lake Co. (Steel Corporation) in the Connellsville region, non-union, for more than a generation although the U. M. W. declares it has been largely organized lately.

The only coal traded to any extent of late has been Connellsville, the offer-
ings of which have been heavily re-
duced by high strikes and by insuffi-
ciency of transportation. The urgency of certain buyers, particularly public service corporations, has been greatly increased, chiefly by reason of the inter-
ruption of deliveries of West Virginia and Kentucky coal. Nearly every day in the past week Connellsville coal has advanced 50c, being now strong at $7.

COLUMBUS

The combination of the coal miners' strike and the railroad trouble is pretty much a mutual advantage to both.

While there is a fair tonnage still being produced, lack of transportation facilities is causing much anxiety in all quarters and there is an acute shortage in certain sections. The entire price situation is wild and uncertain and quotations ranging $3.50 @ $7 are being heard.

Some of the larger operators are making an effort to abide by the Hoover levels but they are not meeting with much success. What free coal is on the market is commanding higher figures and since it is a bidder's market the highest bidder gets the coal.

Retailers are now coming into the market to replenish their stocks. Some householders, expressing anxiety, are buying their winters' supply. Retail prices have advanced to higher levels in sympathy with quotations.

Lake trade is falling off. The H. V. Dock at Toledo during the week ended July 19 loaded 57,345 tons as compared with 96,685 tons the previous week. A total of 1,455,692 tons has been loaded by these docks since the opening of the season.

EASTERN OHIO

That reserve stocks are nearing ex-
hhaustion and that a fuel crisis looms in eastern Ohio is evidenced by developments during the week. The quantity of coal now reaching this section is the smallest in years and operators and jobbers are being besieged by indus-
trial consumers.

Stripping operations in eastern Ohio have been curtailed, not so much by a lack of transportation as by interfer-
ence and intimidation of employees by union miners.

Indications are that public utilities in this territory have limited reserves of fuel. Industrial and steamship lines in many instances have already found it necessary to restrict their activities because of limited fuel. The Detroit & Cleveland Navigation Co. has temporarily retired two steamers between Cleveland and Detroit and in the Mahoning Valley the operations of steel plants are being seriously retarded, and blast furnaces are being banked.

Iron ore demand and the diminishing quantity of coal available have boosted prices. The maximum has moved up from $5.25 to $7@7.50. Pittsburgh and Ohio high-grade coal at $7.75@$8 f.o.b., mines, while the range of spot prices on coal from other districts is $7@8.50.

NORTHERN PANHANDLE

Since the beginning of the rail strike feeling between union and non-union miners has been intensified, striking railroad pickets have attempted to intimidate the miners to some extent. The non-union is affected much by additional strike troubles. Inability of the B. & O. to move coal is affecting production to a greater extent than the strike of miners. This is limiting the movement largely to railroad fuel.

DETO RIT

Interest of buyers is apparently not very generally aroused, as with the shortening of supply is beginning to be noticeable. Demand can scarcely be classed as active or urgent except in a few cases.

The principal difficulty now being experienced is in getting coal from mines to docks on Lake Erie or through by the all-rail route. This impediment is attributable to growth of the strike rather than the miners' strike.

Some buyers are negotiating with the mines for coal on the basis of $7 at the mines. It is believed, however, that these are exceptional instances as the business coming to jobbers and wholesalers is not of large proportions and incoming shipments are small.

CLEVELAND

The situation in this district is doubly acute. Not only are local consumers clamoring for fuel, but the demand from the Northwest is centering here. Mean-
while conditions are moving only from bad to worse. The sky is the limit for prices, recent quotations ranging up to $6.50 and $7 per ton. Even the non-union grafter, the cool, however, is extremely scarce, not only because of the enormous demand but declining receipts as well. The plight of the Northwest is reflected in the fact that at present the dumpings of coal at lower lake ports is around 500 cars daily, whereas the normal figure at this season is 2,500. The quantity of coal moved by rail is 4,000,000 tons against 11,500,000 for the same period of last year.

The Cleveland Chamber of Commerce has appointed a committee to act in the emergency.

Many Cleveland industries are being crippled. The fact that 75 per cent of the industries are supplied with power by the Cleveland Electric Illuminating Co., is preventing more widespread distress, as the illuminating company is far from full. It is estimated that the Cleveland Electric Illuminating Co. is losing $20,000 per week.

Ohio operators with headquarters in Cleveland thus far have made no move to start operations under military protection and the majority of them probably will not do so.
COAL

Northwest

Federal Distribution
Plan is Encouraging

Northwest Believes It May Get Enough
Coal by That Agency—Dock Men Are Using Allotment Scheme Already—No More Upbound Cargoes Due.

THERE is a ray of hope for the Northwest in Secretary Hoover's promise to Governor Preus, of Minnesota, and to others that the region is going to get preference in coal shipments when the government's new scheme of coal apportioning goes into effect. However, that is about the only cheerful thing the people of the Northwest have to think about in connection with coal. Lake shipment of coal from lower ports has stopped and no more cargoes are scheduled. Stocks of free coal are so low that in most cases orders will not be taken until they have been approved by dock-company headquarters. Prices generally are still going up.

Public utilities and industries throughout the region find themselves in various conditions. Most of the big utilities have enough fuel on hand to run until September, but among manufacturing plants the situation is grievous generally.

MINNEAPOLIS

With the Governor of the state making vigorous efforts to get a priority on coal for the Northwest when deliveries are resumed, buyers of this district are beginning to appreciate that the situation is serious. And there is no assurance of an adequate coal supply no matter what the government may do. Ordinarily the domestic business begins to get considerable service by September 1. Since there is little chance of that this year, consumers are starting a rush for coal. Wholesalers are refusing many orders. Bidding is being done on coal for prompt shipment, and premiums are being run up quietly, but wholesalers are endeavoring to avoid this sort of thing, realizing the hereafter that will follow anything that savors of profiteering.

Efforts to one subsection may lead to wood and lignite. Wood will be expensive but will do very well in cook stoves and airtight heaters. Lignite is difficult to handle in ordinary steam plants because it sticks and runs down through most grates.

DULUTH

Stocks on docks have decreased so heavily that the majority of dock concerns are selling only insignificant amounts from their headquarters in Minneapolis. This method of apportioning is an effort to place coal where it is most keenly needed. Latest reports show that 165,000 tons of free bituminous remaining here, with anthracite in an even worse condition. Shipments have practically stopped, one cargo only having been received last week. At the same time assurance has been received that no more cargoes will be shipped to lower lake ports from here.

Public utilities in Duluth and Iron Range cities are well taken care of according to latest reports. The local plant of the Minnesota Steel Co. and the Oliver Iron Mining Co. have sufficient coal to continue work until December. Independent mining companies are reported as being in more serious condition.

The general impression here is that the strike will be broken before a general tie-up occurs. Secretary Hoover's assurance that the Northwest will receive preferential shipments as soon as mining starts, and in this way will be able to get its accustomed amount of coal here, is giving heart to all.

Virginia Terminal Shortage
Is Felt: Market Turns

Quotations Likely to Tend Upward Till Rail or Mine Strike Ends—Textile Resumption Not in Sight—Outlook Is for Pitiful Buying in Small Lots.

SHORTAGE of coal at the Virginia terminals has made itself felt. While thus far there has not been demand enough to cause any very active bidding up of prices, it is clear that the market has turned and that quotations probably will tend steadily upward until either the shopmen's strike or the suspension of union mining is brought to an end. In this territory there are fair reserves, industrial conditions considered, but were the textile mills to resume full-time production there probably would be a notable shortage that would send prices soaring. However, there is no immediate prospect of any such general resumption here and buying will doubtless continue to be scattered and confined to relatively small tonnages.

For distribution inland, reloaders at Boston, Providence and Portland have little free coal. Receipts have begun to fall off, and factors here know that for the next few weeks their present stocks will not easily be replaced. Prices in consequence have risen to new high levels; $9 has been quoted on cars Boston, and actual sales at $8.75 are known, these prices being per gross ton. At the same time deliveries are being made on contracts, and one retail distributor in Boston has seen the way to place an average price of $7.45 per net ton delivered for 12,000 tons New River for delivery prior to Sept. 15.

With the condition it is no wonder that the British coal is likely to come here in quantity. As much as 500,000 tons has already been arranged for, it is said, all of it to be received at Atlantic ports, and this should be an influence not only in keeping prices within reasonable limits but also in making it clear to union leaders that coal consumers are not entirely helpless.

The trade is much interested in following reports from day to day of developments on the railways that serve Pocahontas and New River fields. The serious breakdown on the Norfolk & Western is still the occasion of much anxiety, and New England will hardly feel easy over supply until conditions on that line show some improvement before long. Since April 1 that particular railroad has been a main channel of supply, and any interruption has serious implications.

Spot prices are bound to be more or less buoyant the next fortnight or so, if not longer. With anxious buyers in many different sections there is bound to be a certain amount of bidding for what free coal there is, and it would not be surprising to see $9 per gross ton f.o.b. vessel at Hampton Roads reached within a relatively short time.
Cincinnati Gateway

Big Demand for "Free" Coal Creates Three Price Levels

Offers Made at Scales, Between Mine Mouth and Weighing and Before Loading—Unsettlement Laid to Rail Trouble—Non-Union Output Drops and Car Movement Slackens.

DEMAND for "free" coal has grown out of all bounds of possibility of supply. The result is that there are really three prices to be reckoned with upon coal passing through the Cincinnati gateway. One might be called the scales price—that is, a price offer for coal that is about to be weighed by the N. & W. or the C. & O. or that has hit the main line of the L. & N. The second price might be said to apply to coal from the mouth of the mines to the scales and the third that for coal still to be loaded. Even this latter is split into two prices, for there are some firms still holding to the Hoover price even on free coal, while there are others who are getting the limit that the market will stand.

The backbone of the trouble is the rail congestion caused by the breakdown in transportation. Non-union production is curtailed and those cars under load are moving in at less than 50 per cent of normal.

CINCINNATI

Lake business is "shot." One cargo gathered up on Wednesday cost $96@ $7 a ton. Casual buyers therefore are standing off. Country business is pretty much in the same boat—the dealers here come, look the market over and find out the prices that are being asked for coal and go back home again. The whole situation has been created by the breakdown in transportation attendant to the shopman's strike and the others that have surrounded it. Thousands of cars are lying on the sidings that cannot be moved. Less than 30 per cent of normal of loaded cars were brought across the river this week; in round numbers this is a drop of 5,000 cars.

Smokeless agents frankly declare that they will have no coal to offer until the middle of next month. Logan has been hard hit and is moving only a few cars out to the main line of the C. & O. Hazard has a better car supply than surrounding fields. Hazard has only one day this month. Producers say that their costs are mounting and that every ton put on the cars this week has cost them $5@$.80.

Retailers are still holding to the prices established the first of the month. They are warning customers, however, that they will soon be forced into the open market and that a rise in price can be expected.

LOW-VOLATILE FIELDS

NEW RIVER AND THE GULF

Labor troubles and the effects of the mine strike have been a serious overcomer in the New River field, but a shortage of cars has begun to seriously interfere with production. For a time there was a threat of trouble on Beard's Fork and Loramie, but the demand for steam fuel is strong. There is a heavy demand at Tidewater.

Losses due to a shortage of cars in the Gulf region were somewhat more pronounced during the week ended July 15, and tended to make inroads on the output at a time when labor shortage was being overcome. The condition of motive power is making it difficult to move coal as promptly as usual and congestion was beginning to develop on the Virginian by the middle of the month. The movement down the movement to Tidewater.

POCAHONTAS AND TUG RIVER

By the middle of July a rather serious car shortage had begun to develop in the Pocahontas region, the lack of empties entailing a loss of about 45 per cent. The market is unable to handle so large a volume as it did during June and hence there is congestion at various terminal points as well as on connecting lines. The general tendency is to move coal to Tidewater, owing to the short haul and the fact that loads did not have to be delivered to connecting lines.

Tug River mines, too, are suffering from the effects of a car shortage, amounting to about 45 per cent. There was more coal than usual on sidings and at terminals awaiting movement to market. Restricted movement of coal was tending to affect the steel operations since so large a proportion of the output of this territory is usually shipped to affiliated steel mills.

HIGH-VOLATILE FIELDS

KANAWHA

Considering the obstacles to be overcome, the field was producing a fairly large tonnage during the second week of the rail strike, increasing its output to 70,000 tons, the largest since the strike began. Coal was not being moved so promptly as had been the case during the first week of July. It was also difficult to secure empties now than it was before the rail strike, but the need for empties is not as large in the Kanawha region as in some others. There are still more than 100 mines at work, although despite some serious acts of violence.

LOGAN AND THACKER

Handicapped by decreasing railroad facilities, Logan mines have been unable to keep up the pace recently set, although there is still a large output in this territory. Each of the output is being held up at connecting points owing to congestion on other lines. Producers are not finding it possible to get coal to the steel companies in sufficient quantities to keep them stocked. With the supply dwindling the demand is reaching even stronger proportions.

In the Thacker field the only factor which is interfering seriously is the railroad situation. Cars are much harder to secure because of the congestion at terminals on the Norfolk & Western and connecting lines. Not only is there a car shortage of about 45 per cent but it is becoming more difficult to move loads. Lake buyers are seeking large tonnages and the general movement to the West is large, instead of transportation facilities permit.

NORTHEASTERN KENTUCKY

There is a serious curtailment of the output owing to the rail strike, the car shortage in that respect affecting production to the extent of about 20 per cent or more. Loads are not being moved expeditiously and congestion is resulting, in the face of a very strong demand.

KANSAS CITY

While it is true that the production of coal under normal conditions in the Kansas coal fields is small as compared with other coal producing districts, the production in Kansas today is about 25 per cent of normal. Many mines are opening up. It will be recalled that about a year ago there was a split between Alexander Howe and John L. Lewis and each had his following and the miners that followed Howe are the ones that are digging coal today and apparently without any interference from Lewis' followers.

A more peaceful mining locality than the Kansas field would be difficult to find and is an object lesson to all and clearly shows what may be expected where there are two factions about equally divided. Howe is in jail, which may have something to do with the lamb-like demeanor of the men. If that is the case, we can go farther and draw another conclusion: Free and radical labor leaders in jail and there will be peace.

Coal of all grades is scarce and hard to get. Some of the retail yards have sold out to the steam plants and are taking a chance of getting a supply later to take care of their trade. Prices fluctuate from day to day but the ruling figures on Kansas coal are about $3.75 for slack and $5 for lump.

SALT LAKE CITY

Business is improving. Some of the dealers are stocking up and there is a demand for Utah coal. The prices are firm. The U. S. Fuel Co. reports more orders in all grades than it can fill, despite the fact that its production last month was more than double that for the same period last year. Some of the operators, however, have been badly hit by the strike and are producing much less than in normal times. Large, slack, day by day, but the ruling figures indicate a little uneasiness. Local dealers and producing companies cannot meet the demand. The domestic consumer is not buying much yet but inquiries indicate a little uneasiness. Local dealers and producing companies cannot meet the demand. The domestic consumer is not buying much yet but inquiries indicate a little uneasiness.
COAL AGE

July 27, 1922

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News Items
From Field and Trade

ALABAMA

It is rumored that stockholders of the Alabama Company have been asked to vote on the sale of the properties of the company to Lloyd H. Atkinson and associates. All stockholders of the Alabama Company are given $6,250,000 in the circular letter sent out by the company, asking them to accept or reject the request for an open meeting of stockholders. The properties of the Alabama Company are in Baltimore. The properties consist of blast furnaces and company coal mines, most of which are now in operation, although they have been out of the market for a time.

Charles H. Nashott, chief mine inspector, attended the annual meeting of the Mine Inspectors’ Institute of America, which was recently held in Chicago.

ILLINOIS

Orders to start the work on the new power plant of the Central Illinois Public Service Co., at Grand Tower, have been given. The plant will be located near the Mississippi River at Grand Tower, to insure a year-round supply of water for its enormous turbines. The company furnishes a large portion of the power consumed by the mines of southern Illinois. The company has power plants now in operation in many Illinois centers in the southern part of the state.

The Union Fuel Co. announces the opening of offices in Michaelville, Illinois, Chicago, where the executive, sales and service departments will be located. Andrew Christ, Jr., has been appointed vice-president of the company and will be in charge.

A permit has been granted for the construction of the Jefferson Southwestern R. D. power plant by Judge Martin of Marion in Jefferson County. 15 miles southwest through coal lands about to be opened by the Nason Coal Co., of Chicago, to a connection with the Chicago, Burlington and Quincy, three miles from the location of a proposed huge mine. Construction of the line will begin soon and the sinking of the first of several mines on the property will start as soon as a new work agreement is negotiated with the miners.

The McDonough County Coal Co., of McComb, has been reorganized and the work of the company is being continued. The property is being enlarged to the point where the purchase of additional machinery, including a compressed air plant.

INDIANA

A merger of three of the largest coal companies in Indiana, including the American Coal Mining Co., Brazil, Indiana Coal & Mining Co., and the Olivette Coal Co., Vincennes, has been announced by H. A. Glover, Indiana's sales representative of the new organization, which will be known as the Knox Consolidated Coal Co. The new corporation will take common stock to the amount of $3,500,000, and the same amount of bonds. Two of the mines formerly owned by the American company and one each of the remaining two were owned by the Indiana Coal & Mining Co., and the Olivette interests. The purpose of the merger was merely a combination of interests to improve the position of the companies in competition. The value of the properties is $20,000,000. The Knox Consolidated Coal Co. will use the present mines, and will have a daily capacity of 2,000 tons and 3,000 tons of coal a year.

Missouri

A trust deed to secure an issue of $7,000,000 in first mortgage bonds has been filed in the offices of the First Trust & Savings Bank of Kansas City, in favor of the Kansas City, Missouri Corporation and the largest instrument in the state. The property is owned by the Kansas City, Missouri Corporation and the largest instrument in the state. The property is owned by the Kansas City, Missouri Corporation of property and the company has a mine at Camden.

The United States has been granted the Kirkville Co. to operate coal mines in the vicinity of Kirkville. The company has a capitalization of $10,000,000.

Kansas City interests are engaged in the organization of a company to operate coal mines in the vicinity of Wainwright, Callaway County, Mo. It is understood that H. M. Saunders of Kansas City, owns 3,000 acres there, and that in addition to the mining of coal the mining of clay will be carried on. It will be necessary to show the clay before the operation and it is anticipated that a brick plant will be built near the premises in the near future.

NEW YORK

J. P. Zimmermann, president of the Maxim Coal & Coke Corporation, Buffalo, since its organization, has resigned and re- signed. The company is continued with former president D. T. McCarthy elected president and treasurer and his son, F. A. McCarthy, vice-president and secretary.

Attorney General Charles D. Newton has taken steps to test the constitutionality of the Pennsylvania authorization law and has appealed the Attorney General of New Jersey, Massachusetts, Connecticut, New Hampshire, New York, New Jersey, and Delaware to join him in the movement.

F. J. Kerner Coal Co. of No. 1 Broadway, New York, has opened branch offices in Somers, Pa., and Morgantown, W. Va.

Ohio

It is reported that the old coal carrying railroad, the Marietta & Rio Grande, which has been abandoned, will be electrified shortly and used to serve a number of small mines. The company is formerly the Marietta, Columbus & Cleveland.

Virginia

It is reported that the old coal carrying railroad, the Marietta & Rio Grande, which has been abandoned, will be electrified shortly and used to serve a number of small mines. The company is formerly the Marietta, Columbus & Cleveland.

The Murphy Coal Co., Columbus, recently incorporated with a capital of $75,000, has been organized by John M. Murphy of Logan, president and H. H. Long, secretary and treasurer. The company was organized to produce coal in the vicinity of Columbus and to sell steam to the coal mines in the vicinity. The company has an option to purchase 250 acres of land in the vicinity of Columbus, and to erect a plant for the production of steam to be used in the coal mines. The company has a capitalization of $75,000.

In the suit against the Scranton Coal Co., for failure to allow a sufficient amount of plaintiff's coal, a suit for injunction, a suit for damages, and a suit for declaratory judgment, the defendant was held by Judge C. B. Witmer in an opinion in which he held the defendant liable for damages, and not a declaratory judgment. The defendant was also held liable for the breach of the contract of sale.

The Atlas Fuel Corporation of New York City, has changed its general offices to the Park Bank Building, Pittsburgh. Jay W. Johns, president, is in charge.

The Purity Coal Co., one of the Consolidated group, opened a new office in Columbus, and in Somers, Pa., recently increased its capacity by the installation of a new boiler. The company has a capitalization of $500,000.

Coal shippers are again in controversy with the New York Central, over the handling of their coal at the terminal. A conference was held in Buffalo, and the result was a decision in favor of the shippers. The conference was held at the request of the shippers, who were dissatisfied with the way their coal was being handled at the terminal.
Traffic News

In the complaint of Holmes & Hallowell Co., the commission on rearguard, has modified the rates previously prescribed on bituminous coal from the Lakes to points in Minnesota, and the Davey steamer tramway on the tramp, the rates on bituminous coal at $8.50 per ton on 20 miles and under, to $4.25 per ton on 26 to 60 miles. The rate is reduced from 14 to 19 per cent.

The Burlington line has also reduced its rates on bituminous coal from the Lakes to points in Minnesota, on a grade of 55 tons capacity, for prompt delivery. The commission has approved the reduction, and the rates will be reduced from 14 to 19 per cent.

In the case of the Northern States Power Co., the commission has reduced the rates on bituminous coal from the Lakes to points in Minnesota, on a grade of 55 tons capacity, for prompt delivery. The commission has approved the reduction, and the rates will be reduced from 14 to 19 per cent.

Coal Mining Institute of America will meet Dec. 13 and 14 at 15 at Pittsburgh, Pa., as the annual meeting of the Chamber of Commerce Blvd., Pittsburgh, Pa.

American Chemical Society's annual fall meeting will be held Sept. 4-9 at Pittsburgh, Pa., divisional meetings will be held at Carnegie Institute of Technology and general meetings at Carnegie Institute of Technology.

American Mining Congress. Twenty-fifth annual coal and iron conference and exhibition of mines and mine equipment will be held in the Phalanx Hotel, Cleveland, Ohio, Oct. 9-14. Executive officers, the Hotel, L. C. Porter, convention manager.

The Rock Island Coal Mining Institute will hold meetings at the Loyal Lodge, Galena, Ill., Sept. 6-8. Secretary, F. W. Sprague & Sons, New Port News.

Oblitary

O. R. Scott, general manager of the Pataoka Coal Co. died at his home in Indianapolis, Ind., on Aug. 22, after a long illness of about two months. Mr. Scott was born in Terre Haute, Ind., and began his business career at an early age as a delivery boy for a Terre Haute grocery. Later, he went to Indianapolis in 1912. From that time, his rise in the coal trade was steady.
On the Last Lap

Facing an unprecedented coal shortage, the result of the combined strikes of union and non-union coal miners and certain railroad employees, the country is slowly awakening to the seriousness of its situation. It was pointed out a month ago that by Aug. 1 stocks would have shrunk to the danger point, and the curtailment of output caused by the rail strike, not anticipated at that time, has in fact accentuated this condition.

It is imperative that the production of coal be resumed. It is equally imperative that a sane adjudication of the points at issue be provided and that provision be made against future serious breaks of this kind. There is now but one force in this broad land that can accomplish either—public opinion.

Settlement of the rail strike comes first because without unrestricted transportation even the coal from non-union fields is locked in the hills. Moreover, more than can be furnished by these mines is necessary. Anthracite production, cut off for four months, must be resumed if the health and security of half the householders of the country is not to be further imperiled. Industries already are halting for lack of fuel and now largely dependent on depleted reserves, with priorities turning the restricted current output to the more essential requirements of transportation and public utilities, will in a few weeks reach the bottom of their coal piles and perforce shut down. Because it is midsummer and this country has always been able to worry along somehow through previous similar situations, the great body of public opinion is indifferent. It will not remain so indefinitely.

The miners will return to work when John L. Lewis permits. He arrogantly defies anyone to get his miners to dig coal until he says the word. The strength of his position lies in his appeal to the men to preserve their organization, the United Mine Workers, at any cost of suffering or deprivation. He has taken the position that to follow any but his policy would mean the disintegration of the union. On this basis he has held his followers in line despite the fiercest kind of internal disputes. John L. Lewis will permit the miners to work when his terms are met.

Or, the miners will return to work when a force superior to John L. Lewis compels him to abandon his high and mighty attitude—drives him from his rule or ruin policy. From January to the middle of July the two parties—miners and operators—had a free hand. In that time splendid opportunities one after another were lost by the operators nationally to educate the public and mobilize opinion in the direction of a sane settlement of the issues. The anthracite operators and those groups of soft-coal producers who, struggling alone, have built up a clear record must suffer now for the lack of a united national direction. The adminis-

That Commission

One happy thought seems to be common to everyone who talks or thinks about the coal situation—let us have a commission. A commission will find all the ills and aches in the coal industry and prescribe a cure, or possibly a series of cures. Everbody seems to know a lot of things that are wrong, or at least is sure that things must be wrong, but no one knows just what, or how to correct the errors. Therefore, a commission. The commission will take the facts we have, add to them, and do the thinking for us that these collated facts suggest. This is just what the situation demands. A commission that will do one-half the things it is now hoped it can accomplish will be the best thing that ever happened to the coal industry. It will explode a lot of myths, lay down some sensible rules of conduct and, although we have but slight hope of its reorganizing the bituminous-coal industry, it will be able to expound some healthy truths about the existing forms of doing business.

Commissions on coal almost without number have been proposed in the past three years, in every instance in some form of legislation objectionable alike to operator and miner. The objections have all centered around the idea that the suggestions were designed to initiate regulation of the coal industry—wages as well as prices—through the opening wedge of compulsory fact finding. In some instances it has not been so much the actual legislation that has aroused hostility as it has been the obviously hostile spirit prompting it. The spirit of President Harding's suggestion is so entirely
free from taint of partisanship that the only one to object to his commission will be he who wants to hide facts. It cannot be otherwise than that he will appoint as commissioners men from all walks of life—eminent and unbiased. Neither miner nor operator should expect representation. It would be a modern marvel, indeed, if employee representation should produce other than a minority report, which in turn invariably results in some form of strike in protest of the majority.

It will be quite important to have the jurisdiction of this commission clearly and properly defined in advance. If it is to be an arbitration board then it can have jurisdiction over none but those party to the present controversy. The President has so indicated, to the dismay of the miners, who want nothing better than to have the government drag the non-union operators in the room where they are sitting.

On the other hand if the commission is not for compulsory arbitration and is but to investigate and study the coal industry, if it is to do any of those very important things which Mr. Hoover has indicated should be done and which some of the miners and some of the operators have advocated, then it must take in the entire coal industry. It must be national in the scope of its investigation, but with no power to force its decisions. The President has also indicated that he expects his commission to work that way too. Of course, it cannot do both and he will decide which of the two he desires the most.

The attitude of the United Mine Workers toward a commission is expressed in the following words from their reply to the President’s proposal of July 10: “When all the facts bearing on the production and distribution of coal have been collected and impartially analyzed, we shall gladly face these facts and accept them as a condition to the rehabilitation of the coal mining industry.” Those who are familiar with the readiness with which this union “accepts” findings other than its own will know best what credence to give this fine assertion.

Mr. Ogle, president of the National Coal Association but speaking for the union coal operators who attended the President’s conference on July 1, urges the immediate appointment of a fact-finding commission. The other union and the non-union operators have not so specifically expressed themselves on this matter. They have not been asked to, in fact.

As for the public, that part which has made itself heard is solidly for an investigation of everybody and everything connected with the coal industry. The idea of a commission is popular.

There will be a commission. When it comes time to lay their respective cases before that body the miners will be prepared and the operators will not be ready. The miners were ready last month, last year. They are regularly preparing data and arguments in support of their policies and positions. Such in fact is now the regular practice for all large labor unions. The union can give you a printed book, right up to date, on any subject from the “Hazards of Coal Mining” to the “Sanction of the Living Wage.” The very weight, in pounds avoirdupois, of their evidence is impressive. They know what they want to prove, and they get the figures to prove it.

There is just one point to what has gone before. Operators who have any hope of defending their cause before whatever type of tribunal or commission is certain to come, and soon, will do well to inquire into the modern style of conducting such bodies and get ready. They cannot expect anyone to prepare their case for them. The commission will gather its facts by way of evidence introduced—not by digging it out itself. The facts on which it bases its conclusions will be those placed before it.

Will Miners Expose Themselves to This?

THE miner’s qualification acts on the Illinois and Indiana statute books are precious to the United Mine Workers of America. The organization would surrender a good deal of ground undeniably gained by one means or another since April 1 rather than see those acts repealed. By that very fact a weapon of defence against coal famine is laid in the hands of the voters of those two states. “I’ll call a special session of the Legislature and repeal the Indiana act,” declared the stalwart Governor of Indiana the other day. “Don’t,” pleaded the state president of the miners; “give us forty-eight hours more,” and in his voice was the fear of the whole mine union organization. Repeal of the qualification act, behind which the union is solidly entrenched against the open shop, would be a disastrous blow to unionism.

In Indiana there is a strong possibility that the Legislature, if assembled in special session, would actually effect the repeal. In Illinois the issue would be in graver doubt. Illinois operators have made no recent move against the act and might not favor a repeal even if it were in prospect. Instead, operators there are inclined to take the position that the Governor should declare a suspension of the state mining laws during the present emergency and, with martial law in effect in the mining districts, protect sufficient non-union men in the workings to prevent suffering for coal.

However, if higgle-haggling continues in the national coal-mine situation and the country begins keenly to suffer for coal, public pressure upon the Indiana and even the Illinois legislature to force the mines open to non-union labor may become irresistible. If the United Mine Workers of America, in their desperate ring battle with the operators, permit strike conditions to reach that point, they will have exposed a vulnerable spot upon which outraged spectators climbing over the ropes may land a wicked punch.

The more urgent work of taking care of a car shortage has compelled the Interstate Commerce Commission to suspend hearings recently inaugurated on the subject of car service rules—that is, on how to distribute cars during a shortage. The last car shortage was two years ago, and since then there has been admitted necessity of giving consideration to a revision of the rules of car service. It is said that down in Arkansas they never fix the roof while the sun shines, because it does not need it, and when it rains, they cannot.

The Coal Deadlock invites picking.—Washington Post.

It looks as if the tariff bill would clip a big duty on returning prosperity.—New York Tribune.

Since It Started on the first, why not call it the April Fuel Strike?—Manila Bulletin.

After a while, perhaps, the leaders of certain unions will discover that wages cannot be hoisted with bombs.—Columbia Record.
Merrill Mine, Its Housing Problems, Gravity Chute and Other Original Features

Village Located Convenient to Town—Men Travel to Mine on Railroad Train—Experience in Handling Partings in Coal—Assembling Empty and Load Trips—How Supplies Reach Mine

BY ALPHONSE S. BROSKEY
Pittsburgh, Pa.

In West Virginia coal operations are scattered and travel on the railroads is slow and arduous. In consequence it is necessary that each town be complete in itself, and to hold its men a company must provide such a town unless it can locate its village near one of the thriving centers that West Virginia is rapidly developing. While lack of easy communication makes the mine worker of that state less disposed to wander from operation to operation, it is a distinct disadvantage where a company seeks to add to its working force.

At some of the mines the valleys from which openings are made are so narrow that place for a town can hardly be found anywhere near the operating point. The Merrill mine, on Little Buffalo Creek, three miles west of the main Guyan Valley-Logan Branch of the Chesapeake & Ohio R.R., is in this predicament. A branch road built by the company runs up Buffalo Creek from the main line to the mine, but the town of Henlawson, where the men employed live, has been located almost from necessity where the two creeks meet and the branch forks from the main line. It lies at a point not far from the City of Logan, which is the center of the activities of this field.

The Merrill Coal Co., which owns the mine, has a little more than 4,000 acres of coal land which lie under the two mountain chains that flank Little Buffalo Creek on either side and extend from the mine to the village of Henlawson, the mine openings and the tipple being at the eastern end of the property. In the valley some building land is to be found, but had it been used the men would have been located conveniently neither to the mine nor to the main line and the town of Logan. Furthermore, a dirt road up the valley would have had to be maintained. Consequently it was thought best to build at the present site and transport the men by railroad.

On the three miles of track that the company owns it operates one 40- and one 60-ton shifting locomotive and two passenger coaches. A labor train leaves the town in the morning in time to get the men to their work at 7:30 a.m. As there are no houses in the valley all the 162 men employed at the mine travel to and from work on the labor train. This is run by the company, for, as at many other mines located off the main lines of railroad, the company finds it advantageous to use its own shifting engines. This insures the prompt delivery of cars from the main line to the mine and also guarantees daily removal of the loads. The railroad grade is in favor of the loaded cars, so that the number of cars taken out of the valley is almost unlimited, but only ten empties can be hauled upgrade to the mine.

Three workable seams outcrop from the two ranges, the Winnifred, the Alma-Draper and the Island Creek, but the latter is the only one being worked at the present time. As the coal is mined out the workings will approach the village and eventually the men will be entering the mine and working at points near home. The coal has no unusual dips and the grades are slight, consequently the main haulageways may extend for considerable distances along the principal axis of the mountains and coal may be brought out to the surface entirely through one main drift or it may be taken through several drifts and trammed along the mountain side to the tipple. When the haulages become too lengthy and an increase in production is desired, addi-
GATHERING LOCOMOTIVES DO ALL UNDERGROUND HAULING

Six-ton reel locomotive bringing thirteen loads from the First Flats Left. The curves leading from the mains to the flanks are of 100 ft. radius; those which join butts with flanks have a 75-ft. radius. The room curves are laid to a radius of 25 ft.

Six-ton reel locomotive bringing thirteen loads from the First Flats Left. The curves leading from the mains to the flanks are of 100 ft. radius; those which join butts with flanks have a 75-ft. radius. The room curves are laid to a radius of 25 ft.

ditional tipples may be erected at intervals from the present mine to the town. Future plans call for the erection of four additional tipples to take the coal from the two hills, thus reducing the length of the underground haulage.

The Island Creek seam at this place has an average thickness of 6 ft., and the slate roof is so unusually strong that few timbers or props need be used even along the roadways of wide rooms. Three streaks of slate which attain a maximum thickness of 1½ in. appear and play out from place to place.

The lowest streak appears 3½ in. from the bottom, and the other two streaks above are separated by 4 and 8 in. of good coal. The coal is undercut with arcowall machines and where the bottom rolls the cut is kept several inches above the floor. The bottom coal is easily removed by shovels. Where the coal is undercut it is brought down by the usual method.

An attempt has been made to cut between the first and second slate streaks, using the arcowall cutter, but it was found that after shooting the slate was badly broken up and the coal obtained was not as clean as with undercutting. The idea was abandoned, therefore, as undercutting and shooting permit the removal of the slate in pieces of a size suited to picking.

Most of the cleaning is done on the picking tables. The slate does not always fall free from the coal, and in such cases the loose slate cannot be removed in the mine and that which clings to the lump coal must be loaded out. During periods of operation when the coal passes over the picking tables in large quantity the pickers do not have time to knock the slate from the lump coal. In consequence it is the practice at this mine to pick from the table the chunks of coal having adhering slate, depositing them on the tipple deck so that during periods of no run the pickers can wield their hammers and clean the accumulated lumps of their impurity.

At the tipple the Island Creek seam lies 300 ft. above the railroad track, the headhouse lying, however, approximately midway between these two elevations. Coal is trammed from the point where the trips are made up, which is in the vicinity of the substation and not far from the drift mouths, to the headhouse, a distance of one mile, the grade being 3½ per cent in favor of the loads. Further details regarding the surface haulage arrangements will be given later.

The two mountains under which the coal lies come together at the upper end of the creek. It is at this point that the first drifts, or, as some would say, "the first mines," are being worked. The tipples, as was mentioned above, lies one mile from here, down the creek. Remembering that the coal area describes a long and narrow U the working-out plans may be followed easily. At the present time most of the coal comes from drifts emerging from the curve of the U.

TRACK LAYOUT IN ASSEMBLY YARD OF MERRILL MINE

Because the coal is brought in six to ten loads a trip by gathering locomotives and comes in from many directions the problem of yarding the cars at the surface is not easy, but ample trackage insures minimum interference and delay.

Four drifts have been driven to win the coal at the juncture of the main bodies on either side of the creek. Of these, No. 1 drift is the only one of any importance, No. 3 and No. 4 drifts having been worked out, with No. 2 in the last stages of pillaring. An irregular body of coal to the east will be worked out during the coming year, leaving the two long arms on either side of the creek to be operated in an approach to the town. No real developments have been made in the northern arm. Access is gained to the southern arm through No. 1 drift, which is the principal opening. As necessity requires other drifts will be opened progressively in the direction of the tipple and the town. When the haulages to the present tipple become too long and when other conditions favor the action, other tipples will be erected to the east of the present one.

Because of the exceptionally firm roof, rooms can be driven 24 ft. wide on 60-ft. centers without any extensive timbering along the track. They are 300 ft. long, driven in one direction only. In No. 4 drift rooms were driven in the same manner on 80-ft. centers. The procedure was found particularly valuable near the outcrop. The good roof does not warrant the wide center elsewhere, however.

On the main hauls and the tramroad 50-lb. rails are laid on a 44-in. track gage. In the rooms and on the butts 25-lb. rail has been laid. Steel ties are used.
Assembly Yard

A large motor with a trip of twenty-five cars is headed for the dump house near the tipple. After it has pulled out the smaller gathering locomotives each will bring from six to ten loads and assemble them into a trip. The substation is the only permanent building in the illustration. A steel-and-stone machine shop measuring 49 x 100 ft. will be built soon.

in the rooms and also on the butt entries. They have been adopted as standard equipment for room track in a majority of the mines of West Virginia, having been more generally used in that state than in Pennsylvania. I sometimes wonder why it is that the Keystone State is slow in adopting the steel tie in place of wood for room work. Surely it is easier to handle, has a longer life, costs less, maintains a uniform gage and for room work is more rigid than the wood tie as usually laid. Where the grades are light it may be adopted even for laying track in the butt entries, as is the practice indeed at the Merrill mine. This company has experienced no difficulties from spreading or insecure rails in the butt headings where they have been laid on steel ties. However, their use is not to be recommended where grades of one or more per cent are encountered.

In turning the butts off the flats, however, the curves are laid with 50-lb. rail on heavy wooden ties. Extreme care must be exercised in putting down the curved track, and the joints made by the light and the heavy rail must be aligned accurately and firmly joined, else the gathering motors with their trips may encounter trouble in hitting the "straightaway" at usual curve speed.

The air butts are utilized as storage tracks for empties and the live butts from which the rooms are driven serve for storing loads. Just now five 6-ton motors are used for both gathering and loading coal. When the workings have been extended, however, larger motors will be required for the main haulage. The gathering motors will deposit the loads on the main or straight way of one of the live butt entries near the curve. After backing the allotted number of empties into the aircourse butts, the main haulage motor picks up the loads from the tracked butts. Then the gathering motors have easy access to the empties through the first break-through off the flat, a distance of 80 ft.

At most operations in this state where the coal lies some distance above the railroad, the problem of transporting supplies to the coal horizon is solved by a plane and a hoist. The grades in most cases are steep, so that a self-propelled trip is not practical. Thus an ordinary mine-car truck is fitted with a body best suited for the supplies handled, and this is raised and lowered by a hoisting engine placed either at the top or foot of the hill. At the Merrill mine the industrial track is laid on a 15-per cent grade, switching back once and maintaining the same grade to the tramroad over which the coal passes. The industrial track does not cross the tramway at right angles, as is the usual practice, but is in reality a continuation of the tramway, being located on the side of the headhouse opposite from the mine. Supplies are carried to the mine openings by means of ordinary mine cars hauled by a 6-ton motor, two cars to a trip. After leaving the loading point the trip can make connections to any one of the drift mouths, passing over the empty track through the headhouse and thence to the single track or tramway. There are no pauses during a trip from the bottom landing to the destination. In the old system of hoisting supplies the cars are raised some distance above the tram track and are then dropped down on a switch to the tramway. Here a motor is coupled to the car, and both proceed to their destination.

The yard track in the vicinity of the substation is laid out in an interesting manner. One of the illustrations shows the track arrangement looking toward the substation and No. 1 drift. Another is a plan sketch of these tracks so designated as to aid in explaining how trips are made up ready for their movement to the tipple. Five 6-ton motors gather loads at the faces and, as the workings are not extended, carry them to the assembly yard. In the plan the trip of loads on the left track is headed by a 10-ton motor which is ready to move to the tipple. Immediately after this trip had pulled out a trip of ten cars emerged from No. 1 drift on track A, and crossed over at B to track C on the bridge; the motor then pulled into the clear at D. That trip was followed by ten more loads from No. 1 drift which pulled out and backed into the loads standing on the bridge.

The second motor then pulled out light and crossed over at E, where it picked up a trip of 20 empties from track J, backing into No. 1 gathering motor, which was waiting at D. The trip of 20 empties with a motor in the front and the rear proceeded inside No. 1 drift to the flats. Here the trip split in two, No. 1 motor pulling its quota to the First Flats Left section and No. 2 motor backing its trip into the First Flats Right section. Then a trip backed down off the hill on track F, directly in front of the loads which had been deposited by No. 1 and No. 2 motors on the bridge.
No. 3 motor then pulled to the miner, going light, and waited at point G until the big motor returned from the tipple with a trip of empties. The empty trip from the tipple on arrival pulled up on track A to clear the end of the trip at H. The No. 3 motor, which had been waiting at G, then backed into this trip of empties, and pulled it up the hill over G and A.

It then backed down and over the crossover 1 in the storage track J, where the cars above the number required on the hill were dropped, and the empty trip then pulled for the hill. The big motor with a trip of 25 to 30 loads then started with the tracks cleared for the tipple. A round trip from the yards to the tipple can be made in twelve minutes.

Because of the variation in the schedule and the quantity of coal coming from the several mines at different times this description does not hold for all car assemblies, but it does give one an idea as to the flexibility of car, trip and motor shifting that may be obtained with such a layout. The large motor makes from 15 to 20 trips per day to the headhouse; as a 2-ton mine car is employed, a 25-car trip averages 50 tons, or 900 to 1,000 tons per day.

**Rotary Tip Dumps Cars While Coupled**

About 150 ft. west of the headhouse the single tram track gives way to a double track, one a load and the other an empty track passing through the headhouse and continuing out past the other side for some distance, acting as storage track. The load track is a straight-line continuation of the tramway. The headhouse is about 150 ft. above the railroad tracks over which the tipple stands. The headhouse is equipped with a two-car air-operated rotary dump arranged for dumping trips while still coupled. A 75-cu.ft. compressor, running at 190 r.p.m. and driven by a 10-hp. induction motor, supplies air at 90 lb. pressure. After leaving the dump the trip progresses by gravity to the empty-storage track, where it is picked up by the big motor on its return with the next trip of loads.

The coal drops by gravity from the cars down a concrete chute placed on a 35-deg. slope ending in a 15-ton feed hopper. The chute is 94 ft. long and 17 ft. wide. The slope of this chute is greater than usually is adopted, but as the tipple is designed so that coal may drop by gravity directly into a car as mine-run, if so desired, the slope is enough to insure the sliding of the condition. The chute is large enough for storage of 180 tons of coal.

An apron feeder provides for the mine coal at a rate of 300 tons per screen, which are designed for lump and screenings. The lump and the shaker screens to picking tables, each parallel to the railroad tracks, ft. clear picking space. Each table of the receiving boom for lowering the lump and railroad cars. Screenings are loaded by means of chutes.

**Can Load Run-of-Mine with Apron Feeder**

Emergency run-of-mine may be a chute from the receiving hopper on the track without operating the tipple. From the picking table passes by and thence to a refuse bin across the tipple. Picked run-of-mine may be through the lump loading boom, the coal picked and reassembled at the load.

The receiving hopper is of steel from the concrete chute, the floor controlled by two slide gates operated from a platform alongside the slack track. The feeder is of the apron type with a steel thimble roller chain at the minute. The shaker screens are enhanced and stepped type. The upper openings for separating the slack is 5-in. openings for separating the larger.

The discharge end is so designed that the picking table without breakage is driven by babbitted eccentrics on the eccentric shaft. The screens are driven, which also drives the picking table feeder.

Each of the picking tables is large to accommodate ten men. As already noted bands of slate are found in the
be slabbled from the lump and picked out when loose. Two feet of clear picking space is apportioned to each man. The discharge ends of the tables for a distance of 31 ft. are mounted on pivoted frames, forming loading booms for lowering the picked coal into cars. The conveyor chain is of the pitch-steel roller chain type with 4-ft. carrying pans and a speed of about 60 ft. per minute. The trough of the scraper conveyor is formed of two channels and bottom plates. The flights are carried on a 9-in. pitch steel thimble roller chain driven by a 15-hp. motor at a rate of approximately 80 ft. per minute. The tipple was designed and erected by the Pittsburgh village of Henlawson, the rest of the foliage on the surrounding hills is four of these fabricated houses equipped with a bathroom rooms. They shelter eighty-five single men. As 162 men work, there are about two men to each house, each man.

Spiral Dump Is an Old Idea in a New Form

PAUL STERLING, mechanical engineer, Lehigh Valley Coal Co., Wilkes-Barre, Pa., calls attention in a letter to Coal Age to the fact that the dump shown in the article entitled “By a Twist in Track Cars Are Turned Partly Over, Dumping Contents” is quite similar to one built many years ago.

The article to which Mr. Sterling refers was written by A. F. Brosky and appeared in Coal Age of July 13, 1922, page 50. It describes a dump wherein the rails and wheel grips are spiraled through a certain number of degrees, first one way and then the other, thus changing the direction of movement. The device built by W. A. Lathrop, at that time of Pennsylvania Coal & Coke Co.”
Pulverized Coal Is Dangerous on the Surface as Well as Underground; Precautions to Be Taken in Handling It*

Cleanly Use of Powdered Coal Essential to Safety—Switches and Generators Have Been Known to Ignite Dust Clouds—Dangerous to Overheat Drier—Beware of Fire in Circulating Pipes

By L. D. Tracy†

Pittsburgh, Pa.

PLANTS in which pulverized coal is used should be carefully inspected, and the owners and operating forces should be impressed with the absolute necessity of reducing to a minimum conditions that tend to raise or ignite a cloud of coal dust.

This latter term is used advisedly. Pulverized coal in bulk is not especially hazardous, but as soon as it is raised into a cloud and mixed with air it becomes as dangerous as an unconfined body of gas. It takes only a small quantity of coal dust per cubic foot of air to form a highly explosive mixture. In tests by the Bureau of Mines 0.032 of an ounce of Pittsburgh coal dust mixed with a cubic foot of air has been found sufficient to cause an explosion when brought in contact with flame. Perhaps this danger can be visualized more readily when it is stated that all that is needed to produce such an explosion is a quantity of coal dust that can be heaped on a silver quarter of a dollar mixed with the air contained in a 12 x 12 x 12-in. box. Such a mixture needs only an open light to cause it to explode.

Some time ago the Bureau of Mines demonstrated the inflammability of powdered coal at its experimental mine. A large funnel containing pulverized coal was connected to a compressed-air line and a short distance away a piece of burning waste was placed on a small rod driven into the ground. The air was turned on, raising the coal dust into a cloud which was blown across the burning waste. Prompt ignition of the coal followed.

One form of coal dust which is exceedingly dangerous and to which perhaps too little attention is paid is that coming from small heating furnaces in which pulverized coal is used as a fuel. These furnaces are comparatively small and are used principally to heat bars and rods for small forgings. They are somewhat like the old-style blacksmith forge, being generally provided with a hood over the fire for carrying away the fumes. The pulverized coal is shot in under pressure and sometimes all of it is not completely burned but goes off into the surrounding atmosphere as floating dust which finally settles all over the platforms around the furnaces, on the beams and girders of the buildings and any other place upon which it can lodge.

I once made an investigation of a plant in which this condition existed and found this kind of dust all over the building. Samples were taken and analyzed. Many of these samples were not much different from a poor grade of pure coal.

A rather peculiar accident happened some time ago from dust of this kind in one of the Pittsburgh steel mills. At one point in the building an electric switch was so situated that dust could settle between the poles. One Sunday, when the mill was shut down, sufficient dust accumulated to form a short-circuit, and as a result a whole panel of the switchboard in the power house was burned out. Many accidents have occurred practically all of which were due to the dusty and unclean condition of the buildings.

Some hazards, however, are more or less connected with the apparatus used in pulverizing the coal and delivering it to the point of consumption, and though it is true that reduction of the fire and explosion risks rests largely with those operating such plants yet much can be done through proper inspection by well-informed authorities having proper jurisdiction. In order to get an adequate understanding of these hazards and their remedies a working knowledge of the methods and machinery used in pulverized-fuel plants is necessary. A brief description of these methods and equipment therefore may be of value.

Before coal in a finely divided state can be used for fuel it must be crushed, dried, pulverized and conveyed to the furnace or boiler where it is to be used. Generally speaking three distinct classes of pulverized coal equipment are in general use. These may be designated as (a) the circulating system, (b) the indirect system and (c) the unit system. The first two mentioned employ practically similar processes, varying perhaps in detail, but differing chiefly in the manner in which the pulverized coal is transported to the furnaces.

In the circulating system, after the coal has been pulverized it is fed in regulated quantities to a fan, by which it is forced in a cloud through pipe lines with diameters ranging from 8 or 10 in. up to 14 or 16 in.
Branch lines leading from the main line to the furnaces carry such coal as may be needed and the surplus, which has not been drawn from the main line, is returned to a point near where it started, where a separator removes the coal dust from the air and returns it to a storage bin to be blown again through the line.

In other words this system embodies a continuous circulation of coal dust. It is somewhat analogous to a gas line where the fuel is drawn off as needed. Secondary air lines, independent of the main coal feed, provide the additional air at the burners necessary for proper combustion.

The indirect system transports coal either by means of compressed air under possibly 50 to 90 lb. pressure, a screw conveyor, or a combination of air and screw conveyor to bins at the furnaces. From these bins the pulverized coal drops into a small screw conveyor by which it is either fed to an air blast which carries it into the burner, or directly to the burner itself.

**DIRECTLY AND INDIRECTLY FIRED TYPES IN USE**

An important feature of this method of utilizing pulverized coal as contrasted with the circulating and direct systems is the entire absence of a drier to expel the moisture from the raw fuel.

Two types of these driers, the directly and the indirectly fired, are at present in use. The former type consists practically of a long shell from 3 to 5 ft. in diameter, at one end of which is a furnace and at the other a stack. The hot gases pass through the center of the shell, coming in contact with the raw coal, which is fed into the drier at the stack end.

The indirectly fired drier generally is one of two kinds. The first is the double-shell type which consists of two cylinders, one inside the other. The raw coal travels through the inner shell and the hot gases move in the opposite direction in the space between the two cylinders, after which they return through the inner shell to the exhaust stack.

The other kind has an inclined single shell, the higher end of which terminates in a brick housing supporting the exhaust stack, and the lower end in a steel hood. The furnace for heating the drier is placed between the stack chamber and the hood. This furnace is provided with a large combustion chamber through which the drier shell passes. The hot gases from the combustion chamber of the furnace circulate around the outside of the drier shell.

**DRIER IS A POTENT FACTOR IN EXPLOSIONS**

The drier, directly and indirectly, doubtless is the cause of a large percentage of the fires and explosions which have occurred in coal-pulverizing plants. On the man operating the drier—by this I do not mean the man in general charge but the one actually shoveling the coal—is placed a great responsibility, akin to that laid on the man in charge of a battery of boilers. I sometimes think that the average factory or power-plant superintendent little realizes this fact. If the man tending a boiler forgets to keep the water therein at the proper level, something pretty costly is likely to occur. If the man tending a drier happens to perform his duties improperly and allows the furnace to become too hot the chances are that there will be work for the fire department in that vicinity.

This is well illustrated by an explosion and fire that occurred in a large steel plant. From evidence obtained at an investigation it was well established that the man tending the furnace of the drier for some reason built up an abnormally large fire so that the coal in the drier ignited. The flame then passed into the pulverizer, where it came into contact with fine coal dust, with the result that an explosion followed, filling the entire building, killing two men and badly burning two others.

One precaution that can be taken to prevent fires in buildings where powdered coal is used is to insist upon absolute cleanliness in the pulverizing plant. Accumulations of dust must not be allowed. One principle that should never be forgotten is that when cleaning up such a plant coal dust should never be swept up with a broom nor should accumulations be dislodged from window ledges, girders, boiler housings or platforms by blowing with compressed air, unless they have first been thoroughly wet down or mixed with incombustible dust in the proportion of seven parts of rock or shale to one of coal. Some plants that I have visited are kept almost spotless by means of a vacuum system.

Another safeguard is to isolate the drier from the rest of the pulverizing plant. If the former is not placed in a separate building it should at least be separated from the coal-consuming equipment by a blank masonry wall.

If a building the inside of which is covered with coal dust once starts burning the fire will spread with far greater rapidity than in a similar building that is clean. In fighting a fire of this nature care should be taken to avoid a sudden explosion or backfire from pulverized coal, possibly stored in a bin, but suddenly raised into a cloud by a sudden air draft or by falling material.
All driers should be equipped with recording pyrometers that make a continuous record of the temperature at which the drier is operated. Preferably this chart should be placed in the office of some responsible official. Thermocouples—that part of the pyrometer affected by the change in temperature—should be installed at the discharge end of the drier.

One of the greatest causes of fire in a drier room is the continued passage of hot gases from the furnace through the drier shell when the machine is not in operation or when the shell is not revolving and there is not a constant stream of coal passing through it. Under such circumstances a certain amount of coal may quite possibly be lying in the drier shell, which, through continued contact with the hot gases, may in time become ignited. When the drier is again put in operation this hot coal will either be delivered to the pulverizer or to the dried-coal storage bin. If it goes to the pulverizer it is likely to ignite and explode the fine dust therein; if to the dried-coal storage bin, it may possibly start a fire. Such fires usually are, and wrongly, charged to spontaneous combustion. On the other hand, through continued application of heat from the furnace, gas may be generated from the coal within the drier. This may collect in the shell and explode, with disastrous results, if brought into contact with an open flame.

Though regulation of the coal-drying equipment is largely a matter for the operating official, yet an enactment by the proper authorities requiring all driers to be equipped with bypasses, in order to prevent the gases of combustion from entering the shell when these machines are not in operation, would be of great value.

Next to the drier one of the most prolific sources of trouble is the large main which circulates the mixture of air and coal dust around the plant, returning the unused coal to the storage bin. Pulverized coal is driven through this line by air currents induced by a fan and having a pressure of about 8 or 9 oz. per square inch. Fires in this line are often of a smoldering nature but they may heat the pipe red hot. In coping with such a fire little can be done save cutting out the hot section.

In any event the blowing fan should be stopped. The most important precaution of all, however, is that the entire line be inspected to see that it is absolutely free from sparks, glowing particles or smoldering coal before the fan is again started. Otherwise there may be just enough dust lying in the bottom of the pipe line to make an explosive mixture when it is raised into a cloud by the starting of the fan. Such a mixture will cause trouble if brought into contact with any glowing particles. For this reason after a fire in a coal-circulating line the entire piping system should be thoroughly inspected before the fan is started.

At a manufacturing plant which had a large number of small furnaces drawing fuel from such a line, the main fan suddenly broke down and stopped running. The sudden cessation of pressure evidently permitted a back draft and drew hot particles of coal into the pipe line. Here they continued to smolder until several hours later when the fan was again put in operation. The air current, thus started stirred up the dust which had settled to the bottom of the pipe and simultaneously fanned the smoldering coal into flame. The result was an explosion which travelled throughout the entire length of the pipe line and ended by blowing into pieces the cast-iron housing of the fan, one man being killed and two others burned. It is perhaps needless to say that all pipe lines carrying pulverized coal should be of metal.

In a pulverized-coal plant all elevator systems and all screw conveyors should be dust-tight. This type of apparatus offends more, probably, than any other in the matter of throwing off fine dust. For a while this dust will remain in suspension, but it finally settles on some convenient flat surface. It is an easy matter to permit the joints to become loose and the cover to be jarred off.

Coal elevators should be adequately vented to the outside air. One point should be closely watched, however, in all outside vents connecting with passages wherein pulverized coal is carried and that is that the dust be not discharged in the open air in such manner or at such points that it may be drawn into the doors or windows or settle on the roof of some other building.

Fires in storage bins have been another source of trouble to users of pulverized coal. Such bins are of two kinds, those which have a capacity of 15 tons of dried coal or thereabout and those that store pulverized coal. The latter hold from one to five tons each.

**Need Self-Ignition Data for Powdered Coal**

Spontaneous combustion almost undoubtedly plays a large part in the origin of these fires. Few reliable data are available concerning spontaneous combustion under the conditions found in pulverized-coal plants. We do not have, for instance, information relating to the quantity of air that should be circulated through the bin or the temperature which once reached will cause the coal to heat rapidly. We know, however, a few things about the spontaneous combustion of coal under other conditions and they may possibly hold true for pulverized coal. One is that fine coal exposes a larger surface to the air than coal of the same weight but in larger sizes. Consequently, it will take up oxygen more rapidly. Burning is, of course, no more nor less than a rapid absorption of oxygen. Once coal is heated by any agency whatever to a temperature of 150 or 175 deg. F., it conserves enough of its own heat and absorbs oxygen so rapidly that the temperature of actual combustion is soon reached.
Accounts of the following instances of spontaneous combustion are taken from the records of the Bureau for Safe Transportation of Explosives and other Dangerous Articles, which is affiliated with the American Railway Association.

Smoke was noticed coming from a box car loaded with pulverized coal in bulk. The side doors were opened for ventilation. At first actual fire could not be detected, but the entire load was hot and smoke was rising from the surface of the coal. Three hours later the fire was seen coming to the surface. Efforts were made to transfer the contents of the car, but the dust and gas ignited where the men were shoveling. Finally the car was brought to a fire hydrant and a stream of water was used on the dust from time to time. It was eventually necessary to wash the entire load out of the car with a stream of water.

Another case was that of a shipment of pulverized coal in bags. When the doors of the car were opened smoke poured out in great volume. Several bags of the pulverized fuel which had ignited spontaneously were unloaded from the car and the fire extinguished.

An official of a large steel company in the Youngstown district stated that trouble had been experienced from fire in its pulverized-coal bins. There was no way, so far as he knew, in which burning coal could be transported to and deposited in the bins. These bins were close to the heating furnaces and thus absorbed much radiant heat. However as they were not large they probably were supposed to be emptied every 24 hours.

It is a well-known fact that for some reason pulverized coal will stick to the sides of a bin and in time become so caked that it is necessary to jar the bin or use bars to loosen it. In such cases the coal fed to the furnace comes entirely from the center of the bin.

It also is a well-established fact that pulverized or even slack coal stored in close proximity to a furnace, a steam line or a stack for exhaust gases will heat up much more quickly than it would otherwise. As the bins mentioned often caked and were close to the heating furnaces it is reasonable to assume that the coal clinging to the side walls was heated by radiation from the furnaces and in time reached a temperature high enough to cause combustion.

It is well, therefore, to locate all storage and other bins containing pulverized coal as far away from furnaces, open lights and flames as operating requirements will allow. The bins should be so located that no radiation from furnaces, boilers, steam pipes, flues or other heating appliances can materially raise the temperature of their contents. When practicable, bins used in connection with various furnaces should be placed outside the main building. Where this is not practicable they should be separated from the furnace by a non-combustible partition.

Where a bin contains any large quantity of burning coal care must be taken to guard against one important danger when making efforts to extinguish the fire. If a stream of water is poured on red-hot coal carbon monoxide is likely to be generated, and should the bin be located within a confined space men are quite likely to be overcome, for carbon monoxide is the most poisonous gas of all those ordinarily encountered. A fraction of 1 per cent is deadly when breathed. If a strong stream of water is played on a pile of powdered coal within a bin a cloud of dust may be raised, and when it comes in contact with a flame it may ignite, with serious consequences.

Probably the quickest, safest and most economical way to cope with a bin fire is to remove all the coal as soon as possible and let it lie in a pile outdoors until the fire is entirely extinguished.

When fires occur in driers their extinguishment requires considerable judgment. If the fire has not attained much headway it may be put out with water. If it is fierce and the drier shell has become red hot, however, it would hardly be well to introduce water. While I have no personal knowledge I understand that live steam is a highly effective and safe means for extinguishing a fire of this kind.

All electric wires and cables in a plant using pulverized coal should, as far as possible, be carried in conduits. All switches, as far as can be arranged, should be placed on the outside of any building in which coal dust is likely to accumulate, and where they cannot be so located they should be of the oil-immersed type. The necessity for this precaution is shown in the incident mentioned above wherein a switch short-circuited by dust and a switchboard panel was burned out.
Motors that are likely to spark are a potential source of danger. Perhaps the best illustration of this peril is the explosion which occurred at the New Brancephet colliery in England. The pulverizer was driven by a 25-hp, 500-volt direct-current motor, which was inclosed but not explosion-proof. It stood on a platform about 6 ft. from the floor. A short-circuit of one of the armature coils caused severe sparking, whereby the coal dust inside the motor casing was ignited. This caused an explosion of sufficient force to blow off the sheet-iron hood that covered the commutator end of the motor. The flame thus produced ignited the fine dust held in suspension within the building, the resulting flames extending 6 ft. outside the open door and for a height of 15 ft.

The U. S. Bureau of Mines and prominent English authorities have made extensive tests in order to determine whether a cloud of dust can be ignited by an electric arc or spark. For instance, when an arc was formed with a direct current of 100 volts and 100 amp. ignition was obtained in twenty cases out of sixty-two. With a direct current of 240 volts and 27 amp. ignition was obtained nineteen times in twenty-three trials. A motor of 5 hp. on a 220-volt circuit ignited a dust cloud once in every ten trials, and a 10-hp. motor on the same voltage ignited a dust cloud almost every time. Consequently motors of the non-sparking type, preferably squirrel-cage machines, are the nearest to being explosion-proof now available. All machinery should be thoroughly grounded to prevent sparks arising from static electricity.

Whenever inspections for fire hazards are made around any kind of plant where there is a prevalence of dust, whether it be of coal, grain, aluminum, or in fact dust of any kind, the electrical equipment should be carefully examined and especially any device that may spark, such as motors, exposed switches and electric wiring.

When portable incandescent lamps are used to illuminate any place in which there is liability of a pulverized-coal cloud forming the bulb should be protected with a wire guard. It is, however, dangerous to use these portable lights around dusty bins because the dust may be ignited by sparks from possible defective connections and short-circuits. Ordinary hand flashlights are handy and safer.

In closing I would like to emphasize the following considerations: A cloud of coal dust and air mixed in the proper proportions is as dangerous as a cloud of unconfined natural gas and air; a fire in a structure covered with coal dust, even though the dust has been partly consumed, will be difficult to fight, because if this dust once gets in suspension in the vicinity of flames an explosion is quite likely to occur. Such an explosion has no mercy on anyone who may be fighting the fire in the vicinity.

Supplementing Locally-Generated Current
With Central-Station Power

By M. E. Benedict

An ingenious method whereby locally generated power may be supplemented with central-station current has been devised and patented by H. A. Scott, of Saltsburg, Pa., chief electrician of the Kiskiminetas Coal Co. This scheme has been in successful operation at one of the mines of that company for several years.

The plant is equipped with a steam-driven generator of sufficient capacity to carry the average mine load but inadequate to handle the frequent peaks incident to mine operation. It was necessary therefore either to buy another steam-driven unit or to purchase power, which in this case was readily available. The latter course was decided on and a motor-generator set was installed in the mine as near the load center as possible, power being taken underground through a borehole. Under these conditions the motor-generator set would naturally handle most of the load, and as it was desired to hold the amount of purchased power to a minimum Mr. Scott worked out his device. The plan evolved has resulted in only about 10 per cent of the energy used being purchased from the public-service corporation.

The accompanying illustration makes clear the manner in which the device is operated. The generator A is steam-driven and is located near the drift mouth. It is equipped with the switch C and circuit breaker D. Generator B is the motor-generator set within the mine. The feeder from generator A contains the solenoid E, which, when the current output of this machine reaches a predetermined quantity, closes the contacts 1 and 2, thus establishing a shunt circuit from generator B through the solenoids F, G, and H, through the contacts 3 and 4 and 1 and 2, this circuit being marked 9. The

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current traversing the solenoid \( H \) closes contacts 5 and 6, whereupon generator \( B \) feeds into the trolley through the coils \( F \) and \( G \). Current passing through the coil \( F \) by actuating its plunger closes contacts 7 and 8, which gives another path for the return of the shunt circuit 9. This is necessary, as contacts 1 and 2 will open as soon as the generator \( B \) relieves generator \( A \) of part of its load.

The plunger in the coil \( F \) is set to open by gravity when current in that coil reaches any fixed minimum, this current value being adjustable. All the load is then restored to the generator \( A \). The function of the solenoid \( G \) is to act as an overload breaker. When the load on the generator \( B \) exceeds a safe value this plunger will rise, opening contacts 3 and 4. Circuit 9 thus will be opened and generator \( B \) will be out of service until the plunger of the solenoid \( G \) returns to its low position.

### When Mines Are Moisten by Steam It May Be Necessary to Do It Split by Split

**By F. C. Cornet*  
New York City**

Though a dusty coal mine may be sprinkled by a water car or pipe line so thoroughly that the danger resulting from the presence of coal dust is greatly reduced, the process does not begin to compare, so far as effectiveness and low cost are concerned, with the method that uses the ventilating current as a carrier and distributor of humidity.

For the latter process to be possible the air entering the mine must possess a temperature higher than that of the workings and be so humid that it will reach a condition of saturation before the moment when the temperature of the ventilating current is reduced to that of the workings traversed. Thus a certain amount of moisture will precipitate and settle, as would dew, on the floor, roof, ribs and timbers, moistening every square inch of exposed surface and rendering harmless all dust deposited thereon.

Furthermore, this method of humidification has this further advantage that when the moisture precipitates and settles it carries with it the invisible dust that is in suspension in the air, the moisture so long as it remained in the state of vapor having traveled in intimate contact with the dust.

The instant that the lowering temperature causes the ventilating current to become saturated, precipitation commences and continues until the temperature of the mine has been reached, after which all water vapor left in the traveling air remains in it and returns with it to the outside.

During the greater part of the summer season the ventilating current is at a temperature sufficiently above that of our mines and contains enough moisture to insure a deposition of humidity abundant and prolonged enough to render harmless the dust present in all places traversed by the air current.

In mines abundantly and efficiently ventilated it is a matter of common observation in summer that the traveling air begins to shed humidity on entering the mine and continues to do so to the end of its underground progress. This is of great importance, for whether the ventilation be blowing or exhausting, it results in the humidification of not only the aircourses and workings proper but also of the haulage roads, which generally are dusty, often more so than the rooms themselves, a condition due to the action of the wheels on the coal falling from the cars.

What happened fifteen years ago at Monongah, W. Va., when a trolley wire fell on the track a short distance from the mine mouth and thereby caused a disastrous dust explosion, demonstrated that when measures are devised to humidify a dusty mine the

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*Consulting engineer.

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**Diagram:** System of Humidifying Mine by Separate Splits

Air must be so completely heated and so adequately humidified that when it is about to leave the mine it will still be prepared to deposit moisture when passing over surfaces of the temperature of the workings. Otherwise it will leave its work only partly done. To give the air in any one split more heat and more steam it is given all that is available, but for a short time only, and each split has its turn.
haulage roads, beginning at the first set of timbers, should not be forgotten.

The conditions of temperature and moisture under which the ventilating current is able to deposit humidity from the beginning to the end of its underground travel, through the twenty-four hours of the day, are met only during the hottest and most humid weeks of summer. There may be summer days when the atmospheric temperature is abnormally low and the ventilating current, being initially little warmer than the underground workings, deposits all the humidity it is capable of yielding before it completes its passage through the mine. But any deficiency thus caused in the humidification process is sure to be made up in a day or two, when the outside air again becomes warm.

When a mine fails in summer to be thoroughly humidified it will generally be found that the ventilating air volume is either too small or unevenly distributed. The latter occurrence is much more frequent than the former, for if the total volume of air entering a mine is, in general, amply large to satisfy all necessary humidification requirements, it is seldom rightly apportioned. Some of the separate currents into which it is subdivided are sometimes of such small volume and travel so slowly that they reach the temperature of the mine at an early stage of their travel, thus ceasing to spread moisture before reaching the places most in need of humidification.

Some Splits Take Too Much of the Moisture

Conversely, the volume of other splits may be so large that they spread moisture in needless profusion along their whole route, their temperature even on returning to the outside being often found to be higher than that of the workings they have superabundantly ventilated and humidified.

The remedy for these different conditions suggests itself. If the situation of certain workings is sometimes so dry that their humidification by the ventilating current calls for the use of an air volume seemingly out of proportion to their importance, the management of the mine is solely responsible for this condition, which in nearly every case is attributable to lack of foresight.

During seven months of the year, when for the greater part of the time the atmospheric temperature in West Virginia is lower than that of the mines, the ventilating current grows warmer as it travels underground, thereby developing a capacity for absorbing moisture which is evidenced by the drying up of all ventilated places, except, of course, those where water happens to run out of the strata. The more abundant the ventilation, the more marked is this drying process, which sometimes is so active that sprinkling, unless continuously resorted to, is powerless to check it.

When steam is turned into the ventilating current it warms the air, thus enabling it to absorb a certain amount of water vapor, which it sheds later while traveling through the workings, thereby humidifying the latter. Most coal-mining men are familiar with this method, which, however, has been found to fail in so many instances that many have hastily condemned it as not worth bothering about or, at any rate, not sufficiently satisfactory in its application to justify driving the fan by steam when electricity is more convenient.

My opinion, gained from personal experience, is that in all cases where the fan is a blower, exhaust steam turned into the ventilating current will do all that the advocates of the idea claim for it, provided the volume of air thus treated is not out of proportion to the weight and temperature of the steam exhausted by the fan engine.

When the volume of the ventilating current is too large to be humidified as a whole by the exhaust steam, it must be treated in detail, being to that end split into two or more parts, the largest of which must not overtax the heating and humidifying capacity of the steam furnished by the exhaust of the engine. The splitting must be done close enough to the fan to permit the full amount of exhaust steam to be discharged in a controllable and practical way into each split separately, heating and humidifying each in turn.

The full exhaust may thus be turned into each split at regularly recurring intervals, thereby raising its temperature sufficiently and imparting to it enough moisture to develop in it a humidifying capacity that will endure throughout the time it takes the air in each split to run through the workings assigned to it.

Gate Valves Place Heat Where Desired

How the ventilating current may be thus humidified in detail is shown in the accompanying drawing. The fan and engine appearing here are of old types; the wooden housings, having outlived their usefulness, will soon be replaced by a concrete covering of a design calculated, as may be seen, to make the plant fairly efficient. The main air current will be subdivided, as shown, into three splits within a distance of 20 yd. from the center of the fan. Two gate valves, placed near and under the engine in a double system of exhaust piping, will permit the management to direct the exhaust steam at will either into a vertical pipe leading into the atmosphere or into a horizontal pipe laid in a so-called pipe tunnel parallel with the main airway and separated from the latter by a concrete wall through which pass three branch pipes, each controlled by a gate valve and each leading into a separate split, an arrangement designed to permit the separate warming and humidifying of each split in turn.

The system is a most flexible one. All of the exhaust steam may be sent direct into the atmosphere or part of it may be sent there while the rest is directed through the horizontal pipe and one or more of its valve-controlled branches into one or more of the splits. Or again, all the steam leaving the cylinder may be sent through the tunnel pipe and its valve-controlled branches into the three splits concurrently or each split separately, in turn and in rotation.

In order to make the arrangement a success the tunnel is made easily accessible by a good stairway running down from the engine room. A hole 3 or 4 in. in diameter, made in the airway wall at the far end of the tunnel, will keep the latter continually ventilated and fairly comfortable, and two electric lights will be kept burning there at all times. The horizontal pipe will be buried in tamped cinders, as indicated, the valve-operating wheels, their stems and stuffing boxes only standing up out of the leveled and hardened fill.

Even if both lights should happen to be out at the same time, an operator used to the place will be able, despite the darkness, to find the valves rapidly and without difficulty. The latter will have to be operated often in any event, the present plan being to keep the exhaust blowing in each split for 8 hr. at a time, making it necessary to make a change in the gate valves only three times a day. The probabilities are that if the 8-hr. period is departed from it will be made longer, not shorter, thus increasing proportionately the intervals between valve changes.
Responsibilities in Firebossing

Importance of the Work—Other Duties Than Inspecting for Gas

Fireboss in a Large Mine Has No Time for Tracklaying and Timbering—Unusual for a Fireboss to Wink at Unsafe Conditions

FROM some of the letters that have appeared in Coal Age, regarding the work and duties of firebosses, it would seem that many of these officials, following their morning inspection of the mine, are put to other tasks than their own particular work.

During the past twenty-seven years, I have filled all the positions inside the mine, from trapper boy to mine superintendent. Practically, all of this time has been spent in gaseous mines employing firebosses or "gas watchmen," as they were called at times.

Except in a small mine or one that had just been opened where the duties of the fireboss did not occupy his whole time, I have never known a man acting in that capacity to be taken from his own particular work and asked to lay track or timber roadways.

Having been employed as fireboss, myself, it has always been my custom to consider the work one of the most important jobs that fall to the lot of underground workers. Its relation to the safety of life and property makes it such. My experience is that there are many duties of a fireboss other than inspecting for gas.

When a fireboss gives the attention he should to the ventilation of the working places, seeing that crosscuts are made at regular distances apart and brattices and stoppings properly built, he has little time for anything else. This is particularly true where the mine has been developed to the extent that there are abandoned workings to be looked after and kept in safe condition and doors, air bridges and other appliances to be examined daily.

Much Depends on the Fireboss

Capable firebosses are valuable men, in a gassy mine, and should be treated as such. Where they are able to work in harmony with the other mine officials and have their confidence and respect, it will generally be found that conditions in the mine are improved. I have known cases where firebosses were afraid to give orders to the men in their charge, because of the union; but such instances are comparatively few.

In my opinion, the fireboss, in a gassy mine, is of all officials the one on which the mining company must most depend. His responsibility is great and requires him to be a man of sober, industrious habits. His character and reputation for honesty must be beyond reproach.

Reference has been made, by writers, to the question of whether the fireboss should be made responsible to the state or to the company. For my part, I cannot see any material difference between the two cases, if the man is honest and conscientious in the performance of his duties. He must comply with the requirements of the mining law and act without fear or favor, whoever employs him.

It is contrary to my belief to think that any company or corporation would want their fireboss to slight their duties; because there is too much at stake in both life and property. It may happen that a mine superintendent, or a foreman, will expect his fireboss to wink at some conditions that he knows entail some risk; but such instances are the exception and not the rule. The fireboss who is content to do contrary to what his judgment tells him is safe is unworthy of respect, whether he acts according to his own will or under pressure from a superior officer.

Cumberland, Wyo. WYOMING.

Improvement Needed in Shotfiring

Progress slow in methods of blasting coal—Advantage gained by employment of special crew for that purpose—Large proportion of miners shoot their own coal.

When one considers how prone a large number of coal operators are to continue old methods and practices, in the operation of their mines, it would seem that the coal-mining industry in this country is very much like a big overgrown baby, asleep and not mindful of what is going on around it. This remark is suggested by the reading of an excellent editorial that appeared in Coal Age, May 25, p. 870. The article is entitled "Power Drilling"; but, in addition to drawing attention to the use of electric drills or jackhammers, by a few miners who have thrown aside their old hand-drills and adopted these new devices for drilling their holes and cutting hitches or footholds for timbers, the writer alludes to the need of similar improvement being made in the work of shotfiring as now performed in mines.

This is one phase of coal mining that has not been given the attention it should have received. The reason is hard to understand, inasmuch as most mining men willingly admit that the present system of shotfiring entails great risk and is expensive for both the operator and the miner. It is not too much to say that coal operators would be surprised if they could see the amount of coal that is shot to pieces and lost, if miners fire their own shots.

Thoughtful men familiar with coal mining will readily allow that there is room for improvement in this matter. The entire work of drilling, charging and tamping the holes and firing the shots should be in the hands of men whose knowledge and judgment will yield better results.

Special Crew Given the Entire Charge of Blasting

My plan would be to employ a special crew, call them "shotfiring," if you will; but charge them with the whole duty of blasting down the coal, leaving to the present day miner only the work of loading the coal into the cars ready to be hauled out of the mine. Instead of miners, these men would then be called "loaders."

There are advantages, in this arrangement, that should appeal to every coal-mining official. Not only would this dangerous work be more directly in the control of the mine superintendent or foreman, but it would afford them the opportunity to instruct in regard to the proper methods of blasting and the use of explosives; but there would be fewer accidents and a larger amount of marketable coal would be produced by the old method.

In the Interest of Safety

As a means of safety, some companies have employed shotfiring to shoot the holes, which are drilled and charged by the miners. Other companies have gone a step farther and employed "face bosses" to see that the holes are properly placed and charged with the right amount of powder. While this is a step in the right direction, it only touches the margin of the real problem.

It is my belief that an investigation would show that 95 per cent of our bituminous coal is blasted by miners. The work is in the hands of men of varying degrees of knowledge, experience and judgment in performing the work. The results can readily be imagined and no sane person will deny that there is an inestimable amount of coal lost and lives sacrificed by reason of this condition.
In closing, I want to refer, incidentally, to the benefit to be derived by the miner or miner's family, as we must now call him, by reason of the fact that he is relieved from the burden of having and maintaining his own drill and pick. Moreover, he is not charged with the expense of powder, nor has he the same responsibility for keeping his place timbered and safe.

OSTEL BULLOCK.
Central City, Ky.

Limitation of Certificates
Coal mining, past and present—Need of mine officials keeping themselves up-to-date—Limiting the life of the certificate a means to that end.

COMPARING the mining of coal, only thirty-five years ago, with present-day methods and equipment is like drawing a comparison between the old-fashioned stagecoach and the automobile. We find nothing to justify the conclusion that the method in use then is as bad now as it has been thirty-five years ago.

New methods and practices have been developed which make the coal-mining industry safe, but how often are they used? The new methods must be learned and adopted by the mine owners or by the mine officials. This is the greatest difficulty, as many of the mine owners and mine foremen are opposed to change and have a tendency to stick to the old-fashioned methods and practices which they have learned.

LIMITING LIFE OF THE CERTIFICATE GIVES INCENTIVE TO STUDY

Taking these facts into consideration, I believe it is needful that some means be undertaken that will act as an incentive to mine foremen, mine superintendents and managers to inform themselves and become familiar with all improved means and methods constantly being placed at their disposal.

Speaking of mine officials, I would say that there are a number of mine officials, including mine superintendents and foremen, assistant foremen and firebosses, who have classed this as important, a few have assumed to think that the certificate is unnecessary in the outfit of a practical mine foreman; other than their own personal ambitions.

It is with regret that we are compelled to acknowledge the lack of such ambition, in a large number of mining men holding official positions. How often has it been stated, in Coal Age, that when a man has secured his certificate, in the majority of cases, he ceases to study, read and keep himself informed in regard to new methods and appliances relating to mining.

While I cannot feel that it would be reasonable to compel certified men to go through all that they were required to pass through in order to secure their first certificate, I do feel that every holder of a certificate should be obliged, at certain set periods, to go before a board and take an examination that would prove that he had kept pace with progress, by reading and studying, and is capable and up-to-date on all matters pertaining to the mining of coal, in his present official capacity.

To my mind, this is the surest way of keeping men in touch with the present stage of mining, both in respect to safety and economy. I do not have the old certificate withdrawn, but endorsed by an examining board, from time to time, at such fixed periods as would seem best. I hope to learn the thoughts of others along this line.

Mayport, Pa.
JAMES THOMPSON.

Re-tiring Mine Locomotives

Coal of pipes surrounding wheel operated as a blower, using coal oil or gasoline and compressed air.

NOT long ago, I remember, an ingenious device for a good practical method of removing worn tires from the wheels of a mine locomotive (Coal Age, Apr. 20, p. 660). It occurred to me that a rig we have used for that purpose would be of interest to him and others.

We designed the apparatus for our own use, after reading a description of such a device in the Railway Mechanical Engineer, Jan., 1920, p. 36. We have used this apparatus now for some time and it has proved highly satisfactory.

In the accompanying figure, is shown a diagram illustrating the construction of the device, which I would call a coal-oil locomotive tire heater. Briefly described, the apparatus consists of a coil of 1 in. pipe, passing twice around the wheel from which the tire is to be removed.

The inside diameter of the coil is made slightly larger than the diameter of the wheel. We are using a 10-gal. Haupt heater coil-oil tank, having a hose connection with the coil of pipe. Compressed air at about 70 to 80 lb. pressure is used to force the oil through the coil of pipe.

As indicated in the figure, 1/16-in. holes are drilled 21 in. apart around the inside of the coil, starting at a point about 2 ft. from where the oil enters the coil. I believe the apparatus would work successfully, however, with a less air pressure than what we are using.

As stated previously, the use of this device has given complete satisfaction, both in removing wornout tires and applying new ones; and if carefully handled the operation is not dangerous. Moreover, I would suggest keeping it well away from a low roof in the mine when used underground.

J. CAMPBELL, Supt.,
The Lehigh Valley Coal Co.
Dritton, Pa.

Working Contiguous Coal Seams on Moderate Pitches

Main slope driven on the full dip—Use of machines determines direction of driving rooms—Examples of successful workings.

An INTERESTING question relating to the working of two contiguous seams of coal, lying on a moderate pitch, was answered in Coal Age, Apr. 27, p. 702. This is a matter in which I have always been deeply interested and anxious to obtain all the information possible from the experience of others.

The question to which I have referred, a 15-ft. seam of coal having a hard floor was overlaid with a 7-ft. parting of shale, which was again overlaid with a 4-ft. seam of coal having a fireclay roof. The two seams had an inclination of 23 deg.

SLOPES DRIVEN THREE ABREAST PROVIDE GOOD VENTILATION

As stated in the reply to the question, the method of attack should be to drive the main slope on the floor of the thicker and lower seam. Owing to the large amount of air that can be driven through these slopes, the roof being 23 deg, and the driving of these slopes three abreast will be expensive, but will doubtless pay in the end. The middle slope can be used as the main intake and haulage road, and the two side slopes as return air-courses for their respective sides of the mine.

If the reply to this inquiry assumes that the seams outcrop on the property, and it is stated that the average depth of cover is 700 ft., which would suggest extra care and caution being taken in the working out of the coal. It is questionable whether the shale top of the big seam will make a good roof in working that coal. Therefore, I would suggest leaving, say 2 ft. of topcoal up, in the first working, which will leave 12 ft. of coal to be taken out in two benches.

FIRECLAY ROOF TREACHEROS

In regard to the upper seam, which is only 4 ft. thick and overlaid with a bed of fireclay, it is my opinion that it will probably be better not to mine this coal at all. The fireclay would make a very treacherous roof, particularly if the strata are wet. However, if the roof can be managed and this seam is worked the coal should be taken
out through a tunnel and hoisted on the main slope in the thicker seam.

Now comes the question as to whether the mine is to supply steam coal or coal for coking. In the latter case, a large percentage of lump coal will not be required, as the product will need to be crushed in either case. On the other hand, if the mine is to supply coal for domestic purposes every effort must be made to obtain as large a percentage of lump as possible. In that case, it will be generally agreed that machine mining should be adopted in preference to pick mining; and just here is the parting of the ways.

It is evident that the answer given to this question contemplates pick mining, since it states that the coal is worked out to the rise of the levels or gangways. Driving the rooms to the rise would eliminate the use of machines on a 23-deg. pitch.

ARRANGEMENTS FOR MACHINES

Without reflecting on the method of pick mining, however, let us assume that this coal is to be mined with machines. In that case, arrangements must be made to drive the rooms practically on the strike of the seam, which was the plan adopted by the Owl Creek Coal Co. and described in my article which appeared in Coal Age, March 16, p. 439.

In that plan, instead of driving the rooms up the pitch, butt headings are driven to the rise of the levels and rooms turned to the right and left of each pair of butts, always giving the rooms a slight inclination up the pitch so as to provide a grade in favor of the loaded cars.

As explained in that article and again referred to in my letter, June 1, p. 925, a small portable hoist is set at the head of each pair of butt headings and attends to the gathering and distribution of the cars in the rooms. The same hoist also handles the machine in passing from one room to another on those headings.

This plan is working successfully at two mines in the Gebo district, where the pitch is 23 deg., and is the only plan that has given satisfaction under these conditions. The chute-mining system, previously used in the Gebo mine, proved unsuccessful and had to be abandoned for the method just described. This mine, to my knowledge, is the only one of few pitching seams using machines in mining the coal.

Denver, Colo.

C. M. SCHLOHS.

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Estimating Number of Cars Needed to Operate Mine

Important to Know Height of Coal in Determining Capacity of Cars and Other Data—Length of Haul—Kind of Locomotive or System of Haulage Employed

A WHILE ago I was called on to solve a problem similar to the one asked in a recent examination and which appeared in Coal Age. The question required me to estimate the exact number of cars needed to operate a mine successfully under certain conditions. The answer given to the examination question in Coal Age showed me the method of proceeding.

However, I want to say that in order to arrive at a reliable estimate, in a problem of this kind, it is important to know more data than are commonly given in such a question. For example, one should know the height of the coal, which will determine very largely the size and capacity of the mine cars, besides giving an idea of about the amount of coal a miner will dig in a day.

It is important to know, also, the kind of haulage locomotive employed, whether a storage-battery or a trolley locomotive, as the latter is commonly operated at a greater speed than the former. These and other data such as the length of haul, grade and condition of track materially modify the actual results in practice.

The proposition presented to me was somewhat unusual from the fact that it involved an extra long haul for the very small output desired, as I was asked to estimate on a daily output of 100 tons, in 8 hr. The main haul was approximately three miles each way, with a 3 per cent grade in favor of the loaded cars.

My report was to state the capacity and number of cars needed, and the type and weight of locomotive required for the most economical operation of the mine. Although my information warranted me in assuming that a 500-volt, direct-current transmission is economical for a distance up to four miles, I decided that this small tonnage would not justify the expense of electrifying the mine for a trolley locomotive.

After carefully considering the problem from every angle, I decided to recommend the use of a storage-battery locomotive. By boosting the battery an hour at noon, each day, the locomotive would have a capacity that would enable it to operate successfully throughout the day.

My estimate was based on a speed of 3 mi. per hr., on the upgrade, and 6 mi. per hr., coasting on the downgrade, which I considered safe. On this basis, the three-mile trip outby, at 6 mi. per hr., would require 30 min.; and the same trip inby, at 3 mi. per hr., 60 min., making the time for the full round trip one hour and a half.

To be on the safe side, I allowed 15 min. for making up and changing trips at each end. This made the full time two hours per trip, or four trips a day. To handle a daily output of 100 tons, on this basis, would necessitate hauling 25 tons of coal per trip.

For ease of calculation, therefore, I estimated on hauling twelve 2-ton cars, or 24 tons of coal per trip. Then, assuming the men would load 8 tons of coal per man per day, there would be need for twelve loaders; and if these were working in pairs each place would need 24 tons a day, or two trips per hour.

In the 2-hr. interval between trips, each place would then produce two cars of coal and the six working places, together, would furnish the twelve loaded cars needed for the next trip. At the lowest estimate, I concluded there should be at least twelve cars in transit, twelve cars on the tippie unloading and twelve cars in the mine in process of loading, making thirty-six cars in all. In addition to this number, I added an extra four cars to cover what might be laid aside for repairs, or loaded with timber or other supplies awaiting movement into the mine.

***

A.MINE ENGINEER.

Colo.

The correspondent's error lies in computing the cycle of a single car. For example, each car is held 2 hr. in the mine, although it takes but an hour to load it. Then, it is 2 hr. in transit and 2 hr. waiting at the tippie for the next trip, making 5 hr. in all. Each car would then average 8 + 5 = 12 trips, per day, and haul 2 × 12 = 36 tons of coal a day. But this would make the 36 cars haul 36 × 36 = 155 tons of coal a day, which does not check with my estimate, for some reason that is not clear to me. I would appreciate being told where my error lies.

A.MINE ENGINEER.

Colo.
Examination Questions Answered

Kentucky Mine Foremen's Examination.
Lexington, May 30, 1922

(Selected, First-Class Questions)

QUESTION—State what, in your judgment, are the most essential qualifications to make a successful mine foreman.

ANSWER—He must be straightforward, honest and fair in all his dealings, never making promises he cannot keep. He must be broadminded, kind and patient, but firm, and a student of mine nature and a man of foresight and good judgment. He must be industrious and have a thorough technical and practical knowledge of mining, gained by study and experience.

QUESTION—Describe the various instruments that you would use first-class mine foreman or fireboss, would use to determine the condition of the mine atmosphere, the quantity of ventilation, the temperature, humidity and other general conditions. Explain fully how these are used.

ANSWER—A first-class mine foreman must have and be able to use a safety lamp of approved type, understand its construction and the danger of its misuse in the examination for gas or when used for work in a gassy mine.

The mine foreman must have and use an anemometer for determining the average velocity of the air current passing in an airway. He must be able to calculate, from the observed reading of the instrument, the quantity of air in circulation. To determine the temperature and humidity of the mine air, the foreman should have and use a wet-and-dry bulb hygrometer; and be able to calculate, from its reading, the degree of humidity or percentage of moisture in the air.

The foreman should have and use a water gage to determine the pressure producing circulation in the airways in the point where the observation is taken. He must be able to calculate, from the readings of the gage and the anemometer, the horsepower on the air. From this he should be able to estimate the efficiency of the ventilator, after ascertaining the horsepower of the engine driving the fan.

In addition to these instruments, the mine foreman should have and use a compass for setting sights, giving the desired direction of driving entries and rooms. He must have and use a tape measure for measuring distances, and finding the size of airways and break-throughs in the mine. If the seam has much inclination, the foreman should have a clinometer for measuring the degree of the pitch. Every foreman is supposed to have a reliable watch that he carries with him at all times.

In the examination of abandoned areas or workings, the foreman should have and use a carbon-monoxide detector. For the purpose of accurately determining the percentage of gas in mine air, the foreman should have and use a gas indicator that will eliminate the evil habit of guessing the percentage of gas from the height of the flame cap. This is important, as it is seldom that any two fire bosses reach the same conclusion in this respect.

QUESTION—The figure of a section of an airway is a right-angled triangle, having the base and perpendicular equal, and the length of the hypotenuse 15 ft. What is the area of this figure and what will be the quantity of air passing in this airway when the velocity of the current is 300 ft. per min.?

ANSWER—The area of the hypotenuse of a right triangle is equal to the sum of the squares of the two sides and these being equal, in this case, the square of either side is equal to one-half the square of the hypotenuse, or \( \frac{1}{2} \times 15^2 = \frac{1}{2} \times 225 = 112.5 \). Again, the two sides being equal, the square of each side is evidently twice the area of the triangle. Therefore, in this case, the area of the given triangle is \( \frac{1}{2} \times 112.5 = 56.25 \) sq.ft.

QUESTION—(a) If you were in charge of a mine, would you consider it dangerous if dry and dusty dancing face, even if gas was not present? (b) What precaution should be taken under conditions of solid shooting, in a mine of this character?

ANSWER—(a) A dry and dusty condition, at the working face in a mine, is always dangerous whether or not gas is present; but the presence of gas greatly increases the danger from dust. Also, the danger is much greater where the coal is blasted, particularly if black powder is used for that work.

(b) The practice of solid shooting should not be permitted in a dry and dusty mine. In any event, the working places should be kept free from accumulations of dust and well sprinkled before any shots are fired therein. Only permissible powder should be used. The safest practice is to employ practical shotfiers, to examine, charge and fire all holes for the miners and which, in their judgment, are safe. Each place must be examined for gas before a shot is fired.

QUESTION—(a) What should be the first thing for you to observe as a fireboss, on entering a mine? What constitutes a good safety lamp (b) for general work; (c) for testing purposes?

ANSWER—(a) On entering a mine and having regained his sight, the fireboss' first duty is to examine the condition of his lamp and know that it is burning properly, before proceeding to the main intake of the mine or section he is to examine. This does not take the place of a fireboss carefully examining and testing his lamp when assembling the same, before entering the mine. On reaching the intake his first act is to note carefully that the usual volume of air is in circulation.

(b) A good safety lamp for general work must be of a type approved by the Federal Bureau of Mines. It must give a good light and not be too sensitive to gas. It must be simple in construction, having few parts that are easily and quickly assembled. The lamp should be protected from strong air currents or a sudden rush of air, by means of a good bonnet. The air should enter the lamp from a point below the frame, in the lamp, as much as possible the tendency of the flame to smoke. Preferably, the lamp should burn a good quality of sperm or cottonseed oil, and be provided with a pricker, for cleaning the wick as may be required.

(c) A good lamp for testing purposes must give a free upward circulation of air within the lamp, which must burn a non-volatile oil and be provided with some form of indicator that will eliminate the bad habit of guessing the percentage of gas present in the air, by estimating the height of flame cap produced.

QUESTION—Is there any difference between marsh gas and firedamp? If so, what is the difference? Explain fully.

ANSWER—Yes. Marsh gas is the common name for undiluted methane (CH4), while firedamp is a mixture of this gas with air, produced in inflammable or explosive proportions. While the term "firedamp" is generally understood to refer to an inflammable or explosive mixture of methane and air, other gases may be and often are present in a firedamp mixture.

QUESTION—Are there any conditions when a large body of pure marsh gas could be rendered more dangerous than a large body of firedamp? If so, explain why.

ANSWER—This is not a practical question in its application to the presence of gas in mines; because a large body of pure marsh gas, accumulated in a mine, a greater menace to safety than the same volume of firedamp, because when the marsh gas is converted into a firedamp mixture by the addition of air, the volume of the mixture is greater than the volume of the original marsh gas.
Smokeless Output During May Exceeds That of April by Over 800,000 Tons

SMOKELESS coal production in the West Virginia fields increased from 2,860,961 net tons in April to 3,687,874 tons in May, as shown in the following table. The May output was 712,163 tons higher than for May last year, only the New River field showing a decrease.

<table>
<thead>
<tr>
<th>District</th>
<th>1922</th>
<th>1921</th>
<th>Decrease</th>
<th>Increase</th>
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<tr>
<td>Pocahontas</td>
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<td>798,336</td>
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<td>364,283</td>
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<td>506,059</td>
<td>447,480</td>
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<td>Total, May</td>
<td>3,687,874</td>
<td>2,973,711</td>
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<td>Total, April</td>
<td>3,660,961</td>
<td>1,978,153</td>
<td>2,672,808</td>
<td>712,163</td>
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<tr>
<td>Total, March</td>
<td>3,399,571</td>
<td>1,710,151</td>
<td>1,689,420</td>
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The N. & W. Ry. hauled 2,525,235 tons of the May output, the Virginian, 651,739 tons, and the C. & O., 510,900 tons. Total coal movement of these railroads in May is shown in the following table:

HAULED BY NORFOLK & WESTERN

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<tr>
<td>Pocahontas</td>
<td>2,019,185</td>
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<td>Total, Tug River</td>
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<td>Total, March</td>
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HAULED BY CHESAPEAKE & OHIO

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<td>Winding Gulf</td>
<td>209,510</td>
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<td>Kanawha</td>
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<td>Total, March</td>
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HAULED BY VIRGINIAN RAILWAY

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<td>388,846</td>
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<td>Total, March</td>
<td>451,669</td>
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The situation, in the opinion of many in Washington, is such as to emphasize the advisability of forming an organization within the coal industry along the lines of the Construction Council recently formed in the building industry. The possibilities of a coal council have come in for serious consideration during recent weeks. The wish has been expressed that such an organization be formed and that every effort be made to induce Secretary Hoover to become its active head. While no opportunity has been afforded for any general consideration of the plan, those who have discussed it believe it would be the most direct approach to the problem of stabilizing the coal industry. Practically the identical idea has been put into effect by the construction industries and somewhat similar ends were sought by the motion-picture industry in engaging the services of Will H. Hays and by the baseball interests in putting their affairs under the direction of Judge Landis.

That the coal industry entertains a different feeling toward Secretary Hoover from that which it had at the time the Frelunghysen bills were under discussion was shown by the anxiety occasioned in the industry when it was erroneously reported that Secretary Hoover had resigned. Numerous appeals reached Washington asking that he be induced to stay on the job at least until the coal situation had been straightened out.

Water-Borne Southern Coals Outdistance All-Rail Fuel in New England

SOUTHERN coals via tidewater seem to have captured the majority of the New England markets which can be served from rehandling points on the coast. All-rail coals practically dominated throughout 1920, with the exception of the period of the switchmen’s strike in April, and until August, 1921, reaching the peak during the first week in August, 1920, with a movement of 320,000 net tons. From that week receipts fluctuated, but with a steady downward trend, until a year later they dropped below the tonnage of water-borne coal from Hampton Roads. Since that time the all-rail suppliers have seen more and more of their territory slip over to the sellers of Southern coals, who in one week in March of this year moved 300,000 net tons from Hampton Roads alone.

The decline of the all-rail movement was definitely started when the increase in freight rates, late in 1920, put the Southern coals in better position by reason of the softening of coastwise vessel freight rates. Reduced wages in southern West Virginia mines then furthered the competitive position of those coals. Of course, the present strike has reduced production in central Pennsylvania and affected that tonnage available for distribution in New England, but even with the resumption of mining the relative positions of these two coals will not be disturbed by the July 1 freight-rate reductions, as the greater saving on all-rail freights is partly offset by a smaller reduction—mines to tide—on Southern coal. The remainder of the freight cut differential is easily overcome through low mine costs and the plenitude of coastwise vessels, which means cheap water rates.

The diagram below, compiled from the published reports of the Geological Survey up to the end of June, compares the shipments of soft coal through the New England rail gateways with cargo shipments over piers at Hampton Roads.

[Diagram showing weekly receipts of bituminous coal in New England via tide from Hampton Roads and all rail]
Text of Priority Orders, Issued July 25

Service Order No. 22, issued by the Interstate Commerce Commission Tuesday, July 25, 1922, is as follows:

The subject of routing of freight traffic being under consideration and appearing to the Commission that an emergency exists upon the lines of all carriers by railroad in the United States, the following Order is hereby made, which requires immediate action, and that each of such carriers, by reason of unfavorable local conditions and the traffic offered to it, is hereby directed, in order best to promote the service in the interest of the public and the commerce of the people, it is ordered and directed:

That from and after July 26, 1922, and until the further order or direction of this Commission, all said common carriers by rail, and all railroads in common operation with any of the carriers, are hereby directed to discontinue the routing of traffic so as to properly serve the public interests, and in order to best promote the service in the interest of the public and the commerce of the people, it is ordered and directed:

That inasmuch as such disregard of routing is deemed to be unjust, the rates applicable to traffic so forward by routes other than those designated by shippers, or by carriers from which the traffic is received, shall be the rates which were applicable at date of shipment over the routes so designated, unless the rates applicable over such designated routes are higher, in which event the rates applicable over the route of movement will apply.

That in each instance where the traffic is routed, or rerouted, by carriers by railroad under the authority of this order, the carrier responsible for such routing or rerouting shall, within three days from the date hereof, file with the Interstate Commerce Commission a notice addressed to the consignee of the traffic, stating the carrier responsible, the route or routes made by such carriers, or by carriers from which the traffic is received, or to the owner- ship of the cars, and that all rules, regulations, and agreements are hereby suspended and superseded in so far only as conflicting with the directions hereof.

That the rates applicable over the route of movement is less.

That in the case of shipments in private cars, which are subject to calculation of empty mileage, and also of fruits and vegetables, live poultry and other shipments customarily recognized as such, a telegraphic notice of the change of routing or rerouting shall be sent to the consignee by the carrier responsible therefor.

That in executing the directions of the Commission contained in this order, the common carriers involved shall proceed without reference to contracts, agreements or arrangements now existing between them with reference to the divisions of the rates of transportation applicable to said traffic; that such divisions shall be settled and adjusted between the shippers and respective routes over which the traffic is moving and that charges for such traffic shall be made in accordance with the terms and schedules of rates, fares and charges, as those terms are defined in said Act, will be the same as they would have been if such routing or rerouting had not taken place, unless, as above provided for, the rates applicable over the route of movement is less.

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Government Control of Coal Distribution Expected To Continue Throughout Winter

By Paul Wooton
Washington Correspondent of Coal Age

Washington, July 31.—Actual control of the distribution of practically all the current coal production will be effective within forty-eight hours, Secretary Hoover announced this morning. Henry B. Spencer, administrative member of the President’s committee, opened temporary offices this morning in the old War Trades Board Building. Permanent offices are being prepared for the committee in the American Railroad Association Building, 718 18th Street.

Mr. Hoover stated this morning that there is no sign on the horizon to indicate an approaching settlement of the coal strike. He expressed the opinion that 8,500,000 tons weekly will keep the country fairly well supplied with coal if the distribution plan results in an equitable apportionment of the coal mined. He stated that practically all of the western Kentucky operators are now in line.

Officials in Washington are being deluged with requests for coal. These requests are being returned promptly to the governors of the states from which they came. Incidentally there is evidence that some of the governors do not relish the task which has fallen to them. While many governors are quick to resent federal activities which can be interpreted as an encroachment on the rights of the state, there now seems to be a desire on the part of those same governors to suggest that the federal government is in a much better position to say who shall and who shall not have coal. Secretary Hoover has made it plain that the federal government will do nothing more than allocate coal to the primary purchaser and look after the coal supplies for the interstate railroads.

While, generally speaking, the public utilities still are fairly well supplied with coal the telegrams reaching Washington indicate that there are many weak sisters among them.

The advance in the wage scale from the 1917 to the 1920 basis in some of the non-union districts is explained on the ground that poor car supply had reduced the number of working days to the point where an additional wage inducement was necessary to keep the men interested.

That control of coal distribution must continue for the remainder of the calendar year and possibly for the remainder of the coal year is becoming more and more apparent. A large corps of workers will be required. It is probable that a deficiency appropriation of $200,000 will be asked for the purpose.

The problem before the government differs considerably from that with which the Fuel Administration had to deal during the war. The situation now is a traffic problem. It is somewhat similar to the situation handled successfully by the Central Coal Committee in 1919 and 1920. As a result of the excellent work done by that committee it is probable that the new organization will be formed along the line of that committee. It may be stated, however, that the methods used by the Central Coal Committee in regard to paying for coal will not be followed. Since the situation is being controlled through the powers vested in the Interstate Commerce Commission, the execution of any plan must be carried out by the railroads. For that reason Henry B. Spencer, the former chairman of the Central Coal Committee, has been chosen as the fifth member of the President’s committee.

In addition to the need for an appropriation it is apparent that the administration soon will request legislation giving out-and-out power to fix prices and to seize coal. There is a possibility that a revolving fund will be asked, so that the administrative committee can buy and sell coal when occasion demands.

Even if arbitration negotiations were begun at once it is realized that some time necessarily must elapse before the union fields actually would be producing coal. By that time the country will be so far behind in coal production that supplies will be insufficient for all purposes. For that reason there is certain for many months to be a trying problem in the attempt to see that the more essential activities receive necessary fuel requirements. Control of distribution has not begun as yet, and it will be several days before the necessary machinery can be put into shape for its inauguration. The fact that the job is a railroad traffic problem probably is the reason why Dr. Harry A. Garfield was not requested to take over actual administration of the work. The desire was voiced in official circles that he be made the administrative member of the President’s committee as recognition of the work he did during the war and to prevent what would seem to be a further mark of ingratitude for the valuable public service that Dr. Garfield rendered as Fuel Administrator. So far as can be learned, no invitation was extended to him. The reason, doubtless, was that he already had announced that he would not accept such an appointment although the apparent fact that the actual administrator in this situation must be a traffic man may have been the compelling one.

Railroad Strike Situation Encouraging

Reports reaching Washington during the last three days as to the improvement in the railroad strike situation have been encouraging. Apparently, the railroad executives were not thoroughly aroused to the seriousness of the situation before the shopcraft strike. As a result there was hesitancy in taking drastic action to operate with new men. The seriousness of the situation soon became apparent, however, and the results of the delayed effort are only now becoming apparent, it is believed. Traffic is moving better through all the vital junction points and there have been encouraging responses to the railroads’ invitations for outside shopmen. The situation will be relieved further, it is believed, as industry is slowed down by lack of coal, thereby making available more men from whom the railroads can draw workers.

The coal operators report much better prospects of obtaining men for the mines that they are opening in the union fields. Once it is established that protection is adequate, it is believed that enough men can be obtained in the Pittsburgh district and in central Pennsylvania to produce a considerable tonnage of coal. In addition, that the building up of output from mines in the union districts will be a slow process. John L. Lewis’ efforts to call together a rump conference of operators in the Central Competitive Field is not being taken seriously by coal operators or in official circles. While it is admitted that there are certain operators in each of the four states who would join Mr. Lewis in this effort, the tonnage that they would control would be insignificant as compared with the total output of the Central Competitive Field. Nevertheless, Mr. Lewis’ utterances indicate that the idea of negotiation is being kept alive.

Secretary Hoover on July 30 announced the details of his plan covering coal distribution. His statement reads as follows:

“The federal government will limit its activities in coal distribution entirely to interstate questions. Mr. Spencer has been appointed Fuel Distributor, not Fuel Administrator, because the federal distribution is concerned with coal distribution between the different states, not with coal administration in the sense of the war organization.

“Control of coal distribution to individual consumers within the state boundaries is of course in the hands of state authorities except for railway coal. The methods of handling coal for railways responsible to the Interstate
Commerce Commission will be determined directly from Washington in maintaining interstate commerce. "Distribution problems vary in different groups of states; that in New England, Middle Atlantic, Southern, Middle West, Northern Lake States, Intermountain and Pacific States. The last two groups are able to look after themselves and are not now embraced in active administration. Each state outside the above groups has been required to canvass its situation as to stocks and requirements in order of the priority in different classes—public utilities, public institutions, households and industrial coal. "Each state has been asked to make such rules and regulations as it may see fit to control speculation and distribution within the boundaries of the state. It has been suggested that the co-operation of their state wholesale and retail dealers' associations should be secured. The federal government has no authority and can exert none in this matter beyond moral pressure. "Each state that must import coal from other states has been asked to create a central state agency or committee for the purchase or guarantee of purchases of coal that may be imported into the state from other states or from abroad, all coal to be consigned to an agency designated by the state. By this arrangement a great deal more mobility is given the state authorities in shifting coal to meet its local emergencies. Furthermore, this arrangement will remedy the financial impossibility of asking coal producers to ship to strange consumers whose reliability must be established. The repudiation of coal during the last strike caused great losses and litigation. "The Federal Fuel Distributor will place these state central agencies in contact with the coal producers in states of coal surplus and will undertake to see that coal is sold to the central purchasing agencies at a fair price. The state purchasing agencies will indicate the destinations within the states to which coal is to be shipped. "The federal distribution will prorate the available supplies between states following the general basis of priorities declared by the Interstate Commerce Commission. Where coal is already flowing through natural channels to priority concerns approved by the state agencies, it will continue, but it will form part of the state quota. "The whole plan is one of complete decentralization into the hands of the state authorities, the federal agencies acting solely in interstate commerce." Secretary Hoover emphasizes the fact that his organization is the Interstate Commerce Commission. He announced that instructions had been issued to all state authorities to limit bunkering only to the next port of call. After Aug. 1 all ships sailing from foreign ports must bunker for the round trip. While Canada will not be treated differently than would be the case were it part of the United States, there will be insistence that she take full advantage of opportunities to secure imports from elsewhere. With the return of H. Foster Bain, director of the Bureau of Mines, from Alaska, he will represent Secretary Fall on the President's committee. George Otis Smith, director of the Geological Survey, will continue to co-operate with the committee, but from this time forward will devote more of his time to the compilation of data for the subsequent use of the fact-finding commission. Secretary Hoover announced that every effort is going to be made to decentralize the handling of the coal situation. Great reliance is being placed upon the state governors, the state public utilities commissions and upon the railroad administrative officers and coal operators in the different districts. Mr. Hoover stated that there would be no direct effort from Washington to prevent retail profiteering. This he is leaving to the states, although every effort will be made to cooperate closely in any action they may take. M. H. Ayresworth, executive secretary of the National Electric Light Association, and A. I. Phillips, engineer for the American Gas Association, have been in Washington making arrangements preparatory to the opening of Washington offices so that the public utilities can cooperate closely with the government during the emergency. The utilities expect to work largely through the state public utilities commissions. The governors of the following states have undertaken to erect the necessary administration to control profiteering and distribution of coal within their states: Ohio, Indiana, Illinois, Michigan, Wisconsin, North Dakota, Minnesota, Maine, Massachusetts, Rhode Island, New York, New Jersey, Maryland, Pennsylvania, West Virginia, Iowa, Oklahoma, Florida, Kentucky, Tennessee and Louisiana. Kansas already has an establishment under its Industrial Court. It is not considered to establish coal control in the intermountain and Pacific states, as they have supplies of coal and fuel oil. "The following have so far been designated as members of the advisory committee of operators from the producing coal districts under the chairmanship of C. E. Bockus, of Virginia: E. L. Douglas, of Kentucky; George S. Francis, of Pennsylvania; E. C. Mahan, of Tennessee, and W. J. Magee and E. E. White, of West Virginia; also C. E. Tuttle to advise as to Lake and Northwest movement, and Le Buvon H. Willard to advise on bunker and tidewater movement.

Three Coal Roads Declare Embargo in Favor of Coal and Food

THE Norfolk & Western, Chesapeake & Ohio, and Louisville & Nashville railroads have declared embargoes over their lines against the acceptance and transportation of coal, coke and other fuel. They have been ordered to embargo a large number of the shipments of coal. This course was taken under the Interstate Commerce Commission's declaration of an emergency, which authorized roads embarrassed by the shortage of coal to embargo the shipments to strike if necessary to transportation. The embargo orders are designed to conserve all the equipment and facilities of the three carriers for the transportation of coal. All the railroads have been ordered to embargo the quantities of coal until the shopmen went out, after which their tonnage was immediately cut in half.

Managements of the roads notified the Interstate Commerce Commission that they would modify the embargo orders as rapidly as conditions permitted, and would gradually accept other classes of freight for movement as they were able to transport it without interfering with the shipment of coal.

Here's a Rocky Mountain Invitation

"COAL man from anywhere and everywhere will be welcomed at our fall meeting in Glenwood Springs." is the invitation of the Peabody Rock Mountain Coal Mining Institute issues to the world for its three-day session in beautiful Glenwood Springs, Col., beginning Sept. 7. The Institute has planned a program which includes the pleasures afforded by the mountain region around Glenwood Springs, in addition to technical meetings of wide scope. Papers scheduled for the meetings are these: "Electricity in Coal Mining," by L. M. Cargo and H. S. Sands, of Denver, Col.; "The Practical Use of Pulverized Fuel in Power Plant Work," by T. H. O'Brien, general manager of the Inspiration Consolidated Copper Co., Inspiration, Ariz.; "Wire Rope in Mining," by W. R. Abbott, of Denver, and J. F. Howe, of Worcester, Mass.; "Practical First-Aid Work," by W. F. Murray, of Dawson, N. M.; and "Co-operation in the Coal Industry," by Harry F. Nash, vice-president of the Oakdale Coal Co., Denver.

Results Obtained by W. J. Dunkley, gas engineer of the U. S. Bureau of Mines, in the course of experiments made at Ottawa, Ill., in the use of mixed coal and coke fuel for water-gas manufacture, show that capacities up to 97 per cent of the rated capacity with good coke fuel can be obtained, using 70 per cent Illinois coal and 30 per cent Kentucky coal, with 6 ft. gas, at efficiencies operating up to 60 hours per day. The generator fuel consumption was about 33.5 lb. of mixed fuel per 1,000 cu.ft. of gas made.

"HERE'S A DANGER SIGN. Watch me go past and find the trouble." He found it. Somebody found him.
Middle West Has Hectic Time of It: "Something New" About to Happen in Illinois and Indiana

BY E. W. DAVIDSON

Strike developments in the Midwest coal-mining region have been swift and baffling during the past week and promise to be just as swift if not so baffling in Illinois during the next few days. While Michigan and Indiana were trying without success to induce miners to work enough mines in those states to supply state institutions, Governor McCray of Indiana finally gave the men until Tuesday, Aug. 1, to do it peacefully or he would see that it was done by force—things were popping over in Illinois.

On Monday the operators of Illinois met to consider the situation. They were in session all day in Chicago. Frank Farrington, president of the Illinois miners, was in Chicago the same day. Wednesday Farrington got his state executive committee together in St. Louis, appeared to sound the sentiment of the striking miners, and then called a state union convention for Aug. 3 in Peoria, Ill. Word naturally went around that Farrington was breaking finally with national headquarters and was going to get authority from the convention to enter into peace negotiations with the Illinois operators. The state thought its mines were about to be opened.

The next day Farrington called off his convention, saying the Associated Press had befuddled the matter by stating, in the news story of the convention order, that the session was called to permit a test of strength between Farrington and Lewis. Later that same day Farrington retracted his charge against the Associated Press and said it at the door—or mouth—of John Watt, state secretary-treasurer of the union. Watt is reputed to be a Lewis man. Farrington said Watt was "a victim of running off at the mouth" and that statements of Watt and others had made strike settlement in Illinois a dead issue.

Meantime John L. Lewis had broadcasted to the whole country the news that he was on the point of obtaining a four-state conference with operators. With no more explanation for his sudden change of convention plans, Farrington took his foot in hand and scurried to Philadelphia to attend Lewis' conference of union state presidents preparatory to the announced four-state conference with operators. Before going, Farrington replied to an invitation of Acting Governor Sterling of Illinois that he would like to confer with Sterling on the acting governor's plan to get a few of the mines of the state open to supply state institutions with coal, but he really couldn't do a thing about it even if he were the one to be opened.

Up to Saturday night no date or place had been announced for the Lewis four-state conference with operators. Indiana on Friday had declined absolutely to have anything to do with such a conference and Illinois took the same attitude but had not, up to that time, received any invitation from Lewis to attend, so it was unnecessary for that state formally to write its refusal. However, the full pressure of Ohio in favor of the conference had been exerted upon both Indiana and Illinois, with no more success, it appears, than was had with the Pittsburgh operators of Pennsylvania.

"Well," commented an Illinois operator's official, "Lewis is stalling around and using up a few more days, anyway. Every day this strike continues, and every day the time approaches when the public will begin to cry for a settlement on the miners' terms, the better the union's grip on the situation."

This same official prophesied that before the end of the first week in August there will be decisive developments in the Illinois situation which will get a grip on the attention of the whole nation. He would not divulge what these developments are to be. The operators' association have already declared in favor of the opening of enough mines to insure the production of sufficient coal, under union auspices, to stave off fuel famine in Illinois. Since the federal government appears to have no intention of directing any coal from Kentucky and the East into Illinois or Indiana under the new car-distribution plan, it seems that Illinois and Indiana must dig their own coal. Governor McCray and the operators of Indiana have worked out a plan for it in that state under the protection of state troops.

Midwest Coal Men Hope for Success of Plan Of Control by Distribution of Cars

The general sentiment of the coal trade in the Middle West seems to be favorable to the new federal plan of controlling the distribution of coal through car supply. The superior men in the industry are hoping Mr. Hoover will be successful in this newest effort. Not that they think his scheme is fair and reasonable—or even legal—in every respect; but they are for him anyway.

Practically every man who expresses an opinion about it says that no doubt the Hoover plan of regulating distribution is all right and should work well; but when that same method is used to restrict the price to $3.50 a ton they think the regression of the law will have been made.

"But I doubt if anybody is going to fight it; that's the point," commented an operator whose string of mines includes one that will be affected at once by the federal scheme. "If anybody tried it, his case would daily along in the courts, while his mine stood idle, until some time in the next generation. So what good would it do to dash into court? Wise men are going to dig coal, sell it at $3.50 and keep it up—so long as this government board continues to supply them with a full quota of cars. But if the car supply fails—then will be the time to kick the Hoover price out."

Hoover Conference Results in Formation of Connellsville Operators' Association

Following the return of an operators' committee from Washington, where they held a conference with Secretary Hoover, a public meeting was held in Uniontown, Pa., when the committee reported that the price-control plan through distribution of cars had "teeth" in it and that there was nothing to do but comply. As a result of that public meeting has grown the first organization of Connellsville coal operators, the Fayette-Greene Coal Operators' Association.

George Whyle was named president; W. W. Parshall, vice-president, and E. D. Brown, secretary. The executive committee consists of the officers and the following: W. C. Rod, representing the C. Frick Coke Co.; John Sinecock, of W. J. Rainey, Inc.; M. B. Cooper, of the Hillman interest; C. F. Lingle, representing the Greene county operators; H. M. McDonald, John B. Moore and W. D. McGinnis.

While Connellsville is one of the principal coal-producing regions in the country it has never been represented by an organization of operators. The Coke Producers Association, an exclusive organization of coke operators, has been inactive for some years.

Experiments on the Treatment of Lignite, Raw and Carbonized, by the Trent Process are being made in North Dakota by W. W. Odell, fuel engineer of the U. S. Bureau of Mines. Construction of a vertical lignite carbonizing even has been completed.

Cancellation of the Assignee-Car Hearing has been announced by the Interstate Commerce Commission. The matter will be taken in a new proceeding at some future date after the passing of the emergency.
Borah Coal-Commission Plan Held in Abeyance by President Harding

SENATOR BORAH, chairman of the Senate Committee on Education and Labor, held a conference July 28 with President Harding on the Borah bill proposing that a commission study the coal question, with a view to reporting a plan, for permanent legislation to control the coal industry.

President Harding advised Senator Borah that he was in full sympathy with the purposes of the measure. The President asked Senator Borah to visit him again early this week and go over the matter further, when the President expects to know more about the outlook for a settlement of the dispute.

Since introducing his resolution Senator Borah evidently has learned that the work he prescribes for three commissioners at $8,000 a year is an undertaking which will require a large organization to carry through and will cost hundreds of thousands of dollars. The task is even more complicated than the valuation of the railroads and many years would be required to gather accurately the information which he proposes should be done in nine months.

Senator Borah’s bill, introduced July 25, proposing that a commission be created to inquire into the advisability of nationalizing the coal industry, provides that the commission be composed of three members, to be appointed by the President, subject to the advice and consent of the Senate. Members of the Senate and House, however, shall be ineligible to serve on the commission.

One member of the investigating body, the measure provides, shall be chosen from a list of three nominees presented by the National Coal Association, one from three names submitted by the United Mine Workers and the third shall represent the public, but must not be interested in a business way in the coal industry. The salary of each commissioner is to be $8,000 a year. The commission shall cease to exist one year after the passage of the act unless otherwise provided by Congress.

It shall be the duty of the commission “to investigate fully the conditions, ascertain the facts, and study the questions relating to the coal industry with a view of aiding, assisting and advising the Congress relative to legislation either in the nationalization or the regulation and control of the coal industry by the government. To this end the commission shall ascertain and report to the Congress and to the President, first, as to the ownership and title of the mines; second, cost of production; third, profits realized by the operators or owners of said mines during the last ten years, labor costs, wages paid, irregular production and suggestions as to the remedy for the same and all facts, circumstances or conditions which would be deemed essential in determining and establishing a wise policy relative to the said industry by the government.”

The bill also provides that the commission shall submit recommendations relative to:

(a) Standardizing the mines upon the basis of their productive capacity and regarding the closing down of mines which by reason of their natural limitations fall below the standard.

(b) Standardizing the cost of living for mine workers and the living conditions which must be supplied or afforded in order to surround the workmen with reasonable comforts, recognizing the psychological effect of such surroundings in respect to their efficiency.

(c) Standardizing a basis of arriving at the overhead cost of producing the coal and delivering it at the door of the consumer, recognizing in this compilation that the standardized cost of living to the miners must be the first and irreducible item of expense.

(d) The advisability or necessity of nationalizing the coal industry.

(e) The feasibility or necessity of governmental regulation and control of the coal industry.

The commission is to render its first report and recommendations as soon as practicable but not later than nine months from the passage of the bill. In making its investigation the commission may require by subpoena the attendance of any person and the production of any book, paper, document or other evidence from any place in the United States at any designated place of hearing, and no person shall be excused from attending and testifying or from producing evidence on the ground that the testimony or evidence may tend to incriminate him. The penalty for violation of this provision is $5,000 fine or imprisonment for one year, or both.

For defraying the expenses of the maintenance and establishment of the commission, including the payment of salaries, provision is made for the appropriation of $100,000 or so much thereof as may be necessary, to be available until one year after the passage of the act.

BRITISH COLLIERY OWNERS TO ERECT 10,000 HOUSES.—A scheme for the erection of colliery villages being undertaken by a British industrial association composed of colliery owners is based upon the principle of trading without profit. The program, it is stated, includes the erection of about 10,000 houses at the rate of 2,000 a year without any form of government subsidy. It is proposed to make application for a loan from the Public Works Loan Board. The difficulties which confront the mine owners in respect of the housing question, particularly where houses are provided free, was indicated at the annual general meeting of one of the large colliery groups last month. It was stated then that a workman’s cottage could be erected at a cost of £400, which was estimated to work out at a cost of 1s. 7d. per ton of coal, assuming 1½ workers per house and an average output of 250 tons per person employed.

MEMBERS OF THE HOUSE OF LORDS call themselves gentlemen, but they wouldn’t give Lady Rhondda a seat.—New York American.

A glance at the proposed tariff schedules confirms rumors that the crumbling Peak of Prices is to be restored to its former lofty grandeur.—Brooklyn Eagle.

“Sign says this ladder’s unsafe. What of it? I ain’t got time to go around.”

So he went right up—and came right down again in a heap.
Seventeenth Week of the Coal Strike

EDITORIAL REVIEW

INTEREST in the railroad strike eclipsed that in the coal strike last week. The administration at Washington directed its principal efforts in the direction of getting the railroad men settled once more in their jobs and to rounding out the federal, state and local organizations for administering the priority orders. For the time being the government has been directly engaged in making coal.sofar as there is going further and in increasing the output from the non-union fields, crippled since July 1 by the rail strikes. Efforts of operators in union fields to get their mines in operation have been practically fruitless. In the Pittsburgh district, where most was expected and where military protection has been provided, almost no coal has as yet been loaded out, and in Ohio no attempt has been made to operate any except the strip mines which were in operation in the early part of the summer and have been closed by intimidation of their workers.

Illinois and Indiana operators cannot work their shaft mines without licensed labor and have made no attempt to resume production. The Governor of Indiana has threatened to call the Legislature and to ask it to repeal the law which acts as a bar to coal production. This would be a blow to the miners.

No effort has been made to get out coal in the anthracite region and it is understood none will be until the union puts the men back.

On the union side John L. Lewis has been diverting attention from the question of the union's attitude toward arbitration by talking a great deal about getting sufficient operators together to start a joint interstate conference. In this he is quite persistent, despite the reiterated refusals of substantial groups of producers. There appears to be as wide divergence of opinion among the miners as in the ranks of the soft-coal operators, but John L. Lewis manages to hold the workers together.

There was no material change in the situation in the Connellsville coke region during the past week.

Miners Will Not Be Driven Back to Work at Starvation Wages, Says Lewis

BEFORE leaving New York for Philadelphia to confer with the presidents of the unions in the anthracite fields on July 26, John L. Lewis, president of the United Mine Workers of America, issued the following statement:

"Ten days have elapsed since the President directed the coal operators of the country whose miners are on strike to return to their homes and resume the production of coal, following which he telegraphed the governors of the several commonwealths urging them to accord military protection to all coal companies employing strike breakers.

"Despite the promulgation of this policy by the Federal Government and its punctual application by several governors, there has been no increase in coal production. Not a single union miner has returned to work throughout the length and breadth of the land and it must now be obvious to all that the American miner will not be driven back to work at starvation wages and under non-union conditions by any fanfare of trumpets or vain military display. The assembling and training of engines of war to awe American citizens who are merely exercising their inherent constitutional right to cease work in order to maintain their industrial and social status as citizens of the Republic would be a national farce did it not possess the elements of tragedy.

"The presence of federal troops in the mining communities where no transportation of the law has occurred in itself constitutes a menace to domestic tranquillity and creates a situation repugnant to the ideals of every free-born American. Aside from the question of equity and constitutional rights which are involved, the public is being heavily taxed to maintain military forces in the field to assist mining corporations who deny industrial justice to their employees and are applying labor-breaking anti-union policies.

The employment of the citizen soldiers of our country in the protection of imported strike breakers in the mining industry is bound to lessen the respect of a large part of our citizenship for the National Guard as an impartial institution. The lamentable breakdown of the federal policy actually lessens the desire of the public for further experiments of this sort. The public is primarily concerned with its future coal supply and this summer it is on the wane. Time is an important factor. The loss of an additional ten days to further develop fantastic schemes in the field of industrial experimentation can hardly be afforded.

"The mine workers are resolved not to be driven back to the mines by any threat of force and neither do they intend to return until the coal operators of the country are required to meet them in joint conference in order that a new wage scale may be negotiated.

"The principles of collective bargaining are at stake, and the right to employment at a living wage is an issue which must be considered.

"The coal strike, now in its seventeenth week, involving more than 600,000 men and affecting the welfare of our nation, is in itself a colossal industrial tragedy which reflects no credit upon our antiquated industrial relations or American statesmanship. Such a condition, by every rule of reason and logic, is indefensibly wrong and is an outrage to every moral and economic principle.

"The miners are anxious to settle this strike and resume the production of coal. We are ready to meet in joint conference with the coal operators at the earliest moment if such a conference can be arranged in harmony with the contractual obligations of the coal companies and in line with the procedure which has prevailed in the industry for more than a quarter of a century.

"The adjustment of a national strike in this national industry cannot be accomplished through the instrumentality of state or district settlement. No district conference or agreement will be sanctioned by the Mine Workers Organization. The Mine Workers' representatives will hold themselves in readiness to respond to any logical and practical attempt to effectuate an adjustment."

Miners Return to Work in Increased Numbers in Central Pennsylvania

SLIGHT increases in the number of miners who have returned to work were reported all along the line of the Cambria-Somerset-Indiana sector of the coal-strike area of central Pennsylvania up to July 28. The largest additions at the mines were reported from Colver and Twin Rocks. About one hundred reported for work at the mines of the Ebensburg Coal Co. at Colver and the largest production since the walk-out at this mine several weeks ago was reported. Ten cars were shipped from the Twin Rocks district, three of which were from the Commercial Coal Mining Co., which is operating under guard.

Operations were resumed at No. 9 mine of the Bethlehem Mine Corporation at Helmond with a few men returning to work and Mine No. 11 is expected to reopen this week. Officials are confident that the majority of the men will return to work.

At Windber the Reitz Coal Co. has a full force of men at work and production will be at a pre-strike rate within the present week. About 100 cars of coal was shipped from the Windber district, showing a substantial gain. Additional men have been called to work. Calls for guards have been received at National Guard headquarters at Ebensburg from a number of other operations.

United Mine Workers in the field are redoubling their efforts to restrain the men from returning to work, with the result that James H. Maurer, president of the State Federation of Labor, has opened headquarters in Johnstown and is addressing meetings of miners at various places.
Michigan Union Officials Refuse To Comply with Governor's Request

OFFICERS of the Michigan district of the United Mine Workers have definitely refused to comply with the request of Governor A. J. Cayton that they return to work to produce coal for state and municipal needs. The reply to the Governor, signed by Thomas L. Jones, district president, asserts that for the miners of Michigan to resume work before the end of the strike would be to "dig their own graves." It is pointed out that one year ago state institutions of Michigan were contracting with producers outside the state for coal supply, as was also the Bay City School Board.

"Inasmuch as the Michigan mine worker was denied the opportunity to supply coal for municipal and state institutions it is not to be expected that we are going to do it at this time when great principles are at stake," says the communication to the Governor.

Operators of Southwest Indorse Harding Plan for Resumption

A SPECIAL convention of the Southwestern Interstate Coal Operators' Association at Kansas City, Mo., on July 24, 1922, gave consideration to the report of the majority committee of the bituminous coal operators to President Harding in reply to his proposal to the operators and miners for an arbitration commission. Its provisions were regarded as being ample and sufficient to have brought about a peaceful and orderly settlement of the strike. Unanimous agreement on the union position was given to the plan of preserving the best interest of the public, the bituminous operators and the employees in the coal industry and regret was expressed that the miners declined.

Consideration also was given to President Harding's later invitation to resume operation of mines with such voluntary labor as could be obtained.

The report of the convention says that the members of the Southwestern Interstate Operators' Association, "realizing and appreciating their obligation to the public as producers of coal, feel that in this hour of need, as loyal citizens of our government, it becomes our duty and we hereby pledge our unanimous and hearty response to the call of President Harding for the resumption of coal mining at the earliest possible moment; notwithstanding the many obstructions and difficulties that must be overcome in connection with the plan of Harding's plan."

"In order to carry out this response to the President's direction as effectively and efficiently as possible, we make the following recommendations:

(1) That the operators in each state represented in this meeting should appoint a committee of five operators, as a state executive committee for said state. It shall be the duty of such committee to confer and arrange with the county and state authorities for the necessary protection as to the miners to protect the public property in the mining industry. Said committee shall in conjunction with each local mine owner and the association officers have jurisdiction in each state over all matters applying to and governing the preliminary operation of mines.

(2) That association mines that are now operating shall be encouraged to increase their operations and production to maximum capacity.

(3) That the offer of employment by association members shall be extended to experienced mine workers now in field, who in the judgment of the management are most suited for the purpose.

(4) That the wage scale to be paid for day rates, tonnage, dead work and yardage work shall be in conformity with the majority recommendations of the committee to President Harding.

(5) That the rules and regulations governing contract conditions for the operation of mines, adopted by the General Sales Committee and approved by the last special convention of the association, shall be adopted and put into effect in connection with the above wage scale and daily working conditions and shall be complied with and regulations governing their mines.

(6) That the law and regulations of the Western States Coal Operators' Association are not antagonistic to union nor to collective bargaining, but having failed to secure a contract with the United Mine Workers, the association is forced to conform to that scale and submit to the demands of the strikers.

The Coal Age to as far as the operators are concerned, the strikers are asking for a better wage scale, and which our obligations to the public and to our government in its call to resume mining operations and realizing the difficulties of this undertaking, through the probable resistance of the organized forces of the miners and labor generally, we ask the public to be patient in its demands for coal and to render such co-operation and assistance as all good citizens should, who believe in the orderly and peaceful procedure of industry, exercising its legal and lawful rights to meet a nation in its dire distress, and to further assist in the encouragement and enforcement of laws by all legal constituted authorities.

Court of Appeals Sustains Injunctions Except in Regard to Tent Colonies

THE U. S. Circuit Court of Appeals at Richmond has sustained Judge George W. McClintic, of the U. S. District Court for the Southern District of West Virginia, on the appeal taken by the United Mine Workers of America from the injunctions granted in five fields and has modified the injunctions granted by the lower court only to the extent that the Borderland case was modified and that is with reference to the maintenance of tent colonies.

Injunctions were obtained on Monday, July 24, by additional companies in the Kanawha field to halt the activities of the United Mine Workers in attempting to interfere with the operation of mines. The temporary restraining orders were issued by the U. S. District Court for Southern West Virginia and cover the mines of the following companies: Southern States Coal Co., Black Bird Coal Co., Valco Coal Co., Lincoln Coal & Coke Co., Piney-Pocahontas Coal Co., Glenn Coal Co., Lomo By-Products Coal Co. and Black Band Consolidated Coal Co.

Local unions at the following places are covered by the injunctions: Morrisville, Cofoco, Cheyan, Handley, Kayford, Burnwell, Dry Branch, Plymouth, Mordue, Marmet, Malden, Whitesville, Crown Hill, Shrewsbury, Montgomery, Sharon, Raymond City, Coalburg, Winifrede, East Bank, Colcord, Big Chimney, Petona, Eldale, Gallagher, Smithers, Wewaco, Canneton, Leevale, Boncar, Wake Forest, Highstoon, Dana, Sharples, Montreal.

Production in Western Canada Improved Slightly Late in July

THE British Columbia situation with respect to coal production showed little change during the latter half of July. In the Crow's Nest field the miners still are closed owing to the strike. The collieries of the Nicola-Princeton area are operating much as usual, although the Coalmont Collieries are doing somewhat better, their output averaging 800 tons a day, which is a considerable jump. On Vancouver Island the Canadian Colliers (D), Ltd., at Comox and Wellington have not yet been required to work full time to meet the demand. The Western Canadian Fuel Corporation, however, is reported to have signed contracts that will absorb its capacity production for a time. Consequently the mines at Nanaimo and in that immediate district are active. In the north there is some prospecting of the coal fields adjacent to the Grand Trunk Pacific Ry. and it is assured that mines will be operated on a small scale to meet the coal requirements of Prince Rupert and other local centers during the winter.

No Labor Trouble has been noted in the northern coal fields of Colorado since the National Guard and the Colorado Rangers were first sent into the strike districts. Rangers are widely scattered over the entire coal area in the state. Ten rangers appear to have more effect than a company of troops, as most of them are personally acquainted with the strikers and retain their respect. A prominent merchant of Denver, Col., writes us: "We have practically no coal strike here in this state. We have to thank our Governor for this state of affairs. We had some trouble during coal camp time as when the National Guard had to be called out after much damage was done."

"This time the State Rangers were in the different coal camps the day before the strike started. The result was that we had no violence since and the mines are operating.

"Our Governor, Oliver H. Shoup, deserves the thanks and recognition for the stand he has taken."
**Weekly Review**

The steadying influence of the government on the price and distribution of coal is now making itself felt. Production is again on the increase as the tangles caused by the rail strike are being straightened out. The Geological Survey estimates the output last week at 3,900,000 tons, a gain of 200,000 tons, or 5 per cent over the previous week. This increase came mainly from the non-union fields in the South, but Pennsylvania contributed some.

Prices continue strong. *Coal Age* Index of spot prices of bituminous coal at the mines rose 96 points to 556 on July 31. This corresponds to an average spot price of $6.73. Prices on Western coals, particularly those from Kentucky, declined with the collapse of the boom on the Chicago market a week ago. Cincinnati, Columbus, and Boston were the most active markets as the week opened.

**Government Price Control Now a Moral Influence**

Washington's machinery for handling the details of distribution is in the making and the control over prices is yet but a moral influence. The structure is being built from the top down, but it is being well built, extending into the states and cities through the cooperation of state commissions and local fuel administrators. Secretary Hoover is getting ready to meet a situation that is more than transient, a shortage that is yet to be fully felt and that will not be over until next spring.

The railroads are the only consumers that have found it necessary so far to take advantage of the priority orders—the Pennsylvania is taking 20 per cent of output on its lines. These orders were primarily for their protection and they are now using them to get coal. Where the roads demand the coal, shippers are letting them have it below the market rather than have it confiscated.

Buying of British coal, the feature of last week's review, has abated somewhat, mainly because both coal and ships have become scarce if wanted for immediate delivery and because prices advanced sharply. Whereas two weeks ago English coal could be had c.i.f. New York for around $7.50, it is now obtainable for late August and September delivery at around $10.

A survey just completed by officials in Washington of the Lake coal situation indicates that it is physically possible to move enough coal to give the Northwest reasonable supplies if the Lake movement is begun by Sept. 1. Such a program, however, presupposes full co-operation on the part of ship owners and that there will be no delays to vessels in obtaining coal for loading at the lower ports.

Anthracite shipments embrace mine storage and an increasing volume of river steam coals. Pea and smaller sizes are about all that are moving from the storage piles. Retailers are reordering heavily of pea, using this as a substitute for the family sizes. Railroads also are taking pea coal and are requesting the companies to reserve them a considerable amount of this tonnage in lieu of the smaller sizes. It is likely therefore that this grade will soon be off the market.

Coke offerings have decreased considerably. Connellsville spot coke is extremely scarce, the improvement in operations recently noted having referred chiefly to

<table>
<thead>
<tr>
<th></th>
<th>BITUMINOUS</th>
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<tbody>
<tr>
<td>Week ended</td>
<td>1921</td>
<td>1922</td>
</tr>
<tr>
<td>July 8 (5)</td>
<td>6,141,000</td>
<td>3,513,000</td>
</tr>
<tr>
<td>July 15 (6)</td>
<td>7,401,000</td>
<td>4,123,000</td>
</tr>
<tr>
<td>July 22 (5)</td>
<td>7,580,000</td>
<td>3,701,000</td>
</tr>
<tr>
<td>Daily average</td>
<td>7,210,000</td>
<td>617,000</td>
</tr>
<tr>
<td>Calendar year</td>
<td>217,410,000</td>
<td>199,134,000</td>
</tr>
<tr>
<td>Daily avg. cal. yr.</td>
<td>1,274,000</td>
<td>1,162,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>ANTHRAKITE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>July 8 (5)</td>
<td>1,525,000</td>
<td>23,000</td>
</tr>
<tr>
<td>July 15 (6)</td>
<td>1,576,000</td>
<td>31,000</td>
</tr>
<tr>
<td>July 22 (6)</td>
<td>1,947,000</td>
<td>22,000</td>
</tr>
<tr>
<td>July 22 (6)</td>
<td>44,000</td>
<td>100,000</td>
</tr>
<tr>
<td>July 22 (6)</td>
<td>41,000</td>
<td>104,000</td>
</tr>
<tr>
<td>Calendar year</td>
<td>9,117,000</td>
<td>5,514,000</td>
</tr>
</tbody>
</table>

*Subject to revision. (b) Revised from last report.*
furnace ovens rather than to merchant ovens. In this section byproduct ovens are now largely dependent on their reserve coal stocks, as shipments from West Virginia and Kentucky have almost ceased.

BITUMINOUS

Returns on coal output in the seventeenth week of the strike (July 24-29), according to the Geological Survey, give the first test of the response to the invitation to reopen mines. "There has been a slight recovery as compared with the sixteenth week," the Survey says. "Production is running at the rate of 3,900,000 tons, against 3,700,000 tons last week. The increase is due partly to more men at work in Pennsylvania, partly to improved car supply in southern West Virginia, and partly to heavier shipments from Alabama and the Far West. Production of anthracite remains practically at zero."

"Loadings on Monday, July 24, were 13,083 cars. This was 417 cars above the preceding Monday, but 3,664 cars below the last Monday before the shopmen's strike. On Tuesday and Wednesday loadings declined, but on Thursday a slight recovery was noted."

"It thus appears likely that the total output for the seventeenth week will be less than 4,000,000 tons, probably only 3,960,000 tons. In the lowest week of the strike 5,375,000 tons were produced and in the highest week (June 19-24) 5,365,000 tons. The decrease since June is attributable to traffic congestion resulting from the shopmen's strike. In the Middle Appalachian region the congestion is still acute, although a slight improvement over last week has been reported from certain districts."

"There is no indication of increased production in response to the invitation to reopen mines in any of the strongly organized districts. More coal is coming out of the former non-union fields in Pennsylvania and a little more from the Fairmont and Kanawha districts of West Virginia, but

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

<table>
<thead>
<tr>
<th>Low-Volatile, Eastern</th>
<th>Market</th>
<th>July 3</th>
<th>July 17</th>
<th>July 24</th>
<th>July 31</th>
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<tbody>
<tr>
<td>W. Va. screenings</td>
<td>Columbus</td>
<td>$3.25</td>
<td>$3.25</td>
<td>$3.25</td>
<td>$3.25</td>
</tr>
<tr>
<td>Hoaing lump</td>
<td>Columbus</td>
<td>6.10</td>
<td>6.10</td>
<td>6.10</td>
<td>6.10</td>
</tr>
<tr>
<td>Hoaing mine run</td>
<td>Columbus</td>
<td>4.00</td>
<td>3.80</td>
<td>3.70</td>
<td>3.60</td>
</tr>
<tr>
<td>Hoaing screenings</td>
<td>Columbus</td>
<td>4.30</td>
<td>4.30</td>
<td>4.30</td>
<td>4.30</td>
</tr>
<tr>
<td>Pits No. 8, lump</td>
<td>Chicago</td>
<td>4.25</td>
<td>4.25</td>
<td>4.25</td>
<td>4.25</td>
</tr>
<tr>
<td>Pits No. 8 mine run</td>
<td>Cleveland</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
</tr>
<tr>
<td>Pits No. 8 screenings</td>
<td>Cleveland</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
</tr>
</tbody>
</table>

| Midwest               |        |        |        |        |
| West Ky. lump         | Louisville | 4.40 | 4.40 | 4.40 | 4.40 |
| West Ky. mine run     | Louisville | 4.40 | 4.40 | 4.40 | 4.40 |
| West Ky. screenings   | Louisville | 4.40 | 4.40 | 4.40 | 4.40 |
| West Ky. mine run     | Chicago | 4.40 | 4.40 | 4.40 | 4.40 |

| South and Southwest   |        |        |        |        |
| Big Seam lump         | Birmingham | 2.50 | 2.50 | 2.50 | 2.50 |
| Big Seam mine run     | Birmingham | 2.50 | 2.50 | 2.50 | 2.50 |
| Big Seam (wash)       | Chicago | 2.50 | 2.50 | 2.50 | 2.50 |
| S. E. Ky. lump        | Louisville | 3.75 | 3.75 | 3.75 | 3.75 |
| S. E. Ky. mine run    | Louisville | 3.75 | 3.75 | 3.75 | 3.75 |
| S. E. Ky. screenings | Louisville | 3.75 | 3.75 | 3.75 | 3.75 |
| S. E. Ky. mine run    | Cincinnati | 3.75 | 3.75 | 3.75 | 3.75 |
| S. E. Ky. screenings | Cincinnati | 3.75 | 3.75 | 3.75 | 3.75 |
| Kansas lump           | Kansas City | 5.00 | 5.00 | 5.00 | 5.00 |
| Kansas mine run       | Kansas City | 4.25 | 4.25 | 4.25 | 4.25 |
| Kansas screenings     | Kansas City | 4.25 | 4.25 | 4.25 | 4.25 |

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

NOTE—Smokeless prices now include New River and Pocahontas.
How the Coal Fields Are Working

| Percentage of full-time operation of bituminous coal mines, by fields, as reported by the U.S. Geological Survey in Table V of the Weekly Report. |
|---------------|-----------------|
| **U. S. Total** | 43.6 |
| **Non-Union** | 57.7 |
| **Union** | 42.3 |

- **Alabama:** 63.9%
- **Somerset County:** 55.3%
- **Western Pennsylvania:** 54.9%
- **Virginia:** 54.8%
- **Hazard:** 51.7%
- **Pocahontas:** 49.8%
- **Tug River:** 48.1%
- **Logan:** 47.6%
- **Cumberland-Piedmont:** 46.0%
- **Winding Gulf:** 45.7%
- **Kenova-Thacker:** 38.2%
- **N. E. Kentucky:** 32.9%
- **New River:** 24.3%
- **Oklahoma:** 63.9%
- **Iowa:** 57.4%
- **Ohio, Eastern:** 35.6%
- **Missouri:** 30.7%
- **Illinois:** 44.8%
- **Kansas:** 42.0%
- **Indiana:** 41.4%
- **Pittsburgh:** 41.2%
- **Central Pennsylvania:** 39.1%
- **Fairmont:** 35.3%
- **Western Kentucky:** 32.5%
- **Pittsburgh:** 30.4%
- **Kanawha:** 26.0%
- **Ohio, southern:** 22.9%

- **Surplus loaded:**
  - **Rail and river mines combined:** 100,000 cars
  - **Rail mines:** Union in 1921, non-union in 1922.

### CAR LOADINGS AND SURPLUSSES

- **Cars loaded:**
  - **Week ended Apr. 1, 1922:** 860,907
  - **Previous week:** 718,319
  - **Same week a year ago:** 774,884

- **Surplus cars:**
  - **July 8:** 405,120
  - **July 15:** 403,180

### COKE

- Beehive coke production was 104,000 net tons during the week ended July 22. The output appears to have found a level at about 100,000 per week, the figure for the week ended July 15. The principal factor in the increase was in the Connellsville region, although this was confined mainly to furnace ovens. The amount of spot coke offering therefore has not been increased proportionately and as a result spot prices have climbed further.

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**ANTHRACITE**

Production of anthracite during the week ended July 22—about 27,000 net tons—was practically all steam coal dredged from the rivers. Mine storage stocks now consist mainly of pea coal and smaller sizes and retailers are taking the former for distribution as a substitute for their trade. Both householders and dealers are placing orders for the family sizes to be delivered as soon as mining is resumed.

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**Relative Activity of Markets for Bituminous Coal at End of Seventeenth Week of Strike**

- **Maximum market activity this week.**
- **Current peak in prices appears to have passed.**
- **Local market quiet, with prices up because of Northern buying.**
- **Quiet.**
American Shippers Active in British Market; Production Registers Slight Increase

AMERICAN shippers are actively seeking tonnage to replace their strike losses. Public utilities and railroads have been the heaviest users, and now that the United States Government has given priority to these consumers, considerable tonnage of domestic-coal and coals will be available to them. This makes the American market a rather uncertain and temporary one for the British shippers.

British production during the week ended July 15 was 4,627,000 tons, according to a cable to Coal Age, as compared with 4,598,000 tons for the previous week.

Some improvement is indicated in the British coal trade. Steam and gas coals especially are in better demand than for some weeks, and from 6d. to 1s. per ton increase is being offered for the better qualities of steam coals.

Among the inquiries received in the North of England are 30,000 tons of gas and coking coals for autumn shipment to the Stockholm gasworks, 8,000 tons for the Bordeaux gasworks, and one Belgian coal company is in the market for around 500,000 tons. Up to 30s. is now the price of best gas cokes and there is an appreciable market at that price. The Baltic and Holland are the most promising buyers.

Coal Paragraphs from Foreign Lands

ITALY—Cardiff steam first is now quoted at 36s. 6d., as compared to a cable to Coal Age, as compared with 36s. 3d. last week.

The Italian Government has issued an announcement covering the prices at which its surplus stocks of German coal may be purchased for industrial use. Westphalian and Silesian steam, gas, and furnace coal may be purchased for 150 lire per metric ton on board cars in transit or 165 lire f.o.b. Italian port. The sale price of Westphalian coke for metallurgical purposes is fixed at 230 lire on board cars in transit or 240 lire delivered at a port. Silesian coke, which can be shipped only by rail, will be sold at 220 lire on board cars in transit.

INDIA—The market is firm. Mills are purchasing and it is understood that

The market was demoralized with prices soaring at Hampton Roads last week, with demand double the supply. Slight improvement in coal movement was noted on all roads, although surplus supplies did not increase to any appreciable extent. Export business dwindled to nothing.

Terminal facilities were in normal condition, but movement of coal from the mines continued interrupted. The prospect for improvement was said by coal men not to be bright. Schooners and barges, prepared to carry coal to Northern points, were lying idle in the harbor.

The price of coal, soaring as high as $11 per ton in some instances, reached the highest point since the peak of business in 1920.

June Reparation Deliveries

 Deliveries from Germany to France, on reparation account, in June were:

<table>
<thead>
<tr>
<th>Metric Tons</th>
<th>Coal</th>
<th>Coke</th>
<th>Briquets (anthra.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>385,500</td>
<td>501,900</td>
<td>22,460</td>
</tr>
</tbody>
</table>

The importation of British coal into Germany has lately assumed larger proportions owing to the insufficient supplies of German coal and the great demand has already led to an increase in price. A number of works imported British coal with a view to exchanging it through the Coal Syndicate for coke allotted to the railways. Now all the Reichskohlencommissar has ordered that imported coal could be partly taken into account in making allotments of inland coal and this appears to have led already to a noticeable decrease in the demand for British coal.

Production in the Ruhr district during the week ended July 15 was 1,760,000 metric tons, according to a cable to Coal Age. The output in the previous week was 1,629,000 tons.
British Coal Now a Factor; Softening Tendency Seen

Uncertainty Exists as to Delivery—Price Decline Would Be Disturbing, and High Prices Were Paid for Foreign Fuel—Government Activity Calms Consumers.

BRITISH coal is becoming a factor at North Atlantic ports. Many orders were placed last week and more are in prospect, although much uncertainty exists as to the question of delivery. The market shows tendencies of softening and a price decline would soon place these shippers at a disadvantage as the tonnage now on the way from Great Britain was purchased at high prices. British coal was quoted at $10, New York Harbor, early in the week.

Governmental action in the coal crisis is having a soothing effect on consumers, and there is not the urgent rush for coal that was so apparent a week ago. Receipts are still very light, however, and spot tonnage is difficult to obtain.

CENTRAL PENNSYLVANIA

The Consolidation Coal Co. at Jerome, Somerset County, was the first company to resume operations under guard, the output amounting to an average of 10 carloads a day.

The commercial Coal Mining Co. at Twin Rocks, Cambria County, has asked for guards. The mines at Vinsondale and Webster mine No. 10, at Gallitzin, also has resumed work under guard. Others are expected to follow. Car shortage cut down production, but this has been overcome.

Prices on the spot market rose rapidly and reached as high as $8.50, but little coal was sold at this price, as practically all that is mined in the district is sold under contract.

NEW YORK

The market was a trifle easier at the end of the week. There were many orders placed for British coals during the week although there was a wide range in quotations. Toward the end there was a softer market and exporters were tendering when they could expect deliveries. About fifty boats of the Shipping Board have been placed into service. Most of the orders had been booked for early August delivery and it was expected the first of these would arrive here about Aug. 10. Quotations at the end of the week were around $9, New York.

A factor which may have its effect upon the receipt of British coal here is the attitude to be taken by the Longshoremen's Union which may refuse to handle it. The matter is now under advertisement and the action taken by the men may not become known until their first cargo of British coal is in the harbor.

Southern coals are coming forward in good quantity, most of it already under contract. Several of the City Departments may run short of coal because of the strike and the failure of dealers to submit bids at the last opening, on July 18.

Quotations for unclassified Johnstown coals said to be of Pool 10 quality were around $8.25 at the end of the week, the stated scale for Pool 11 quality was quoted at $7.25@$8.

PHILADELPHIA

The amount of coal coming here is much below that needed to replenish stockpiles, but despite this there have not been any notable shutdowns. Large users are active and have forced the small consumer to buy at $7.50@$9 per ton.

Sellers are not seeking any business at present prices, although willing to buy when given definite orders. Strong efforts are being made to hold prices in check, and for this reason many commission houses are idle. The bulk of current production is taken over by the railroads or going on contracts.

The P. R. R. is in strong operating condition and is moving all shipments offered promptly.

Quite a few houses unaccustomed to tide business have made foreign connections, and there is an increasing tonnage of British fuel being sold here for August delivery. On steam coal from Wales there have been offerings of $9 a ton, and high-volatile English gas coal at $8, all delivered at the piers.

Baltimore

Co-operating with the Federal Government, Governor Ritchie consented to name a coal commission for the state of Maryland, a joint move by the chief executive and the Public Service Commission of Maryland, to prevent the widespread price changes of the last week. All railroads in the state have been notified that the fuel will be delivered at a uniform price.

Brokers have refused to take coal on consignment, and most of the dealers with mines are practically through for the balance of the month in terms of sales. The coal situation is the same in Pennsylvania and West Virginia, where conditions are particularly critical.

UPPER POTOMAC

Transportation difficulties are playing no part in holding back production in the Upper Potomac region, for the Western Maryland is placing all the cars needed and is moving coal at the rate of about 100 cars a day, giving this field an output of about 50,000 tons a week. Approximately 35 mines are operating in this territory.

FAIRMONT

General preparations were being made during the last week in July to overcome the strike, with the expectation that the miners would return to work.

KANSAS CITY

Kansas mines are doing better than those of the surrounding region, as they are unionized and will be able to supply public institutions and utilities and also a large part of the steam coal requirements of Arkansas, which has to be able to care for a part of the domestic requirements. Fuel oil is quite a factor in this section now at $1.65 per bbl. This is equivalent to steam coal at $4.95.

The split among the miners in the Kansas field will also help. Their allegiance is about equally divided between Hawwat and Still. Hawwat's fight against the Kansas operators turns out to be in the best interests of these same operators. Most of the production in that field today is the direct result of this fight.

SALT LAKE CITY

Utah operators are receiving many large orders from interests outside the state. These are hard to fill. Local retailers are buying more than they have done for some time. There is nothing like a rush, however. Slack is becoming scarce, retailing at $4.50 with an additional 50 cents for the selection.

Other small grades, while not so scarce as slack, are hard to get.

There is no actual car shortage, but a little tightening of this service is noticeable. The strike situation is about the same. The national guard is still in charge.

DENVER

Demand is picking up noticeably with the approach of the fall. Price rise, however, in spite of the fact that demand already has far exceeded the present capacity of the state's mines to produce. Shoup's ultimatum against high prices is effective. There is no sign of a public panic over coal because Colorado, with its mines running at between 70 and 80 per cent full, is sitting on a large surplus.
**Anthracite**

**Pea, Last of Family Sizes, Nearly Gone from Yards**


**PEA COAL**—the last of the family sizes—is fast disappearing from the retail yards. Dealers are still offering for replenishment but reserves at the mines are getting low and railroads are urging conservation of this coal for their use as a substitute for the smaller sizes. River steam coals are very active. Hope of getting an adequate supply of hard coal up the Lakes has about been given up.

Retailers are active in placing orders with their suppliers, for delivery when coal is again available. This process is being followed out also by the householder, and business on this basis constitutes the only life in the domestic anthracite market today.

**NEW YORK**

The pea coal supply is rapidly disappearing and with it the storage buckwheat. Some of the larger dealers have heavy tonnages of the latter on hand but the call for it is increasing. Consumers, realizing more than ever the seriousness of the situation are taking in pea coal to tide them over the cool days in case there is a delay in securing their regular supply of the larger coals. It was also announced that some of the railroads are using pea coal in place of buckwheat.

While no plan of distribution has been mapped out it is very apparent that when coal does begin to filter into this market the dealers are going to spread it as far as possible among their customers.

Some of the smaller operators have buckwheat stocked around their mining plants but owing to the attitude of the miners on strike are not having it loaded for shipment.

**PHILADELPHIA**

On account of the heavy undelivered tonnage the retail men are working hard to get in proper lines for their shippers, and even with companies who have not heretofore had them on their books. The producers have been flooded the past week with requests that orders be entered for shipment at such time as the strike is ended. Many of the companies are accepting orders on this basis, although a few decline to take any action until coal is once more being mined; on the other hand at least one concern was soliciting business on this basis recently.

In the meantime the dealers are experiencing good business on pea coal, particularly those who were foresighted enough to lay in heavy additions to stock when the rush for this size developed during the past ten days.

Prices at retail still present a great variation, running as low as $8.75 by one chronic price cutter, after which there are quotations rising 25¢ a time until the so-called standard price of $11 is reached, at which retail sales are made. In the last almost be said that the large sizes of coal are cleaned out of the yards, although there are a few exceptions where good stocks are still available and the price is a hand or two for this week and next, as compared with the ordinary price of $14.25.

In the steam trade river barley remains the only standard basis for the demand and prices are ranging from day to day. While some sales are being made at $2, most of this is for coal under order for some time, and the bulk of the business now is running between $2.50 and $3.

**BUFFALO**

There is a growing feeling of concern over the failure to take any visible steps toward getting the miners to work. At the same time the actual demand for coal is still light and probably will continue so till autumn sets in.

An effort is being made here to organize the anthracite interests, so that the distribution of what little there is left shall be to the best public advantage. Distributors generally refuse to deliver coal to anything less needy than hospitals. The small amount of steam sizes is fast going into the hands of steamboilers and other special fuel. Hope of getting a supply to the upper lakes in the fall has been given up.

**BOSTON**

The day approaches when retail dealers will be down practically to bare boards. The public still seems not greatly alarmed, but conditions, of course, grow steadily worse. Coke producers and sold up for six weeks to come and oil installations are increasingly hard to arrange for.

At wholesale there is little change. The supply of pea sizes is fast being depleted. The railroads are making every effort to have reserves on their lines saved for locomotive use.

**BALTIMORE**

Dealers are in entire accord with Governors in the belief that they have the machinery to distribute fairly. In the pinches during the coal scarcity periods of the recent war times, they allotted coal on the half-ton, one-ton and two-ton basis and kept everybody supplied. As it stands the yards are swept bare, except for a small quantity of pea, and a large majority of the homes are without supplies usually in bins at this season.

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**Coke**

**BUFFALO**

The supply is now confined to the by-product plants, some of these in the Connellsville region. Purchases as high as $16 for foundry have been made, to which add $3.24 for freight to Buffalo. So heavy is coke demand that the local by-product plants will shut down in a few days unless a supply of coking coal is obtained. Iron ore is coming in at the rate of 50,000 tons or upwards a day by lake.

**CONNELLSVILLE**

Coke offerings in the open market have undoubtedly decreased considerably in the past 30 days. Reports of improvement in operations have referred chiefly to furnace ovens rather than to merchant ovens, and another factor, perhaps, is that several weeks ago one or two of the operators made contracts in foundry coke to the end of the year, involving coke that otherwise would have continued to come into the open market.

Practically all classes of consumers are now out of the Connellsville market, on account of price, except foundries, and even this demand is far below normal, partly because operations are lighter and partly because there are still stocks of some size. There was some stocking after the strike started, but at much lower than prices prevailing at the present time.

The market advanced about $1 in the week and is still not under $14 for furnace and $15 for foundry. Byproduct ovens are running largely on stocks of coal, as shipments from West Virginia and Kentucky have almost stopped. Several plants have decreased production and not a few furnaces have been banked or blown out. A few byproduct plants still have stocks for 30 days' operation at that rate.

The Courier reports production in the Connellsville and Lower Connellsville region in the week ended July 22 at 56,580 tons by the furnace ovens, an increase of 4,296 tons, and 12,600 tons by the merchant ovens, an increase of 470 tons, making a total of 68,670 tons, an increase of 4,750 tons.

**UNIONTOWN**

The week has shown no change whatever in the strike situation itself in this region. The call by the Rainey interests for their employees to return to work was unproductive of results. Another company of state police has been detailed to this region but no national guardsmen are on strike duty and probably will not be unless some serious outbreak occurs.

Formal acceptance by the principal operators in this region of the Hoover plan means a quick drop in the price of Connellsville coal from $8 to $3.50.

For the present the team track operators are out of business, the $3.50 figure not permitting them to operate profitably. However, Secretary Hoover indicated that where operating costs, as the first committee reported, the administration may consider a higher price.
Buoyant Hopes Ascend
As Market Goes "Flop"

A Certain Optimism Over Illinois Is Felt While Federal Control of Cars Drops Kentucky Prices—Full Car Supply Pleases Kentucky.

ALL through the midwest there were sighs of relief and the lessening of a great tension when the government's plan of controlling coal distribution—and incidentally, price—went into effect. Excitement over coal buying came to an end in the western Kentucky field. Buyers refused to pay any more sky figures for fuel, cars in both the eastern and western Kentucky fields began to appear in normal numbers for the first time in more than a month along the Louisville and Nashville with engines borrowed from many roads, and "normalcy" seemed much closer. At the same time, in Illinois, there began to spread a certain feeling of optimism regarding affairs in that state. "Something good is about to happen" was the sentiment among coal men who are usually first to hear of developments, and, all in all, the region went home over Sunday for a comfortable week-end.

The effect on coal prices of the events of last week was marked indeed. The "hooraw!" method of buying and selling coal was banished. The prospect of Hoover control of prices and the effect of the railroads and big utilities getting all the coal they need for the time being withdrew those ardent coal purchasers from the market. The drop of western Kentucky coal resulted until the region closed the week Saturday noon with quotations at $8@$8.25 in Chicago, and a prospect of much coal before the middle of this week. Eastern Kentucky followed. The market came to a grand pause to see what was going to happen next.

The feeling of operators in the Kentucky fields was wholesome, however. Eastern Kentucky, almost to a man, was delighted at the prospect of getting a full car supply after a three weeks' period of much less than half that number of cars and many of the leaders among the western Kentucky men counseled the hot heads among their number to accept the Hoover plan with good grace, as it would be more profitable in the long run for them to sell a maximum output at $3.50 than to sell one day's output a week at $10. Fuming it was easily seen, any operator who chose to fight the government control of cars probably would find his case dragging in the courts long after the present ravenous demand had passed.

SOUTHERN ILLINOIS

Calm still prevails though it is evident, here and there, that a good deal of propagandist work is being done by the Harrington and Lewis factions within the United Mine Workers to strengthen those two main divisions. The spirit of the union—and its community influence—was shown last week when a meeting of all sorts of citizens in Williamson County was held to protest violently against any program of operating mines there under guard. There are evidences at some of the mines that the operators are getting ready for a resumption of work. This is especially true of the Peabody group.

WESTERN KENTUCKY

The end of the "wild time" came at the close of last week, bringing a distinct feeling of relief to many an operator in spite of the sharp drop in the market. Some are angered by the new government plan of controlling price by car distribution, but the assurance of a car supply looks better to most men than a battle in the courts. The spirit of the miners along the L. & N. lines is viewed most hopefully. Railroad conditions generally throughout this end of the state are improving, with a consequent increase in sales of spirits in the coal fields. "Full car supply" are words that sound as good to many an operator as "ten dollar coal". There is a good prospect now of full-time operation. If practically all of the output for the next three or four weeks must sell at $3.50, the average operator will be well off and happy over it.

CHICAGO

The bottom began falling out of the western Kentucky market here early in the week when the government plan for car control and the loan of motive power between railroads was announced. Buyers withdrew, railroads and utilities felt reasonably assured they were going to get coal at $3.50 within a few days, and trading arrived, by the end of last week, at a standstill. Western Kentucky dealers declined from $11.50 to $8 in four days and other coals on this market were drawn down too. What little eastern Kentucky the traders here could get sold readily enough at the same level as the other. Smokeless was practically unobtainable.

A great activity now, on the part of coal men, is to get authority from the control board for orders they have taken. A stampede by mail, by wire and by personal solicitation toward one or another member of the board started as soon as appointments were announced. The trade here expects there will be little free coal on the market for two or three weeks unless—and there is much which may over this point—Illinois should start operating mines under martial law.

LOUISVILLE

The hectic excitement appears to be over, at least for the moment. Last week's peak prices have come and gone, the flush mob of buyers waving fists full of currency in the faces of operators, was longer a mob but merely a calm and scattered crowd, and in the readjustment, compelled partly by the new government plan of controlling distribution and partly by the volume of buying at flyghty prices when a new low level is in sight, the market has subsided markedly.

Of the western and eastern Kentucky coal slid downward to a level of about $7 by the end of last week. Most of that which was traded was coal already in stock. With the railroads getting their new privileges right over all others industrial buyers appeared to believe coal not already in transit could never be delivered to them. So they merely pulled up what they thought they thought was almost the last free coal to be available for some time, and took it only on a swiftly declining market.

Canada

MONTREAL

Welsh coal is en route to Montreal to meet the fuel shortage. A cargo of 2,400 tons of anthracite coal, recently consigned to the F. P. Kennedy Co., for the West Indians, was sold by the F. P. Kennedy Co., for a large Montreal manufacturing company, and the other will be used to meet smaller orders.

Local dealers state that in the face of a coal shortage in the Province of Quebec estimated at 300,000 tons they are confident that should be. A report is made by the Federal government of Montreal and Canada coal companies that the dealers are. Some coal companies are making every effort to supply the demand and are asking for Co. to purchase coal in order to meet the situation. They feel that with proper handling the coal will be well received.
Non-Union Receipts Low; Industries Not Pinched Yet

Inquiries increase in volume—Anxiety Felt About Future Supply—Belief That Price Will Be Fixed Holds Down Quotations—Northwest Situation Grows Perilous.

Inquiries for fuel are increasing daily, but as yet industry has not been seriously affected by a coal shortage. Receipts of bituminous coal from the non-union fields, however, are the lowest in years and anxiety is felt in all sections about the future supply. The expectation of consumers that a fixed price will soon be established has held the market from a continuation of last week's soaring prices. Spot coal is difficult to obtain, but the trade is not taking advantage of the situation by boosting prices further.

Car and coal shortages have lowered the Lake dumpings. The needs of the Northwest are fast becoming urgent and a few weeks more delay will spell a certain coal famine for that section next winter.

Cleveland

Domestic demand for coal in the Cleveland district is showing considerable strength. If it were possible for retail dealers to obtain coal, business in the fuel line could be maintained at a rate materially above that ordinarily prevailing at this season. Strike conditions, of course, have helped to strengthen the present demand. Some hope is seen by coal dealers and jobbers here in the priority orders issued by the Interstate Commerce Commission. It is believed that movement of loaded coal cars through the clogged Cincinnati and Columbus gateways will be speeded by this action.

The Chesapeake & Ohio and other railroads operating in Ohio report their sidings blocked with coal cars in Cincinnati and Columbus, while the Big Four yards are comparatively free. Belief is that through the enforcement of the priority orders much of this load will be shifted to the Big Four. This probably will expedite shipments of Southern coal.

An especially strong domestic demand exists here for Pocahontas and other West Virginia coals. Stocks in the retail yards are getting extremely low. One large jobber and retailer states that its orders are being filled from stocks of coal which have been left over. Pocahontas shoveled lump is being quoted at $9.50 a ton, and forked Pocahontas lump is being sold for $11 a ton, delivered. It is reported that the Cleveland Electric Illuminating Co. has just purchased 100 carloads of coal from mines around Pittsburgh which are now producing or are about to produce coal.

Columbus

Just prior to the issuance of priorities there was a hurry to get under cover by consumers not in the favored list. Buying was wild and prices ranged from the federal levels to as high as $7.50 per ton. It was not so much a question of price as of the ability of operators and jobbers to deliver the coal promptly. Anxiety is felt in all localities about future fuel supply. Then buying manufacturers have low reserves. Public utilities and railroads are in a safe position, but other industries have been scurrying about.

The lake trade shows a still further decline owing to car shortage and transportation disability. During the week ending July 26 the H. V. Docks had turned out 57,354 tons the previous week. The total handled by these docks to date is 1,503,705 tons. Up to July 23 of last year these docks had loaded 2,258,170 tons.

Pittsburgh

Operators state that miners went into four mines in the Pittsburgh district on July 27—Montour No. 4, Henderson No. 2, Atlas and Wilson, all in Washington County—while officials of District No. 5, U.M.W., assert that no coal has been produced at these mines.

The priority order for coal has not affected coal movement in this district thus far. The P. R. R. and the P. & L. E. roads announce that as they are operating at 100 per cent efficiency there is no occasion for them to modify their practice. The relatively small amount of Pittsburgh district coal available, and that from stripings, has been reduced by timidity of the workmen, and trading has been practically confined to Connellsville coal.

There was excited buying up to July 26, with the price advancing until the market was rather firm at $8.50 for steam grade. Then buying began to taper off, consumers expecting a fixed price, much lower, to be established soon. By the end of the week the market had become quiet, with the price down to $7.50. Buyers seem to expect that the set price will be $3.75 for lump, $3.50 for mine-run and $3.25 for slack, but Connellsville operators have already indicated an expectation of being able to obtain $1 more.

Eastern Ohio

Persistent rumors that a joint conference of operators and miners of a part of the old Four-State field is to be held in August and soon has given renewed hope to the coal trade that a coal shortage may be averted by the early resumption of mining operations.

Inquiries for fuel are increasing daily but there has been no appreciable interruption to industry because of fuel scarcity. The volume of non-union coal reaching this section is the lowest in years. Spot prices have stiffened materially during the past week, the range on any coal obtainable being from $8@9 per ton.

The Wheeling and Lake Erie Ry. is taking coal pro rata from each mine in accordance with the I. C. C. priority order.

Several blast furnaces in the Youngstown district were banked during the week because of fuel shortage. The Youngstown (Ohio) plant of the Trans plate & Co. is reported to be closing this week because of lack of coal. A strip mine near Steubenville where the workers quit because of intimidation and the fact that union miners had been supplying coal to this plant.

Detroit

Efforts to relieve the dangerous condition confronting Detroit as a result of rapidly diminishing coal supply are being made by a special fuel committee appointed by Detroit Board of Commerce.

Prices on bituminous at the mines have advanced to $8 and $10 per net ton, though jobbers say producing companies have not advanced the price of coal sold ahead are filing such orders on the Hoover price basis or in some instances at a lower cost to the buyer where coal is available for shipment.

Neither steam nor domestic coal buyers are purchasing coal except when necessary to meet current requirements, the present high cost, in their opinion, makes it undesirable to stock up at this time. Retailers fear they would be accused of profiteering in attempting to deliver such costly coal to their customers, while the steam plants do not seem to order coal in a way equal to the high cost in the selling prices of their products.

Northern Panhandle

The trouble at Cliftonville on July 17 has not affected production at other mines but the output of the field as a whole had been reduced approximately 20,000 tons a week owing to congestion on railroads. No new demand for fuel in all markets with prices steadily on the upgrade. The demand at the lakes is particularly strong.

Buffalo

The situation turns on the soaring price of coal, caused by delay in getting miners to go back to work. They have been able to get enough outside work men to keep them in production, but the shortage of coal to continue, for that shows what their hold on the situation is.

Care shortage caused by the shopmen's strike is causing most difficulty now. It is said that there is coal enough stranded in cars on the Baltimore & Ohio alone, in the vicinity of the lake region, to supply everybody. Mine owners in that territory report to Buffalo buyers of their coal that it is on track, but there is no motive power to move it.

As a rule the consumers have coal, but many are getting uneasy and bid up for it. Most of the sales are at $8@9 at the mines, but sales have been made up to $11. A little gas coal is offered here on track at $9 by a dealer who says he paid $8.50 for it.
Mississippi

Helpless But Composed
Northwest Faces Future

Stocks Exhausted, It Cannot Help End Strike Which Victimizes It—Holds Prices to Slow Rise—Industries Share Their Fuel Piles.

A ROUND the Upper Lakes industries and small consumers alike face a shivery situation. Nobody is absolutely certain that the government will be able to direct much coal to that region. Its stocks are about gone, the docks are practically empty of free coal and almost no shipments are arriving.

The only thing the Northwest can do, helpless as it is to play a hand in the settlement of the mine strike, is conserve what coal it has. This it is doing by various means including a general movement in which several "wise" industries are sharing their fuel with "foolish" but necessary plants. Prices are steadily rising in the face of this shortage, but the rise is not uncontrolled. The Northwest is keeping its head.

MINNEAPOLIS

The Northwest is in the desperate plight of being unable to do anything to help settle the coal strike. Neither miners nor operators are in intimate contact with this district, and there is no influence which could be brought to bear direct. Belated investigations, surveys and under way in different directions can collect information, but no fuel. They will be valuable in assuring the consumers of the exact status of things, so that there need be no worse alarm than the cold facts justify and they will aid materially in the equitable distribution of such coal as may be obtained.

As a result of the frequent reports of the desperate condition of things, people are approaching a panic. Premium prices could be readily obtained for prompt delivery, but profiteering is discouraged. Retail prices of prepared sized coke, heretofore selling at $14 in these cities, have been advanced to $15. The coking plant managers claim that the advance is still low and the coke is worth considerably more than this figure. Coke will have to be used rather freely as a substitute for anthracite. The needs of the Northwest are for 1,250,000 tons for the winter. The quantity on the docks, including everything down to anthracite dust, is less than 250,000 tons. The desirable sizes are also nearly exhausted. The tonnage needed is not so large and could readily be handled in the period remaining before the close of navigation. But when resumption of mining comes, it will come with the immediate urgent demand from all section for coal, and the Northwest will hardly have much chance for more than a minimum share. The soft coal requirements, while several times as large, have so many more sources to draw from, that they do not seem as desperate.

DULUTH

The situation here has become acute. Business as a whole is on tenterhooks. The most accurate estimates available place free stocks of coal here at but 100,000 tons and some of this is available only to regular customers. Only five out of the twenty-three companies at the Head of the Lakes are taking business.

The condition of anthracite is similar. There is none to be had in Duluth or Superior except a small quantity of egg. Dealers are taking orders for delivery when they get the coal, and it seems probable that many householders, who have not filled their bins, will pass a cold winter. Customers who contracted for large amounts some time ago are now actively moving this.

Companies are inducing concerns which laid in their stocks early to divide with less foresighted neighbors. This move is meeting with some success among public utilities. It is increasingly hard to keep the boats of the smaller independent lake steamer companies going, but $5.00—an advance of $2.50 in two weeks. Bituminous prices generally are up 50c. over last week.

MILWAUKEE

Like all other cities, Milwaukee is in the throes of coal agitation. A canvass of the receiving yards reveals the fact that the only hard coal available at this time is the short quantity of pea and buckwheat. Dealers are refusing orders for soft coal for winter use in homes, conserving it for industries. They hold that supplies for boilers and furnaces in apartments and houses can be obtained later.

Most supplies offered by this market use Eastern screenings. Pocahontas can be had without trouble and also to the high price of bunkers, which makes the operation of steamers unprofitable. Only two cargoes, aggregating 10,000 tons, were received last week, making the total receipts of soft coal 740,960 tons against 1,497,933 tons during the same period last year. Last year the hard coal receipts to date aggregated 45,708 tons. No hard coal has been received this year. These figures do not take into account receipts of coal by car-ferry, which mainly go through the port to their destinations.

New England

Threatened Coal Shortage Has Become a Reality


DEVELOPMENTS are so rapid that each day's news is history by nightfall. The strikes have so seriously affected the output in the non-union fields, notably in Pocahontas and parts of the New River district, that the threatened shortage of a fortnight is now a reality. Few of the agencies have coal in any quantity at Hampton Roads and the great bulk of contract coal has been effectually cut off. Railroad priorities are expected further to curtail the supply for normal uses, and the trade is wondering precisely what is to befall.

Sundry high quotations are reported, but the quantity of coal changing hands must be very small; $9, f.o.b. vessel has been rumored, and very likely will be much exceeded within a few days.

The transactions on the Roads have been of small tonnage for clearance purposes. High figures are also rumored on cars Boston, but in most cases realhands have little or none to spare.

The natural tendency here of both buyers and sellers is to stand pat for the present. Factors who ordinarily have large tonnages regularly arriving are now suffering a dearth of supply and on that account are trying hard to keep what they have. Some are closely interested in British coal and there is active canvassing now for orders against cargoes due to arrive early in August. So far the prices heard are around $9.50 on cars Boston and Portland.

At Hampton Roads the wholesale cancellation of charters because of the lack of coal at the piers has resulted in an accumulation in the coastwise freight. Coastwise freights are easy at 85c.@90c. to Boston, but tankers are quite as scarce as coal.

The few desirable grades available from central Pennsylvania are also commanding what would very recently have been considered high figures; $7@$7.25 per gross ton has been offered on Cambria coals, especially when available at New York piers. Screened gas coal has been quoted up to $9.50.
Price Situation Upset in Related Housecleaning


PRICE conditions for the past week have been badly distorted. As the government was about to step in there was a belated attempt at housecleaning and all firms that had car numbers on spot coal were disposing of them to the highest bidder. This, however, did not mean any wide range of profit to jobbers and wholesalers, for most of the coal was coming from small mines that exacted the last penny that buyers would pay. Industries placed low in the priority list were all caught in the rush for coal and with a prospect of waiting for a month for a new supply were disposed to pay any price asked.

Clarification of the situation was promised through the arrangement effected under Secretary Hoover at the Washington conferences. The Cincinnati trade has been disposed to stay within bounds and did so until forced into higher prices by the operators who had free coal and wanted the top of the market. Whatever arrangement is made in Washington will be followed here.

CINCINNATI

Lake business has been begging for coal for the past week and where tonnage was necessary to fill cargoes partially made up on contract stuff the high price of the market was paid. During the past few days—since it was shown that the government intended to take a hand—both the lake and the steel people have disappeared as buyers, though the railroads remained actively in the market until the last minute.

The railway situation seems much better at this writing. The Norfolk & Western worked 800 cars across the scales at Portsmouth in one day, as against 1,600 cars normal. Russell Ky. and the C. & O. scales there also report improvement. Movement of L. & N. coal likewise is better.

The local retail situation is unchanged. Prices that were established the first of the month still hold. An abortive attempt to advance the price of high-volatile and smokeless domestic was frowned upon and those who put up the prices up the latter part of last week had to get back in the traces.

Blocks of twenty and thirty cars that had passed the scales or were in transit, fetched the highest price, that about $9. Any siding of southeastern Kentucky coal that had been started to market was worth $8.50.

HIGH-VOLATILE FIELDS

KANAWHA

The effort of mines formerly in the union category to produce coal has been materially checked in this field owing to the growing inability of the carriers to keep the mines supplied with cars. Acting as a unit, have declared their intention of opening up throughout the field in response to the President's invitation, provided transportation facilities are furnished to move the output. Prices offered for coal range all the way from $4 to $7 and $8 a ton. Producers as a rule, however, are shipping to their regular customers at the Hoover prices. The lake demand is unusually strong and inquiries are heavy from Western markets. At the same time Eastern buyers are also seeking large tonnages.

LOGAN AND THACKER

A car shortage is making heavy inroads on production in the Kanawha Thacker district. Because of congestion on the Norfolk & Western, these mines are operating only three or four days a week. A strike of Norfolk & Western clerks has tended to make matters worse. Buyers are bidding as high as $5 and $6 a ton.

Not more than half the production possible during June is being reached in the Logan district owing to the difficulty being experienced in moving coal. Because of the conditions described the Logan output has been reduced from 250,000 tons a week or more to 180,000 tons, with mines not running more than half time. The whole situation in this district now hinges on the transportation situation.

NEORTHEASTERN KENTUCKY

Mines are being crippled by generally inadequate transportation facilities, which has cut production to 55,000 tons a week or just about 43 per cent of capacity. The demand is unusually heavy. Crippled transportation facilities are holding back movement to the lake.

LOW-VOLATILE FIELDS

NEW RIVER AND THE GULF

New River production would be virtually normal but for the rail strike, but the output is materially curtailed and miners experienced in moving it, as a result of the growing congestion on line. Unable to obtain empties regularly, mines are not working more than half time. As far as the coal situation is concerned it is no longer a serious factor. The market is extremely active and prices are soaring, although producers as a rule are not quoting the hedge price maximums. Consumers are willing to pay $5 and more a ton.

Production in the Winding Gulf region has been reduced to about 60 per cent of potential capacity by the rail strike. The demand is unusually heavy but can be met only to a limited extent since production has been reduced to between 100,000 and 120,000 tons a week. The scarcity of fuel is forcing prices up despite the fact that most producers are not quoting above the Hoover maximum.

POCAHONTAS AND TUG RIVER

Losses in production in the Poca- hontas region as a result of the rail strike are greatly outstripping outputs. Against a total production of about 100,000 tons a week about 100,000 cars and general railroad disabilities are causing a weekly loss now of about 320,000 tons. The strike of clerks on the N. & W. is doing the best it can to keep coal moving to markets, but connecting lines are experiencing difficulty in handling loads and getting empties to the N. & W.

SOUTH

BIRMINGHAM

The local market reached peak demand during the latter part of last week. Brokers and agents were deluged with inquiries from Virginia and other points. Their immediate interest was to get orders in and numerous representatives of industrial interests and foreign brokers were in the field buying everything in sight.

Prices for spot coal soared rapidly, ranging $4@6 per net ton mines for mine-run or washed, without particular attention to grade.

The strain has now eased off to some extent through the market is still strong and active, with demand in excess of supply. The sales agencies of the larger producers have no surplus and the spot supply comes principally from the smaller mines which have done no contracting and from operations which have temporarily resumed to participate in the active market. Coal of good quality for steam use is still available in twelve-month contracts at $2.25@$2.75 per ton mines. The output of domestic sizes is pretty closely sold up and spot coal is hardly obtainable, quotations and interest being in line with the figures on mine-run and other steam sizes.

Production is at the peak in so far as the car supply and transportation service will permit; the latter is improving.

VIRGINIA

Handicapped by a shortage of cars, mines in southwest Virginia are unable to produce as much coal as they did during June, the loss from a car shortage is approximately 150,000 tons a week during the latter part of the month, reducing the output of this territory to about 64 per cent of capacity. The car shortage is being most severely felt on the Interstate Railroad and the Norfolk & Western. On the C. C. & O. production is being maintained at nearly 90 per cent.
CONNECTICUT

The union wage coal mine a few miles east of Evansville, which was visited a short time ago by a body of masked men who damaged some machinery at the mine, will be reopened, according to a statement of H. W. Rice, president of the operators of the mine. Guards have been employed to watch the mine.

The City Coal Co., Jassowle, Ind., has contracted with Krellhiel Company, Chicago, III., for the tipple equipment for its new mine. The equipment includes a Jacobson horizontal screen with a loading box for the railroad coal, and a separate screen for preparing local trade coal.

KANSAS

A. H. French has resigned as district sales manager for the Midland Coal Co. at Pittsburg, Kan., and manager George J. Wulf, who became president of the company soon after the death of W. F. Hawkins, of St. Louis, several months ago, Holmes Wagner, for a number of years cashier, becomes general claim agent at Pittsburg.

Rustee Hamilton, dinky engineman for the Edlworth Coal Co., at Minden, Mo., has applied for a patent on a steam engine, the motive for which he spent eight years in developing. He asserts that his engine development more powerful with less bulk and fewer working parts than anything of the kind he has ever seen. The chief advantage he claims for it, however, is that it is foolproof.

KENTUCKY

Recent incorporations in Kentucky include the following coal companies: Bourneville Coal Co., at Minden, Mo., a capital of $100,000, and partners Charles Frost, John Frank and H. A. Steele, Copperas Cove Coal Co., at Bentonville, Ky., a capital of $100,000, and partners Thomas Porter and Logan Thomas East, Kentucky Coal Co., $25,000, and partners J. F. Auxler, N. C. Auxler and Paris Bouquet.

The Millers Creek Kentucky Mining Co., headed by W. B. Brunk, is installing an aerator across Big Sandy River at Auxier, and doing development work preparatory to producing as soon as the trains are completed.

IOWA

Coal production in Letcher County Kentucky has been decreased 99 per cent, account of the railroad strike. According to various estimates the present unemployment situation is reported to be serious.

The Prestonsburg Coal Co. has moved a large piece of equipment from the old company's coal mines near Prestonsburg to its new operation in Green River County. A narrow-shafting screen and a loading boom tipple and about two miles of railroad track from C. & O. have recently been completed.

MINNESOTA


The Big Mountain Coal Co., recently formed to operate a jobbing concern which has been re-organized by P. A. Coen and the Clyde Coal Co., has recently opened. New officers are P. A. Coen, president; S. C. Sharp, vice-president, and C. H. Auschild, secretary.

The following charters were recently granted to the Superior Coal Co., of Prestons- burg: Huether Coal Co., mining and preparing coal for the market. Has a capital of $500,000. Incorporators, H. J. Huether, B. A. Huether, and E. H. Huether.

The Huether Coal Co., Connellsville, $5,000; Philip Gallagher, Connellsville, treasurer. Incorporators, Thomas Howard, S. H. Galloway, and R. Galiardi, Connellsville.


The Valley Coal Co., has been supplying the City of Pittsburgh, under contract, with coal for industrial purposes, taxes, etc., during the strike period. For this purpose union miners were employed to dig out a number of tons of coal per day from one of the company's mines. It is reported that the new owners of these mines refused to work. The company, represented by Harry Kicklighter, of Pittsburgh, was the second party whereby coal was to be supplied for the city, the company paying a royalty of 15 per cent to the union and using some of the miners. It may be interesting to note that representatives of District No. 5 of the United Mine Workers of America gave their approval.

The Y. V. Coal, Gravel & Transport Co., Zanesville, has been incorporated with a capital of $250,000. The incorporators are H. B. Vincent, H. C. Stalher and others.


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**WEST VIRGINIA**

Operations are to be conducted upon a far larger scale under the plans of the **Springdale Coal Co.**, which has recently been organized and chartered with a capital stock of $300,000. This company will engage in the coal business in Fayette County, and the offices have been located at Morgantown. Leading figures in this operation are Robert A. Pollard, H. C. A. Hawley, C. O. Dunn and E. L. Ellison, all of Beckley.

The **Centre Coal Co.** has been formed by Morgantown people with a capital stock of $75,000, with offices at Morgantown. Leading figures are Richard A. Pollard, Hudson Clinesey, Vision Mollott, Matt Fluttert and Huyck to all points in Morgantown.

The **Guyan Valley Fuel Co.** presages the development of property in the Logan region on a small scale, and the **Berkeley Coal & Coke Co.**, whose headquarters will be at Huntington, is also making preparations for the mining of coal.

**Traffic News**

The **Montana Coal & Iron Co.**, in a brief filing at Pittsburgh, says that it is possible the rate case requests the rates per ton payable by the coal from Beaver Creek, Mont., are applied to rail freight charged at Arlington, Minn., and Kirby to all points in Montana, Wash., Idaho, and Montana and the differential basis of rates on slack track lumber are illegal.

The **Indiana Power Co.**, of Vincennes, Ind., alleges unreasonable rates on coal switched at Evansville. The company requests the rates not in excess of those charged for other mines in the Finleyville, Moundville and Richland fields.

The **Lincoln Gas Co.** of Pittsburgh, has requested the rates on coal from its mine, which is at Selbyville, Del., Wheeling to points in the Eastern and Midwestern states are not reasonable. The company requests rates not in excess of those charged on other mines in the Finleyville, Moundville and Richland fields.

The I. C. C. has decided, in the case of **West Kentucky Coal Board**, that the rates on bituminous coal from western Kentucky mines on the Louisville & Nashville Railroad are unreasonable, and points in Georgia are unreasonable. It is held, however, that the maintenance of rates on bituminous coal from mines in Alabama, eastern Tennessee and southwestern Kentucky and port Wheeling, Ga., for export, while no export rates are charged on western Kentucky points from western Kentucky mines, is prejudicial to the western Kentucky mines.

The I. C. C. has made recommendations as to the following coal rates, which are unreasonable: from points near Evansville, Ind., to Zionsville, Ind., and Wheeling to points in the Eastern and Midwestern states from coal from a mine in the Illinois and Indiana coal field. The companies have been notified of the rates that are not reasonable. Rates on coal from a mine in Michigan are unreasonable. Rates on traffic charges on coal at Worthington, Minn., and Hammond, Wis., are reasonable.

The I. C. C. has made recommendations as to the following coal rates, which are unreasonable: from plants on the Illinois Central and Indianapolis Southern, and the Chicago, Rock Island & Pacific railroads on bituminous coal and briquettes from Illinois and Indiana to points on the South Side of Chicago.

The **Ballard & Thompsons Railroad Co.**, operating a line connecting the properties of the **Glass Works Co.** and the **St. Louis & Southern** R. R. at Thompsons, in Grand County, has applied to the Public Utilities Commission for permission to operate as a common carrier. It is held that both the needs of the coal companies and the residents at Sego make it necessary for the operation of the road as a public carrier.

Thomas W. Arnette, of Fairmont, president of the Antler Coal Co., has gone to Denver, where he will spend about two months in making necessary investigations. Mr. Arnette will visit the mines under his supervision and is endeavoring to improve the operations of the mines in the Morgantown field.

Toledo, Ohio, July 17 — The general manager of the **Massey-Tyler Coal Co.**, of which the co-partner is Mr. Hatfield, the latter has been in charge of the company since it took the lead in opening up one of its mines, has been open-shop on the belief that labor alone can not possible. Others finished as fellows: 2d; Michel; 3d; Holliveau; 4th, Blairmore, 5th, and 6th, respectively.

In the senior first-aid contest there were 28 contestants. The winners were: 1st, Drumbellier Coal & Land Co.; 2d, Coleman International; 3d, Canmore; 4th, Lethbridge, 5th, Lethbridge (No. 2); 6th, Calgary. The ladies first-aid event was won by a Calvert, Mrs. Frank Greeno, of Lethbridge, presented the awards.

**COAL AGE**

**Vol. 22, No. 5**

**ALBERTA**

Mine-rescue and first-aid contests were held at Canmore, July 10 and July 1 under the auspices of the Canadian Institute of Mining and Metallurgy. In the junior first-aid contest, the winners were: 1st, Mrs. N. A. L. Lambie, 2d, Mrs. C. M. Reader; 3d, Mrs. George R. Smith, 4th, Mrs. W. J. G. Gibson. In the senior first-aid contest there were six contest, the winners were: 1st, Mrs. J. E. B. P. Lambie, 2d, Mrs. W. J. G. Gibson, 3d, Mrs. C. M. Reader, 4th, Mrs. E. B. N. Ziler, 5th, Mrs. George R. Smith, 6th, Mrs. W. J. G. Gibson.

**WASHINGTON, D. C.**

For the year beginning July 1 the War Department has available, under Congressional appropriations for 1924 of the **National Army**, the President, $3,500,000 for the purchase of fuel during the year.

**Northwestern Dock Operators’ Association**

Henry F. Smith, of St. Louis, was elected president of the **Northwestern Dock Operators’ Association** at its recent meeting in Chicago. Mr. Smith is vice-president of the **Harold Coal & Coke Co.** of St. Louis, and the officers chosen were: Vice-president, J. L. Fish, secretary-treasurer, C. O. Lambie, secretary, J. O. Lambie, of the Toughenyohe-Northwest Coal & Coke Co.; secretary-treasurer, W. A. Prinsen, of Chicago.

**Coming Meetings**

**New York State Coal Merchants’ Association**


**American Institute of Mining and Metallurgical Engineers**

Will hold its next meeting during the week of Sept. 25 at San Francisco, Cal. It is proposed to meet on Sept. 19, stopping at different cities en route, and to have the meeting in conjunction with the annual meeting of the **American Society for Reinforcing Concrete Buildings**, New York City.

**American Chemical Society**

Annual meeting will meet at the **1924 annual meeting of the American Chemical Society at Carnegie Music Hall**.

**American Mining Congress**

Twenty-fifth annual meeting of the Association, and equipment will be held at Buffalo, Cleveland, Ohio, Oct. 9-14, Executive Committee, E. C. Porter, convention manager.

The **Rocky Mountain Coal Mining Institute** will hold its next meeting at Glenwood Springs, Colo., Sept. 7-8. Secretary, W. B. Whiteside, Denver, Colo.
A Substitute for President Harding's Proposal

CLEVELAND is staging a two-ring show this week. One is the Eastern Ohio operators' party with Mr. Lewis, to which we refer elsewhere on this page. The other is a horse of another color. It may almost be described as the "dark horse," for it was but announced on Tuesday with all details officially withheld until Wednesday. It is a plan to settle the present suspension of mining. It is not a settlement for the issues of the strike. Briefly, it is this—mine owners and mine workers are to resume operation with the status quo of March 31, 1922—wage scales, check-off, everything. They are then to go home and forget the controversy and cool off for 30 days. By Oct. 31 they are to elect an advisory committee composed equally of operators and miners, which committee is to make detailed, deep and complete study and investigation into the coal industry. It finally will report its recommendations, not binding on any one, as to the best way to conclude future wage scales, whether by districts, states, groups of states or nationally. This committee is to give equal consideration to the competitive relationships of the operators and the necessity for full compensatory wages for the men. A lot of other things are suggested.

The essential thing is that the moot point of HOW is put aside. Mr. Lewis does not get his four-state conference, nor the operators get their district agreements. Which it is to be will be recommended by this committee. Since neither side is called on to concede the point, and since the resumption for the winter at the 1920-1922 wages has already been discounted in most fields, made certain in fact by the proposal of President Harding last month, there is not much left to argue about. It may be, as some thus early would think, but another string in John Lewis' bow, but since he has the bow, what matters another string? It is a plan parallel to that proposed by the President on July 10, with the difference that John Lewis will accept it.

Negotiating a Truce

LAST February the United Mine Workers declared war on the American people. They said they would exert their full economic force to prevent the liquidation of their wages from the post-war peak. They have succeeded so far. In the face of economic conditions wholly opposed, contrary to every canon of sound industrial readjustment, the miners' union has stood off wage reductions, even consideration of wage readjustments, and when they go to work some time this Fall or this Winter, it will be for the most part at the wages they struck to maintain. This is not a concession in advance of the fact, but an actuality. It is a tribute to superior organization, unified command, better generalship and more efficient use of the common type of munitions, propaganda—if you do not object to the use of the word.

A war is not over until someone surrenders. Neither has surrendered so far. It is true that the principality that regards Cleveland as its capital and metropolitian center is treating with the union this week, but the bulk of the operators in that conference, the leaders at least, never were in the war. They had no quarrel with the union and have put no army in the field. The operators of Eastern Ohio have not capitulated to the union. Their course has been consistent from the start. They have been one of the neutral states in this strife. In the crucial test of 1921 that field suffered, by comparison, not at all from non-union competition. They could continue to pay the highest rates to their men and it would be no skin off their knuckles if the consumer had to pay them in accordance for coal.

Eastern Ohio in the last six months of 1921, when competition in the sale of coal was so keen that men ceased to be friends, operated at the rate of 32.6 per cent of full time. Her nearest union competitor, southern Ohio, managed to record 22.9 per cent in that same period. Pittsburgh all-rail mines ran at 41.2 per cent. The non-union fields of southern West Virginia, with lower costs both by reason of better natural conditions and liquidated wages could register no better than from 49.8 for Pocahontas to 24.3 for New River. Is it any wonder that Eastern Ohio has not been in favor of fighting it out with the union? How can anyone call a fellow a quitter when he never started? So it cannot be heralded as a victory for John Lewis that he has lined up that group of operators.

Where John Lewis has scored a triumph has been in holding his forces intact through the summer and until the public necessity for coal has driven first the hard coal producers and then a substantial portion of the soft coal operators to offer a resumption of work on the old and highest scale, for the winter. The question of supply of fuel for homes, transportation and industry for this winter has long since become so acute that the President has virtually taken charge of the situation. He is after coal production for the people. He asks the contestants to forget their strife for a while and give us the needed coal, and urges the submission of the points at issue to the third party, an impartial tribunal.

Plainly enough the policy of the administration at Washington in both the coal and rail strikes is to establish the principle of arbitration in these major industrial disturbances. Nothing can be fairer. The inhabitants of the east bank of the Rhine, however, never crowded the hotels at the Hague in 1914 and came somewhat reluctantly to Versailles in 1919. John Lewis surveys his ranks and states that the only council table he will put his feet under is one of his own
Choosing. So he calls in the few who have no quarrel with him and they bring some adherents and attrition of the operators' ranks begins.

Since March the various coal operators' local associations have regularly offered to meet their men, through the regular union representatives, in district conferences. Time after time they have called for conferences, set dates and opened the boxes of cigars, but nobody from the union came to the meeting. John Lewis had told the men that the only way to prevent a reduction in wages, to forestall the otherwise inevitable loss of some of the gains of the war and post-war inflation was to stick together; that district settlements foreshadowed less than district settlements and disruption of the union. He got the message over and no power of operator persuasion has been able to jar loose a single element of his membership. His ranks held.

Now, with coal stocks lowered to the point where cumulated demand insures full running time for all the mines and offers even the operators of the more sorely beset of the union operators a market for what they may be able to produce at such prices as will warrant any old wage scale, Mr. Lewis attempts to turn the flank of the enemy with some of the tactics he resisted for five months. Having successfully withstood the enticements of district settlements offering local enrichment to small groups of mine workers, he seeks to entice small groups of operators from their common policy of district settlements to participation in national wage conference.

### Congress Views a Hornet's Nest

Throughout the week the office of the Federal Coal Distributor has been busy day and night. It already has been demonstrated that H. B. Spencer and his associates have a comprehensive grasp on the situation and are entirely capable of carrying out the very remarkable plan which Secretary Hoover has worked out—remarkable particularly in respect to putting responsibility outside of Washington. The trouble is they are being called upon to make bricks without straw. Just how much of a success they will be able to make of the job, in view of the flimsy authority to which the Federal Government can lay claim, is questionable. One thing is certain, the coal operators are on trial. They have been put on their honor but if they yield too generally to the temptation of accepting prices above the maximum agreed upon, it is believed that nothing then can prevent regulatory legislation. This is not an argument for fixing prices, but a conclusion. Just now Congress regards the strike as something of a hornets' nest. The administration has won little commendation for its efforts. Because of the danger of being stung, Congress will keep away from the hornets' nest until after the strike.

### Two Hundred Thousand Dollars

High-sounding resolutions of horror at the Herrin massacre, in which a score of non-union men were murdered after they had surrendered to a mob—presumably a union mob—and resolutions calling upon the state and national authorities to bring the culprits to swift justice are easy to pass and put in the mail. But what do they accomplish? It is well for the public to express its opinion on such matters, but, unfortunately, the peculiar situation at Herrin and in the remainder of the solid-union south of Illinois makes it so difficult for state and government to enforce the authority of the law that the citizenry of the state and nation can better aid by lending assistance more concrete than words. Money is the answer.

In handling a situation such as that in Williamson County, where morals are no higher than they obviously are, one of the most powerful magnets to be used in search of the truth is cash offered to obtain evidence. State Attorney Edward Brundage, of Illinois, recognized that after his first visit to the troublesome region. He offered $1,000 cash for evidence that would result in conviction of the guilty. He obtained some evidence, but, apparently it is little enough. With a fund available two hundred times as large as that offered by Mr. Brundage a tremendous impulse should be given to the swift and sure apprehension of the men who instigated, abated, and executed the Herrin horror. Two hundred thousand dollars should encourage enough willing but fearful citizens of Williamson County to yield up facts at the risk of their lives so that that "bloody" section of the State of Illinois could be purged to a point where honest people there could once more tell the truth and law and order prevail.

### Interminable Roadways

Some are disposed to think that only in big mines are long roadways and a haphazard system of development to be deprecated. After all most of what has been said of these larger producers by Wilcox and Pleschner is true also of small drift mines.

When even a 1,000-ton mine is laid out with only a main entry and several interminable room entries there is bound to be excessive air resistance or excessive splitting and, what is as bad, much loss of air from leakage and much expense for maintaining stoppings and roadways. Development also is sure to be slow and must be run double shift.

Many small mines, especially in low coal, fail to be productive because of lost air, excessive road upkeep, frequent stoppings, repairs to brattices, too many poor communications, making supervision and management difficult; attempt to maintain several expensive drainage ways and too frequent night work on headings. Where a room heading supplies a full load for a locomotive the length of the heading may be of little consequence. The locomotive has to go as far whether the work is in panels or goes on indefinitely or to the crop. But where the locomotive has to haul from two headings to obtain a full trip it is a distinct disadvantage to have the headings long, for much time is wasted in running so far under partial load.

Unfortunately an elaborate layout serves often only to cause delay in the first stages of development. At that time one main entry (including, of course, a return airway) is all that is needed. The room entries are short, the resistance to the air is light, the leakage through the stoppings is negligible and the expensive layout necessary to guard the future is regarded as extravagant. But after awhile the simple method, adequate enough for early operation, becomes wholly unsuited to later conditions. Nowhere is coal enough removed, and a squeeze is likely to occur. With all the robbed portions of the mine cleaned out and entirely caved the newer parts are safe and may be relied on.
Methods and Practices of E. E. White Coal Co. 
At Stotesbury, W. Va.

By Alphonse F. Brosky*
Pittsburgh, Pa.

Track Device Tests Automatically Presence of Loose Wheels—Rebuild Locomotives Periodically According to Determined Schedule—Foundry Established at Mine—Tire Removals Facilitated—Larry Adapted to Steep Hillside Dump

A FREQUENT source of accident around coal mines is wheels that become loose and out of
gage by the loss or shearing of retaining pins or the loosening of bolts. No assurance can be felt that
wheels will not become loose even when they are of the
tight-wheel type, in which, of course, the axle revolves
with the wheel. Whether the wheels have plain or
roller bearings they are apt to become loose and the
so-called "loose wheel" that revolves on the axle is prone
also to loosen in the same undesirable sense. All wheels
therefore need inspection if derailments are to be
avoided.

*Bituminous editor, Coal Age.
Note—Frontispiece shows tipple of E. E. White Coal Co.

At many mining plants the mine cars are periodically inspected, particular attention being paid to the
condition of the wheels and axles. However, as such
cars are heavy and as the inspection usually is made
with the cars on the track, judgment is left to the eye
alone and not, as it should be, to some mechanical test.
Consequently a faulty wheel often goes unnoticed.
At other places the man who attends to the lubrication of
the wheels or axles is instructed to watch for any de-
fects, but, unfortunately, it is much easier to bend over
slightly and fill up the oil reservoirs than to get down
on one's knees and crawl around in the effort to detect
a faulty wheel or axle.

For this reason inspection is often omitted or else
made in such a haphazard manner that it might just
as well be dispensed with. In still other cases inspec-
tions are never made and defects are corrected only
when they assume a dangerous form and are readily
discernible by the eye. A greater tractive effort of the
locomotive is necessary when the wheels become loose.
This deficiency inevitably makes itself felt in higher
power bills.

At the Stotesbury mine of the E. E. White Coal Co.,
at Stotesbury, W. Va., an ingenious track device has
been designed which will make evident such wheels as
have too much play and will sound an alarm when they
are found. With this arrangement no one is required
to give up his time to inspection, as the action of the
device is automatic and, what is still more to its ad-
vantge, each car is inspected every time it passes
over the empty track at the tipple. Unlike a personal
inspection it is foolproof, for every car that passes
over the device is made to sound an alarm if the wheels
under test do not continue within the limits of the
track gage. One of the several men who work on or
about the tipple will hear the alarm and run the car
without delay on the track leading to the shop.

With the following description and the illustration
shown it will be possible for the blacksmith at almost
any mine to fabricate the rails of which the device is
composed. As may be seen by referring to the illus-
tration, the entire length of the deflecting track is no
greater than that of the standard rail—that is, about
30 ft.

It is inserted on the empty or return track leading
from the tipple, so that the cars pass through it by
The double rail on the right acts as a raceway, holding the flanges of the right-hand wheels against the inner guide rail. The tension spring at D should be strong enough only to pull back the latch to the position shown, after a normal car has passed. A spring with a tension of about 30 lb. should do this work.

The blacksmithing job required is easy, for the material needed is available at any mine. Even the small separating collars and the spring are likely to be found there. The cost complete is nominal, and the saving made by detecting a loose wheel before it has time to cause a smashup at frogs and switches will repay the expenditure.

We have been reading so much lately about mine locomotives and their care that we sometimes feel that the subject has been overstressed. But the E. E. White Coal Co. follows a policy regarding its locomotives that would increase the tonnage at any mine at which it was adopted.

The ideas which suggested the present policy came from two sources. One of these is the railroad. In the case of steam locomotives and, to a lesser extent, of other rolling stock the railroads have ever followed the maxim that "a stitch in time saves nine." As everyone knows, railroad locomotives are given a daily inspection and every evil is remedied regardless of the time or the extent of the repair job.

Run Mine Railroad as Railroads Are Run

Steam valves are replaced if leaky and all joints are made secure, and this is followed by attention to mechanical details, including a general tightening up of loose parts. Even though the steam locomotive is notoriously inefficient, it is truly remarkable how few are the delays on the railroads that can be attributed directly to the failure of the locomotive. The secret of this continuity of service may be found in frequent overhauls and inspections.

At the Stotesbury mine at least one locomotive is in the shop at all times. They are taken there in turn, not because there is something radically wrong with them but because it is thought that by so doing the interruptions due to locomotive ailments will be minimized. The policy is no longer an experiment, as gratifying results have justified its permanent adoption.

A new locomotive with a proper consideration for its limitations will run a long time without requiring much care. Gradually, however, it will run down; certain parts will have to be replaced because of wear and others as a matter of safety. Virtually this mine never has any old locomotives, as they are completely torn down, one at a time, and rebuilt, putting in new parts where advisable. The electrical features receive the greatest attention in these overhaulings, partly because they cause most of the trouble and largely also because their defects are not immediately apparent.

Gears, pinions, bearings and the like may be inspected and their real condition thus determined, but electrical equipment may disclose no weaknesses when inspected physically and yet may be found faulty when tested electrically. On the other hand, the opposite may be true—an electrical test may satisfy the observer whereas a physical inspection may show that the insulation is in poor condition. Armatures, controllers, resistors, coils, cables and so forth do not have lives of equal length, for the intensity of duty of each varies.
Under given conditions and with careful usage the average life of the part may be determined—the length of time, that is, during which the respective parts functioned satisfactorily. By allowing a life for each slightly shorter than that observed in use and making replacements and repairs accordingly the locomotives may be kept going for a long time without frequent and annoying trips to the shop.

In keeping costs an adaptation of the Indianola mine system is employed to cover the electrical equipment used underground. Each section of the mine is put in charge of an electrician, who is held responsible both for the upkeep and the cost of the electrical equipment in his section. In this way a check is made on the work done by the shopmen, as the electricians are willing to have their equipment overhauled at stated intervals, but do not like having a job that is not done properly charged up to their department.

The upkeep costs of locomotives, pumps, cutting machines and wiring per ton of coal mined are kept separately for each mine section, and it is the constant aim of each electrician to keep the cost per ton at the lowest possible figure. It might be said here that if the cost of new parts and the workmen’s time only is considered this system of renewal is much more costly than the old system where repairs are made only as needed, but if the greatly increased tonnage obtained under the new system as compared with that under the old is taken as a measure, then a saving is effected in favor of the new.

The loss of tonnage under the old method of not repairing until a breakdown occurs should be charged up against the old system. After the practice of making repairs before a failure occurs had been in force a year the tonnage coming from the mine in one month was increased from about 40,000 to 51,000 tons as compared with that attained when the new system had just been introduced.

Some mines in West Virginia, and for that matter in other states also, are situated in such isolated regions that only with great difficulty and loss of time are supplies obtained. A complete stock of repair parts cannot be carried without an excessive interest charge, but there are times when a gear or something similar is needed to complete an urgent repair job, and at such times the delay creates a perplexing problem for the management of the mine.

If the plant has been provided with a well-equipped machine shop, a small bronze foundry may well be added so that parts needed in a hurry may be molded, poured and machined in less time than would be consumed in placing an order for them at some distant point. A small bronze foundry, having a capacity of 400 lb. in one heat, occupies one corner of the blacksmith shop at the Stotesbury mine.

With the aid of a small furnace small pinions and gears may be cast, the latter of considerable size, in case of an emergency. Here the journal boxes of locomotives frequently are made and occasionally bushings are cast. But the foundry is most useful in the casting of metals having comparatively low melting points. Where mines are situated handy to a commercial foundry a job of an unusual characted may be completed under the personal supervision of the customer, who can see that just what he wants is constructed, but mines at a great distance from such a foundry are handicapped in this respect, and in such cases a foundry at the mine is more than justified.

No one can gainsay that where possible it is a wise policy to order all replacement parts from the manufacturer, as thereby a better product is assured. It would be foolish indeed to assert that workers at the mine can compete with a commercial house as to the quality and cost of one of its standard products. A small foundry is justified, therefore, only when installed for the purpose of insuring continuous operation of the surface

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Jobs Completed in Foundry

This mine is located at some distance from custom repair shops and from supply houses, and consequently a foundry at the mine prevents delays that would otherwise be inevitable. Certainty of operation is one of the methods by which running costs are reduced.
plant. Because this is so the cost of the emergency job is a secondary consideration, so long as a normal coal tonnage is forthcoming as a result.

The furnace in use at Stotesbury utilizes coal as fuel, aided by a natural draft of a 24-ft. air column. The furnace proper is sunk below the floor line and is therefore of the pit type. For the benefit of those who might have need for it, a sketch of the furnace is shown on page 201. The retaining walls and the ash pit are constructed of concrete, the dividing wall and the grate being supported by old rail. The heating chamber is lined with firebrick and the fuel grate was supplied from a sand drier. It rests upon the rails embedded in the concrete. The mouth of the furnace is corniced by a cast-iron channelled collar covered by a cap of like metal. The lower inlet of the chimney is at least one foot below the floor line; consequently it should be protected by firebrick or plastic cement. The use of the latter to line both the furnace and the lower region of the chimney is desirable because of the ease with which it may be applied. The molding, heating of the bronze, pouring and the care of the furnace are placed in the hands of one experienced foundry-man, who, when occasion demands, enlists the aid of one or more of the blacksmiths.

The coal at the Stotesbury mine lies several hundred feet above the railroad track, so that all supplies must be raised up an inclined plane. At the foot of this plane and close by the railroad track stands the sand house, the construction of which has at least one feature of merit. It is elevated upon a foundation of wood posts so as to allow cars to pass under it, thus facilitating the loading of the dried sands. As the building is constructed of wood the two chambers in which the sand dryers stand are fireproofed by a cement lining and steel sliding doors. There are five compartments in the house; on the two extreme ends are located the storage bins for the green sand, and the two drying compartments adjoin these on the inside; between the two dryers is a storage bin for dry sand. The latter is provided with a trap in the floor through which the sand is discharged into a sand car spotted beneath. The layout is such as to eliminate all needless handling of the product.

At almost any mine the problem of removing flat and otherwise worn tires from locomotive wheels must be solved. This is accomplished in many ways, among which is the circular burner which circumscribes the wheel to be heated and consumes a mixture of gasoline and air under pressure. This method, while effective and quick, is dangerous and complicated as compared with the method employed at the Stotesbury mine.

The heating device in use at this mine is an adaptation of the gasoline air burner. A piece of 2-in. steel pipe is rounded to form a circle the inside diameter of which is slightly greater than that of the locomotive wheel. To complete the burner pilot holes are drilled at intervals.

A socket coupling connects the burner to a 2-in. line which connects up with a small motor-driven air blower. The burner is placed outside the machine shop directly under the hanging point of the boom of a swivel windlass derrick. The connecting air line supplies air from the blower inside the shop to the burner on the outside. Slack coal is used as fuel, heaped up about the burner and the wheel.

The second cut on page 201 shows a multi-groove split collar to take up play between an axle-suspended motor and the gear it drives. As shown in the figure, six ½-in. square-sectioned grooves are cut in the axle on 1-in. centers. Four square tongues of similar dimensions are cut upon the split collar to engage into four of the six female grooves on the axle furthermost away from the suspended motor.

With this provision any side play of ½ in. plus necessary clearance may be taken up simply by stepping the collar over one groove toward the motor. If the side play is great enough to be taken up but still less than ½ in. plus the necessary clearance, then the collar may be faced down to meet the correct dimensions. Every locomotive that comes into the shops at the Stotesbury
mine for the first time has its axles equipped with the collar. At few mines in West Virginia has an efficient system of slate disposal been installed. At several mines slate is actually hand shoveled from solid cars; at one mine at least horses and wagons are used; horn dumps and galloway dumps are resorted to extensively. One of the illustrations shows a refuse larry in use at the Stotesbury mine, having been built in its shops. It is nothing more nor less than a tilting container equipped with a lever-controlled end gate.

This box is mounted on a turntable on the upper half of which is mounted a 15-hp. motor which is used for revolving the slate holder and also for raising and lowering it by means of a worm and gear drive attached to a windlass-and-sheave hoist. The body of the larry is mounted on an I-section frame generously reinforced. The larry is driven through the usual pinion and gear attachment to the rear axle by a 15-hp. motor.

At many mines in this state the coal lies far above the railroad and the tramroads and slate roads are veritable shelves cut in the precipitous hill sides. Consequently a slate larry need only be self-propelling and self-dumping. It is not necessary to have it carry the slate away from the larry, for by merely sliding from the tilted bin large quantities of slate may be stowed without any necessity of barring the track over.

Will Neutralize Mine Water with Marl Before Pumping It to Surface

BY WILMER C. MASON
Columbus, Ohio

A TANK has been installed by the Triangle Clay Co., of Ulrichsville, Ohio, which apparently treats water from the coal mines so successfully that “sulphur” or copperas is removed and the effluent from the plant is made relatively harmless to pumps and pipes.

The installation consists of a wooden tank, 15 ft. long, 8 ft. wide and 2 ft. deep, divided by baffles alternately joining at the top and the bottom of the tank. The water flowing through the tank is thus forced upward and downward through the marl, a natural calcium clay, with which the tank is filled. This neutralizes the copperas, and the product, being insoluble, is caught on the cinders with which the last compartment of the tank is filled and which will be cleaned out from time to time.

The cost of the installation was $40. It is estimated that one charge of marl in the tank, which holds three tons, will last six months. Marl, at this rate, will cost another $40 a year.

An analysis of the untreated copperas water from the mine showed that it contained 17,800 parts per million of solids, of which 840 were in suspension. The solids in the treated effluent from the tank contained only 2,520 parts per million of solids, of which 60 were in suspension.

The solids in the water were largely sulphates of iron, calcium and magnesium, the iron sulphate giving a strong acid reaction in the untreated water, which expressed in terms of sulphuric acid, amounted to 446 parts per million. Although the other solids in the treated water, similarly expressed in terms of sulphuric acid, amounted to 87 parts per million, they were largely non-acid-forming calcium and magnesium sulphates, and indicators gave no acid reaction, either immediately after treatment or after the treated water had been allowed to stand a week with the purpose of determining whether the treated water would revert to acid.

Mine water has in the past so polluted streams that cattle and horses which drank it have died as a result. It has destroyed thousands of fish, rendering the streams unfit for use as a source of water supply for domestic or industrial purposes. Many companies have gone out of considerable expense in unsuccessful experiments to treat the water before pumping.

The Ulrichsville treatment tank, where the copperas

*Assistant Supervisor of Streams, Department of Stream Pollution, State of Ohio.*

PLAY TAKEN UP BY GROOVED SPLIT RETAINING COLLAR

*Takes up any play that may tend to develop between an axle-suspended motor and the axle it drives. It will be clear that a shift of the collar from position A to position B will reduce the play the width between groove centers.*
is neutralized, was built outside the mine for experimental purposes only, but it will be moved to the sump, so that the treatment may accomplish its purpose of eliminating the cost of the present frequent renewals of pumps and pipes. The system was developed by the Stream Pollution Department of the Ohio Fish and Game Division. Several other mines in Ohio which have been watching the progress made with the preliminary experiments have intimated that they will install the system.

It should be added that the mine is not of large capacity, being worked only for the fuel supply of the clay company. The quantity of water now being pumped is about 500,000 gallons a day. When the strike commenced the mine was allowed to fill with water, which is now being pumped out. Under normal conditions about 100,000 gallons would have to be discharged daily.

**Illinois Mine Inspector Makes Suggestions For Greater Safety in Mining**

Too many accidents, fatal and non-fatal, occurred last year in the mines of Illinois. Falling coal alone, mostly coal that had been already undercut and shot, was the direct cause of thirty-two fatal and 412 non-fatal accidents. That is too great a number for one state, a single cause and a single year. When I come across an accident from falling coal I am always convinced that it was not really accidental, for it could have been avoided. Mine managers and superintendents contend that some men really die not from accident but from deliberate suicide, but the contention seems difficult to support.

All coal should be undercut or sheared and when undercut it should be snubbed for half the depth of the cut and at least one-third of the thickness of the seam. An accident by which four shotfiring in the Springfield district lost their lives on Feb. 22 of this year would not have occurred had the coal been undercut or sheared before the shots were fired.

We shall make more improvements in the next ten years in the mining and transportation of coal from the face to the surface than we have accomplished in the last thirty years. In the past we have greatly improved our mining machinery both below and above ground, but at the face improvements in mining methods have not kept pace with other developments. The faces of all cross and main entries should have two ways of ingress and egress to the surface, but when driving a single room entry it is not necessary to drive two headings—an intake airway and a return—provided that the mine is operated by the panel system of mining.

When the panels are 2,000 ft. apart a small booster fan can be placed at the mouth of each stub entry, and this will give the miner better ventilation at the face of the entry than he would receive if two headings were driven. The pipe from the fan can be kept within 10 or 15 ft. from the face of the entry until the headings hole through. Then when rooms are started air sent in at either end will go through without loss. In this manner one heading and several crosscuts will be eliminated, and a saving made in labor and yardage. And yet the mine will be better ventilated.

Some one has asked me: "With only one entry in operation, what if you should have a squeeze?" My reply is that I have never heard of a squeeze that did not close both entries and that in all my experience I have never known of anyone being closed in a mine by a squeeze. Furthermore, if coal were mined out in the proper way, no squeeze would take place in the advance workings, but only during the retreat or pulling of pillars. In my opinion a large part of our accidents, both fatal and non-fatal, are caused by taking out too much coal when driving our rooms up. The more tons of coal mined per keg of powder, the less accidents we have. The Lovington Coal Co. has been in operation for over ten years, mining 150,000 tons per year, or 1,500,000 tons in ten years, without a fatal accident at the face. In this mine an average of 150 tons of coal is produced per keg of powder.

Fifty or sixty per cent of the coal can be mined without the use of explosive. If we would drive up our rooms no more than 21 ft. wide, laying the road along one rib and leaving pillars sufficient to support the surface until the room is driven up to the boundary, and if when we start drawing back the pillars we would undercut the coal from crosscut to crosscut, the coal would fall down without the use of powder. This would increase the percentage of lump coal and reduce the percentage of screenings, causing the coal to bring a better price.

One mine in my inspection district, operating under the method just mentioned, produced from 80 to 90 per cent lump over 11-in. screens. While driving up the rooms the coal was shot with four drillholes instead of three, as in common practice. The first holes were drilled and fired about 3½ to 4 ft. above the bottom of the seam, and the coal below this was shot down and loaded out before the other holes were fired.

The coal was nearly all of lump size. No overhanging coal was left, nor did the ribs of rooms have to be squared up. Under this plan the number of accidents has been reduced, as the undermined coal all fell down on the floor of the room. With this plan also the miner had less work, for the coal was in fine shape for loading. Less powder was used in shooting and a better grade of coal was obtained.

Laws should be enacted regulating the use of electricity in mines, and no gasoline engines of any kind should be allowed below ground. Many mining accidents are due to mine cars, locomotives and hoisting machinery. I believe the time is not far off when belts will be the means by which coal will be transported from the inside parting to the surface. This also will add to safety.

*Abstract from paper by J. H. Haskins, state mine inspector for Illinois District No. 9, read at the annual meeting of the Illinois Mining Institute at its session June 3.
Steel Props Furnish Recoverable, Quickly Set and Self-Adjusting Supports for Mine Roof*

Designers Endeavor by Use of Sand, Dirt and Shot Beds in Telescoping Props to Provide for Taking Up of Initial Flexure of Roof Without Breakage and for Shortening of Props Prior to Removal

By John Roberts

In recent years, owing to the scarcity and consequent high price of timber, the use of iron and steel has greatly increased. This trend was particularly significant during the progress of the war. Many causes have contributed to enhance the cost of timber, the chief being labor and transportation charges and the gradual exhaustion of forests. There are indications that prices will remain at a fairly high level for some years to come, if not permanently, and that in the future mines will consequently use iron and steel more extensively than ever for the support of the roof.

Steel posts may be classified as follows: (1) Temporary supports, or those used at the coal face; (2) "semi"-permanent supports, or those used on branch roadways, and (3) permanent supports, or those designed to be used on main roadways.

One of the earliest metal props, if not actually the first, to be invented was that patented by W. O. Johnston in 1861. This consisted of a tubular prop made in two parts for easy handling, these being held together when in position by means of a retaining ring. The two parts were preferably inclined at the joints so as to facilitate their removal when the ring was released. Provision also was made to hold the parts together by a catch, if desired.

One form of this prop is illustrated in Fig. 1, the chain shown being used when withdrawing the prop. The objections to this type of support are: The retaining ring is apt to split if it is subjected to excessive pressure, and this tendency is increased when the joints are inclined; no provision was made for the gradual yielding of the prop to the pressure of the roof and although the prop could be withdrawn, the withdrawal was sudden, when it should be gradual. If instead of the ring the alternative catch was used falling stone or coal would be likely to displace it.

Collison Devises First Adjustable Props

Little appears to have been done in the way of introducing new metal props during the succeeding thirty-five years, but in 1896 Collison designed adjustable screwed struts (Fig. 2) for use in a horizontal position in trenches and like excavations. The struts were expanded and contracted by a nut which worked on a screw and bore against a washer. This design, however, never may have been applied to mining purposes.

In 1897 Cadman and Marshall patented a stop block for holding in position crossbars and side posts. The stop block was cast in one or two pieces and secured by a wedge-shaped bolt. It served to prevent the prop supporting a metal crossbar from being displaced. Later in that year Firth and Thompson brought out a metal prop constructed of H-iron, part of the web being cut away and the flanges being bent over to form a flat bearing surface, as shown in Fig. 3.

Several inventors seem to have directed their attention to pit props in the year 1899, about the time when W. H. Hepplewhite patented his system of tapered props, and the principles then first applied were followed by other designers in subsequent years. Green proposed the use of a metal box (Fig. 4) at the foot of the prop. The box was filled with sand, on which the prop rested, and this sand served as a cushion to take up the pressure. Doors at the sides of the box, which could be opened from a distance, allowed the sand to escape when the removal of the support was desired. Green's invention was followed in a few weeks by Baron Masham's adjustable prop (Fig. 5). The prop is made to rest in a hole in the floor, and was designed to carry a channel-iron girder that served to support crossbars. Adjustment was effected by means of a screw turned by a wheel. Security appeared to be a strong feature in this prop, as it could be fixed into both the roof and the floor.

Balmer aimed in his prop to cushion the weight by the use of a flanged and ribbed lower tubular member partly filled with dirt, which served to support the upper member. The adjustment or withdrawal of the prop (Fig. 6) could be effected by means of holes in the lower tube, which holes could be opened or closed at will, thus allowing the required amount of dirt to escape.

Gascoyne used a combination of wood and metal in

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*First part of article entitled "The Development of Metal Supports for Mines," read before the North of England Institute of Mining and Mechanical Engineers, Newcastle-on-Tyne, June 9, 1922. The second installment will be published next week.
his supports. A vertical metal tube or a piece of iron of H-section (Fig. 7) was fitted with a moveable crown, which in turn supported a short auxiliary wooden block, on which rested a wooden cap. Wooden blocks also were used with tubular props. The auxiliary block, however, makes the prop less rigid, so that it would be easily displaced by falling coal.

Spencer and Chambers followed soon afterward with props of H-section in which the flanges were bent, as shown in Fig. 8 (a and b), which also illustrates the special form of cap used with this type of prop.

In the year 1900 Garforth, Sutcliffe and Buxton patented an extensible prop which had two extension screws and was specially designed to be used in conjunction with coal-cutting machines. This appears to have been the only important invention of its kind during that year, but in the year following Fowler set out to improve the Pirth prop by cutting away parts of the webs of the H-section and placing recessed saddles on them. The flanges were bent down over the saddles, and the latter tended to prevent distortion of the bent flanges. In 1902 Sommer, returning to the Johnston type of prop, used two tubular members, in which the lower tube was slotted at its upper end so as to facilitate clamping by means of a screw-collor.

Mounier in 1905 proposed the use of shot or other material in one part of the inner tube and devised means for allowing some of this to pass into a lower chamber either when setting up the prop or as the roof pressure came on. Mommertz (1906) employed a collar into which wedges were driven to secure both tubes together. Two forms of this collar are shown in Fig. 9. In a modification the wedges were replaced by a cam. In the same year Lowe used three tubes with a block of wood between the upper and middle tubes and wedges at the foot of the inner tube (Fig. 10). The first of many patents by Nellen was taken out in 1907 in collaboration with Voigt. These inventors suggested the use of cylinders of compressed stone in conjunction with metal.

Nellen subsequently designed a form of arch in which half tubes were held together by clips and filled with alternate layers of compressible material such as cork, straw and wood shavings, and this system was afterward applied in a modified form to props. Mounier developed further improvements in his prop, and used a rack and lever for adjustment. A cock was placed near the bottom of the tube to allow the shot to escape when necessary. The rack and lever would appear to be easily put out of action if handled roughly.

Noottaar, who introduced in 1907 a prop which possessed no very striking improvement, patented several binding devices for tubes in March, 1908. Later in the same month he brought out a tapered inner tube with wedges, similar to those proposed by Mommertz. He also devised a springhead to be used in conjunction with the wedges, but apparently made no provision for the withdrawal of the prop. Nellen again came forward, this time with two semi-tubes screwed together to form a hollow cylinder, which was filled with fine material. A rectangular opening in the lower tube is normally closed by a brace (Fig. 11), but on opening this the fine material escapes, allowing the head of the prop to sink and be withdrawn.

In the Eickershoff pattern (Fig. 12) the upper member rests on a shoulder of a cone-shaped body and is supported on sand, which is forced up through the cone when pressure is exerted. A hole near the foot of the prop allows the dirt to escape when it is desired to lower the inner tub. Normally this hole is closed by a rotary shutter. Caps and feet are placed on the props by means of bayonet joints, and these are fitted with lugs to engage with the levers used to turn them.

**DESIGNED PROP OPERATED BY SEPARATE TOOLS**

In a subsequent design by Sommer the upper member was raised by a mechanism which was independent of, and detachable from, the prop. This raising mechanism consisted of screw jacks, wedges and levers. In one form he adopted a rack and pinion, but in all his patterns the upper part of the lower member was slit so that the collar clamped the parts firmly together.

The year 1909 did not bring forth many ideas of importance, but it witnessed the entry into the arena of W. Reinhard, whose work will be referred to later. Binder devised shoes for holding props and bars in position. Schaefer proposed a form in which the upper member was secured in position (frictionally) by a divided ring placed upon the tapered upper end of the lower member. In this year Pittroff suggested the use of accordion-pleated tubes. The only development of note in 1910 was that of Sommer and the Mannesmannroehrenwerke, in which the sliding members were clamped together and provided with adjustable stop rings or pins. Possibly the Mannesmann weldless-steel prop shown in Fig. 13 is the outcome of the combined efforts of the inventor and factory just named.

In the few years immediately preceding the outbreak of the Great War several new principles were applied. Gruenewald and Gorich, for example, in 1911 introduced the system of holding the upper member by means of a series of balls and of adjusting the prop with the aid of an eccentric and lever at the bottom. Wild adopted the principle of right- and left-handed screw-threaded struts, which were held in contact by means of collars and end sockets, as shown in Fig. 14.

It was during this period that Reinhard developed his roof supports. In his earlier designs the feet of the props were made to receive tapered wooden plugs for yielding to the pressure, but these were replaced later by springs.

A prop of comparatively simple construction was in-
introduced by Humbles (1912). This is shown in Fig. 15. The prop was in one piece, with open tubular ends, in which internal diaphragms formed abutments for the floor or for wooden blocks. Flanged lids or beads were used to strengthen the ends, and the enlargements in the tube made it easy to attach chains and thereby to remove the prop.

Messrs. Mavor, Coulson and Mackay in 1913 encased wooden props in metal tubes, allowing parts of the props at the top and bottom to protrude so that they would yield on compression. In the same year Treinies used telescopic tubes filled with sand (Fig. 16). The upper tube was filled, plugged at the bottom, and held in position by a flange and collar. Means were provided for allowing the sand to escape, a device that is very popular with inventors.

Some of the foregoing supports were excessively simple in construction, but others were more complicated and necessarily expensive. The hallmark of refinement, however, was reached by Hodges and Smith, who, in order to indicate the movement of the mine roof, applied to props an electrical arrangement!

The war accentuated the demand for a substitute for timber and inventors continued their endeavors to obtain a suitable substitute. With the object of saving timber, Gainsford suggested using two metal tubes joined in the middle with a wooden plug and having a plug at the top and another at the bottom of the prop. Foggo also set out to save timber, and joined two short lengths of wooden prop by means of double-conical metal sockets provided with exterior strengthening rings (Fig. 17).

**Other Developments During the War Period**

Mills (1915) was responsible for a prop which in some respects resembled that of Reinhard, but he used a spring arrangement fitted within a special casing for holding the two parts of the prop together. The prop was adjusted by turning the casing. Verner supported the lower end of his tubular prop by means of a conical wooden block surrounded by a metal sleeve. The narrow end of the block was pointed upward, and yielded to pressure. Edwards and Beard and Slack and Williams also adopted the principle of employing wooden plugs at the foot of the prop for taking up the roof pressure, and the Butterley Co. and Bircumshaw have patented a means of readily removing these plugs.

Ericsson, who had previously devoted his attention to corrugated caps or lids, in 1915 devised the corrugated tube shown in Fig. 18. A suggested improvement on this type will be referred to later. The principle of the Wrighton and Ringquist prop will be readily understood on reference to Fig. 19. This prop consists of an inner and outer tube so arranged that the upper member rests on sand within the lower member. An aperture at the foot allows the sand to escape when necessary. When this aperture is closed, the sand passes up through a perforated plate at the lower end of the inner member as the pressure is applied. A perforated cap provides for the insertion of sand as required.

The form of prop shown in Fig. 20 was devised by J. S. Jones (1917), the chief feature of which appears to be the valve, which has two side apertures at right angles to a central one. In setting up the prop the side apertures allow the sand to fall around the lower receptacle until the prop is adjusted. These apertures are then closed and the central one opened, and this allows the sand to descend into the lower receptacle to a distance corresponding to the load on the prop. Robertson, in the same year, reinforced concrete cigar-shaped props with a spiral strip of metal. They were provided with end caps having serrated edges forming teeth, some of which were turned inward so as to penetrate the concrete.

Kearsley (1918) adjusted the inner member of the prop by means of pins inserted in holes in this bar. The whole appliance could be tightened by a screwed sleeve at the top of the outer tube. In the Sutcliffe and Sheppard type the lower member is hollow and is provided with teeth that engage in other teeth on the inner member and are kept in engagement by means of a gib-headed wedge so arranged that it may be loosened when desired without being completely disengaged.

A prop for mining purposes should possess the following characteristics: Strength, rigidity, resiliency, lightness, durability, adjustability, reliability, and simplicity of construction consistent with the foregoing qualities; it also should be easily withdrawable and comparatively inexpensive. With regard to construction and expense, where a prop possesses every other requirement, the cost, within reasonable limits, is not so important, because the props can be used repeatedly and recovered in safety, and although the original cost may be high, economies can be effected by their use.

In order that a steel prop may commend itself to a miner it should be capable of being set up easily and quickly, and when fixed it should be safe. When the preparation and setting up of supports entail much trouble there is often a strong temptation to the miner to delay the operation, and accidents have frequently occurred from this cause. To measure and cut a post and to prepare a cap, or "lid," takes much more time relatively than the actual setting up of the prop, and miners do not like to interrupt the process of filling a car of coal in order to put up timber.

When a workman sees that by removing, say, half a ton of coal he will have room to erect a necessary support he should in his own interest prepare the prop and cap beforehand. Many miners do this, but others omit the precaution and take risks. The temptation to do this is reduced where adjustable props that do not
require to be cut are in use. A prop which is considered to fulfill many, if not all, of the requirements of a handy and reliable support will now be described.

The underlying principle of the types illustrated in Figs. 21 to 23 is the employment of oval or partly oval and partly cylindrical tubes which can be adjusted longitudinally and be interlocked by partial rotation. The lower member, a (Fig. 21), is partly cylindrical and partly oval, the oval section being provided with horizontal ribs, b, which extend over part of the inner surface. The upper member, c, also is partly oval and partly cylindrical, but the major axis of the oval portion is slightly shorter than the minor axis of the lower member.

When the major axes of both members are parallel the upper member is free to move vertically within the lower member. The inner tube is provided with external flanges, d, which are adapted to engage in corresponding slots in the outer tube. On rotating the inner tube through 90 deg. it becomes tightened by friction as the flanges become engaged in the slots.

A clamp collar, e, is free to slide, within limits, on the upper member and is used to lock the two members in position, as shown in Fig. 21(d). This collar is provided with wedge-shaped or tapering slots that engage corresponding ribs, f, on the inner tube, this facilitating the turning of the inner tube as required.

The foot of the prop rests in a metal box, g, in which a spring is fitted to take up the pressure when the load is applied, and a similar spring, h, is fixed at the head of the prop. It will be observed that the bolt, k, which passes through the lower spring, is provided with a large head, which may be either round or square. This head serves to prevent the prop from being readily displaced after being properly set in a hole in the floor. The cup l (Fig. 21, d), carrying the head spring, is especially made to form a support for the cap.

The lower end of the inner tube also is provided with a cylindrical extension, m (Fig. 21, a), which constitutes a false bottom, and is provided with apertures for the passage of sand. In this type the sand is not used for supporting the upper member but simply to produce a cushioning effect during withdrawal and to prevent the sudden drop of the inner tube when disengagement takes place, as will be described later.

To set up a prop, a small hole is made in the floor to receive the bolt k; the inner tube is raised until the cup l touches the roof; it is then turned through 90 deg. and locked, being lowered if necessary an inch or so to enable the flanges to engage in the slots; the clamp collar is lowered into position, and the wooden lid is then driven in and tightened.

In order to withdraw the prop the clamp must be raised and fixed to the ribs; a chain should then be attached to the clamp, and the clamp given a partial turn from a safe distance. The upper member will then sink gradually on the sand, forcing it up through the apertures, and the prop will be loosened.

Fig. 22 shows a modified form in which a metal cap is used. It is so arranged that it can be secured by means of a wedge which cannot be withdrawn, whereas the cap may be removed on loosening the wedge. The final adjustment and securing of the prop is obtained by means of the wedge and cap, the box in which they are fixed being free to move vertically.

The principle of the oval interlocking prop may be applied to the corrugated type made by Ericsson (Fig. 18), for it will be seen that by using oval corrugated tubes (Fig. 23) advantage can be taken of the corrugations to facilitate adjustment and interlocking.

Another type for which I am responsible is shown
in Fig. 24. In this case sand is used for supporting the upper member, and the chief feature is the flat slidable plate valve, a, a plan of which also is shown. This valve is normally closed and prevents the passage of sand into the upper chamber. It is provided with a hole, b, for the insertion of a pin to keep it from being accidentally opened, and lugs, c, prevent its being completely withdrawn from the tube. Before setting up, the valve is opened and sand allowed to pass into the chamber d. The prop is then adjusted, the required amount of sand being run into the lower chamber for this purpose, and the valve is closed. As the load comes on, the sand in the middle and lower chambers is compressed, and a gradual yielding takes place.

In order to withdraw the support the valve is opened from a safe distance by means of a chain fastened at e and the upper member then sinks as the sand passes upward through the aperture f. The advantages claimed for this form of prop over somewhat similar types are the ease and comparative safety with which it may be removed and the fact that the sand is retained within the prop.

When Headframe Burns Colorado Shaft Mine Resumes After Thirty-seven Days

THIRTY-SEVEN days is a short time within which to see a disastrous fire destroy the top works of a mine, the construction of a new plant and the resumption of coal production, but thirty-seven days was enough time for that rapid series of events at the Monarch No. 2 mine of the National Fuel Co. near Louisville, Boulder County, Colorado. Today that mine is far better equipped than it ever was before and can produce 1,200 tons of sub-bituminous coal in eight hours when the whole operation is going full blast.

On the night of Nov. 15, 1921, the consuming flame did its work at Monarch No. 2. The structures over the shaft were all of wood and burned readily. The whole surface plant except the power house was reduced to ashes, and the wooden shaft lining was ruined to a point 65 ft. below the collar. Headframe, tipple, car loader, track scales, cages, trestles, chutes and practically all the top equipment of the mine went up in smoke.

It was a discouraging appearance the mine presented the next day. But the market for that particular coal was strong enough just then so that the National Fuel Co. could not afford to sit down and grieve. Rush plans for new top works were made, and the job of shipping material and equipment started at once.

A permanent headframe and scales were thrown up in a hurry, and a temporary tipple was ready for service as soon as the hoisting equipment was operative. On Dec. 22, exactly thirty-seven days after the fire, the mine began loading coal once more.

With more leisure the company chose equipment for the permanent steel tipple. Roberts & Schaefer, of Chicago, constructed the plant, which contains balanced picking-table screens, self-dumping cages, a belt-type box-car loader, scales and other modern equipment. Whereas the destroyed plant had but two tracks, the new one, which was finished April 1, 1922, has three, so that the mine can load every size of coal that may be required. The Monarch mine now uses electric power.

**MATERIAL FOR GEOPHONE DIAPHRAGMS.**—An investigation conducted by the U. S. Bureau of Mines to determine the most suitable material for geophone diaphragms showed that in mica diaphragms the thickness was not an important factor. Metal diaphragms were not only more satisfactory than the mica but their sensitiveness increased with thickness until a point was reached when a ringing tone was produced and the diaphragms therefore became useless. With the exception of Non Gran bearing metal, a material 0.025 in. thick was the maximum thickness that could be used. With Non Gran bearing metal, however, a diaphragm 0.035 in. thick was satisfactory. To determine the sensitiveness of the diaphragms, observations with the geophones were made on blows struck with a 52-lb. hammer swung as a pendulum against the coal at a distance of 400 ft. away from the observer. The swing of the pendulum was measured, and the shortest swing that could be detected with the geophones was recorded. The results obtained at the experimental mine with the different materials are given in Technical Paper 277, just issued.
Britain Leads Germany in Coal Resources: Foreign Production Figures for 1921

Before the war Germany had larger coal resources than any European country, with Great Britain second. All this has changed. Germany has a little more than one-quarter of the coal in Europe and Great Britain almost one-third. This, of course, has not arisen from any enlargement of the British resources but by the handing over of some of Germany’s coal areas to other nations. These facts are derivable from the third report of the Imperial Mineral Resources Bureau of Great Britain, which contains a general review of the principal mineral industries of the British Empire and other countries for and as of the year 1921.

Other countries have gained territory from Germany, Austria and Russia, and their quotas have been increased accordingly. Taking into consideration only the actual and possible reserves of true coal and lignite or brown coal in seams 12 in. thick and over within a depth of 4,000 ft., in accordance with the estimates obtained by the executive committee of the International Geological Congress held in Canada in 1915, the position before and after the war may be summarized roughly as follows:

**PERCENTAGE OF TOTAL RESERVES OF EUROPE BY COUNTRIES**

<table>
<thead>
<tr>
<th>Country</th>
<th>Pre-War</th>
<th>Post-War</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>40.2</td>
<td>28.7</td>
</tr>
<tr>
<td>Great Britain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and Ireland</td>
<td>32.0</td>
<td>32.0</td>
</tr>
<tr>
<td>Russia</td>
<td>1.0</td>
<td>0.4</td>
</tr>
<tr>
<td>Austria-Hungary</td>
<td>8.3</td>
<td>6.2</td>
</tr>
<tr>
<td>Belgium</td>
<td>4.1</td>
<td>2.1</td>
</tr>
<tr>
<td>France</td>
<td>1.7</td>
<td>3.6</td>
</tr>
</tbody>
</table>

* Austria, 0.1; Hungary, 0.1.

Austria’s reserve was 41,377,000,000 tons. It is now only 388,000,000. Hungary had 1,718,000,000 and now has 619,000,000. Russia had 60,170,000,000 and now has 1,988,000,000. Germany had 207,030,000,000 and now only 148,248,000,000. The United Kingdom had, and now has 165,387,000,000. The whole of Europe has a reserve of 517,221,000,000 tons.

Whereas 31 per cent of Germany’s fuel production in 1913 was of lignite, in 1921 it was over 47 per cent. Taking into consideration the relative potentiality of coal, lignite as produced and lignite as marketed and converting the quantities of the several forms of fuel into their equivalent coal value, the following results are obtained:

**GERMANY’S DISTRIBUTION OF EARTH FUELS IN EQUIVALENT COAL VALUE IN MILLIONS OF TONS**

<table>
<thead>
<tr>
<th>Year</th>
<th>Production</th>
<th>Imports</th>
<th>Exports</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>1913</td>
<td>291.5</td>
<td>15.1</td>
<td>42.5</td>
<td>180.8</td>
</tr>
<tr>
<td>1920</td>
<td>158.4</td>
<td>1.9</td>
<td>35.5</td>
<td>134.8</td>
</tr>
<tr>
<td>1921</td>
<td>229,500,000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The United Kingdom in 1921 produced 168,000,000 tons, in 1920, 229,500,000, and in 1913, 287,000,000. Of this, 24,660,552 tons was exported in 1921, 24,931,853 in 1920 and 73,400,118 in 1913.

The average realized value of the coal mined at British mines in January, 1921, was 50s. 7d. ($7.44) and in December of the same year was 19s. 6d. ($4.75), the corresponding figure in 1913 being 10s. 11d. ($2.46). Wages were at their highest level in January, 1921, the average wage per person employed being £2 1s. 9d. ($10.49). For the quarter ending Sept. 30 the corresponding figure was £2 12s. 7d. (or $77-26 a month). Since that time wage rates have been much reduced.

The average f.o.b. value of exported coal in January, 1921, was 67s. 13d. per ton ($16.33), compared with 70s. 57d. per ton ($17.15) in January, 1920. The average value in December, 1921, was 25s. 2.2d. ($6.13), compared with 54s. 74d. ($20.59) in December, 1920. All the converted values given are at normal rate of exchange—namely, $4.865 per pound sterling.

France’s available production for 1921 is nearly equal to that before the war. True, the production of the areas in pre-war France is only 29,000,000 tons, but the Saar area added last year about 9,500,000 tons to the total, bringing the production roughly up to that in the pre-war period. Belgium’s coal fields are producing more than before the war, last year’s production being 21,700,000 tons.

India’s production is not definitely known at present. It may have fallen to 15,000,000 tons owing to the fact that with increased wages the men did not find it necessary to work steadily and a labor shortage consequently resulted. Furthermore the railroads were unable to supply enough cars.

South Wales and the Union of South Africa each export to India provided for this shortage in production. The output of the South African colony rose from 9,600,000 tons in 1913 to 10,160,000 in 1921 and exports from 800,000 to nearly 1,200,000 tons. The provinces contributed as follows:

**OUTPUT OF UNION OF SOUTH AFRICA**

<table>
<thead>
<tr>
<th>Province</th>
<th>Output Long Tons</th>
<th>Value Per Ton</th>
<th>Percentage of Whole Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transvaal</td>
<td>6,303,001</td>
<td>74</td>
<td>61.00</td>
</tr>
<tr>
<td>Cape</td>
<td>5,159</td>
<td>77</td>
<td>62.58</td>
</tr>
<tr>
<td>Orange Free State</td>
<td>819,443</td>
<td>69</td>
<td>8.06</td>
</tr>
<tr>
<td>Natal</td>
<td>3,141,161</td>
<td>77</td>
<td>30.89</td>
</tr>
</tbody>
</table>

10,168,764

The coal production of Australia, including brown coal, totaled 12,867,325 tons, compared with 12,968,285 tons in 1920. The Canadian production was about 90 per cent of that of the previous year—namely, about 13,250,000 tons as against about 15,000,000—the important decreases being in Nova Scotia and Alberta. The United States exported 12,250,000 tons of bituminous coal to Canada in 1921 as against 14,500,000 in 1920. The fall in the aggregate production and import in 1921 as compared with 1920 was 4,000,000 tons and resulted from the depression of industry, particularly in the steel trade of Nova Scotia.
Timber Frames in Headings

Use of Full-Length Posts to Support the Collars—Disadvantage in Liability to Being Knocked Out by Derailed Car—Another Plan Uses Short Legs Set in Hitches—Plan for Pitching Seams

In the issue of Coal Age, May 25, p. 886, appeared an inquiry regarding the manner of timbering a heading driven in coal 5½ ft. in thickness and overlaid with 12 in. of drawslate, above which was mixed coal and slate. The object sought was to reduce, as much as possible, the expense of cutting hitches, 8 in. wide and the same depth, in the coal and drawslate above, required for the short legs used to support the crossbars or collars.

One plan that I would suggest is to use full-length legs under the collars, as indicated in Fig. 1, widening the entry, if necessary, so as to give the desired clearance between the legs. As shown in the figure, I have made the entry 12 ft. wide, instead of 10 ft.

FIG. 1. TIMBER FRAME, LONG LEGS

and set the posts 10 ft. 6 in. spread at the bottom, with a width of 9 ft. between notches under the collar. An 8-in. collar should be used and 2 or 3 in. lagging laid over the collars to support the roof, which is described as a mixture of coal and slate and will probably need this support.

The collar shown in Fig. 1 is 10 ft. in length; but, if desired, a longer collar can be used and the posts given less inclination, as indicated by the dotted lines. The disadvantage of this plan, of course, is that the long legs are liable to be knocked out by a derailed car when hauling a trip.

Another and, perhaps, a better way is that shown, in plan and elevation, in Fig. 2, which eliminates the use of legs, the collar beams being supported by a special type of hitches cut in the drawslate. It is true the drawslate may prove hard cutting. If the slate is soft and crumbles on exposure to the air the hitches must be cut down to the coal, which appears to be firm, as the posts are shown resting in the coal, in the original inquiry.

As shown in Fig. 2, a simple box hole is cut in one rib of the entry, say 6 in. deep and large enough to receive one end of the crossbar. In the opposite rib, has been cut what should be styled a "slip hitch," which needs no further explanation than the illustration shown. When the crossbar is in place it is wedged with pine wedges.

STEEL TIMBERING MORE ECONOMICAL THAN WOOD IN THE END

Regarding the comparative cost of wood and steel for crossbars, if steel H-beams or other rails are available and the life of that portion of the mine is to extend over a long period, the steel will be more economical in the end than wood. The frequent renewals of timber will more than equal the higher first-cost of the steel. This is particularly true in the West where so much native pine is used in the mines.

Before closing, allow me to refer to a method of timbering entries in the empty carbide or powder can, which was first filled with concrete and set down firm on the bottom. As shown in the figure, each post on the low side of the entry was stood on such a concrete-filled can, which raised the foot of the post above water drainage and prevented its decay.

Mt. Harris, Col. Thomas Allen.

Solid Shooting

Actual dangers more important than possible dangers arising from the practice—Conditions in pick mining contrasted with those in solid shooting—Shearing versus center-top or bottom-mining—Reasons for condemning unregulated solid shooting.

The subject of solid shooting has been so well and thoroughly discussed, in the columns of Coal Age, it would seem that little of material interest can be added either in advocacy or condemnation of the practice, proceeding in the manner in which it has generally been considered and treated. It is my object in the present letter to discuss more particularly the dangers that actually result from the practice, rather than the one, on which so much emphasis is laid, as being possible through the practice.

For the last several months, I have read with care and much interest the various letters on this subject. Almost invariably those writers who have condemned the practice have assumed
that the greatest danger to be feared in solid shooting, or the shooting of coal on shots only, properly made, is the possibility of a blownout shot causing a coal-dust explosion. Again a few writers express their disapproval of the practice, without assigning any particular reason for their opinion.

**Pick Mining vs. Solid Shooting**

While not an advocate of solid shooting, I would not presume to condemn it solely for the reason just mentioned, as it has been clearly demonstrated, by both class, that mining men, such a possibility is as liable to occur in machine- or pick-operated mines, as in mines where solid shooting is practiced. Indeed, it is my opinion, based on observation and experience, that there is a greater possibility of a blownout shot occurring in a pick-mining operation than in a mine where shooting off the solid is practiced and even though the practice is not regulated either by statute or official supervision.

In pick mines, the miner is accustomed to go to the coal to a certain depth, drill a specified depth of hole and use a specific charge. This becomes routine work. If, for any reason, a hole is drilled on the solid the amount of explosive necessary to perform the work effectively becomes a matter of guesswork and the possibility, if not probability, is that it will be inefficiently handled.

On the other hand, a man when shooting off the solid has variable conditions of blasting to contend with, and this variability has cultivated his judgment to a degree that he seldom undercharges a hole. As a rule, where such shooting is practiced, the general tendency is to overcharge the hole. That such is the case may be readily perceived by any one who has worked in or inspected a mine of this kind. As a result, the coal is found scattered all over the working places and in some cases more or less finely divided condition. In such mines it is the more finely divided coal that is not utilized by the miner and, consequently, in every working place is found much of this fine coal.

**Coal That Is Properly Mined**

One of the conditions of "properly mined" coal, as defined by the Pennsylvania Anthracite Mining Laws is that the coal shall be properly cut or machine. In a former article on this subject, I endeavored to point out that the blasting of sheared coal differed in no respect from the shooting of coal from a loose end; also, that the miner took no part of the seam, created only a loose end by which the removal of the coal is more easily accomplished.

In center- or bottom-mining, the cutting, if properly done, should extend all across the working face before anything is sheared. In shearing, on the other hand, the cutting is confined to one, or not more than two, localities, the coal being cut through the thickness of the seam. Conse-

**Coal Age**

**Law and Justice**

Supremacy of the law—Authority of Courts—Confusion caused by mis-statements of leaders and the Press—An example and faulty education poisons the mind—Solution of the problem.

With pleasure and much satisfaction, I read the editorial entitled "The State, It is I," Coal Age, Apr. 20, p. 643. The writer of the article refers to the time when a French king made the bold declaration "The State, It is I," and there was some truth in the words he spoke. Today, in this enlightened country and generation, the conditions are far different from what existed under an absolute monarchy. There, the people were subject to the will of the ruler, whose word was law.

How many of us realize that the Law, here, is supreme. It is with reason, then, that we obeyed our intelligent men at times, sidestep the judicial branch of our government and attempt to set aside the law and replace it by suggestions of one kind and another that, in their opinion, would meet the present situation.

**Upholding Law Brings Condemnation to Judge Anderson**

Federal Judge Anderson is, today, the most despised man, in the opinion of a certain class of miners, because of his interpretation of the law bearing upon the 60 year old 6-hour day demanded by the leaders of the miners' organization, who claimed that it would give the men more steady work.

In this decision, the Court only upheld the supremacy of the law, and refused to permit the suggestion of the statesmen of citizens of the enactment of the lawmakers. It is not strange that, almost without exception, the attempts of propagandists of both parties to reconcile employers and employees result in driving them farther apart.

Confusion in the minds of the public, has been caused by the statements of leaders of both parties to the present controversy, through the daily press. Articles have been written, based on the suggestions of cabinet members and congressional committee men, that have no standing in the face of the law. On the other hand, we read how certain individual miners drew exceptionally large pay, at the end of the month, amounting to two or three times the average earning capacity of a miner. On the other hand, we read of extraordinary profits, amounting to millions, that are granted to certain companies to pay fat dividends.

Viewed from an unprejudiced standpoint, the present situation has grown out of the bad example often set by the luxurious living and faulty education of many who have accumulated wealth and are spending it wholly on themselves, while they manifest little regard for that class of workers on
which their activities depend. It is this condition that poisons the mind and makes it impossible for the two classes to work harmoniously together.

Time and necessity will bring the miner back to his work; but the problem will still be unsolved. Reduced wages cannot provide for him steady work, as has been argued. In this locality, out of a possible 300 working days in the year, one of our mines worked 88 days, at intervals of one or two days a week. Another mine did a little better, and worked 124 days during the year. The same conditions have prevailed practically throughout the entire competitive field.

Assuming the wages of miners are cut in half, can it be expected that they will work twice the number of days they worked previously? But, it must be remembered that double the working days will double the production of coal and, unless another system of mining and marketing is established, what would be the result?

It is a shame to think of the chaotic condition existing in this country at the present time when there is complete and utter lack of safety, which mankind, and discard only between men and men. In my opinion, the only solution to the problem is expressed in the words “Co-operative mining and collective marketing” of coal. This alone, I believe, can bring about a practical solution.

Henry Bock.

Staunton, Ill.

Testing a Safety Lamp

Every lamp tested by lampmen when given to miners—Tested again by fireboss—Habitual practice of an experienced fireboss—Two conditions that insure safety.

I HAVE been employed in many gassy mines worked exclusively with safety lamps. Naturally, the reference made by Joseph Cain, in his letter, Coal Age, July 13, p. 60, to statements of his firebosses regarding their practice in the use of safety lamps, interested me greatly.

It is hard for me to understand how any responsible fireboss could offer such an excuse as Mr. Cain says his men gave for failing to properly test their safeties, by blowing into their lamps after assembling them and before carrying them into the mine to make an examination.

The excuse these men gave was that they were afraid to tighten the lamp against the glass more, lest the heat of the lamp should expand the parts and break the glass. Of course, it was possible to blow out the light in a lamp so carelessly assembled.

In mines where I have been employed, when a miner got his lamp from the lampcar, he is in charge tested it by blowing into it, at both the top and the bottom of the glass, before giving it to the man. Each miner then had to take his lamp to the fireboss who made the same test and returned it to the man. Many of the miners would test their own lamps in the same way.

As mine examiner (fireboss) I always used my own lamp. Each shift, before going into the mine, it was my invariable custom to test my lamp, by blowing, to make sure the glass was tight. Every fireboss knows the lamps have asbestos washers and many have expansion rings besides to prevent the breaking of the glass by heat.

The answer given to a recent examination question asking what made a lamp safe, named two essential conditions: 1. The right construction and assembling of the lamp. 2. Proper handling in its use.

Pete Boland.

Herrin, Ill.

Inquiries Of General Interest

Self-Acting Gravity Plane

Having seen much valuable information obtained by inquiries through the columns of Coal Age, I desire to submit a proposition we have in contemplation in the near future.

At the present time, we are working a seam of coal that outcrops at the tipple. Overlying this coal is another, four-foot seam, outcropping about 900 ft. higher on the hillside. There are some six acres of this upper seam that we want to start to work out at an early date.

The plan that we are considering is to lower the coal from the seam above to the tipple where it will be loaded on the same tracks we are using in working the lower seam. We have in mind a single-track gravity plane extending from the opening in the upper seam down the hill to the tipple.

The grade is sufficiently steep to afford good haulage by the gravity system. What we desire to know, however, is whether it is practicable to use a single-track incline and provide a passing track at the middle of the plane. Or, is it necessary to build a double-track tramway. We wish to avoid that expense if possible.

Dora, Pa.  C. M. Shaffner, Supt.

Without more exact data it is only possible to reply to this inquiry in a general way. In the first place, regarding the choice between a single- and a double-track incline, the latter should always be adopted, unless the conditions are such as to entail a large additional expense. Two tracks are safer and more economical in the end than a single-track, where such construction is practicable.

The operation of a single-track gravity plane requires that a passing track be provided at the middle point of the grade so that the descending loaded trip can pass the ascending empties. In the accompanying figure, it is shown the portion of a single-track, self-acting incline, including the passing tracks at the half-way point. An automatic spring-pole switch at each end of this parting causes the descending loads to take the left-hand track, while the ascending empties pass to the right, as indicated by the arrows.

Much will depend on the inclination it is possible to establish. The grade over the main portion of the plane must be sufficient to provide a gravity pull that will move the trips. It is evident that there must always be an equal number of loaded and empty cars, and these will balance each other. Also, the unbalanced load is the weight of material (coal) being lowered and the net weight of the rope.

When a loaded trip is starting at the head of the plane an equal number of empty cars, forming the empty trip, is starting from the bottom. At this juncture, the entire length of rope is lying on the plane. As previously stated, the cars are in balance and it is clear that the gravity pull due to the weight of the coal must be sufficient to overcome the gravity pull of the rope and the frictional resistance of both trips and the rope.

To enable a gravity plane to operate successfully, the grade for a short distance at the top of the incline should be somewhat steeper, and that at the foot of the incline similarly lighter.
than the average grade of the plane. This will not only assist in starting but, likewise, help to slow down the speed of the moving cars and bring them to rest at the end of each trip. In other words this feature takes care of the inertia of the system when starting and when stopping trips.

Again, it must be observed that the rope balances itself when the two trips reach the passing tracks. From the time of starting till then, the net weight of rope is on the ascending side of the plane and acts to retard motion; but, after that, to the end of the trip the net weight is on the descending side and acts to assist motion.

Observe that during the first half-cycle the net weight, retarding motion, decreases from a maximum at the start to zero at the midtrip; and during the second half-cycle the net weight, assisting motion, increases from zero to a maximum at the end. The effect of this trend of the net weight of rope, from the ascending side of the plane to the descending side, is to uniformly accelerate the movement of the system.

In a perfectly designed self-acting plane, therefore, beginning at the head of the plane, for a short distance, there should be provided a slightly steeper starting grade, corresponding to an equal distance at the foot of the plane where the track is almost level. Between these two starting and stopping grades intended to overcome inertia, the grade of the main portion of the track should gradually and uniformly decrease from top to bottom, so as to offset the effect of the transfer of the rope from the ascending to the descending side of the plane.

The movement of the entire system is controlled by a strong brake applied to a brake-wheel mounted on the same shaft as the headsheave or attached to the latter. To allow for the fleeting of the rope on the drum and give the necessary arc of contact there are provided two headsheaves set tandem to each other. The rope is made to take as many half-turns about each sheave as necessary to prevent the slipping of the rope on the sheaves when the brake is applied.

be the same as that of a double-acting pump, per stroke. Therefore, since the given pump makes 340 / 3.4 = 100 strokes per minute, the single-acting pump must be run at a speed of 100 r.p.m., in order to discharge the same number of gallons per minute as the given pump.

**Question:** If the volume of air provided is insufficient when the fan is running at its full capacity what would you do, under such conditions, to improve the ventilation?

**Answer:** Clean up the airways; shorten the distance of air travel in every way practicable; straighten the air-courses, avoiding sharp angles and bends wherever this can be done to any advantage; and, finally, split the air current, at points where the velocity in the several splits will permit, remembering that the velocity of the air sweeping the working faces must be sufficient to carry away the gases that would otherwise accumulate. It is a matter of importance that all stop-pings are made air-tight so as to prevent the leakage of air through them. Again, wherever it is necessary to conduct the air to the faces of rooms or headings, or to cause the current to pass over falls or circulate through abandoned workings, the necessary brattices must be erected for that purpose.

**Question:** Name at least one dangerous practice that is frequently indulged in by the following persons: Miners, motormen, brakemen, brattice-men, trackmen, timbermen and wiremen. Would you allow these practices? Explain.

**Answer:** Miners are frequently prone to neglect to examine the roof in their working places and set the timbers needed to make it secure, before proceeding to work. They often omit to spray their coal when mining a shot, and will frequently cut too short a fan of brattice; or, in other words, the necessary brattices must be erected for that purpose.

**Question:** Are there any conditions under which it would not be safe to use a safety lamp? If so, name them.

**Answer:** A mine safety lamp is never safe when in the hands of an inexperienced person who does not understand the danger of its misuse. The lamp is not safe if defective from any cause, such as injury to the gauze chimney or the gauze protecting the openings for the entry of air; a dirty gauze owing to the accumulation of soot; or the improper assembling of the parts of the lamp. The lamp is not safe when the gauze becomes heated or the lamp is exposed for too long a time to a body of gas, or when exposed directly to the force of a blower of gas or a sudden rush of air, or carried unprotected against a strong air current.

The lamp is never safe when held in an inclined position, or swung backward and forward when being carried from place to place, or permitted to fall.

**Question:** State under what conditions you would consider a mine gaseous.

**Answer:** A mine should be classed as a gaseous mine when any portion of it is generating gas in sufficient quantity to be detected on an ordinary safety lamp of approved type. Such classification, however, does not imply that the mine must be worked with locked safety lamps. It would simply mean that necessary precautions must be adopted to prevent accidents occurring by reason of accumulations of gas. The tendency has largely prevailed, in the past, in coal-mining states, to designate a mine as "non gaseous," until sufficient gas is generated to require the mine to be worked with safety lamps, but the practice is a menace to safe mining.

**Question:** If you have a ditch 2 ft. wide and 2 ft. deep, running full of water, with a velocity of 15 ft. per sec., how many gallons is passing per minute?

**Answer:** The sectional area of the ditch is 2 x 2 = 4 sq. ft. Then, assuming an average velocity of 15 ft. per sec., the volume of the flow is (4 x 15 x 60 x 1,728) / 231 = 26,900 gal. per min.

**Question:** A pump discharges 340 gal. of water per minute and has a capacity of 3.4 gal. per stroke. How many revolutions would a single-acting pump have to make in order to discharge the same amount?

**Answer:** Assuming the two pumps are of the same size, the capacity of a single-acting pump, per revolution, will

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**Examination Questions Answered**

Kentucky Mine Foremen's Examination, Lexington, May 30, 1922

(Selected, First-Class Questions)

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Federal Fuel Distributor Establishes Procedure for Getting Emergency Coal—Committees Named

FEDERAL Fuel Distributor Spencer has completed the organization of his administration by designating the following:

Samuel Porcher, in charge of railroad fuel; J. N. Snider, for New England and the East; George F. MacGregor, for the Western Le Fouston S. Willard, for tidewater coal; C. E. Tuttle for Lake coal. E. M. Durham, Jr., for the South-east; E. W. Thorneley, manager of orders; F. G. Tryon, of the Geological Survey; Lieut. Commander E. A. Cobey, of the Navy; M. J. Gormley, of the American Railway Association; J. C. Roth of the Interstate Commerce Commission; D. R. MacLeod, secretary of the Administrative committee.


District committees to be named in the principal coal producing districts east of the Mississippi River for the purpose of distributing orders from the Federal Fuel Distributor among mines will consist of representatives of the Federal Fuel Distributor, the Interstate Commerce Commission, coal operators and the railroads.

The Federal Fuel Distributor has designated district headquarters as follows:

**Norton, Va.:** All coal districts of Virginia except the Pocahontas.

**Thurmond, W. Va.:** covering New River and joint mines on the Virginian Railroad.

**Bluefield, W. Va.:** Pocahontas, Windng Gulf, New River, Tug River and Virginian coal districts.

**Huntington, W. Va.:** Kanawha, Logan, Williamson, and Big Sandy coal districts.

**Knoxville:** Coal districts in southeastern Kentucky outside of Harlan and Hazard, and all Tennessee mines.

**Louisville:** Harlan, Hazard and Western Kentucky on the Louisville and Nashville and the Illinois Central railroads.

**Birmingham:** Alabama.

The Federal Fuel Distributor announces that coal operators will continue their regular ordinary business, but that this will be gradually encroached upon by priority orders of the Interstate Commerce Commission and finally coal orders placed through the Federal Fuel Distributor for railway purposes and state committees will gradually absorb the total output of mines.

Under plans of the Federal Fuel Distributor, the governors of states will appoint fuel committees and orders from the committees will be sent to the Fuel Distributor at Washington, passed on, and then sent to district committees.

Duties of state organizations appointed by the governors are defined in regulations issued by the Fuel Distributor as follows:

Report at once the consumption of coal in the state, as to utilities, household, industrial and other uses.

Furnish statement showing a list of those who receive priority coal for current use, but not for storage, in the order of emergency of their need; character of coal required, including source from which consumer previously obtained supplies; name of coal operator with whom he does business if in the present producing field; weekly supply needed by such consumer; number of weeks stocks he has on hand.

To set up a single consignee in each state on behalf of all coal shipped into the state on orders from the governor’s committee, through the Federal Fuel Distributor. The governor’s committee will be responsible for the payment of all coal shipped into the state and will advance to a bank a deposit to cover it, which depositary will honor sight drafts with weight certificate, car number, etc., this being practically an f.o.b. sale.

The Governor’s committee will distribute the coal made available to it according to the respective states, and is at liberty to reconsign or move coal after it reaches points in the state.

The governor will distribute the coal according to necessity as follows:

Public utilities and public institutions, households, industries manufacturing public necessities, and industries in general.

The governors’ committee will be expected to secure the co-operation of wholesale and retail dealers in their states, and will be responsible for prevention of profiteering and extortion in the sale and distribution of coal in the states. They will furnish written orders to the Federal Fuel Distributor on forms to be prepared.

Government fuel orders will be given by the co-ordination committee and will pass through the Federal Fuel Distributor to the District Committees.

Shipments of coal by the Lakes to Minnesota, North and South Dakota, northern Wisconsin, northern Michigan and Canada will be through the Ore and Coal Exchange of Cleveland. Cars for such coal on contracts in existence will go through or be approved by the Federal Fuel Distributor to the District Committee. It is planned to establish a regular weekly movement of coal to this trade. The division of this coal between the states or receiving points must be approved by the Federal Fuel Distributor.

The Federal Fuel Distributor further announces that coal operators will continue to function individually with respect to filling their ordinary business or priority orders that may come under the Interstate Commerce Commission order of priority until orders are received by the district committee from the Federal Fuel Distributor supplanting their capacity.

On receiving orders for coal from the Federal Fuel Distributor the service agent of the Interstate Commerce Commission on the district committee will issue an order upon recommendation of the representative of the Fuel Distributor to the railroads to place cars for coal shipment. The order will be sent to the representative of the railroad on the district committee for transmission to the proper official of the railroad for execution. The district committee will specify the mines from which the coal is to be shipped. Representatives of the Federal Fuel Distributor will, subject to a guarantee of payment, which shall be satisfactory to the mine operator, but in keeping with the Hoover fair trade.

Representatives of the railroads on the district committee will report to the service agent of the Interstate Commerce Commission the number of cars shipped daily under the orders. The district committees will report to the Fuel Distributor at Washington the shipments made.

The distribution of fuel for railroads will be concentrated in the hands of a railroad coal committee composed of coal buyers from the different railway groups as given above. This committee will meet in Washington, check the needs of the railroads for coal, pass upon applications for emergency coal for railroad use and in other ways co-operate in the execution of the general plan.

**District Committees Named**

The personnel of the district coal committees has been announced by the Federal Coal Distributor, as follows:

**HUNTINGTON, W. VA.**

J. F. B. Conger, representing Federal Fuel Distributor

Coal Operators’ Representatives:

Williamson Committee:

L. E. Woods, Crystal Block Coal and Coke Co., Welch, W. Va.
G. S. Patterson, Sycamore Coal Co., Welch, W. Va.
L. E. Armestrong, Borderland Coal Co., Cincinnati, O.
Geo. Bauswine, Jr., Secretary, Operators’ Association of Williamson Field, Williamson, W. Va.

Northeast Kentucky Committee:

C. L. Casterl Jason, Mountain Stone Mining Co., Ashland, Ky.
W. M. Mooreman, Wells-Bkhorn Coal Co., Ashland, Ky.
S. Hand Consolidation Coal Co., Jenkins, Ky.
Geo. H. Archer, Prestonsburg, Ky.

**District Committees Named**

The personnel of the district coal committees has been announced by the Federal Coal Distributor, as follows:
COAL

Priority Plan in Middle West Makes Halting Start; Car Supply Continues Bad

The Middle West's hope for a flying start of the new federal system of coal distribution was brusquely defeated during the past week. The plan did not produce results. Priority orders did not absorb the whole flow of fuel, car supply was not much improved, and prices were not generally drawn down to the government level of $3.50. When the week opened cars made an improved showing. Many a Kentucky mine got more than 75 per cent of what they requested, and everybody felt fairly good. By the middle of the week, however, more than half the mines of the state were down and the same old condition of affairs prevailed. The L. & N. supplied 30 per cent of the demand for cars at the mines along its lines.

Practically all the coal that went to railroads sold at $3.50 but in many cases a jobbers' commission of 10 cent was added. The remaining coal, which was of larger volume than the market had expected, sold all through the Midwest region at widely varying prices. In the fields it brought $6.50@$10 and in the markets a shade more than that. Chicago, maintaining its reputation for top prices, saw coal from Kentucky selling above $11.

Illinois suffered a considerable flagging Friday when Robert M. Medill, state fuel administrator, announced that he interpreted the federal plan to mean that the state was absolutely cut off from all fuel from outside fields. At once the market got excited and Western Kentucky coal hopped from $9 to $12. There were all sorts of wild quotations made by greedy brokers running up to $14, but no sales were made above $12. The market quieted down to $10 the next day, however.

Mr. Medill, in a message to Coal Age Saturday morning set forth his understanding of the matter thus: "Illinois' supply of coal from outside producing points has not yet been cut off although we have been advised that we must not expect even a small amount of output so far as states which have no coal resources and which require longer periods of transportation must be afforded a larger ration of the national supply."

It is felt in some quarters that a few Kentucky operators, especially in the western end of the state, are doing what they can to avoid taking priority orders so as to extend the periods of $8 and $10 coal as long as possible. The first definite complaint of this sort in Kentucky was registered with the state railroad commission by Muscoee Burnett, general manager of the Paducah Water Co., who complained that he had tried to get coal from four or five western operators only to be told all their output was under contract and they could not send him a ton. The case is being investigated.

The new plan has not been in effect long enough yet for a thorough try-out. In Illinois, Mr. Medill is getting his county distribution boards appointed and will aid Governor Small or Acting Governor Sterling this week in the formation of a complete state committee.

In the meantime the coal trade not only of Illinois but of many of the surrounding states is anxious for the whole market of coal to come into gear. The general uncertainty of things wears on nerves already harrassed.

A survey of price situation made last week at the instance of Secretary Hoover developed the fact that 95 per cent of the coal now being produced is being sold within the maximum fixed.
Illinois Offers Last Year's Wages If Miners Will Agree To Abide By Impartial Arbitration

BY E. W. DAVIDSON

"Immediately upon resumption of operations, the whole matter of wages and working conditions will be submitted to a Board of Arbitration composed of citizens of high public standing and qualified to advise the President of the United States, no member of which Board shall be a contractor or a coal miner—the findings of such Board to be binding upon both operators and to continue for a period of two years from April 1st, 1922.

"As we have stated in our letter to President Lewis, we cannot believe that the Illinois miners will reject such an exceedingly fair proposal.

"Very truly yours,

"ILLINOIS COAL OPERATORS' ASSOCIATION.

"W. K. Kavanaugh, President.

"COAL OPERATORS' ASSOCIATION OF 5TH AND 9TH DISTS.

"H. C. Adams, President."

The Illinois refusal to attend the Lewis conference in Cleveland and the reasons thereof were set forth by the operators in this letter to Lewis:

"We have your invitation to meet you in conference at Cleveland, August 7th, to negotiate a basic wage scale for the country. You, the President of the State of Illinois as early as January, 1922, urged an immediate conference to discuss a new scale of wages to be effective April 1st, 1922. You continually refused to permit such conferences. You have heretofore issued two calls for joint interstate meetings, both of which calls we accepted; but prior to the date of these conferences you cancelled the calls.

"Subsequently, at the request of the Federation of the United States we met you and your representatives in Washington and requested in him a conference. We cannot understand why it is that the state of Illinois unanimously and without reservation accepted the President's proposition, and why it is that the State of Illinois refused.

"In public statements you seek to put the burden of the present critical position of the United States upon the operators, stating that you were responsible for the continued failure to produce coal. We believe that the international officials of the miners' unions entirely responsible for the present condition of the coal mines in the state of Illinois, where the operators have a definite contract with the miners which they agreed that there shall be a state negotiation of new wage contract prior to the expiration of the contract expiring March 31st, 1922. Through your refusal to allow this conference the present position in the state of Illinois has been brought about.

"The public, as well as you, are fully aware of the fact that so far as Illinois is concerned, your national and state organizations are in flagrant violation of your contract with the operators of this state.

"By reason of the published refusals from practically all other unions, districts to attend such meeting, we suggest that the conference cannot be in any sense representative, or even possible for determinative wage scales to apply throughout the country. It will be approximately the price charged by the operators of your state for dealing with a portion of the state of Illinois and possibly a few other districts, and wages fixed by the conference will be discarded as a practical method of determining wage scales; your own public statement in sending invitations to this meeting to a number of individuals not participating in the coal operators' field organization violates former Central Competitive Field procedure and acknowledges that you yourself recognize and are following a new course. For these reasons no representative of the Illinois Operators' associations will be present in Cleveland on Monday, August 7th.

"Recognizing the great seriousness of the present situation and the threat to public health and welfare that will be caused by further stoppage of coal production, and because of the failure of our former repeated acceptance of invitations to national or interstate meetings which have failed of results, Illinois operators are today offering to the President of Illinois the thought of a proper solution of the totally unwarranted deadlock in this situation. We cannot believe that the Illinois mine workers will reject such an exceedingly fair proposal as we have suggested and by their refusal continue to inflict great and needless suffering on themselves and on all other citizens."

"Illinois operators do not now and have not at any time favored even the temporary payment of the enormous wage rates now offered to their workmen. W. K. Kavanaugh, President.
Mine Fatalities in June Higher in Number
And Ratio to Output Than in May

Accidents at coal mines in the United States during June, the third month of the strike, resulted in the loss of 263 lives, according to reports received by the Bureau of Mines from state inspectors. Fatalities not resulting from the normal hazards of mining are not included in this number. Revised figures covering the present strike period show 78 fatalities in April and 79 in May. The increased number of accidents in June as compared with May was confined largely to the bituminous mines of Pennsylvania and West Virginia. Based upon a production of 22,593,000 tons of coal in June, as reported by the U. S. Geological Survey, the fatality rate for the month was 4.11, as compared with 3.89 for May and 4.04 for April of the present year and 4.03 for June, 1921.

During the past nine years (1913-1921) an average of 263 men have lost their lives by accidents at coal mines during June. The output of coal has averaged 47,280,000 tons, thus indicating a fatality rate of 4.29 per million tons as representative of the month of June over the 9-year period. It will be noted that the rate for June, 1922, while somewhat higher than that for May, was lower than the rate for April, the first month of the strike, and also lower than the average rate for June for the nine-year period between 1913 and 1921.

The first half of 1922 saw 899 men were killed by accidents at coal mines as compared with 1,001 during the first six months last year, a decrease of 172 fatalities, or 17 per cent. The output of coal has declined 14 per cent, the fatality rates for the two six-months periods being 4.13 for 1921 and 3.97 for 1922 per million tons.

Gas and dust explosions continue to be the only conspicuous class of accidents showing a higher fatality rate for 1922 than for the first six months last year.

No single accident in June killed as many as five men. The record for 1922 to date shows 7 major disasters in which 82 lives have been lost, as compared with 3 disasters and a loss of 17 lives during the first half of 1921.

Two Miners, Both Americans, Each Shoot And Load About Fifty Tons a Day

The Standard Island Creek Coal Co. has operations at Cora and Taplin in West Virginia, the two places being about fifteen miles apart. During the last half of June it conducted a loading contest between its Loma mine No. 3, at Taplin, and Cora mine No. 2, at Cora, offering a cash prize to the loader who produced the largest quantity of coal.

Jerry Dunn, an American miner, working at Loma No. 3 during the last half of June, 13 working days, loaded a total of 649 mine cars of a capacity of 1.4 tons per car—that is 656.4 tons, or a trifle over 50.5 tons per shift. He worked in a double-track room 36 ft. wide with coal 48 in. thick. The mine cars stand 27 in. above the top of the rail. The only assistance he had of any kind was the use of an electric coal auger to drill about 25 per cent of the coal loaded; otherwise he did all of his drilling by hand, shooting and loading the coal without assistance. Mr. Dunn is 6 ft. 2 in. tall, being thus decidedly above the normal height of men generally.

William Smith, an American miner, working at Cora mine No. 2, during the same period loaded 649 mine cars of capacity of 1.3 tons per car—that is 596.7 tons or 45.9 tons per shift. This coal was loaded from two entries each 18 ft. wide, the coal being 46 in. thick. Here also the mine car stands 27 in. above the top of the rail. The only assistance Mr. Smith had was the use of an electric coal auger for drilling approximately 25 per cent of the coal loaded; otherwise he drilled the coal by hand, shot it and loaded it into the cars. Mr. Smith also is above medium height, being 5 ft. 11 in. tall.

It will be seen that each of these men approximated a 50-ton railroad car per working day. F. J. Bailey is superintendent in charge of Loma Mines 1, 2 and 3, at Taplin, and E. C. Purrung is superintendent in charge of Cora Mines 1 and 2, at Cora. Our informant is A. W. Fay, the manager of the coal company. It will be noted that these miners received about 36 cars per day—some service.

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**Coal-Mine Fatalities during June, 1922, by Causes and States**

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

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<thead>
<tr>
<th>State</th>
<th>Underground</th>
<th>Shaft</th>
<th>Surface</th>
<th>Total by States</th>
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<td>Paved</td>
<td>Face</td>
<td>Roof</td>
<td>Domestic</td>
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<tr>
<td>Pennsylvania (bituminous).</td>
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<td>Pennsylvania (anthracite).</td>
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<tr>
<td>Total, June 1921.</td>
<td>70</td>
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Washington Puts Burden of Coal Distribution on States—Hopeful That Cleveland Conference Will Start Mines

BY PAUL WOOTON
Washington Correspondent of Coal Age

Washington, Aug. 8.—The pinch of coal shortage is becoming severe in several portions of the country. Spokesmen for the fuel distributor stated today that great pressure is being brought from the New England states and by states in the Northwest and in the Middle West. Senator Lenroot of Wisconsin saw the fuel distributor this morning and in no uncertain way said that something must be done to start shipments to northern Lake Michigan points, being out of reach of all-rail movement from Kentucky. One of the most active protests considered by the fuel distributor today came from the Middle Western states to look after their canning industry.

Large numbers of locomotives are being moved from the North to Southern coal fields, it was stated. Some railroad shortage of fuel is reported in the Middle Atlantic region. Secretary Hoover stated today that failure to observe the price maximum applied only to an insignificant portion of the tonnage being produced. No increases have been allowed in the maximum price, he stated, in those districts where the 1920 wage scale has been put into effect. He emphasized that the price agreement is for the period of the strike only, but he said the settlement of the strike will not necessarily take the lid off of prices.

Some further move by the President in the coal strike is expected. Events since he sent the operators home to produce coal are thought by many to have demonstrated that they will be unable to produce any appreciable amount of coal in the highly organized districts. On the other hand the mine workers have failed to accomplish anything constructive. In view of that situation many believe the President very shortly will take steps intended to force arbitration.

The failure on the part of the operators in the union districts to secure production has been a great disappointment to their sympathizers. It is true that there has been some increase in production in the Pittsburgh districts in the old non-union part of Pennsylvania, but the aggregate of that output is such as to have a very feeble influence on the situation. The small production coming from stripping operations in Illinois and Indiana has decreased. There is no production in Iowa and there has been no increase in the output of Missouri, Kansas, Oklahoma and Arkansas. Little is expected to result from state operation of mines and very little is being claimed as to the possibilities of production by such methods. As a result it is fully expected that the President will call in again the representatives of each party to this controversy and tell them that they have failed to make good and that the settlement must be placed in other hands.

A possible outcome of the Cleveland conference called by John L. Lewis, according to speculation here over the week end, is that an agreement can be reached whereby eastern Ohio can resume operations on the 1920 scale and with all the other demands of the miners put into effect. Such an arrangement might also be made at isolated operations in other districts in the central competitive field. If that should be done there would soon be a general resumption on that basis, some predict.

As the control over distribution progresses, it is very evident that the individual states under this plan have to shoulder most of the work and most of the responsibility. The task assigned to the Federal Government of apportioning current production among the states and among the railroads is easy in comparison. The thing worrying Washington is whether or not the states can measure up to the task assigned to them. To distribute coal in an intelligent manner in any state is a technical task of great complexity. Large organizations will have to be set up and heavy expenditures incurred. The fear is expressed that the states will not be equal to the task and the whole plan may have to be revised.

Despite the experience the railroads have had with service orders in the past, each road has put service order 23 in effect in its own way and as a result much confusion has been caused. This became so bad that the Interstate Commerce Commission on Aug. 4 was forced to issue an amendment to the order.

The matter of re-establishing restrictions on coal prices in Pennsylvania was the subject of a conference held at Washington on Aug. 7, between representatives of the operating mines of Pennsylvania and Secretary Hoover of the Department of Commerce and Federal Fuel Distributor H. B. Spencer. The purely voluntary price arrangement of June 1, of from $3.25 to $3.50 per ton, broke down two weeks ago, partially due to the fact that some coal producing districts refused to co-operate in the voluntary agreement at that time, and partially due to conditions brought about by the railways offering $1.50 per ton above the fair price for coal in the districts which did agree. Many coal operators in the districts where voluntary agreement was made have held to the fair price, but other districts are asking as high as $7 to $8 a ton.

The operators proposed that a new fair price should be fixed at a somewhat higher level than that of June 1, in order to allow for increased working expenses due to car shortages and partial operation of mines. It was considered by the administration officials that, inasmuch as the bulk of present production from Pennsylvania is consumed in that state and is, therefore, not a consequent export factor in interstate commerce, the Pennsylvania state authorities should participate in any arrangements. Moreover, while enforcement of price restrictions under the new plan approved by the administration has been made fairly effective in states whose coal predominantly enters into interstate commerce, any enforcement beyond purely voluntary action in coal locally produced and sold must rest upon the state authorities. A meeting between the Pennsylvania state coal committee appointed by Governor W. C. Sproul and the administration officials has been arranged for Wednesday to consider the matter.

While there has been an improvement during the last week in transportation service, there is a feeling that the bond of sympathy between the striking shopmen and the other railroad orders is sufficiently strong to make it certain that transportation efficiency is kept at a low ebb. Just at this time a shortage of power is beginning to be felt. Engine employees are in a position, without involving themselves, to contribute easily to further failures of locomotives. There is also the serious matter of boiler inspection. Strike sympathizers in high places are seeing to it that there is no laxity in the Government's inspection. There is now talk among men in the train service of refusing to take out trains on the ground that the state of the equipment makes it unsafe. The trouble with the workers on lake boats is said to have its real basis in the desire to contribute something to the success of the strike. Among the various labor organizations which have to contribute to the transportation of coal, it is very clear that they are in a position to keep transportation badly tied up for an indefinite period.

**Amendment No. 1 to Service Order No. 23**

At a session of the Interstate Commerce Commission, division 5, held at its office in Washington, D. C., on the fourth day of August, A. D. 1922, it is ordered, That paragraph numbered 7 of the said Service Order No. 23 adopted July 25, 1922, be, and it is hereby, amended.
and supplemented to read as follows effective on and after Aug. 1, 1923:

5. That in the supply of cars to mines upon the lines of any coal company or railways, the dispatch of cars for the purpose of place, furnish, and assign such coal mines with cars suitable for the transportation of coal, no precedence shall be allowed that will be required for the following classes of purposes, and in following order of classes, namely:

1. For special purposes as may from time to time be specially designated by the commission or its agent therefor.
2. For essential purposes under this order or class 1.
3. For transportation purposes by the coal company or railways.
4. For transportation purposes by any person, partnership, or corporation not engaged in the production of coal.
5. For transportation purposes by any person, partnership, or corporation engaged in the production of coal, but not engaged in the operation of the coal mines.
6. For transportation purposes by any person, partnership, or corporation engaged in the operation of the coal mines.

And subject thereto in order of priority:

Class 1.—(As to each coal-loading carrier which reaches mines in Pennsylvania, Ohio, West Virginia, Kentucky, Tennessee, and Alabama. For bituminous coal consigned to any other port for transshipment by water to ports upon Lake Superior.)

Class 2.—(As to all such common carriers by rail.)

Class 3.—(As to all such common carriers by rail.)

Class 4.—(As to all such common carriers by rail.)

Class 5.—(As to all such common carriers by rail.)

Class 6.—(As to all such common carriers by rail.)

Class 7.—(As to all such common carriers by rail.)

Class 8.—(As to all such common carriers by rail.)

Class 9.—(As to all such common carriers by rail.)

And subject to reclassification or diversion except for some purpose in the same class as a superior class in the order of classes, or as otherwise provided in the commission's rules and regulations therewith.

For the more prompt dissemination of coal, bituminous coal, and anthracite coal, to be shipped to retail dealers for household use.

For the purpose of boarding, and for the manufacture of containers therefor, for daily use not for storage, exchange, or sale:

For the more prompt and effective administration during the present emergency of the authorization, directions, and requirements of the commission. The provisions of the act shall be interpreted and applied as agents of the commission, with authority to make such regulations in regard to the matters are hereinafter defined in paragraphs (15) and (16) of section 1 of the Interstate Commerce Act, and referred to in this paragraph. The Governor, by and through Frank C. Crandall, Assistant Director, and thence through the proper officers of the commission and their agents.

The acts of the commission and their agents shall be for the purpose of making the work.

Detailed instructions have been sent to the state governors in the state whose railroads are to distribute the bituminous coal under the new plan. The governor of each state has prescribed a form which is to be followed by the governors in making application for coal. The form calls for the name of the applicant; the point at which the shipment is to be delivered; the name of the delivering railroad; the purpose for which the coal is to be used; the quantity requested; the average rate of consumption of the consignee; the tonnage for daily consumption; the consignee's present stock; the name of the firm with which the applicant has a contract; the district from which the coal ordinarily is supplied and the name of the bank which will guarantee payment when the coal is shipped.

Another form has been devised on which the district committees will report on orders placed. The governor of each state is requested to apply for coal produced in other states through the federal fuel distributor only, and to not order coal from district committees or from producers outside their own state.

Mr. Spencer emphasizes in his letter to the governors that there is no anthracite available for distribution; that essential purposes must be handled only for current use and not for storage; that emergency coal may be had only for the essential purposes outlined by the Interstate Commerce Commission and that all coal will be placed f. o. b. railway cars at the mines at the fair prices for that district approved by Secretary Hoover.

CONFERENCE WAS HELD DURING THE WEEK with the President, Secretary of Commerce Hoover and the Federal Fuel Distributor by Governor Miller of New York and E. H. Outerbridge and D. L. Cooke of the Governor's advisory committee, to acquaint themselves with the plans of the administration to distribute coal. The New York authorities expressed a willingness to co-operate with the government in the coal situation.

RAILROAD LABOR IS FINDING OUT that its goal is not within striking distance—Washington Post.
Illinois Refuses to Meet Lewis at Cleveland Under Any Pretext—Some Favor Crews’ Plan

Chicago, August 8—Operators in session all day Tuesday, Aug. 8, in Chicago reaffirmed their position favoring return to work of all striking miners at the old wage scale pending arbitration, which they were ready to accept either nationally or by states. This was set forth in a message sent to President Lewis of the miners at his Cleveland conference which at the moment was marking time under a pretense of waiting for Illinois and Indiana to come in.

The operators did not alter their firm stand to any degree but they did frankly ask Mr. Lewis whether he wanted them to talk with him on the basis of their proposal. Then they adjourned until Wednesday at 2 p.m. giving him a chance to answer. As an organization they have not been formally invited to Cleveland.

The main effort of Illinois was to secure arbitration of an unbiased effective sort and they were willing to agree even to the high wages of last year in order to get it.

The operators’ only statement at the end of the session was this: “The conference which Mr. Lewis so desperately seeks at Cleveland is not to negotiate a new wage scale or to accept President Harding’s recent offer of arbitration. It is only an offered opportunity provided by Mr. Lewis for the formal surrender of all those operators from any and every part of the country who desire to sign any kind of a contract that may be offered. “With only 49,000,000 tons or less out of an annual output of 500,000,000 willing to co-operate with Mr. Lewis in this further eleventh-hour effort to establish a national wage conference or to revive the discarded Four-State method of bargaining, Mr. Lewis is fully aware that he may not safely tempt public sentiment and welfare by attempting to arbitrarily take any official action with such a small portion of the whole tonnage, hence his anxiety to secure voluntary additional participation.

“This is clearly indicated by the fact that a substantial portion of the very limited tonnage represented at yesterday’s Cleveland meeting was recruited from fields not heretofore participating in the so-called Central Competitive conference.

COMpletely supplanting interest in the original meeting, called by John Lewis for Cleveland on Aug. 7, to negotiate a Four-State contract, the so-called Crews-Glasgow plan for settlement of the soft coal strike entered the arena on Tuesday morning. This plan, according to unofficial reports, the text not having been released when this issue of Coal Age went to press, provides for immediate resumption of mining at the wages and under the terms of the contracts in effect on March 31, just prior to the strike. This arrangement would continue in effect until the end of next March, and would reinstate the check-off and preserve the status quo of last year.

The second step in the plan provides for an advisory committee or commission, one-half operators and one-half mine owners, to be appointed in the last half of September to which is to be delegated the task of making a study of the soft coal industry and setting up recommendations as to the best way of negotiating future wage agreements. This committee, it is understood, would take the place of the commission that President Harding has been proposing to accomplish the same ends. The difference would be that in the one case the entire matter is retained within the industry and in the other the government would be a party. A further difference is found in the fact that the plan now proposed has no representative of the public, whereas the operators had made strenuous representations to the President that his commission should have nothing but public men on it.

This committee would be entirely advisory and its finding would in no way bind either party. This, it is pointed out, is desirable because the only finding that the miners ever accept are those of joint conferences, they having rejected at least in part the arbitration awards of the last two governmental commissions. The memorandum of the plan, it is understood, specifically provides that in making its recommendations the committee shall take into consideration the competitive conditions surrounding each producing district as well as the needs of the coal workers.

Wage rates would be recommended by the committee, it is reported, and the body would have authority from the signatories to make a complete and searching inquiry into all phases of the industry, looking to increasing the efficiency of operations and the betterment of working conditions. Particular emphasis is to be placed on the necessity of developing within the industry a proper spirit of responsibility to the public. Should the operators or miners not be able to agree on their respective members of the committee, the President will be requested to fill the vacancies.

The plan is reported to have the unqualified support of John Lewis and to be acceptable to Mr. Ogle, the president of the National Coal Association. The original draft was stated to have been prepared by Colonel Ralph Crews, a New York lawyer who has been prominent in coal matters for many years, and who changed the operators’ Four-State Competitive Field in the hearing before the Robinson Coal Commission in 1920. He enlisted the help of Mr. Glasgow, a Philadelphia lawyer who has been the general counsel for the United Mine Workers in recent months, and together they got Mr. Ogle and Mr. Lewis together for a consideration of the plan. It was the knowledge that he had this plan to spring on the meeting on Wednesday of this week that is reported to have moved the operators as the adjournment of the original meeting in Cleveland on Monday. The two meetings, those who are in touch with the situation are careful to point out, have no connection.

Commenting on the plan Monday night, Mr. Ogle stated to the press that it was of such character that all who were concerned would be obliged to give it careful consideration. As this issue of Coal Age goes to press there have been no official statements from the operators as to whether they would accept it. Illinois and Indiana producers met on Tuesday to give it consideration. The representatives of the Pittsburgh producers advised Coal Age on Tuesday afternoon that they would not participate and most certainly would not meet the miners in Cleveland. Others have informally expressed approval, while some are holding off.

Southern Ohio Operators Decline to Meet At Cleveland for Four-State Agreement

OPERATORS in the southern Ohio field affiliated with the Southern Ohio Coal Exchange have refused to join the proposed conference of miners and operators at Cleveland Aug. 7. This was made known definitely Aug. 3 when W. D. McKinney, secretary of the Southern Ohio Coal Exchange, sent a telegram to John L. Lewis, national president of the miners’ union. Among other things in the telegram were: “The method of negotiating a basic wage agreement in a four-state meeting has been challenged in the courts. Almost the entire coal industry has taken the position that it has proven entirely inadequate in meeting the changed economic conditions of the country. The coal industry is controlled by the states and every law relating to the production of coal has been enacted by the states. The federal authorities, recognizing this, have placed the responsibility of producing coal on the several states where coal is mined. Operators and miners in states and districts should meet and solve their own problems.”
LEWIS’ FOUR-STATE MEETING DRAWS SMALL ATTENDANCE
OUTSIDE OHIO—NO ACTION TAKEN MONDAY

THE original Cleveland conference, called by John L. Lewis, of the United Mine Workers, adjourned shortly after meeting Monday, Aug. 7, until Wednesday of this week. Operators not present were thus to be given time to reach the conference, it was stated. The real reason for the adjournment, however, it was generally understood, was to take under consideration the crews-Glasgow plan for settlement of the strike. The original meeting—the attempted Four-State conference—was held in abeyance to see what would happen to the proposed crews-Glasgow scheme.

Operators present on Monday, according to various estimates of the union leaders, represented about 30 per cent of the bituminous coal tonnage of the old Central Competitive Field. Among those also present were mine owners from northern West Virginia and a sprinkling from outlying districts. A joint body was organized, of which Michael Gallagher of the Pittsburgh Vein Operators Association was made chairman, William Greene, secretary of the miners’ organization was elected secretary, with W. L. Robison of the Y. & O. Coal Co., assistant secretary.

Mr. Gallagher and Mr. Lewis made this joint announcement following the meeting, which lasted but a few minutes:

“The situation of public distress so eloquently portrayed by Mr. Lewis is that which he forecasted early this year for calling this strike and at a time when coal throughout the United States was largely selling below cost of production.

“Nor is there any indication in his latest call of any willingness to recede from the original demands of his policy committee—a six-hour day five days per week, which reduces the physical capacity of the mines of the country 25 per cent. There is no acknowledgment that the arbitration offer of the President of the United States through an impartial commission is at all acceptable.

“The evidence of the extreme extent of the offer made by the Illinois operators to induce miners to resume work, and for them to establish and give definite evidence of their fairness in submitting to arbitration, we present herewith a comparison of the average wage scale paid in ten Eastern non-union fields now producing coal, and the scale posted on July 26th at the mines in western Pennsylvania, and on the basis of which tonnage is being produced to meet 40 per cent or more of the requirements of the country.

“Illinois operators do not now and have not at any time favored even the temporary payment of the enormous wage rates now offered to their workmen, but because of the offer of the President of the United States, we have accepted such basis of payment contingent, however, only upon the acceptance by the miners of a fair, impartial arm’s-length determination of a wage rate subsequently to be paid.”

Below is given a direct comparison by classification of wages paid since July 20, 1922 and to continue until January 1, 1923, at the Pennsylvania mines now being operated under the protection of the Militia of that state, also average wages paid by ten non-union coal producing fields, with mine wages demanded in Illinois.

No “checkoff” in behalf of the mine workers organization is being made by the Pennsylvania operators now operating under the scale here given:

<table>
<thead>
<tr>
<th>Tonnage Men</th>
<th>Pennsylvania</th>
<th>Non-union</th>
<th>Demanded by Illinois</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pick mining—thin vein</td>
<td>$8.8764</td>
<td>$1.17</td>
<td>$1.69</td>
</tr>
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<td>.7911</td>
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</tr>
<tr>
<td>Loading—thick vein</td>
<td>.5343</td>
<td>.4752</td>
<td>.85</td>
</tr>
</tbody>
</table>

Day by Day

| Motormen | 5.10 | 4.68 | 8.04 |
| Skilled helpers | 5.00 | 4.68 | 7.53 |
| Wages helpers | 4.75 | No scale | |
| Track layers | 5.00 | 4.28 | 7.30 |
| Track layers, helpers | 5.75 | 4.16 | 7.25 |
| Bottom readers | 5.50 | 4.28 | 7.30 |
| Drivers | 5.00 | 4.28 | 7.30 |
| Tram runners | 5.00 | 4.28 | 7.30 |
| Water and machine haulers | 5.00 | 4.08 | 7.50 |
| Timber men, where employed | 5.00 | 4.08 | 7.50 |
| Pipers for compressed air plants | 4.92 | 4.65 | 7.41 |
| Trappers | 2.65 | 2.68 | 4.33 |
| Drivers | 4.75 | 4.08 | 7.83 |
| All other inside labor | 4.75 | 4.08 | 7.83 |
| Outside labor | 4.75 | 4.08 | 7.83 |
| Pushers | 4.50 | 4.16 | 7.36 |
| Trimmers | 4.50 | 4.16 | 7.36 |
| Car cleaners | 4.10 | 4.16 | 7.25 |

Fairmont Not Invited to Cleveland

THAT northern West Virginia associations were not to be a party to the Cleveland conference was the announcement made during the first week of August. It was stated that the Monongahela Association had received no invitation to attend the conference and that if any northern West Virginia operators attended the conference, they did so as individuals and not as representatives of the association. The conference at Cleveland was regarded by many operators as more of an effort to strengthen the morale of the striking miners than as a bona fide effort to reach an agreement and of course it had its effect on strikers who were disposed to cry quits and go back to work.
DEMAND has eased off a trifle in the past week. There is, of course, no dearth of orders for all the coal that is being mined, but there has come an abatement in the rush as buyers prefer to await developments of the Cleveland conference between union officials and operators representing parts of the old Central Competitive group. The cessation of feverish buying has been accompanied in some instances by curtailed industrial activity and further efforts toward fuel conservation by utilities and carriers. In some sections the shortage is now acute; this is responsible for many Lake vessels tying up because of no bunkers and shortened operating schedules at steel mills in the Youngstown district.

Railroads are functioning better, production has increased slightly, and while congestion of loads is still the main bar to heavier non-union production, the accumulated tonnage on wheels is slowly being untangled and sent to destination.

SPOT COAL MOVES AT MORE REASONABLE PRICES

Coal Age Index of spot bituminous prices dropped 45 points to 511 on Aug. 7. This corresponds to an average mine price of $6.18, as compared with $6.73 on July 31. Buyers who must have coal are paying gilded prices for it, unless they are fortunate enough to be lined up with connections who are using the Hoover price as a basis of sale. The list of operators in this category is growing rapidly, however, and in the Midwest the Hoover level may be considered the minimum price of today, with the range continually narrowing as less and less coal moves at the high prices of last week. No seller wants to have high-priced coal confiscated at the Hoover level and there is also a growing feeling among producers that the wisest policy is to accept a reasonable return, especially as the car supply is to be contingent upon the observance of fair prices.

Contrary to expectations, priority orders have not swamped the mines now operating nor has the car supply improved materially, even for those producers who had accepted such preferential business.

Central Pennsylvania mines were the only ones to score advanced prices during the last few days. Somerset producers are now advocating $4.75 as a fair price for their coal during the present emergency. Smokeless agencies at Hampton Roads also kept their prices on the upgrade, mainly because the piers were unable to secure sufficient coal to accommodate the vessels awaiting cargo. On the other hand, smokeless firms in the Midwest were the foremost in observance of the Hoover fair-price list.

The feeling that a resumption of union mining is impending is reflected in this week's market for British coal in this country. Heavy orders had been placed in Great Britain for consumers in New England and the Atlantic seaboard but cancellation of some of these orders, amounting to many thousands of tons, followed the events of the week in the coal trade. As delivery of British fuel involves several weeks' time, no consumer wants to have much of this tonnage en route or on unfilled orders when there is a prospect of home-mined coal being available in the near future.

Anthracite consumers are now fully realizing that a shortage of coal awaits them this winter. Retail deal-
ers are being bombarded with orders and requests for early delivery, but can do little else than file these away with the promise of the earliest possible attention.

**BITUMINOUS**

"A slight increase in output marked the eighteenth week of the coal strike (July 31-Aug. 5)," says the Geological Survey. "Preliminary returns indicate a production of 4,250,000 tons against 3,933,000 tons in the week before. The increase is due to improved car supply in the middle Appalachian fields rather than to re-opening of mines hitherto closed by the strike.

"In spite of the increase in output, the eighteenth week finds production still about 1,100,000 tons short of the level reached before the shopmen's strike; in the week ended June 24, 5,337,000 tons were raised.

"Loadings on Monday, July 31, were 14,768 cars, an increase over the preceding Monday of 11 per cent. The following day they dropped to 11,783 cars, partly because of pay day. A partial recovery carried loadings on Wednesday up to 12,218 cars, and on Thursday 12,177 cars were loaded.

"Up to the present, mines responding to the invitation to resume operations have added little to the coal supply of the country. There has been practically no increase in output in any of the strongly organized districts, and the increase in shipments from Pennsylvania, and from the Fairmont and Kanawha districts has not been large.

"In the middle and southern Appalachians, production has been curtailed by the traffic congestion resulting from the shopmen's strike, but through Pennsylvania, the Central Competitive Field, and most of the districts west of the Mississippi, car supply has been adequate.

"In the strongly organized districts, Ohio, Indiana, Illinois, Michigan, Iowa, Missouri, Kansas, Oklahoma, and Arkansas, production is no greater than in the latter part of June before the Washington conferences were called. In

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

<table>
<thead>
<tr>
<th>Low-Volatility, Eastern</th>
<th>Market</th>
<th>Quoted</th>
<th>July 10</th>
<th>July 24</th>
<th>July 31</th>
<th>Aug. 7</th>
<th>Market</th>
<th>Quoted</th>
<th>July 10</th>
<th>July 24</th>
<th>July 31</th>
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<td>Columbus</td>
<td>3.65</td>
<td>3.60</td>
<td>5.00</td>
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<td>7.50</td>
<td>W. Va. screenings</td>
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<td>5.75</td>
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<td>Midwest</td>
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<td>11.00</td>
<td>7.75</td>
<td>3.75</td>
</tr>
<tr>
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<td>New York</td>
<td>3.50</td>
<td>5.30</td>
<td>7.95</td>
<td>3.75</td>
<td>8.00</td>
<td>West Ky. mine run</td>
<td>Chicago</td>
<td>5.00</td>
<td>11.00</td>
<td>7.75</td>
<td>3.75</td>
</tr>
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<td>Baltimore</td>
<td>3.90</td>
<td>4.75</td>
<td>7.75</td>
<td>6.00</td>
<td>8.00</td>
<td>South and Southwest</td>
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<td></td>
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<td></td>
</tr>
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<td>Philadelphia</td>
<td>3.90</td>
<td>4.75</td>
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<td>6.00</td>
<td>8.00</td>
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<td>2.35</td>
<td>2.40</td>
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<td>3.90</td>
<td>4.75</td>
<td>7.75</td>
<td>6.00</td>
<td>8.00</td>
<td>Big Steam lump</td>
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<td>2.40</td>
<td>4.50</td>
<td>3.60</td>
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<td>4.75</td>
<td>8.15</td>
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<td>Big Steam lump</td>
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<td>2.40</td>
<td>4.50</td>
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<td>3.90</td>
<td>4.75</td>
<td>7.75</td>
<td>6.00</td>
<td>8.00</td>
<td>S. E. Ky. lump</td>
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<td>4.00</td>
<td>8.00</td>
<td>3.50</td>
</tr>
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<td>Cincinnati</td>
<td>3.90</td>
<td>4.75</td>
<td>7.75</td>
<td>6.00</td>
<td>8.00</td>
<td>S. E. Ky. lump</td>
<td>Cincinnati</td>
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<td>4.00</td>
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</tr>
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<td>7.75</td>
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<td>8.00</td>
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<td>8.00</td>
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</tr>
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<td>8.00</td>
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<td>3.75</td>
<td>5.25</td>
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<td>3.75</td>
<td>8.00</td>
<td>Kansas lump</td>
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<td>5.00</td>
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<td>5.15</td>
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<td>8.00</td>
<td>Kansas lump</td>
<td>Kansas City</td>
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<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
</tr>
<tr>
<td>W. Va. mine run ..........</td>
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<td>3.75</td>
<td>5.25</td>
<td>6.90</td>
<td>3.75</td>
<td>8.00</td>
<td>Kansas lump</td>
<td>Kansas City</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
</tr>
</tbody>
</table>

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*Figures given in the preceding columns are net tons, F. O. B. mine. *\(^\text{†}\)Advance over previous week shown in heavy type, declines in italics. NOTE—Smokeless prices now include New River and Pocaenthalas.
the Rocky Mountain states, particularly Colorado and Utah, that there has been an increase, partly through more active demand, partly through return of striking miners to work.  

"Of all districts, Pennsylvania has been most closely watched to learn the response to the invitation to re-open mines. Preliminary returns indicate the shipments for last week (July 31-Aug. 5) will be 792,200 tons. In comparison with the week of June 24, before the Washington conferences, this is an increase of 24,000 tons or 3 per cent. (See preceding week. Resumed shipments from Pennsylvania show a decrease of 6.7 per cent. All districts except South Fork and central Pennsylvania have so far shipped less coal than two weeks ago. Up to the present time, therefore, mines that have responded to the invitation to resume operations have added but little to the coal supply of the country. The increased production has come instead from the middle Appalachians and is made possible by improvement in car supply."

All-rail shipments to New England were 436 cars during the week ended July 29, as compared with 445 cars in the preceding week. Most of this tonnage is on contract, as spot coal of the all-rail variety is more urgently needed elsewhere and New England is not yet feeling the pinch of the fuel shortage to the extent where it will pay the higher prices asked for coal.

Hampton Roads dumpings during the week ended Aug. 3 were 277,072 net tons, nearly 50,000 tons short of the previous week's figure. New England took approximately 200,000 tons of this. There is only a small tonnage at the Roads, but conditions are improving, as the railroads supplying these terminals are now moving cars more easily.

Low dumpings during the week ended Aug. 3 were 89,187 net tons; 73,294 tons cargo and 15,963 vessel fuel—compared with 153,890 tons in the preceding week. The season's movement to date is now 4,832,124 tons; last year it was 14,127,800 tons.

The Northwestern market is becoming skittish. Spot coal is so scarce that it is almost unobtainable and prices are strong. It is not yet too late to save the day if mining is resumed at an early date. Meanwhile, individuals are swapping coal supplies around to keep the wheels turning, although the shortage is daily closing down more plants.

ANTHRACITE

A few cars of hard coal were loaded during the week ended July 29, chiefly steam sizes dredged from the rivers, the only markets for them. Northern dealers and consumers are now anxiously interviewing their retailers in an effort to find out when they can expect coal deliveries. It is evident that when mining is resumed the distribution problem will be a difficult one to solve. Pea coal is still

Kentucky January-June Coal Output Exceeds
Same Period of 1921 by 5,000,000 Tons

KENTUCKY produced 17,267,132 tons of coal in the first six months of this year, in sixty-nine working days, according to the semi-annual report of the State Department of Mines, issued by L. E. Eldredge, chief inspector of mines. This was a daily output of 250,248 tons and is a net increase of 5,020,727 tons over the output for the first six months of 1921. The output during the first half of 1921 was 411 per cent.

"Assuming the mines were operated full time, or twenty-four days each month, the State of Kentucky would produce 72,071,425 tons of coal a year at this rate of production," said the chief inspector, speaking on the report.

Each of the eight districts in the state, except the fourth, composed of Knox and Whitley counties, showed an increase over the production for the first six months of last year. The increases ranged from 14 to 53 per cent. The net increase for the entire state over the tonnage for the first half of 1921 was 411 per cent. This increase in the fourth district was 49,237 tons, or 12 per cent under the tonnage for the same period last year. This decrease is accounted for by a decrease in the number of men employed in the district from 1,482 in 1921, to 767 in 1922, says the report.

COKE

Beehive coke output increased slightly during the week ended July 29, when 110,000 net tons were produced, as compared with 105,000 tons during the preceding week. The Connellsville output is at its highest mark since the strike began, having climbed slowly to a weekly figure of 72,700 tons. Coke offerings are still very light, however, as most of the increased production has been for furnace ovens.

The railroad strike is contributing to an increasing car shortage, which is cutting down the production about one day's output, or 250,248 tons, per week, according to production figures received recently, the report shows. The average number of days worked in the mines in the first half of 1921 was forty-five. This was raised to sixty-nine for the half year just closed, an increase of twenty-four working days.

Operators Restore 1920 Scale in Parts of Kentucky and Tennessee

A JTAIN arbitration board of the Kentucky-Tennessee district, meeting in Cincinnati, Ohio, reached a decision Friday, July 28, which will restore the wage scale of 1920 to union miners in the section around Pineville, Ky., to a few mines in the vicinity of Nashville, Tenn., and along the line of the Tennessee Central Ry. The award grants an increase of wages amounting to 24c. a ton to pick and machine miners; 20 per cent increase on yardage and deadwork, and $2.50 a day to day and monthly men.

It is contended by the operators that the award is not a recognition of the union but simply is a resumption of the 1920 wage scale with the miners as individuals. The award practically is said to be the scale of wages which is embodied in President Harding's coal-settlement proposition.
Orders for British Coals Canceled as Strike Settlement is Expected

COAL

The rapid supply of coal is one of the most important factors in maintaining the economy of any country. The situation in Großbritannien, as reported in the June 1922 edition of the British Coals report, highlights the impact of the strike on the coal industry. The strike, which was a significant event, led to a decrease in coal production and a decline in the supply of coal to various markets.

Hampton Roads Pier Situation

Coal Paragraphs from Foreign Lands

ITALY—Cardiff steam first quoted is 40s. 6d., according to a cable to Coal Age as compared with last week's price of 38s. 6d.

GERMANY—Production in the Ruhr district during the week ended July 22 was 1,800,000 metric tons, as cabled to Coal Age. In the preceding week the output was 1,760,000 tons.

June Exports and Imports

Exports, bituminous coal:

<table>
<thead>
<tr>
<th>Country</th>
<th>June 1921</th>
<th>June 1922</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>1,412,497</td>
<td>427,849</td>
</tr>
<tr>
<td>Mexico</td>
<td>17,650</td>
<td>5,937</td>
</tr>
<tr>
<td>Total</td>
<td>1,430,327</td>
<td>433,786</td>
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<td>By vessel to:</td>
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</tr>
<tr>
<td>West Indies</td>
<td>21,946</td>
<td>8,942</td>
</tr>
<tr>
<td>Panama</td>
<td>8,522</td>
<td>19,101</td>
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<tr>
<td>Cuba</td>
<td>71,750</td>
<td>17,517</td>
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<td>Brazil</td>
<td>75,127</td>
<td>11,030</td>
</tr>
<tr>
<td>Chile</td>
<td>1,983</td>
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</tr>
<tr>
<td>Argentina</td>
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<td></td>
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<tr>
<td>Total South America</td>
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</tr>
<tr>
<td>Egypt</td>
<td>42,169</td>
<td>10,995</td>
</tr>
<tr>
<td>Algeria</td>
<td>66,784</td>
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<tr>
<td>Angola</td>
<td>495,864</td>
<td>289,064</td>
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<tr>
<td>Morocco</td>
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<td>100,426</td>
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<td>United Kingdom</td>
<td></td>
<td>3,889</td>
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<td>Total bituminous imports</td>
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<td>64</td>
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<tr>
<td>Total coke imports</td>
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Pier and Bunker Prices, Gross Tons

PIERS

<table>
<thead>
<tr>
<th>Week ended</th>
<th>July 29</th>
<th>Aug. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pool 11, New York</td>
<td>$10.50</td>
<td>59.15</td>
</tr>
<tr>
<td>Pool 1, Hamp. Rd.</td>
<td>8.00</td>
<td>9.25</td>
</tr>
<tr>
<td>Pool 2, Hamp. Rd.</td>
<td>8.00</td>
<td>9.25</td>
</tr>
</tbody>
</table>
| BUNKERS

Pool 11, New York | 50.00 | 11.50 |
| Pool 1, Hamp. Rd. | 8.00 | 9.25 |
| Pool 2, Hamp. Rd. | 8.00 | 9.25 |

Current Quotations British Coal fob Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff: July 29
Admiralty, Large: 24s. 0d. 30s. 26s. 26s.
Scotch, Newcastle: 17s. 6d. 26s. 26s. 26s.
Newcastle: Best Steams: 24s. 0d. 24s.
Best: 24s. 0d. 24s.
Best Runners: 24s. 0d. 24s.

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

CANCELLATION of some American coal contracts, amounting to many thousands of tons, placed on the British market recently, has followed the belief that an early settlement of the United States coal strike may be expected soon. In spite of this, however, the Canadian and German calls are increasing and prices are at least firmly held. Production is well taken and new business is limited by the general scarcity.

Production in Great Britain during the week ended July 22 was 4,391,000 gross tons as compared with 4,227,000 tons, according to a cable to Coal Age. The somewhat sudden American demand galvanized buyers in Europe and South America, who had been holding off with the idea of forcing down price.

Coal Age's London correspondent, reading that the American miners had obtained the pledge of the British Miners' Federation not to supply coal for shipment to the United States, interviewed one of the British miners' readers, who says that no such pledge has been given. The British miners' view is that, when they were on strike, America sent as much coal as it was able to mine and British labor is now returning the compliment.
Government Plan of Control
Checks Ascent of Prices

Requests for Priority Shipments Fail to Exhaust Current Output—Non-Essential Industries Hustle Before Market Is Closed to Them—Buyers Cautious in Short Market.

GOVERNMENT action to control car supply at the mines has definitely checked soaring prices. Many requests for priority shipments have been filed, but as yet these orders have not taken up the full current production. Non-essential industries have been active in purchasing whatever tonnage is offering before the priority door closes the spot market to them. Buyers are proceeding cautiously, however, and refuse to pay the high figures quoted last week. Considerable bargaining has resulted, a strange feature in such an extremely short market. A feeling that the strike may be settled before much more British coal can be received here has caused several cable cancellations of orders this week.

NEW YORK

Anticipating the full functioning of the priority orders, buyers for non-essential industries invaded the market the last few days of the week and made heavy purchases. Some of these manufacturers were not actually in need of coal but did not choose to wait idly by and watch the railroads and other preferred classes pick up the available supply.

There is considerable uncertainty in the situation and the outcome of the conference held by union leaders and operators in Cleveland on Wednesday was closely watched. Some of the smaller operators are said to be willing to make contracts covering from four to six weeks or longer at prices much lower than the current market quotations.

Buying of British coal was quieter. The first cargoes are expected to arrive here about Aug. 10, although it was reported that three cargoes had already reached the harbor. It is not believed that any foreign coal will be shipped here unless it is already sold. Users of some British coal that has already been received say that the Atlantic seaboard are said to be complaining of its burning qualities. Local quotations ranged $9.50@$10.00 c.i.f.

SOME ORDERS HAVE BEEN CANCELED this week, apparently in the belief that the strike will be settled before the coal can be received.

Southern coal came here slowly and were quoted 9@8.50, Hampton Roads, and 11.50@12. New York. There were 304 cars at the local piers on Aug. 4, a slight increase over the previous week. Most of this was of Pool 11 quality. B. R. & P. coal were quoted locally $7.25@$8.25; Broadtop $8@$8.25, and Shawmut around $7.25.

CENTRAL PENNSYLVANIA

July production averaged 644 cars per day, a total of 14,075 for the month, a little below that of June. However, during the last 10 days of the month there was a big gain, the week ended July 30, showing loadings of 3,864 cars.

Shortage is beginning to be felt among the large public utility companies in the district. Prices on the spot market are a little lower, ranging around $7.50 at the mines.

Report from the leading operators in the district indicate that central Pennsylvania will not be represented at the conference in Cleveland. The district never was a part of the central concept of which the operators have always made their agreements with their employees as a distinct unit.

The Pennsylvania Railroad has announced that in order to take care of the railroad's current needs, it will be necessary to obtain from the producers 20 per cent of their output. The price is to be agreed upon later.

BALTIMORE

While a state commission for Maryland has been named in order that coal movement be regulated, it has not started to truly function, as complete instructions from Washington as to procedure are lacking. Meanwhile the plan of rationing, while making some industries hold out for better prices, is having no appreciable effect on quotations. Individual prices are being paid, and willingly, to get coal at all in many cases.

The Public Service Commission sent out a questionnaire in connection with the state plan of control, asking larger industries of the state whether they had much fuel on hand, and, as another thought, whether they would share with others some of the fuel they had. As a matter of fact few of the Maryland plants have large stocks ahead. The gas and electric light plant of Baltimore only has about twenty-five days' stock on hand. There is still some movement by barge from Norfolk to care for bunker needs and a small line distribution.

In July the total bunkers loading on foreign bound ships only amounted to 6,721 tons. The first ships bringing English coal to Baltimore are expected to dock about Aug. 15. Conditions in the local market at that time will have much to do with the distribution.

PHILADELPHIA

Higher arrivals have been noted during the past week. Any would-be purchasers, however, is deferring orders in the hopes of a quick settlement of the strike. Prices for spot coal are still high, still running from $7@$9, although there are bids in the $7 high figure recently.

If anything there is a slight decline in quotations, and a fair quantity of coal has been sold at $8. This may have been caused by the proposed priority orders of the I. C. O., which, while they have not as yet taken effect, have had a tendency to keep some purchasers in the background, believing that they will be able to get a more favorable price.

Good business with the large industries and utilities continues to go forward on foreign coals. Early in the week state handlers had some difficulty in arranging for boats, as the prices of charters have increased considerably. Orders placed now are mostly for September delivery, although it is quite possible some free cargoes are still afloat.

FAIRMONT

Although there was a rather marked increase in the number of mines in operation during the closing week of July, that was due more to an improvement in transportation than to any general response on the part of the miners to the proposed new settlement. As a result many of the operators are now back at work. Operators engaged in a general effort to put mines on an operating basis, secured injunctions, placed men on duty and cleaning up mines in general.

UPPER POTOMAC

A production of about 25,000 tons for the last week of July was being taken care of without any trouble by the Western Maryland, which was also furnishing all the cars needed. Approximately 40 mines in this district are not producing. Intimidation of men who want to return to work is the principal barrier to further operations.

KANSAS CITY

The coal shortage is being felt very acutely and prospects for increasing the production is not so bright as a week ago. Some of the miners that have been working right along have quit or at least failed to report for work and two large mines that have been producing are idle for the first time in several months. The rumor is that Howatt is responsible for this and his action is another slap at the industrial court law of Kansas.

The public is getting all "heat up," and feels that the strike should be settled right even if it takes all year to do it and there should be no temporizing.

SALT LAKE CITY

Although more coal is being mined than in 1921, operators are not able to properly take care of the demand. One prominent retail house is asking its customers to accept less than half what they order, believing that coal will be more plentiful by January. Reports from railroad cars, which are now running into the yards of the city, and about half of this is in the hands of one concern owned by a large operating company. It looks as if the independent dealer will have a hard time of it.
Anthracite

"When Can Anthracite Be Had?" Is Burning Question

Resumption Not In Sight, Dealers "Book" Orders or Substitute Pea Coal—Commercial Shortage of This Size Likely Soon—Distribution Problem Will Be Difficult on Resumption.

All in the trade now fully realize what a serious condition confronts the consumer of anthracite. The principal question addressed to retailers is when coal will be available. No tangible move is in sight to insure the resumption of mining and dealers can only take orders for future delivery or substitute at this time with shipments of pea coal. This size is moving fast and the request of the railroads that mine storage tonnage be held for their use will soon cause a commercial shortage. It is evident that when mining is resumed the question of distribution will be a difficult one.

River coals are very active and a large quantity of this fuel is being mixed with bituminous. Prices have risen, quotations ranging $2.75-$3 f.o.b. mines.

NEW YORK

The principal topic discussed by consumers nowadays is when they can expect shipments. There is practically no coal to be had.

With the situation becoming graver because of the trouble in the soft coal fields, the railroads began using pea and finally took in the available supply. The companies now have none to offer.

To most of the trade it is becoming more apparent every day that the movement of anthracite, after the mines resume operations, will be one of distribution and that well-laid plans will have to be formulated so that the coal will be evenly divided.

There are the usual orders on the books of local dealers covering the tonnage generally requested by regular customers. Dealers believe that owing to some "wise" buying in March and April house owners have a good supply on hand to start the winter.

The Western Independent Pea in the harbor that was quoted $12-$13, alongside. Stock buckwheat was $10.50 @$11, alongside; screenings, $2.25 @$2.75 at point of loading and river barrel, $2.50 @$2.75.

PHILADELPHIA

The present situation parallels the strike of 1902, at least in the matter of duration, although it will take a month yet before the present suspension equals that of the former year. However, at this time it seems altogether likely that the record will be reached, as no tangible move is in sight to insure the return of the men to work.

Each day shows a fast increasing concern on the part of the consumer. The dealers who ordered pea are in most instances delivering it as fast as it comes in, and the shippers are being pressed for shipment on the balance of the orders.

Some dealers have advised their customers that the time of resumption is still very uncertain and advising them to take a few tons of pea coal. In one instance only, the dealer bought the entire stock of pea being taken up and has refused to sell any more to transient trade. The price of pea at retail strengthens and most sales are being made at $11, the old winter price.

The trade in river barrel is active and a large quantity is being bought for mixing with bituminous coal. While no price is reported there is little chance that minimum and maximum quotations have shortened considerably. Most of the coal is now being moved from $2.60@$3.

BALTIMORE

With only a small quantity of pea coal left, hard coal dealers are at their wits' ends to advise regular customers. Some are suggesting the purchase of some soft coal to tide over the first weeks of winter. Dealers can see how everybody is to be supplied with even a little coal should the strike continue until Sept. 1. There is some new talk of using coal dredged from the bed of the Susquehanna River, but this fuel will not burn properly without a special grate and a special "blower" attachment.

The public is growing uneasy at last and the entire situation seems sure to grow tense in the next few weeks.

BOSTON

Retail dealers have now been reduced to minimum reserves of prepared coal for hotel, hospital and other current uses. Letters from the tentative distributors disclose stocks only for a few weeks at the most. Another month of mine idleness will force an active interest in wood and oil for household fuel.

The last available shipments of pea size are going forward. What pea is left in storage is being saved for locomotive fuel and there is little chance of augmenting supplies of this size for domestic use.

BUFFALO

The trade is practically dead and oddly enough nobody seems to be disturbed by it. Some consumers would put in a supply if they could get it, but nobody is in a hurry.

One reason for expecting a decline in price is probably because soft coal is pretty sure to drop as soon as mining is resumed. It is even expected to go down just as soon as the time is set for resumption of mining. So the consumers of anthracite are on the watch for something of the sort in their own trade.

The wise consumer has learned that substitutes, along with the steam sizes of hard coal, will be on the market at a reduction and they can be put in. In fact it seems likely that they would have to be put in to help out.

Coke

CONNELLSVILLE

Production is believed to be increasing constantly, but at a slow rate. The strikers seem convinced that they are going to win. Many operators are making constant efforts to attract labor to work and coke may be said to be pursuing anything like a strenuous policy in this respect.

In the open market, prices reached their top point Aug. 1, when the market was at $14.50 for furnace coke and $15.50 for foundry coke, with reports of some sales of good brands of foundry coke at $16.50, if not at $17.

Coal fumed on the market and favorite coke does not go to blast furnaces, the price being prohibitive, and is probably taken by foundries simply as a second or third grade material. The market has softened a trifle from the top point, being now quotable at $13.50@$14 for furnace and $15@$15.50 for foundry.

The Courier reports production during the week ended July 29 at 5,450 tons by the furnace ovens, an increase of 1,900 tons, and 14,220 tons by the merchant ovens, an increase of 2,130 tons, making a total of 72,700 tons, an increase of 4,050 tons.

UNIONTOWN

Much like the voluntary price agreement plan, the enforced coal price program through distribution of coal supply has so far proven entirely feasible on paper but not of sufficient strength to combat an acute need for fuel. It may be said, however, that the first slump in coal prices was in anticipation of the Hoover price plan being enforced immediately and when day after day passed without any effort to divert the tonnage produced here from its original channel, the market commenced stiffening slowly. Operators have definitely commenced to recruit their labor forces outside the region. With the local workers more determined than ever, after four months of idleness, to force recognition of their union hope of resumption with former employees apparently has passed. Many men are coming from the Southern fields but it is reported that a few men in miners coming from other districts for employment.

There is no troop protection in Fayette County, Sheriff I. I. Shaw having announced that the state police and mine guards were able to handle the situation. There is, however, a growing sentiment demanding that more positive action be taken to put a stop to outrages against men willing to work.

BUFFALO

The market is nearly blank. The ovens are asking $15@$16 for any good grade and consumers are holding off as much as possible. Operators have definitely commenced to take some banked coal and part of that goes for coke, but the supply is very limited.
Midwest Market Is Still Abnormal and Unsettled

Everybody from Operators to Dealers Holds Up Prices and Sits Back to See What Will Happen—Priority Scheme Starts Haltingly.

The whole region has been upset all during the week by the way in which the new priority scheme of coal distribution started into effect. Everybody expected a sudden and effective drop in prices of all Kentucky coals, a flood of shipments on priority and a fairly certain car supply to all fields. The drop started but never finished. The flood of priority orders was only a small stream and car supply, while starting well enough at the beginning of the week petered down on the St. Louis & Nashville to the same old 20 and 30 per cent. The general result on Saturday was that some coal was moving on priority orders at the government price of $3.50 from operators who were irate because there remained a good deal of free coal at prices ranging $6.50@10 or more.

Illinois particularly was upset during the week by the report of a shutdown of all coal from outside the state and west Kentucky, in Chicago, which had dropped to about $9, bounded sharply up to $12 and then down to $10 when rather uncertain assurances came that the shut-off would not be complete.

CHICAGO

All eyes and all minds in the coal industry during the past week were on Washington and on the fuel distribution system supposed to have taken full effect during that period. Prices on this market did not slide to the bottom, as some expected, for two or three reasons. They stayed up during the forepart of the week because it was anticipated at the outset that the coal then rolling and north of the Ohio River would be about the last fuel on the market here for awhile. Then, when Kentucky mines did not swamp under priority orders and when car supply did not rise much if any above former unsatisfactory levels, a little coal kept coming in at $9 or more.

Then when Robert M. Medill, state fuel distributor, stated publicly that Illinois could not expect any more coal from outside the state, the market, already skittish, suddenly vaulted again to $15 only to quiet down on Saturday to $10. It was generally said, by well-informed coal men, that the outside supply could not, in fairness be cut off from this state. Mr. Medill, in a message to Coal Age Saturday said the Illinois supply had not yet been cut off but that the state cannot expect to get "even a large part of our requirements."

Western Kentucky was about the only coal traded on this market during the week. A few cars of eastern Kentucky came in at $8.50 but that was all.

ST. LOUIS

With a week's supply of coal left, St. Louis faces a real famine, although this is not going to be as disastrous as might be expected, for all the larger plants have gone to using oil. The latest addition is the Illinois Glass Co., at Alton, and practically all of the big plants in the east side industrial district have gone to oil. St. Louis, every day sees new oil users, especially among those plants that would not be classified as essentials. The Union Electric Light & Power Co. has two weeks' supply ahead and nothing further in sight. The United Railways has gone to oil.


Kentucky coal is selling at $5@10 at the mine. All roads excepting the I. C. are observing the priority rules. Alabama is selling $5@8 at the mine. No West Kentucky is coming in and very little Missouri.

INDIANAPOLIS

There is no such thing as a coal market here. Business is big but orders are not being booked even by those who have West Virginia or Kentucky coal for sale because the car situation is growing worse. The utilities of the state, who can use Indiana bituminous coal are watching the efforts of state officials to mine sufficient coal to keep them going.

There is some coal drifting into the state from outside sources, but the supply is suffering and there is a positive shortage at the present time. Each day brings reports of more industries shutting their plants because of inadequate fuel. A survey of the situation shows hundred of plants burning their reserve supplies and dozens will be forced to close down the next week unless there is a change. Prices, naturally, are strong where coal is available.

SOUTHERN ILLINOIS

Quiet still prevails in southern Illinois, although the miners are restless and are finding it hard to make both ends meet. A few wagon mines are getting out coal for local purposes at a few points in southern Illinois but the tonnage is small. One of these is reported in the Carterville field and a few others in the Standard district. During the past week miners at O'Fallon prevented the loading of several thousand tons of slack that had been on the ground for a few years, which had been sold to the City of St. Louis for the waterworks. The union officials notified the drivers that until they wanted a repetition of the Herrin affair that they had better let the coal alone. They let it alone.

WESTERN KENTUCKY

A good deal of priority business is reported on the L. & N., while the L. C. does not appear to have very much of this business, so far, and with an almost full car supply has been able to furnish more equipment for commercial business than the L. & N. At Madisonville the L. & N. agent is refusing billing on cars unless on priority, or consigned to railroads and utilities.

On priority and railroad or utility business Hoover prices are said to command plus 8 per cent brokerage if buying is not direct. Prices on commercial business, where there is no priority, were reported sold at as high as $10 a ton this week though prices wavered from $8.50 up.

Operators are dying hard when it comes to acceptance of the Hoover prices, and are holding out for everything they can get, on the basis that priority will eventually take care of all production, and that there are not enough priority orders at this time to enable anyone to withhold cars where Hoover prices are in force. Western Kentucky has not accepted the Hoover price, except contingent upon satisfactory car supply. This it has not received.

LOUISVILLE

Tightening up of the market on open commercial coal is resulting from priority orders, and the fact that it is impossible to handle shipments over the L. & N.—that is from Kentucky mines—except to railroads, utilities or on priority orders.

Railroad reports at the end of the week that Chicago is offering $10@$10.50, where car numbers of coal rolling can be supplied. It is hard to determine a market on either eastern or western Kentucky, and reports are received of some $6@$6.50 coal, and of other coal sold at $10 in both fields.

It is reported that operators who are supplying tonnage at $3.50 are getting a bit wrought up over the fact that others are continuing the high quotations.

Canada

TORONTO

The public is now thoroughly aroused to the seriousness of the situation, indicated by a shortage in the normal coal supply, estimated at 300,000 tons. There is a anthracite now procurable except a limited amount of pea and buckwheat.

The Civic Board of Control has ordered $100,000 worth of Welsh coal for immediate shipment and has paid for an additional appropriation of $500,000, in order to have an emergency supply on hand during the winter.
Eastern Inland

Cleveland Conference Delays Buyers and Reduces Prices

Believe Settlement May Soon Be Reached—Spot Tonnage Exceeds Priority Orders—Lakes May Be Aided By New Government Fuel Committee.

EVENYONE is watching the Cleveland conference of producers and miners. The feeling is prevalent that a settlement may be evolved therefrom and this is quite a factor in delaying coal purchases. At the same time, operators have found that they still have free coal to offer, in addition to the priority orders for so-called essential industries and prices have softened from last week's peak.

Commercial coal is moving warily, as no one wants high-priced fuel consigned to Hoover levels. Lake business is still light, but the Northwest needs may yet be safeguarded by the efforts of the Lake branch of the Federal fuel committee.

CLEVELAND

Coal for retail distribution and for so-called essential consumption is considerably stronger, despite the priorities in the movement of fuel effective under orders of the I. C. C. Most of the open market coal is now coming from the Pittsburgh district, at $8@8.50.

Early this week, operators and sellers were unloading at $6, expecting a price of $3.50, or within the Hoover maximum. The B. & O. has started moving coal only on the priority list, but it is expected that enough orders are in to make the priority movement necessary. As a result, the rule has been lifted temporarily and coal again is being loaded for industries in general. This development has helped to strengthen the Cleveland market.

Applications are being filed by those who believe themselves entitled to coal under the priority regulations. The railroads serving the Southern coal producing territory still are clogged at the southern Ohio gateways. Sentiment is expressed that the government should divert locomotives from other roads to the non-union coal territory so that these roads could move out the coal accumulated on the mine sideings and railroad yards.

The total number of cars of soft coal received in the Cleveland district last week was down to 5,265 due to the 72-hour reduction in movements. Up to Saturday, five of the seven railroads running into Cleveland had brought in 682 cars of bituminous coal for all purposes. The best six days' receipts on these roads since the week ended July 8. Receipts for the week ended July 1 were 1,145 cars; July 8, 836 cars; July 15, 885 cars, and for the week ended July 22, 480 cars.

EASTERN OHIO

The quantity of coal available in this section increased slightly during the week because of accelerated operations by stripping mines and the release of more non-union coal from the congested strip. But tireless demand for steam coal is so intense that the sale of more apparent ten days ago seems to have subsided, somewhat due principally to curtailed industrial activities rather than the fulfillment of fuel requirements. Buyers of steam coal are holding off in anticipation of an early settlement of the coal strike. The position of the short-age is indicated by reports from various industrial centers in eastern Ohio. Blast furnaces are banked in the Youngstown district, and the Youngstown Chamber of Commerce has appointed a special fuel committee to solicit distribution of coal to domestic consumers and priority orders to manufacturers.

In the Lake trade bunker coal is difficult of procurement and many steamers are either being delayed or discontinued temporarily.

At a meeting of the Lake coal forwarders and dockmen, held in Cleveland recently, plans were made for securing a fair share of coal in order to take care of the railroads and public utilities in the Northwest.

NORTHERN PANHANDLE

An effort on the part of one large company to resume operations, even on the basis of the 1920 scale was attended with success, the 1,300 miners employed declining to return to work in the absence of any nation-wide agreement. Operations in the Northern Panhandle have been affected by the proximity of these open-shop mines to the Pennsylvania and Ohio lines. Notwithstanding this production continues on a fairly large scale.

COLUMBUS

Operators are playing a waiting game, scanning every effort made to settle the coal strike. The position of the operators, as expressed through the officers of the associations is unchanged, that is, to refuse to enter the four-state conference, but to negotiate either by states or mining districts.

Only a limited amount of coal is moving and a large part is going to railroads for fuel. Federal and state fuel commissions have been unable to function to a large degree and as a result some commercial orders are being placed, where priorities are not regarded. Stocks in Columbus are generally sufficient for 30 days on the average. So far no manufacturing plant of any consequence has been compelled to suspend operations. Public utilities are supplied for a time and the same is true of municipalities.

At the opening of the stripping operations at New Lexington a larger tonnage is being produced in Ohio, although no large mines have accepted the invitation of the President to reopen.

PITTSBURGH

While some men are reported at work in certain mines, there is no actual production reported. It is said that many of the miners believe that they practically won the refusal of the Pittsburgh and other districts to go to the conference at Cleveland called by President Lewis not having made an impression as yet.

Coal movement in the Pittsburgh district, involving non-union production from the Connellsville region, Westmoreland County, etc., has not yet been affected by the priority system or price regulations being formulated at Washington. Buyers are receiving coal they purchased a week or two ago if any consigning by the railroads.

From the top point of $8.50 for Connellsville steam coal, reached on July 26, the market declined sharply, owing to withdrawal of buyers, until on the morning of Aug. 1 the price was down to $6. Consumers then began taking hold again and prices stiffened, although they were not at the $8.50 mark of the past few days. Westmoreland gas has hardly been traded in at all. A little Youggheney gas has been in the market, at $8.50@8.75 last week. Recently paid $9@10 were paid.

Production in Westmoreland County is fairly heavy. In the Connellsville region there are almost constant gains.

DETROIT

Interest is centered on the state and county organizations which are being built in the effort to increase the supply of coal brought to Detroit and Michigan. Meantime, results of the present movement are reflected in reports of industries and utilities confronting suspension of operation unless their supplies are replenished within a few days.

Outlining his plans to the Board of Commerce, C. F. Dunn, the Detroit fuel administrator expressed a desire that he be given complete authority to act and said it is very probable if he is required to refer matters to the Michigan securities commission or the state fuel administrator. The present plan that the county fuel administrator will be directed toward getting supplies for the utilities and users of steam coal. The matter of replenishing supplies of domestic coal will remain in abeyance until needs are more urgent.

BUFFALO

The situation is a trifle easier, apparently because coal from many areas is moving faster than they were. The consumer is also helping out by refusing in a good many cases to buy at prices above the $5@6.50 mark.

Everybody is convinced that more mining is going to be done before many days.

All sorts of prices are now paid. If the basis is in a mining district he may pay $9 for it, but as a rule this section is holding off, in the hope, it appears, that something is going to be done. All prices for what is called good slack as low as $4.75 and there are prices all the way between.

The worst feature is the difficulty in getting Lake fuel. All prices up to $10 are asked for it, with the amount usually limited to 50 tons. For July the total was 57,700 tons and for the season 832,910 tons.
If Mining Resumes Now, Northwest Will Rejoice

Experts Figure Region's Needs Can Be Satisfied—Shortage Now Is So Sharp Northern Mines Are Closing—Market Gets Wilder.

THE Northwest is praying for a resumption of mining during the first half of this month—and is beginning to count on it. The general opinion is that if production starts within that period, enough fuel will penetrate this far to stave off suffering. Things are now at a serious pass, however. Many Northern mining industries are closing down, shipping is hampered not only by high bunker prices but by absolute exhaustion of coal at some ports and the coal trade is thrown into confusion here and there by the seizure by railroads of coal on its way to consumers.

A fuel census of Minnesota now going on shows that supplies are at the lowest ebb and that demand from many sources is going to be much heavier than has been anticipated. Freight rates on wood in Minnesota have dropped 20 per cent to help that fuel to reach market.

DULUTH

Many industries over the territory served from the Head of the Lakes docks will be compelled to close down within a few days on account of coal shortage. The sales manager of one of the dock companies had to refuse an order for 500 tons of lump from a mining company on the Mesaba Range. The mining company manager, who had received 14 turn-downs from dock companies, said the mines would have to close down. Other mining and industrial concerns are in the same boat.

Ivan Bowan, state fuel administrator, estimates Minnesota's small-town needs up to April 1, 1923, at 560,831 tons of soft coal and 142,958 tons of hard, a total of 703,782 tons. He believes Northwest threshers must have 1,000,000 tons. Well-informed men estimate the requirements of this market up to May 1, 1923, at 1,200,000 tons of anthracite and 3,500,000 tons of bituminous, allowing for approximately 3,600,000 tons of coal on the docks when the season of navigation opened on April 21, last. Dock operators think the necessary tonnage can be moved from Lake Erie ports if mining is resumed during the first half of this month and provided the railroads can do their part.

Docks with anything to sell are asking $8.50 for Youghiogheny, Hocking and splint lump, and up to $6.50 for screenings. Anthracite prices are unchanged.

MILWAUKEE

The coal market at Milwaukee is completely paralyzed. One coal company, which had a fuel contract with a railroad centering here, which it could not fill because of prior obligations, is having its coal on track confiscated by the railroad. Another company, which contracted to deliver 12,000 tons to city institutions, has defaulted on its contract. The company had been paying $7 per ton to secure coal to deliver at $5 as per contract. Another company asked to be relieved from a clause in its contract with the city covering the thermal units of coal.

State institutions and Milwaukee municipal buildings will be among the first to be benefited by priority orders to be issued by the Wisconsin fuel administration.

No cargoes have been received by Lake Thisis far in August. July's cargo receipts aggregate 167,799 tons of soft coal, making the season's receipts thus far 774,060 tons. About 700 tons of hard coal screenings represent the total receipts of anthracite thus far by Lake. Last year 503,158 tons of anthracite, and 1,515,293 tons of soft coal had been received up to August 1.

Following is the schedule of soft coal prices at retail put into effect Aug. 1; Pitts., Hock. & Yough., $7.25@ $10.25; West Va., $7.50@$8.50; Pocat-blows, $7.25@$11.75; Smithing, $11.25; Kanawha g splash; Illinos and Indiana, $7@$8.50; Coke, large sizes, $14, pea and nut, $10.

MINNEAPOLIS

Despite gloomy reports from all sources, this region persists in believing a relief from its fuel shortage is about to appear. It is difficult to present a report with certainty, but it is probable that the situation may be clearing up. Many wholesale coal dealers have received an order for 1,200,000 tons of coal.

The coal market is reported to be lively, but with many uncertainties. The break in the weather last Saturday cleared up the situation here. The threat of red tape was the chief worry at the time.

New England

Buyers "Wait and See" Before Entering Spot Market


THE market here has shown no material change since a week ago. Political gestures have had the effect of postponing buying and there is a general inclination to "wait and see," before negotiating purchases.

A few houses are dealing actively in British coal, especially for distribution Inland, but there is hardly enough pressure yet to force any very comprehensive business.

What coal is available at Hampton Roads is being applied almost exclusively on contracts and because the aggregate spot tonnage changing hands at the piers is relatively small there is little data on hand to gage current quotations. The smokeless agencies have apparently concluded to confine themselves exclusively to old sales, pending some clearer direction than has yet emanated from Washington. Meanwhile the railroad situation is much clarified.

Improvements are reported on the three roads terminating at Hampton Roads. Certainly if corresponding gains can be made next week on the N. & W. and C. & O. there will be enough increased flow of coal to strike a different sort of balance with respect to New England's supply. It will then be interesting to see whether representative operators will take a leaf out of the book opened for the rail managers or whether they will submit to distribution by novices regardless of their contract obligations. The far-sighted members of the trade are hoping that no developmert during the month will remove all possible excuse for the wasteful paraphernalia which some are so eager to erect. The lessons of 1918 and 1920 are soon forgotten.

Taking into account the inroads by oil, the textile strike, and reduced traffic generally, present reserves are larger than would justify hysteria, although of course, much will depend upon union output the next six weeks. No industry here has the fat margin to work on that was typical in 1918 and there is now every reason to look ahead, look and listen" before entering into blind obligations to accept any kind of coal on any old price. The trade, too, will be less likely to undergo extravagant distribution than was the case during the war period.

Householders who customarily use anthracite will not take kindly to bituminous as a substitute. If one reasonably uniform grade could be assured them, there might be some possible hope of replacing temporarily a certain tonnage, but without this the word that is being told "coal is coal" and in an already deep-seated prejudice against the industry will be unconscionably increased. To the dealer, whether wholesale or retailer, it looks like a joyous winter.
Cincinnati Gateway

Present Emergency Reveals

Queer Angles of Coal Trade

Uncertainty in Regard to Priorities—
Ruling Without Enforcement Ma-
chinery Called Fallacious — New
Dodge Evades Hoover Prices—
Smokeless District Holds to Hoover
Level.

BUSINESS in coal is full of all
sorts of queer corners, and, with
its pivotal position, the Cincinnati
gateway has developed a host of
them. At this writing it is difficult
to say whether priorities are on or
off. The fallacy of creating a ruling
without the machinery to back it up
is glaringly shown here. Right now
there is a large seepage through
of cars accepted by agents in the
mining districts on billing without any
strings attached to them. With these
coming through devoid of permits
they have given the jobbers and
wholesalers something to play with
—something that is marketable above
the Hoover prices.

This is especially true of L. & N.
shipments. The smokeless districts,
on the other hand, were holding to
the Hoover prices as the basis of
trade.

CINCINNATI

Billing and station agents on the C.
& O. are held to strict accountability
for the permits that are issued so that
there are few cars that can be snatched
out of the priority pot there. The
N. & W., too, have set the pace that
their method be systematized of the neces-
sity of watching priority orders, yet
here and there a few cars slip through.
On the L. & N., however, quite a large
number of tardy agents found their way
to the hands of the wholesalers and in
consequence these have been going to
industries and buyers far down on the
preferred list, providing that they will
pay the price.

Like all other dealers in surreptitious
quantities there is a wide divergence in
the price of this coal. The first of the
month and succeeding days saw the
range of $3.60 to $8, quality or prepara-
tion cutting no figure. It would appear
that those with the low price desire
now to move what they had before they
got their fingers burned.

Locally there has been another boost
at retail. Most of the concerns are
asking $8.50 for Pocahontas lump, $7.50
for mine run, $7.50 for bituminous
lump and $6.50 for slack. This ad-
vance was made because the slower
deliveries on contract necessitated get-
ing coal in the open market. A move
is being made to get a district order
to hold up deliveries of retail coal to
consumers upon the lower basis of
spring and summer.

HIGH-VOLATILE FIELDS

KANAWHA

With the C. & O. concentrating upon
the movement of coal to the Kan-
awha field, conditions began to improve
about the beginning of August, even
to a point where production in other and
adjoining fields was greatly curtailed as
the result. Thus, while Government
agencies were beginning to function
and prices were steadier.

LOGAN AND THACKER

The accumulation of 3,500 cars in the
Logan field is being gradually re-
duced. At the outset of August there
was a slight improvement in the car
supply and production began to move
upward again. There has been no ef-
fort to profit unduly by the emergency
and磋商 prices have been materially
reduced as a result of the warning as
to car supply where high prices are
exerted.

Until the end of July Kenova-Thacker
operators were not producing more than
half the output of June owing to the
inability of the mines to secure cars.
The irregular supply made it impos-
sible to go ahead at any time.
With embargoes against the movement
of all freight except coal, livestock
and foodstuffs, operators anticipate a
better movement of cars above the
shippers in the distribution of coal and prices
are approaching normal once again.

NEOESTERN KENTUCKY

After experiencing a shortage of cars
so serious as to reduce the output to
55,000 tons per week as against a po-
tential capacity of 288,000 tons, the
field is beginning to recover, although
producers are still handicapped by the
lack of an adequate supply.

LOW-VOLATILE FIELDS

NEW RIVER AND THE GULF

Although more New River mines are
operating, yet production has been
greatly curtailed as a result of the in-
ability to secure equipment promptly.
New River companies are lending their
full co-operation to the government in
the effort to get fuel to the market
promptly and to take care of needy
consumers, most of the tonnage shipped
moving at the Hoover maximum. There
was a decided slump in prices on all
grades during the closing week of July
and just as soon as the car supply be-
came dependent upon an observance of
fair prices.

Production in the Gulf, notwithstanding
a shortage of cars, entailing a heavy
production loss, remained at about
150,000 tons per week throughout
July, and as August was ushered
in there was a slight improvement in
the transportation facilities which had
the effect of enabling mines to increase
their output.

POCAHONTAS AND TUG RIVER

Serious inroads on the Pocahontas
output were experienced during the
closing days of July as a result of the
poor car supply, production being re-
duced from about 450,000 tons per week
to less than 250,000 tons per week,
with car shortage losses aggregating
almost 400,000 tons. Western connec-
tions of the N. & W. were slow in get-
ting cars back to that road. There
appeared to be a slight change for the
better by the beginning of August, how-
ever. There is a probability that the
Pennsylvania, under the proper con-
tractor, will secure the bulk of its fuel supply
from the N. & W. territory, including the
Pocahontas field.

The July came to an end the output
of the Tug River was not over
50,000 tons a week or just about half
of the total produced in recent months.
 Mines could produce no more owing
to necessity of cars and to an accumula-
tion of loads. Although the demand
was just as urgent as it had been, yet
prices were settled back to the Hoover
level after a brief period of soaring.

South

BIRMINGHAM

Demand continues strong although
the situation has eased some from the
tenseness of a week ago. Orders are
still to be had far in excess of the
supplies, and so far government control
of distribution has not functioned to
such an extent as to interfere ma-
terially with the normal movement. A
large tonnage is moving into the West.

The demand for smokeless is good,
the supply being somewhat short
of the needs at this time. Practically
all of the output of the Cahaba mines
producing domestic sizes has been con-
tracted for and the better grades are
scarce.

Operators have generally agreed to
abide by the Hoover price schedule
during the present emergency and ob-
serve priority orders placed at their
mines, it being the intention of the dis-
trict committee to so distribute prefer-
ential business as to interfere as little
as possible with outside customers.

Prices on the various grades under
the fair-price schedule will be about as
follows, f.o.b. mines:

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<td>Coromia</td>
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</tr>
</tbody>
</table>

Higher prices can easily be obtained
for all grades of coal than the schedule
and of course a majority is tak-
ing advantage of them, as is always the
case. Contract prices on domestic
coal for August range $2.45 to $4.50.

The situation is being interfered
with very materially by car shortage.
The railroads otherwise are furnishing
very much better service, as freight is
moving more promptly and regularly as a
whole.

VIRGINIA

Steam decreases in production marked
the course of July, and during the last
part of July, with a prospect, how-
ever, that there would be an im-
provement in transportation condi-
tions. Improved rates, however, were
producing at a heavier rate than others
in the field or at about 71 per cent. Prices
began to break as soon as it became
apparent that cars would not be fur-
nished to operators charging more than
a fair price.
COAL AGE

COAL AGE

NEW YORK

The Nashwalk Pulp & Paper Co., with headquarters in New York City, has purchased coal mining areas in New Brunswick. The coal properties inspected by officials of the company and it is expected that the work will begin in the next few weeks and will be resumed. It is believed that the property will show a fine grade of soft coal. The coal property being surveyed is located near the pulp land holdings of the company in the vicinity of Portage, Me.

Arkans a

A decree for foreclosure and sale against the property of the Arkansas Coal & Land Co., was made by the Federal Court, Ft. Smith, Ark. The property of the company in Johnson and Logan counties is involved. That public auction at Clarksville. The property to be sold includes the $300,000 judgment held by the Pennsylvania Mining Co. against the United Mine Workers, as an outgrowth of the labor troubles at James City, Pa., a few years ago. The Pennsylvania company's property was later transferred to the Fernwood Mining Co., and the two mines are now being operated as one. A part of that section of Johnson County, as known and shown on a map, the company placed a minimum price on the property of $100,000. The sale was decreed to be subject to the approval of the Federal Court.

KENTUCKY

The Boone Jellio Coal Co., of Pineville, has been formed by officers connected with the Boone Coal & Coke Co., and several residents of the Pineville district. The officers of the company are M. B. McDermott, president; John Emsloe, vice president; A. E. Wheeler, secretary and treasurer. Capital $20,000.

While state troops protected some of the interests in the mines in Bell County, with a total personnel of about 19,000 tons a year have merged the former United States Fuel Co. and the Consolidated Coal Co. The properties taken over are the assets of the American Coal Co., the Mingo Coal & Coke Co., Bennett's Fork Coal Mining Co., and Log Mountain Coal Co. The concern is capitalized at $2,800,000.

The Miners-Elkhorn Coal Co., F. P. Preston, Paintsville, general manager, has received an order from the Court of Appeals of the United States, which will develop a large acreage near Riceville on Big Sandy River. A quantity of coal has been sold and large tippie is being completed.

WILLIAM SCHROUCLIE, receiver of the Metropolitan Fuel Co., of Indianapolis, will sell the assets of the company at a receiver's sale Sept. 7. The concern, which was a receiver when suit was brought against it by the president of the big Indianapolis insurance agencies.

ILLINOIS

John M. Pooperling of the Jewel Coal & Mining Co., St. Louis, was in southern Illinois recently. While in the district he spent a few days at Du Quoin where the company has two mines located.

T. C. Keller, head of the Indiana & Illinois Coal Co., of Chicago, was on a business trip in the southern part of the state recently.

Reports have been confirmed of the purchase of a strip of ground near Mt. Vernon by the Wabash, Chester & Western R.R. The strip was the location of a strip that will be used for high-class purposes. The strip had too little storage room for loads during the three winters. The yards are to remedy this.

INDIANA

Coal production will be the principal business of the Dugger Martin Coal Co., recently organized at Sullivan, with a capital stock of $100,000. The company reserves the right to engage in any sort of mining business. The directors of the company are H. O. Martin, Oliver Steele and M. W. Dugger.

The White & Wright Coal Mining Co. has been organized at Clinton, for the purpose of doing a mining business. The organizers of the company are J. D. Wright, Charles J. White and O. T. Ray.

Morgan E. Greene, F. M. Goble, Russell Sullivan, Thomas Goble and Ray E. Greene are the organizers of what is to be known as the Greene-Goble Coal Co., recently incorporated at Shelburn. The company will do business.

Phebs F. Darby, an attorney of Evansville, has been named receiver of the Posey Mine Co., a coal mine in Warrick County, about two miles west of Boonville. The receivership grows out of the failure of Posey Co., which has been operating the Posey Ridge mine for some time.

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MARYLAND

Governor Ritchie has announced the membership of the Inter-State Coal Distribution Committee. Those appointed are Frederick T. specially the Board of Trade, A. Asbury Davis, president of the Merchants' & Manufacturers' Association, Clyde B. Martin, president of the United States Fuel Co. for Maryland, the United States Fuel Co. for Maryland, and Howard Adams, president of the Maryland Coalajobbers' Association. Hugh Ferris, president of the Exchange, William Miles Maloy, chairman of the Public Service Commission.

MISOURI

Henry Gibson, engineer, has come to Carrollton in the interest of the Big Four Mining Co., with a view of developing the local coal field. It is the plan of the company to open several mines here and start production. The leases secured are on the royalty basis and will net the owners of the land from $200 to $250 an acre.

The Callaway County Coal Co., which operates a coal mine near Carlington, has filed a petition in the Audrain County Circuit Court, asking for a dissolution of the company. If the petition is granted the company can no longer be profitably operated.

Robert O. Edings has filed suit against the Ray County Coal Co. for $40,000 dam-ages. The suit was received in Minn. Feb. 25, 1922. The plaintiff charges that while acting as the agent of the company without authority and to its damage and that he was caught between the choices of the company. He alleges that he was permanently injured and will suffer permanent disfigurement. The managers of the Clifton Hill Banking Co., with parties from Bevier and Macon, are interested in the proposed development of several thousand acres of coal rights in the western part of the county.

Pennsylvania

The fifth annual meeting of Cosgrove & Company was held at the Fort Stanwix Hotel, Utica. Seventy, or approximately 100 department heads and managers were present when the conference began. Bishop Carver, of Utica, delivered the address of welcome to the convention on behalf of the city, while Bishop Darby, Jr., welcomed the convention for the company. James and Greene county coal producers, in compliance to the request of Sec- tor, has been in attendance at this meeting at Utiontown, and affected an organization to be known as the Pennsylvania County Coal Association, as well as adopting without reserve Mr. C. P. Lingle, of Greene County, to fill the present coal shortage emergency. A committee, to be composed of the Audun, will be composed of W. C. Hood, of the H. C. Frick Co., John Sin- started work at Ming, Cooper, of Illinois, and C. Chezart, of Greene County, George W. Johnson, of Dawson, John B. Moore, and W. D. McGein of Connellville. This commit-tee will be changes.

The State will not await the decision of the Supreme Court of the United States in the constitutionality of the antitrust tax in dealing with appeals by antitrust pro- perly, up to the time the appeal is heard by the Attorney General, but will prosecute to the fullest extent. The law is in the hands of the District Court, Harrisburg. The appeals filed for the tax computed to be paid by the antitrust companies will be listed for disposer in court just as are other appeals. If the Attorney General has been notified of an appeal, the tax in the antitrust company which has been required to give adequate bond to the state tax courts, the law will proceed in the fall. The Attorney General will ap- pear in court in order to receive a certified copy of the appeal. The law is in the hands of the District Court, Harrisburg. The appeals filed for the tax computed to be paid by the antitrust companies will be listed for disposition in court just as are other appeals.

Frank Stirk, shaft sinking contractor, of Greensburg, has taken over the contract for the shafts of the large new operation of the Jeannine Coal & Coke Co., of Colorado. The purchase of the tract of land recently leased from the Thaw estate of Pittsburgh, near Utiontown.
Traffic News

The complaint of the Southern Ohio Coal Exchange and many individual coal shop- pers in that section has brought a decision from the Ohio districts to Toledo and other Lake ports following the reduction of freight rates from the East. The complaint was heard before the Ohio Utilities Commission late in July, and it was held that the full 10 per cent was not given to Ohio shippers in much of the effort of the carriers to preserve a balance in the differentials of pre-war times. W. D. McKinney, secretary of the Southern Ohio Coal Exchange was the principal witness for the complainants. The rate from the Ohio districts to Toledo formerly $2.10, has been reduced to $1.50, or about 19 per cent. The rate from the inner mines at West Virginia, formerly $2.86, was reduced to $2.29, while the rate from the frontier mines at West Virginia was reduced from $2.86 to $2.57. J. C. Vin- nying was the principal witness for the railroads. He claimed that the present rate arrangement had the sanction of the I. C. C.
Rates on coal mined in western Ken- tucky and moving to northern Georgia con- suming points and to Savannah, for export have been held by the I. C. C. to be too high in comparison with rates on coal from other points. The I. C. C. has ordered to fix charges on coal from the inner mines at about 7 cents a ton above the rates which they maintain at the southernmost points for coal mined in the Jellico-Middlesboro district.

The complaint of the Gulf Coal Co. has been upheld by the I. C. C. at Washington, Sept. 22.

The complaint of the Colony Coal Co. will be heard at an early date by the I. C. C. at Washington, Sept. 22.

In hearing in the complaint of the Tuba Fuel Co., assigned for New York Sept. 12, has been excluded.

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UTAH

Michael Schennecter has received a per- mit to build a coal mine near Fish Lake, Filmore, Millard County. Coal has been found there and efforts are to be made to see if there is any bituminous coal in the area.

The Park Co-operative Coal Co. of Thompsons, has been organized to work the mines in Thompsons Canyon, owned by U. H. Clark.

WEST VIRGINIA

Increased valuation of coal property in West Virginia has resulted in a protest on the part of coal land owners in some sections. The protest is accompanied by an instance having announced that it would enter a strong protest against the value placed on its properties. It has been decided to make a general reassessment of property throughout the state and the West Virginia Tax Commissioner, D. G. Clark, has been given the authority by the state Tax commissioner, D. W. Ross, to organize a special staff at the direction of the state Tax Commis- sioner. The new staff will be equipped with the latest machinery and equipment in accordance with the statute books since 1908. The state Tax Commissioner, however, insists that coal land owners take the true and fair value in and value in accordance with such instruc- tions. There has been a general increase in the valuation placed upon smokiest and all other coal.

The Washington-Elkins Coal Co. Inc., has been formed at Elkins, with capital $100,000, incorporated by W. B. Maxwell, W. H. Russell, W. C. and Alverna Glueckner, all of Elkins.

The Mont-Saint-Louis Fuel Co., with headquarters at Morgantown, is inspecting the property of the Bear Mountain Gas Coal Co., near Philmont recently.

Supplementing recent news to the effect that Paul Hardy, a prominent coal operator of the Guian and Coal River territory had organized the Hardy Coal Co., for the purpose of developing large acreages of coal land on the Poor Pole of Todd County in McDowell County and was preparing to begin development work without delay, a coal miner reported recently to connect the Hardy company's property with a railroad, of which the N. Y. & Pennsylvania had been awarded to Harry Waugh, with head- quarters at Parkersburg.

The Hool Coal Co. has resumed opera- tions at its mine near Whet Shinning. This mine has been prepared for many weeks. It is owned by W. C. Wyatt and Frank A. Burnett.

Because of the application of unreasonable rates on anthracite from the Carbon- kopolis, the complaints of the Hool Coal Co. for delivery on the West Shore Railroad, the I. C. C. has ordered the General of Railroads to refund $17,733 to Frank A. Cookley and other shippers.

The Hool Coal Co. has been ordered to refund $734 to the F. Kogel Coal Co., for rates on coal from Ohio, Kentucky, West Virginia and Pennsylvania to Detroit.

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Coming Meetings

New York State Coal Merchants Association will hold its annual meeting at Rich- mond, September 21-23, under the presidency of E. B. Blaine, of Albany, N. Y.

Industrial Exposition under the auspices of the Huntington Chamber of Commerce will be held Sept. 15-19 in the Chamber of Commerce Building, Huntington, W. Va. The West Virginia-Kentucky Asso- ciation of Electrical Engineers will again hold its annual meeting in the same building during the exposition.

National Exposition of Chemical Industries will be held at the Grand Central Palace, New York City, September 11-16. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Mining Congress, Twenty-fifth annual convention and exhibition of mining and mining equipment will be held at Public Hall, Chicago. For further information, write offices, the Hollenden Hotel; E. C. Porter, Chicago.

National Exposition of Power and Me- chanical Engineering will be held at the Grand Central Palace, New York City, September 11-16. Manager, Charles F. Roth, Grand Central Palace, New York City.

The Duffin Coal Mining Co., Ltd., has been organized in Denver, Colo., to engage in coal mining and to deal in coal generally. The company is capitalized at $500,000 and the provisional directors are G. H. Seidewich, James Allanston, J. C. F. Bocock and C. C. Hugill, of Toronto.

Archibal Michelson, who is connected with a number of collieries in Wales, Yorkshire and Cumberland, has arrived in Toronto on a visit. He is president of the Davidson Porcupine Mining Co., of which the owner of the Hope strike is proving a big bon to the British collieries.

Senator W. R. Marshall, manager of the Standard Fuel Co., Toronto, has returned from a trip through the various coal fields of the United States, and he is looking into the strike situation and where he says he re- ceived a warm welcome. The strike would be looked after immediately work was resumed.

WASHINGTON, D. C.

Senator Cummins of Iowa, has presented to W. G. Block, of Davenport, urging the prompt shipment of coal for Iowa industries.

The District, with attorneys has de- tailed Walter C. Allen, secretary of the Senate, an investigation of the coal situation in Washington, in connection with the plans of the Senate Permanent Committee on the government's price system.

The constitutionality of the Lever fuel control law and regulations of the Fuel Administration during the war, restricting sales and prices of coal and attacking in an appeal filed in the Supreme Court, brought to the attention of Justice James N. Ford, its vice-president, who were each fined $1,000 and costs for charging that certain prices on the coal he sold in Cincinnati during September, October and November, 1917, and an order that the company's action was affirmed by the circuit Court of Appeals for the district of Columbia. The company and its vice-president was afforded by the circuit Court to reverse the decision of the lower courts the company argues that the act substituted executive for judicial processes and that it delegated to the President is not conferred upon him by the Constitution.

American Institute of Mining and Met- allurgical Engineers will hold its fall meet- ing at the North American Hotel, San Francisco, Cal. It is proposed to arrange the 18th annual session of the Institute for Sept. 16, stopping at different cities as the secretary, F. F. Sharpless, Engineering Societies, Chi- cago.

American Chemical Society's annual fall meeting will be held Sept. 4-9 at Pitts- burgh. Division of Chemicals will be held at Carnegie Institute of Technology and general meetings at Carnegie Music Hall.

The Rocky Mountain Geological Insti- tute will hold its next meeting at Glenwood Springs, Colo., Sept. 7-9. Secretary, F. W. White, Denver, Col.


Obituary

Robert M. Werreth, for 14 years Nor- folk manager for the Norfolk-Virginia Coal Mining Co., died recently at his home at Yorktown. He is survived by his widow and one daughter, and was 41 years of age.

Mr. Werreth was a mining engineer and mine owner, died suddenly of heart disease at the age of forty-eight at his home in Yorktown, Va., Butte, Ticonderoga, N. Y., and after working in the coal fields of Montana and made superintendent of the Clearfield Coal Co. of Clearfield, Pa., to which he belongs, studying mining and time mining engineering. After nine years as superintendent he became general field agent for the Norfolk-Virginia Coal Mining Co. in 1924 he came to Du Bois and entered the mining business as mine owner.
Time Always Befriends the Striker

At the Cleveland convention operators are agreeing to pay wages which only a little while ago they declared they could not pay. There will not be lacking those who will say that they could have paid them when the strike commenced had they only been willing. The reason for the operators' change of viewpoint is that now, after the strike has continued for nearly five long weary months, the stocks are almost exhausted, winter looms ahead, the railroads threaten to be congested and the public must buy from union mines and pay enough to make bituminous mining profitable no matter what the wage may be.

Mr. Lewis hoped to get the same result by unionizing the operators as against the public. He desired to form a big combination of mine operators so large as to be able to fix the price. In compelling them to pay a high wage he knew they must sell the coal at a high figure. They could do this only if they were numerous enough that the public could not sidestep but must buy from them. That is why Lewis wanted the Central Competitive field to bargain with him, and that is why, for a while, he sought to have the Washington authorities declare in favor of a uniform wage in the union and non-union regions alike. He was for unionizing the operators, forming them into a trust which could demand from the public what it would, and would be able out of excessive prices to pay excessive wages to the miners.

But the operators were afraid that such a union or wage trust was illegal. They avoided entering into it even though the President and Secretary Davis invited them, yes implored them to form it, and even though the public wondered why they lacked so greatly a proper sense of obligation that they failed to act in accordance with Federal suggestions.

Now at least there is no risk that the public will buy in the cheapest market because that market is too small for all to enter and is no longer cheap. Even in non-union regions wages have been increased. There is no longer any fear of the competition of non-union men, not at least before April, 1923. The union operators can now safely pay the wage that tended to bankrupt them before April, 1922.

It nearly always ends this way. A strike commences with strong arguments in favor of the operators and ends with conditions such as make the operators friendly and even anxious to concede, because there arrives a time when concession promises profit. Then the only fear is that a contract will be made of such duration that conditions will change before the contract expires.

The conclusion of terms between the union and scattered operators from 7 states does not settle the strike—it breaks the deadlock. The switch in policy on the part of the miners from four-state to district and individual settlements maintains the contention we have made from the beginning that what Lewis was really after was no reduction in wages; that his policy of no district settlements was designed for that and that alone. It was fine propaganda to hold the men in line from January to July but on Aug. 14 it becomes ballast to throw overboard.

Using the Public for His Own Ends

When the coal miners start work it will be with no reduction in wages and under no promise or obligation to arbitrate future wage scales. There is indeed but a slim chance that, as a result of nearly five months of strike, possible two months of sympathetic rail strike, and no one yet knows how much human suffering and industrial paralysis in the coming winter as a direct result of both, the public will have the least degree of insurance against a similar upheaval next year.

During the Cleveland conference John Lewis said to the public through the press "The miners have won their fight and it is practically over. There is no longer a thought in my quarter that wage reductions will be imposed on the mining industry. The question here is one of procedure without undue humiliation of the operators. We have no desire to humiliate them. We only want the immediate resumption of mining, the return to work of the men and the relief of the public." Again, "The miners have not deviated any degree from their original policy." And finally "The miners will never consent to arbitration." Thus from his present pinnacle speaks the head of the miners' union.

Cast your mind back to the early fall of 1919 when John Lewis fell heir to the presidency of the United Mine Workers through the retirement of Hayes. Hayes' legacy to Lewis, an untired leader, was a program so extreme as to shock the country. Lewis had to decide then and there between a policy of moderation and a policy of radicalism. He knew he was accused of being afraid to fight. He knew of the growing influence of the Farringtons, Howats and Brophys. When he set his compass toward "Fight" he took the most momentous step in the labor history of coal.

Taking up Hayes' crazy program of nationalization, 60 per cent increase of wages and the 30-hour week, and throwing it into the mine workers' convention in 1919, Lewis routed his opponents. Violating his contract with the operators, he called a national strike for Nov. 1, 1919, because to have waited until the contract expired on April 1, 1920, would have given the public an opportunity to build up coal reserves. The unlooked for forced resumption of mining by injunction and the forced acceptance of arbitration nearly upset John Lewis, but the 27 per cent increase in wages awarded was so much better than the miners expected that Lewis held his prestige.

Knowing full well that every force in the land was
driving toward liquidation of wages, Lewis in 1921 held to his 1919 decision to fight. To be a successful labor leader one must always be fighting for something more, demanding and never conceding, mindful always that the mine workers have more stomach for a fight than any one else in the country.

How Lewis has held his men in line, despite internal dissent, how he has defied in succession the operators, the President and the people of the country are part of today's realizations.

The burden of all this is that John Lewis is for the moment at the head of the most powerful labor organization in this country. He can hold that cherished position so long as he maintains the offensive and wins his strikes. He is no quitter, hence will have to pull another strike next year or the next. Which is another way of saying that John Lewis, strong as he has demonstrated he is, cannot control the miners. He leads in the direction they are going. The movement is bigger than Lewis—he cannot now put on the brakes.

Which brings us hard up against the problem of what is the country going to do about it? The framers of our government planned to prevent the usurpation of power by majorities. They saw to it that the minority might not be gagged. Little did they foresee the power of organized minorities. Less than 600,000 men of our population of some 20,000,000 workers have this year held the whip hand over all the remainder. The hundred million people who this winter will suffer for lack of the coal that the less than 600,000 refused to dig have not spoken yet. Public opinion is passive. No one in authority has told the people the trouble that lies ahead. What can the public say? It has said "Protect those who would work," but with the protection provided too few have been willing to work. The public can say—"Compose your differences without depriving us of fuel and transportation." If it cannot say that plain enough, forcefully enough, to reach and convince the most unheeding then we must wait till the union dis-integrates through its own super-aggrandizement, submitting in the meanwhile to its tyranny, or we must go on fighting it as best we may until it returns to reason.

None of the spectacles are pleasant—which will you have and what are you going to do to bring it to pass?

From those operators who are crawling to Lewis begging permission to mine coal, those he would not "humiliate," to those whose backbones are upright though their knees may tremble is a far cry, with every human motive ranging from mere profit-seeking to the highest ideals of public service.

Strength for the Next Battle

ALTOGETHER apart from the outcome of the passages at arms with John L. Lewis and his powerful organization of labor, it must be said that the coal operators of Illinois and some other sections of the country give signs of having learned a lesson. They have hung together as never before. That is a proud accomplishment even though it may be greeted by humorous sallies concerning separate hangings. In Illinois as in probably no other state, owners of mines have had thrust upon them painful subject lessons in the ultimate cost of past surrenders to the union. Every time they broke apart to make peace with the miners for immediate gain, they lost in the long run. Every capitulation added power and arrogance to the United Mine Workers of America. It is all very evident now, even to those operators who, for financial and other reasons, have been most keenly in need of producing coal.

It is so evident, in fact, that every operator knows there lies ahead in this country a battle that must be won. It will be a long battle and one requiring the utmost determination and sacrifice but it must be won if the coal industry is to attain the true normalcy so much desired by everybody but union labor. The skirmishes and heavy engagements of this summer have given the coal operators of the land opportunity to exert those forces for solidarity which are developing. Surely such forces have gained potential strength by this exercise. They certainly have in Illinois. Defeat without surrender in a fight for a just cause often is more stimulating to morale than victory.

It Is Up to Mr. Coal Man

EXERCISE of governmental control over coal distribution is producing the usual and expected crop of knockers. To some everything that is being done by the agencies at work in Washington is wrong. There is the customary blatant critical line of dope being written by the usual onlookers telling the country, or such as their tirades may reach, that it is all wrong. The thing to do, for instance, is to produce more coal and there will be no necessity for the government putting its hand on distribution.

In the first place those who take, or pretend to take, such a stand refuse to recognize that in this crisis the first essential step toward getting more coal out of the ground is to make what coal is being produced go as far as possible toward averting a shortage at points and with those consumers whose continuity of operation is essential to the nation. It is not too much to say that under present circumstances four million tons of coal per week reaching the proper consumers may be worth more than five million tons imperfectly distributed. To argue that Mr. Hoover is making bricks without straw is but partially stating the case—he is short of mud as well.

There isn't enough coal to go around and there isn't going to be enough. It's perfectly absurd for some coal men to complain about the government messing in the situation, because if it didn't, a thousand times as many people who are not coal men would demand it.

The old job of 1917-18 and of 1920 of spreading a thin supply of coal over a wide and persistent demand and need is here again. It must be undertaken with the best tools at hand. No one who recalls the difficulties that beset Washington in previous years when with wide-spread authority the control of coal distribution was undertaken can but appreciate what Mr. Hoover and his associates are facing.

It is useless to rail at the fact that Washington is putting its hand to the task—it had no alternative. It is childish to curse and growl at the methods, better take a hand in trying to improve them.

We are not at war with a foreign power, it is true, and a call to patriotism falls short on that count. But what is war but an effort to avert national disaster, and what less faces this country this winter with crippled railroads and short coal supply? The coal man knows this better than any one else and he can help or hinder as he wills.
Railroad Electrification
Will Make
Important Changes
In the Coal Industry

Roads Must Do More Work and Do It More Economically—
Byproduct Plants and Power Stations Will Be Operated Concurrently; Coke and Gas Being Used for Generation of Energy

BY CHARLES MEANS*
Pittsburgh, Pa.

COMMERCIAL development in this country seems to move in fairly well-defined cycles. Years ago we started in to build railroads and it now appears that we built them in plenty, although some were not well located with respect to the general requirements of the country. At a little later date telegraph and telephone lines were being constructed all over the land. In recent years we have been engaged in making one of these lines do as much work as several of them were capable of doing at the time they were constructed.

Just now we are engaged in building highways on a scale unthought of a few years ago. Whether our type of construction will handle future traffic is a problem that the next generation only can ascertain. We are engaged also in the construction of high-voltage transmission lines for the conveyance of vast quantities of energy over relatively long distances. It is reasonable to suppose that in time the wasteful burning of coal in small units will disappear and in its place will come large central stations where the coal can be consumed economically with full recovery of valuable byproducts.

ELECTRICITY FOR LOW-COST TRANSPORTATION

The railroads of the country are facing a problem that, if not solved, may materially affect the development of those regions remotely located with respect to water transportation. Their main problem is not necessarily lack of trackage but high cost of operation. Low transportation expenses and charges are essential for the free interchange of commerce, and the degree of economic development of any district is proportional to its transportation facilities.

As the situation now stands, with the railroads unable to handle successfully increasing inland traffic the next cycle would appear to be the complete electrification of railroads. The railroads we now have must do more work and do it more economically. A wonderful piece of apparatus is the modern steam locomotive, but it has well recognized limitations. Sufficient railroad electrification already has been completed to show us its possibilities, and with the development that will naturally come from increased work of this kind its success is assured.

Though the electric railway locomotive so far has been limited in its application to unusual or severe conditions, it has made good and will continue to do so increasingly as time goes on. This change in the manner of operating railroads will modify the coal industry profoundly. Coal is an expensive item in the operation of the common carriers, and the supply of railroad fuel is an important part of the coal business. Where it is available and conditions warrant its use, water power will be developed which will displace that part of the locomotive fuel that is now being hauled long distances, reducing the tonnage thus consumed not only by the quantity of coal thus displaced but also by that further quantity which is consumed in the transportation of such coal.

Coal that for various reasons is now considered unsuitable for locomotive fuel can be economically burned in large central stations. The firebox of a locomotive has certain well-defined limits, but the combustion chambers under stationary boilers can be designed to burn any kind of fuel having heat value.

This may mean the development of mines not now considered workable, as entirely new economic conditions will be brought about. It is reasonable to assume that the concentration of power-producing centers will admit of the recovery of valuable byproducts, only that part of the coal having no byproduct content being burned. Much of this content, though not suited to the needs of the chemist, has high calorific value.

BYPRODUCT PLANT AT EVERY POWER-HOUSE DOOR

The power plant of the future will embody a byproduct plant just as do the steel plants of today. This, however, will be built along somewhat different lines from those now in use, as the requirements will not be the same. The coke or residue after distillation need not possess metallurgical characteristics, heating value alone being the important consideration.

Coals now considered unsuitable for use at steel plants because their coke is not regarded with favor can be used at power plants after having given up their byproducts. Furthermore, lignites or low-grade coals that are not suitable for locomotive fuel or that cannot be transported profitably will then be of value, for they will be found to give satisfactory service when used directly under stationary boilers.

The ordinary steam locomotive necessarily is more
wasteful in the generation of power than the large central station because of high radiation losses and the inherent inability of the machine to convert any large percentage of the heat produced into useful energy. It is true that with electric currents certain losses occur in transmission, but the reduced cost of transportation, distribution and handling of fuel for locomotives more than compensates for these.

All these phases of railroad electrification have a direct bearing on the coal industry of the future. Because of the utilization of available water power, energy will be supplied in certain districts without resorting to the combustion of fuel. Because of the great increase in efficiency arising from the burning of coal in large central plants one ton in such a station will do the work of two when burned in a locomotive. Further, the burning of fuel in a central plant permits of the recovery of valuable byproducts not now available.

The entire aspect of the coal industry, in so far as railroad fuel is concerned, will undergo a marked change because of the centralization of coal-consuming plants in such locations as naturally offer lowest energy-production costs. Instead of coaling stations being distributed at many points throughout the country, coal used to supply energy for railroad operation will be centralized at a relatively few favorably located centers. Fuel that is now used exclusively by railroads may never reach any of the stations that in future will supply them with power.

While the changes outlined will, no doubt, be gradual, the time when all important lines of railroad will be electrically operated may truly be considered as being by no means remote unless some other now unknown solution for this problem should present itself. With this changed condition will come corresponding alterations in the marketing of a large percentage of the coal produced throughout the country.

Three-Part Pipe Wrench of Great Strength

Light Weight and Ease of Application

A NEW pipe wrench embodying a radical change in design from usually accepted standards as well as several original details in construction is known as the Little Giant. It has the end opening that has been so long and favorably known and utilized in machinists’ wrenches. This allows the tool to be utilized in much closer quarters than the side-opening wrench.

This new tool consists of three parts only: the frame, the movable jaw and the adjusting nut. The first two pieces mentioned are drop-forged and heat-treated. In the smaller sizes the combined handle and jaw is made with two pipe-gripping faces; in the larger sizes four such faces are provided. All springs, rivets, pins and the like have been eliminated, with the result that the weight of the tool is appreciably less than that of a wrench of the side-opening type.

Despite its comparatively light weight this wrench is unusually strong. The 14-in. size has repeatedly withstood stresses exceeding 4,700 in.-lb. without either slipping or bending. Government specifications for tools of this size require that they shall withstand only 2,800 in.-lb. The two or four sets of what might be termed stationary jaws or those integral with the handle may be engaged at the option of the user and lengthen the life of the tool almost in proportion to their number. The inner or secondary main jaws render the wrench highly efficacious on certain classes of work.

This new wrench is the product of the Greenfield Tap & Die Corporation, of Greenfield, Mass. The 8-, 10- and 14-in. sizes are already manufactured, and 18- and 24-in. sizes soon will be obtainable.

Stripping Methods That Afford Clean Coal

COAL is in general about as clean as the mining methods in use make it. Of course some coal is naturally dirty, but other coal is made dirty by negligent handling. There is no reason why strip-pit coal should be dirty. Unfortunately this type of working had its greatest development during a coal boom and in consequence even the most elementary precautions were not taken by some operators to keep the product clean, for quality then was less sought than quantity. The coal shovel was permitted to dig into the bottom; cover was allowed to fall down on the coal and was not removed from it before loading; the coal shovel loaded coal direct into the railroad car and no picking tables were provided. The result could not be in doubt. Stripped coal was in consequence regarded as being a poor purchase.

With care open-cut coal can be produced that is freer from impurities than that obtained underground. Not infrequently in a mine does the mining machine work its way into the coal bottom and the drawslate fall into the coal. Furthermore the cutting machine breaks up a large part of the coal and shooting tends to reduce what remains from lump to slack.

An open-cut mine like that of the Enos Coal Mining Co., in the Ayrshire coal district of Pike County, Indiana, illustrated herewith, avoids these difficulties of underground mining by lifting the overburden and cleaning the upper surface of the coal by hand shovels and wire brooms before the coal is disturbed, also by not attempting to shovel the coal down to the bottom clay, by shooting with due care and by running the coal over a picking table, where it is examined and cleaned by several men. The coal finally is delivered to the cars from the chute and an inspector watches it from a platform as it falls and certifies the coal as clean if it meets with his approval.

The screenings delivered at this mine are unusually large, about 65 per cent being 2-in. nut and practically none of it fine enough to be designated as "bug dust." This mine is typical of the newer operations in southern Indiana. It is connected with the Southern Ry. by ten miles of railroad owned and operated by the coal company. It will soon be connected also with the Big Four. The property was not acquired until May of last year and the first coal was loaded over the tipple in October. Before the strike the production reached 50,000 tons per month. This tipple can handle 3,500 tons in eight hours.

PIECE WRENCH PROVIDED WITH AN END OPENING

This wrench has only three parts—frame, movable jaw and adjusting nut. Springs, rivets and pins have been eliminated making the tool simpler and lighter.
ENOS COAL MINING CO.'S STRIPPING, THE LARGEST STRIP PIT IN THE STATE OF INDIANA

Fig. 1 shows a steam-driven stripping shovel, one of the largest made, removing the overburden from the coal; Fig. 2, the portable pump by which local dips are freed of water; Fig. 3, a trip of seven dump cars on the way to the tipple; Fig. 4, another of the big stripping shovels also a steam-driven unit; Fig. 5, the dump house, coal conveyor shed and tipple; Fig. 6, loading coal with a caterpillar shovel into cars on a track laid on the top of the coal; Fig. 7, the two picking tables, one for large and one for small coal, and Fig. 8, cars loaded with coal under tipple. Note loading boom to reduce breakage.
Roadway and Other Permanent Supports in Coal Mines of Great Britain

Horseshoe Sets Coming Into Disfavor Owing to Weakness at The Crown and Often at the Ground—Methods of Stiffening Weak Points—Extruded Fireclay Often Breaks Invert Arch

By John Roberts

The steel "timbering" used on roadways, either alone or in conjunction with timber or masonry, may be termed semi-permanent supports. Steel rails and girders have been used in mines for many years, the simplest being a rail or girder stretched across a roadway and resting on wooden props or on masonry side walls, as illustrated in Fig. 1. The objection urged against these girders is that when repairs become necessary the girders are not so easily taken out as are timber "collars." On the other hand, they possess the advantage of greater strength and durability, and when once bent and removed they can be straightened for further service.

In Fig. 2 is shown a system in which a steel rail is supported on cast-iron posts. The posts are hollow and flanged at the ends, and cast-iron chairs fit into the upper ends. These chairs serve to support the horizontal rail on which the timber lagging is set. This system is, of course, suitable only where roof pressure along is expected.

To resist pressure from both roof and sides the steel sets shown in Fig. 3 have been adopted. The crossbar a is of I-section and is supported by legs, each of which consists of two channel-bars bolted together and resting on a cast-iron shoe, b. The legs and collars are provided with several bolt-holes so that the sets may be adjusted to suit roads of varying dimensions. The desired batter of the legs is obtained by means of the cast iron shoe b, the underside of which is curved and rests in a sole piece, c. In another form (Fig. 4) the legs and beam are secured by means of angle irons and bolts or rivets.

HORSESHOE LINING SET WITH FLOOR PIECE

Where the roof, sides and floor require support, the form shown in Fig. 5 has been applied. These sets consist of rails bent to the form of the roadway and fishplated as shown. With timber lagging, well packed behind with fine material, this device gives excellent support.

A type of steel set which has become quite popular in recent years, although first used many years ago, is called the "horseshoe" set, which consists simply of rails of uniform section bent to the form of a horseshoe and fishplated at the crown, as shown in Fig. 6. These sets are often used in conjunction with masonry and timber, side walls conforming to the rails being built up to a height of about 6 ft. and the upper sections lagged with timber.

When newly erected the construction presents a neat appearance, but the system can hardly be said to give satisfaction. In the first place, objection is taken to the weak joint at the crown of the arch, which is the point where great strength is required. Again the curved form of the sides has a tendency to cause the floor to "heave" or "puck." Generally speaking, the effect on the sets is either to cause the crown to be bent downward or to be driven up into the roof and to break the fishplates. Buckling frequently occurs also at the haunches.

Where a horseshoe set of uniform section is placed to withstand unequal pressures at different points, such premature buckling is only to be expected, and it is somewhat surprising to find that horseshoe sets have hitherto not been specially designed to offer increased support at the points where the maximum pressure is expected. If it is considered advisable to line a road with steel arches it should be worth while making a good and reasonably permanent job. The forms illustrated in Figs. 7 and 8 may, to a certain extent, overcome these objections.

Fig. 7 is a general design, from which it will be seen that the web of the H-section supports is expanded at the crown a, the two members forming a unit interlock at b. Specially-shaped and long fishplates are used, and these are secured by six bolts of suitable strength. At the haunches, c, a double flange and web provides additional support, which resists the tendency to collapse prematurely at these points.

The lower ends of the sides of each unit are so formed that the advantage of the arch-shaped structure is retained. The additional vertical struts or sup-

Fig. 1

Fig. 2

Fig. 3

Fig. 4

WHERE LITTLE SIDE THRUST IS TO BE APPREHENDED

Fig. 1—Steel rail or girder resting on brick or stone walls with transverse and longitudinal lagging. Fig. 2—Steel rail with the ball of the rail held by a chair which forms a cap to a hollow cast-iron post having flanged base; (a) side view; (b) end section. Fig. 3—Steel set with I-beam crossbar and two legs each of which consist of two channel bars bolted together and resting in an iron shoe (b), under which is a sole piece (c). Fig. 4—Steel set with legs attached to crossbeam by angle irons and bolts or rivets.
The holes so as to allow the structure to yield slightly to the load until settlement takes place.

It is realized that the manufacture of the suggested new designs will not be such a simple matter as that of plain horseshoe sections. There is, however, the alternative of using double-channel sections, held together not only by bolts but also by plates extending across the crown and haunches. These fishplates would give the necessary additional support to the roof (Fig. 11).

Other supports may be regarded as permanent. The distinction between permanent and semi-permanent is perhaps arbitrary, for in mines where little pressure is encountered the most simple form of timbering may last a lifetime, whereas in others elaborate and costly systems of reinforced concrete may have a comparatively short life. Speaking generally, however, masonry and "ferro-concrete" are regarded as permanent structures. The masonry arch reinforced with steel girders, illustrated in Fig. 12, has given good results. In this example ordinary masonry sidewalls were erected, and arched girders weighing 56 lb. per foot were placed in position about 6 ft. apart and resting on the walls. The masonry then was continued about and between the girders.

Ever since the introduction of concrete as a roof support for mines it has been the practice to reinforce it with metal in a more or less systematic manner. Formerly it was the custom to use old rails or any strips of metal to provide the necessary tensile strength. Reinforcement to be effective, however, must be carried out systematically, and this, as a rule, is now being done.

Engine rooms have frequently been constructed in the manner shown in Fig. 13, where old rails are bent to the required form and then fishplated. The concrete is well rammed behind the rails and the exposed surface is smoothed off to prevent, as far as possible, the accumulation of dust and to facilitate its removal. Such a structure possesses the advantage of having no inflammable material in its construction and com-

**HORSESHOE SUPPORTS WITH MODIFICATIONS**

Fig. 5—Horseshoe with steel base consists of three curved members with a fishplate at the crown and sides. This section is weak at the crown and haunches. Fig. 6—Simple horseshoe fitted at the crown, giving no resistance to thrust. This gives greater resistance to side pressures. If the floor heaves, less damage is done to arch. Fig. 7—An improved horseshoe set with better footing, stronger roof supports and more support at the haunches. The increased supports also strengthen the arch against side thrust. Fig. 8—Still stronger horseshoe with strengthening web. Holes are drilled for the web, and it is added only if the arch shows signs of failure. The web has no flange.

Ports provided are adapted to take the major portion of the stresses acting on the roof of the structure, while inwardly curved side members serve to resist the tendency to buckle. This will be obvious from the fact that by fixing the foot of each arm in a notch in the floor, as at a, each member is converted from a cantilever (viewed sidewise) into a beam fixed at both ends.

Failure usually takes place above the spring of the arch, while the sides often remain intact; therefore increased strength must be provided at the crown and haunches. The points near the ends of the fishplates will, at first sight, appear relatively weak, but it should be noted that the sharp arched flanges at these points offer much resistance to the pressure; in fact, this form closely resembles the five-piece set which in some fields is used to replace the more general set of only three pieces. When drawn diagrammatically, as in Figs. 9 and 10, the resemblance between the two systems of reinforcement is striking.

In Fig. 8 is shown a slightly modified form of horseshoe set in which a strengthening web (without a flange) is used. Holes are provided to enable a reinforcing strut to be bolted on as soon as the arch shows signs of failure. Cables or haulage pulleys may be suspended from holes lower in the web, thus obviating the fixing up of crossbars for this purpose.

It is highly important that the sets be well packed behind, so that the pressure may be distributed evenly. Particular attention should be paid to this requirement at the crown, otherwise the supports will be driven up into the roof. Failure often occurs also at manholes, as the result of improper packing, and to prevent this it is generally desirable to wall the sides of the manholes behind the steel sets. When the floor also requires support a tie may be stretched under the track and joined to the base of each member. The employment of wooden blocks under the feet of the supports is generally recommended, and where the feet are "stamped" some fine material should be placed in
Gasoline Locomotive with Tractor Type of Motor Having Clarified Air Supply

In order to meet the demand for a gasoline locomotive that would be dependable for light haulage service and that could be made at reasonable cost the machine shown in the accompanying illustration has been developed. This is a substantial locomotive built to withstand severe service. The motor is of the tractor type, the ruggedness of which has been thoroughly demonstrated. All engine parts in this design are thoroughly inclosed and consequently are well protected from dust and dirt, yet are readily accessible for inspection or repair.

Intake air to this engine is washed by being passed through a water clarifier which removes all dust and dirt. The usual simple and efficient splash system of lubrication is employed. All oil used for this purpose is introduced at one point in a central reservoir which supplies all parts of the motor and transmission assuring ample lubrication.

The clutch is placed behind and adjacent to the flywheel and the propeller shaft at its extremity carries a bevel pinion that is in constant mesh with two bevel gears, causing them to rotate in opposite directions. Forward or reverse movement is obtained by engaging either one or the other of these bevel gears by means of a sliding clutch. A neutral position, of course, is provided also. From the bevel-gear shaft drive is made through a spur gear reduction to a jack shaft on the extremities of which are mounted sprockets which connect with the axles through roller chains.

Changes of speed are obtained by throttle control similar in operation to that of a steam locomotive. All levers are grouped within easy reach of the operator. Cast-iron wheels are standard equipment but steel or steel-tired wheels as well as a cab can be provided. The weight is about 4,000 lb.; the minimum radius of curve that can be traversed is 13 ft. and the speed may be anything up to 8 miles per hour. The track gage is 24 in. or more and the height is 54 in. without cab. Assuming a car resistance of 30 lb. per ton of trip weight this locomotive, which is manufactured by the Atlas Car & Manufacturing Co., of Cleveland, Ohio, will haul a 25-ton trip on a level track, 9 tons up a 2-per cent or 2 tons up a 7-per cent grade.

GASOLINE LOCOMOTIVE FOR HAULAGE AT COLLIERIES

A 2-ton locomotive for light service, that can be used on 12-ft. radius curves and with a 24-in. track gage. It has hand brakes, renewable shoes and hand-operated sanders. The frame is of structural steel.
Can Mechanical Replace Human Energy in Underground Loading?

Human Effort in Coal Loading Costs $10,000 a Year per Horse-Power and Almost Ten Dollars per Kilowatt-Hour—Working Efficiency Roughly 2½ per Cent—Cars Changed in 1½ Minutes

A recent meeting of the Engineers' Society of Western Pennsylvania J. F. Joy read a paper on 'The Substitution of Mechanical Energy for Human Energy in Underground Mining,' of which an abstract follows:

"One of the largest items of expense in the production of coal is incurred in its loading out at the face of the workings. The annual production in the United States, which totals more than 500,000,000 tons, is loaded at the face by approximately 400,000 mine workers out of the 750,000 employed. It is evident, therefore, that this operation absorbs the greater part of the labor employed in the mining of coal.

"It is said that a man at work will through an eight-hour shift develop one-tenth of a horsepower, so that for 400,000 miners the power equivalent is 40,000 hp. Converting this value to kilowatt-hours and allowing 200 working days per year, the work equivalent resolves itself into 47,744,000 kw.-hr. With a daily wage of $5 it will be seen that the loading process costs the coal industry $400,000,000 per year or $10,000 a year for each horsepower.

"Pay five-hundred times too much for energy"

"Similarly the work costs almost $10 per kilowatt-hour, or four to five hundred times the cost of electrical energy. Because men can perform tasks like these only at enormous cost, engineers are providing means to convert electrical energy into mechanical work, in such a way as to effect greater economy.

"The question of efficiencies must be taken into account in making the comparisons. Assuming that the coal is loose the greater part of the 40,000 hp. is spent in raising it, let us say, 3.3 ft., which is a fair average for the difference in level between the mine floor and the top of the car. In lifting 500,000,000 tons of coal through this distance only 1,000 hp. is consumed, and the resulting efficiency is 2½ per cent. Most of the miner's time is spent in dislodging the coal preparatory to loading, in timbering, laying track, etc., but, regardless of the work incurred in these operations, the efficiency is lowered because he must stoop and erect himself for each shovelful of coal.

"The supplanting of hand labor at the face by machinery has been the aim of a number of engineers for a score or more of years. Progressive mining companies have encouraged this and interested themselves in the project and millions of dollars must have been spent in experimentation. As a result, many different machines, involving a variety of principles, have been devised and operated. Many of these machines work admirably when loading loose coal but have been unsuccessful in loading coal in the semidisturbed state as it exists at the working face after blasting. To meet this difficulty the man who loads by hand not only has a shovel to lift the coal but provides himself with two picks to loosen it, and excessive quantities of powder have been resorted to in some cases.

"Although it has the desired effect—that of producing an easily loaded coal—a loss results instead of a saving, inasmuch as the coal is shattered. Many of the machines were not designed in keeping with the prevalent system of mining. To make conditions more suitable to the handling of a particular type of machine the cry has been raised to supplant the room-and-pillar system by one of the many wall systems.

"It is safe to assume that 98 per cent of the yearly production of coal in this country is mined by means of the room-and-pillar system; the method of working has been adopted after years of study and experience on the part of the operators, so that today it is considered the most practical and economical means of winning coal. In the early development of this method many lives and much money were lost, so that it would be incongruous to consider a different system of working at this time."

A Loader Both Props and Runs Machine

In the discussion that followed E. H. Coxe, general manager of the Snowden Coke Co., inquired whether the runner of the one-man loader set the timbers as well as operated the machine, and Mr. Joy replied that it did. Some doubt was expressed as to the practicability of such practice.

Mr. Coxe then told of a loader that was developed and tried in one of the mines of the Pocahontas Fuel Co. several years ago. Mr. Newdick, who developed this machine, was in the audience. The loader was manned by four men in addition to the operative. The seam being mined was the Pocahontas No. 3, which varies in thickness from 8 to 10 ft. Two motors were used for pulling cars to and from the room face, two 3-ton cars to a trip. Breakthroughs were established at 100-ft. intervals, and in this way two motors could ply back
and forth without interference, one working on the straight and the other from the nearest breakthrough. In this manner it was said that a car could be loaded and moved in 4½ minutes, or at the rate of one ton per minute, allowing 1½ minutes as the average time for changing cars.

Mr. Newick afterwards stated that much time is lost in car shifting, even in the best regulated system; investigation at the mine mentioned proved that on the days of maximum loading the loader was in actual operation not more than 42 per cent of the time; with most favorable conditions and using two motors as cited, much time was lost. The time actually occupied in moving from one room to another with only 60 ft. between centers, traveling the nearest breakthrough, totaled approximately 4 minutes. This time did not allow for delays due to derailments and other accidents.

An instance was mentioned where a Meyers-Whaley loader disposed of all the coal from one cut in eight 3½-ton cars (loading time not given), with an average time of changing cars of 1½ minutes. This shifting time agrees closely with that given by Mr. Coxe, which was 1½ minutes.

The question was raised whether it is not disadvantageous to use a rigid conveyor on a machine mounted on a caterpillar tractor, in that the discharge end of the conveyor moves away from the car when swinging around for more coal. Mr. Joy was asked also whether his type of loader necessitated continual car spotting.

To the first question he replied that with the proper manipulation by a skilled runner the discharge point of the rigid conveyor could always be kept over the car and that the rigid conveyor means simplicity in both design and operation. In answer to the second question he said that the conveyor extends over practically the entire length of the car, loading progressively forward, so that the loader and not the car is moved.

To an inquiry made by Mr. Coxe as to the day-in and day-out output of the one-man loader Mr. Joy gave figures of a case where a 3-ft. seam was being worked. In two successive weeks one machine loaded an average of 52 tons in eight hours. In the two weeks that followed this period the average daily output amounted to 60 tons. The operator, he said, claimed a saving of 25c. per ton of coal loaded.

Mr. Eavenson asked if the loading could be reduced to man-hours per ton of coal, so that a person might figure out his own costs regardless of varying wage scales in the different fields. Such figures were not available at the time, but some interesting facts were given in reply. In the 3-ft. seam already mentioned approximately 12c. was allowed for cutting and 8c. for blasting per ton of coal. One loader operative, a mule and driver had an output daily of from 50 to 60 tons. The tonnage came from three working places; there were only nineteen working places in this mine at the time, and it is the ultimate object of the company to have not more than thirty working places throughout the life of the mine. The company asserts that the number of men on the payroll, exclusive of the men on the loaders, is lessened by one-third due to the concentration of workings.

Mr. Weldin asked Mr. Joy if he had decided to cease manufacturing the high-seam loader. The latter replied that in 1917 and 1918 the Pittsburgh Coal Co. used this type of machine in one of its mines, and produced 100 tons per day, loading slightly less than two tons in two minutes. However, he felt that the smaller one-man loader is more practical for the present at least and that the large machine was beyond the economic limit of present-day requirements.

Mr. Eavenson asserted that his observations led him to believe that the actual working time of a mechanical loader does not exceed 35 per cent. Consequently the greatest difficulty in the adoption of the mechanical loader cannot be ascribed to the loading machines thus far developed but rather to the inadequacy of the schemes of car handling. A successful method of car supply to the face must be worked out before the industry can hope for real success. He also asserted that with an adequate car supply, even a hand loader could almost double his daily output.

He was of the notion that pillars could be drawn more safely, more quickly and with an appreciable saving by means of mechanical loading. Because of the rapidity of mechanical loading the retreat would be so swift as to occasion little menace due to the roof, which would not cave so close to the rib end as it does in the present method of mining. Not only that, but there would be less slate to contend with and mining costs unquestionably would be decreased.
Mr. Joy said that there could be no doubt as to the advantages of the mechanical loader for pillar work. Returning to face loading, he said that in the mine of the Pittsburgh Coal Co. to which reference was made the roof was weak. An I-beam supported at both ends by wooden posts was maintained two or three cuts away from the face, being moved every other day. This provision and the practice of placing the regular timbering closer to the face greatly assisted in insuring safety.

He then mentioned an experiment made in a mine where the mechanical loader was used in wall mining. Entries were driven on 300-ft. centers. A wall cut to a depth of 7 ft. was made, with the track placed 7 ft. from the wall, or 14 ft. from the solid coal. Posts were placed on the opposite side of the track. With this arrangement the loader worked admirably.

At this point Mr. Coxe expressed his surprise that a flame-proof motor had not been developed for loading machines. Unless a safe motor were developed the mechanical loader seldom would be used in gaseous mines. F. A. Barry, of the Westinghouse Electric Co., said that manufacturers had given little thought to such a motor, inasmuch as the present demand did not warrant the cost of its development. Such a motor would require a marked change in design. Mr. Joy added that not only must a motor be developed to exclude gas from its interior but that the controller and the resistance must be protected similarly.

Healey River a New Coal Field in Alaska

With Seven to Forty-Six Foot Coal

THE Secretary of the Interior has authorized the immediate construction of trackage connections between the Alaska R.R. and the coal mines recently developed on the Healey River. By constructing a spur four miles in length cheap fuel will be made available to Fairbanks and the mining region tributary to it. The successful development of coal on the Healey River promises to stimulate mining in the Fairbanks region more than any other event in recent years. Even at present, without trackage connections, with all the expense entailed by having to haul the coal four miles to the railroad, unload it at the Nenana River, ferry it across and reload it on cars on the other side of the river, this coal is being laid down in Fairbanks at $8 per ton. With the completion of the Nenana River bridge this winter, and with the establishment of through traffic, Fairbanks will have all the advantages of cheap fuel.

Until the Healey River coal became available the Fairbanks district was dependent largely upon wood for its fuel. Prices last winter were as high as $24 a cord. Even the largest consumers paid $12 a cord on contracts. At such prices no serious efforts were made to thaw ground or even to operate dredges on a large scale. The cost of power prevented the development of large areas of promising placer ground of moderate value.

The coming of the railroad already has cut down the cost of miscellaneous supplies at Fairbanks by one-third. Now, with the assurance of a dependable supply of satisfactory fuel, it will be possible to undertake both lode and placer mining on a scale which costs have made impossible in the past.

What is true of the Fairbanks district will apply in a slightly different degree to all points along the inland rivers, as coal can be delivered by barge from Nenana at prices much below what hitherto has been paid.

Contracts have been let by the Healey River Coal Corporation for driving a 1,200-ft. main adit which will open a series of coal beds which vary from 7 to 46 ft. in thickness. The coal is a fair grade of subbituminous and already is being used extensively for railroad, industrial and domestic use. Steam-boiler tests have been made at Anchorage by John A. Davis, of the Bureau of Mines staff, which show that the Healey River coal has 90 per cent of the efficiency of that obtained from the bituminous coal of the Matanuska field. The corporation engaged in the mining enterprise is being financed and conducted by local men familiar with conditions in Alaska. Only within the last year has it been appreciated that this coal, which occurs near the lignite deposits in the Nenana fields, is not itself a lignite but is of a distinctly better grade. The failure to recognize its quality explains the delay in developing this resource which is expected to play an important part in developing the Fairbanks district.

Outcrops at Healey Forks, Alaska

Careful scrutiny will show a black dump with a coal chute resting on it to the left of the picture, the opening being in the thick bed. Another entry appears in the center at the foot of the same big seam, and on the extreme right is another chute, the drift in the coal which serves it not being visible. Here are apparently six seams, some quite irregular but one unusually thick. In fact the coal, which is subbituminous, measures in places 46 ft. in thickness.
Two-Unit Automatic Mine Substation Erected to Improve Service and Reduce Mining Cost

Surface Substation Runs Without Attendant — Second Motor-Generator Set Not Put Out of Operation Unless for Fully 10 Min. First Set Has Been Adequate, a Short Level Road Making 6-Min. Low Load Frequent

BY H. F. RANDOLPH AND C. E. H. VON SOTHEN

A REMARKABLE increase in the use of automatic substations in mining service has been noticeable during the last year. Motor generators and synchronous converters have been installed with control devices that permit them to operate with perfect safety even though unattended. Infrequent inspections only are necessary. Because of the elimination of the human element and the possibility of more advantageous location, such stations have been able to afford a quality of service better than that rendered by the ordinary manually-operated mining substation and as good as that of the best.

One of the most interesting installations recently put in operation is the two-unit synchronous motor-generator automatic substation of the Star Coal & Coke Co. at Red Star, W. Va. This company recently undertook a general electrification program which involved the installation of General Electric Co. transformers, induction motors for pumps, tipple and fans, an induction hoist motor with magnetic control, and the automatic substation just mentioned.

This substation is situated on the surface about a mile and a half from the mouth of No. 1 mine. Direct-current at 550 volts is taken down a boreshole a distance of 325 ft. to the trolley, which extends approximately 4,500 ft. into the mine in one direction and out through the mine mouth in the opposite direction. From the mine mouth it continues on the surface a few hundred feet, after which it enters No. 2 mine and extends about another mile underground. The present direct-current load consists of one 8-ton and one 10-ton locomotive in No. 1 mine, an 8-ton locomotive in No. 2 mine together with mining machines and gathering pumps.

In No. 1 mine the trips usually consist of twenty 2-ton cars each, except for a short distance where the grade is steep. Here the locomotives pull only eight or ten cars per trip. The loads are brought to the foot of the slope up which they are drawn by the induction-motor hoist over a 7-per cent grade to the mouth, a distance of 5,500 ft. The locomotive in No. 2 mine usually hauls out eight-car trips, the size of trip being such as to bring the full output of the mine to the tipple with as small a demand charge as possible.

Before the new installation was made the haulage system was supplied by two steam-engine-driven direct-current generators. These units have been replaced by the automatic substation, which contains two 150-kw. 500- to 550-volt generators driven by 2,200-volt 3-phase 60-cycle synchronous motors fitted with direct-connected excitors. By making the station automatic it has been possible to place it in the location that will give best voltage at the face, yet minimize attendance charges.

Power is purchased from the Virginia Power Co. Current enters the substation at 2,300 volts through iron conduit laid under the floor. Referring to Fig. 1 the incoming line panel is shown on the extreme left of the switchboard. In addition to indicating meters and overload protection, this panel contains integrating, graphic and demand meters. The alternating current bus connects this panel with the three adjacent ones, which are, in succession, a feeder panel and the two panels that control the synchronous motors. The line from the feeder panel goes to the outside through iron conduit.

Three transformers just outside the station deliver power to the pump motors at 440 volts, the lines being taken down the same boreshole as the direct-current.

FIG. 1.
Interior View of Substation

Two 150-kw., 500- to 550-volt synchronous-motor generators are installed with every detail of automatic control. Starting on the extreme left of the switchboard the first panel is for incoming current; to the right are a feeder panel, two panels that control the synchronous motors, two that give proper starting sequence and protection, a direct-current panel and one for the relays of the automatic reclosing feeder equipment.
lines. The 2,300-volt feeder continues over a pole line to the hoist, the fan, the town-lighting circuit, and to the transformers for the tipples motor and a second small fan. While the incoming line and feeder panels are not necessary for the successful operation of the automatic substation, it was considered desirable to combine them with the automatic switchboard so as to insure alternating current power for the hoist, pumps and fans when the substation is idle.

The remainder of the board consists of two control panels to give proper starting sequence and protection, a direct-current panel containing contactors and circuit breakers for both generators, and, on the extreme right, a panel on which is mounted the relays for the automatic reclosing feeder equipment. The feeder contactor is hung from the pipe framework behind the panel.

Oxide-Film Arresters Sidestep Lightning

Above the switchboard may be seen the six choke coils used in connection with oxide-film lightning arresters on the incoming line and the alternating-current feeder. The two motor field rheostats and the load-indicating resistor for the automatic reclosing feeder equipment also are visible above the board.

Though it is not the purpose of this article to present a detailed description of the operation and protection of this station a brief discussion of it may be of interest. Normally the station will run only during the day. An employee who lives nearby puts it in operation in the morning on his way to work by closing the two control lever switches on the base of the feeder panel or by closing the two oil circuit breakers. Only one motor-generator set starts at this time, however, a change-over switch determining which one shall lead. Provision has been made so that the station may be arranged for starting and stopping from the tipples office, should this be found desirable.

The starting operations are performed in the same order as in manual operation. In other words, half voltage is impressed on the motor until it reaches synchronous speed, then it is excited, and when the field current has built up to about one-half normal the machine is thrown on the line. The moderate starting peak thus obtained results in only a small demand charge and low cost for power.

In Fig. 1 the master control contactor for each motor-generator set is shown on the base of its control panel. When the incoming voltage is sufficiently high for proper operation and all protective devices are in positions showing normal conditions for automatic starting the master contactor of the first set closes immediately after the indication to start has been given. Fig. 2 illustrates the sets with their oil-immersed starting and running contactors. The starting compensator may be seen in Fig. 1, mounted on the end of the pipe framework that supports the starting and running contactors.

Closure of the master control contactor causes the starting contactor to connect the motor to the line through the starting compensator. Soon after the set reaches synchronous speed the exciters voltage builds up to a predetermined value, whereupon a relay picks up and closes the motor field contactor. This device is shown on the base of the synchronous-motor panel.

When the field contactor closes it opens the discharge resistance, which short-circuits the motor field during acceleration and connects this field to the exciter. As the field current reaches approximately three-fourths of its normal value it picks up a relay which opens the starting contactor and closes the running contactor. This connects the motor directly to the line.

Polarized Relay Assures Generator Polarity

When the voltage is sufficiently high a polarized relay, used to verify the generator polarity, closes its contacts. This completes the circuit to the generator line contactor through auxiliary relays. The line contactor closes and connects the machine to the direct-current bus. One section of the load-indicating resistor is next cut into the feeder circuit so as to bridge the feeder contactor. If no severe overload or short-circuit exists on the feeder its contactor closes after a short but definite time delay. The station is now ready to deliver current.

A current relay in the feeder circuit closes its contacts when the load on the first motor-generator set becomes slightly more than full. If this load is maintained for 30 seconds the second set is started, and in less than half a minute is equalized and on the line, helping out set No. 1. When the load falls off to a point
where set No. 2 is no longer needed and remains below this value for approximately ten minutes, this set is shut down completely, but is ready to come on again whenever required.

The reason for using a time-delay value of ten minutes is as follows: There is a stretch of track in No. 1 mine that is practically level, and while a trip is passing over it the total load on the station falls off appreciably. It takes a trip six or seven minutes to cover this stretch, and it would not be desirable to have the second set shut down, but will restart whenever required.

When the mine has finished for the day the station is shut down by opening the oil circuit breakers or the control switches, whereupon all devices return to the proper position for a restart.

In addition to the devices which insure proper sequence in starting the two motor-generators and putting them on the line, others are provided to protect the machines from any damage that may result from abnormal conditions that arise during operation. Two of these protective features have already been mentioned—namely, the relay to prevent starting on low incoming voltage and that for verifying generator polarity.

These protective devices may be divided into two groups: those affording protection in cases of temporary emergency, permitting resumption of service as soon as conditions return to normal, and those that shut the station down permanently when trouble arises of such a nature that the installation should be inspected or repaired.

In the first group may be placed those devices that protect against single-phase starting, undervoltage on the incoming line, overheated motor windings, overheat load-indicating resistor, direct-current overload and reverse power. The second group comprises the bearing-temperature relays and those devices affording protection against excessive starting time, wrong generator polarity, permanent field failure, overspeed and overload either on the incoming line or upon the two motor circuits. The alternating-current feeder also is provided with overload protection. The general arrangement of the bearing-temperature relays, flash barriers and speed-limit switch may be seen in Fig. 2.

Single-phase protection is so arranged that the station cannot start if one phase is dead, but as soon as three-phase power is available it will automatically go into operation. If single-phase occurs while the set is running it will continue to supply power unless the load is heavy enough to cause the motor windings to overheat. In such a case one of the temperature relays will open the main control contactor and shut the set down. It will restart automatically when the windings cool and three-phase power is supplied. The machine temperature relays are connected to the current transformers and have a heating characteristic similar to that of the motor. The automatic reclosing direct-current feeder equipment already referred to is designed to afford proper protection when either or both machines are running.

The service obtained from this substation has been highly satisfactory; all operations of the mine have been speeded up, delays greatly reduced both in number and in total time lost, and power costs have been cut beyond expectation. Other conditions remaining the same, it was found that for the first month of operation with the electric equipment the total cost for power was much less than it had been with the steam plant.

This includes the hoist as well as all other apparatus, but the saving in attendance charges on the substation made up a large part of the total. The results obtained clearly justify the increase in investment over that necessary for manually-operated substations.

Dangers Lurk in Unprotected Gears

This gear train was found unprotected, as shown, in a headframe of a big mine. Guards are still unusual in tipples. They are making their way in breakers, however. Our mine inspectors rarely examine tipples and would have little authority if they did. But dangers certainly exist in them from the moving parts of machinery, flying coal dust, lack of light and fire.

Fortunately the building itself is fireproof. Even

![Corner in a Tipple Where Protection is Needed](image)

then the exposed oil would in this case be no little menace, for the bearings are evidently bolted to wood stringers. With speed reducers the gears and the oil would be kept inclosed and space would be saved.

Gas Blows Out Coal in Granby Mine Faces

Blow-outs have been interfering with the working of the Cassidy, Vancouver Island, mine of the Granby Consolidated Mining & Smelting Co. These occurrences have been more or less frequent for months. Because of them the Minister of Mines some time ago prohibited the use of powder underground. Within the last few weeks they appear to have become more severe, for two miners have lost their lives at different times within this period. In each case they were buried under the fall of coal, and life was extinct before the bodies could be extricated. Coroners' juries have returned verdicts of death by misadventure, no blame being attached to any officials. The situation has developed into a problem of some perplexity both for the department of mines and the company management. The coal in the area now being worked is soft and conditions such that there is no assurance but that blow-outs will continue and that further lives be lost unless something is done to safeguard the workers. William Sloan, the minister of mines, has interested himself in the matter personally to the extent of prohibiting the use of explosives, taking up with the U. S. Bureau of Mines the question of the explosibility of the mine dust, and now, it is understood, has instructed his officials to make full investigation.
Practical Test Applied to Safety Lamps

Long-Standing Practice in Scotland—Lamps, at Times, Assembled Without Gauzes — Caution Taken by Firebosses to Avoid Danger of Cracking Glass — Need of Expansion Rings

REFERRING to the letter of Joseph Cain, Coal Age, July 13, p. 60, I want to congratulate him on the serious view he takes regarding the importance of testing every safety lamp before it is taken into the mine. Most of us will agree that sufficient attention is not given to this matter.

In Scotland, where I gained my early experience in mining, the Coal-Mines Regulation Act requires that firemen (firebosses) examine the safety lamps of all men employed in gassy mines. The examination is made at the fireboss station as the men pass in to their work. At the same time, each man is informed of his individual habit of working and the importance of making this examination of each lamp taken into the mine has long ago been impressed on my mind, through my experience in making such examinations as fireboss, and from the many accidents attributed to defective safety lamps.

PRACTICE IN SCOTLAND

The practice is of long standing in the mines of Scotland. It was the custom, there, to supply every fireboss with a small tin tube, for convenience in blowing down the top and bottom of the glass globe, if the working place was nothing unusual for a fireboss to reject as many as five or six lamps in every hundred examined, because of the test showing leakage past the globe.

If any reader doubts that this is an habitual practice in those mines, let him ask a Scotch miner, who has recently come over. Hand him a safety lamp to assemble and he will invariably blow all around the globe, after putting the lamp together lighted and ready for use.

Many a time I have been ridiculed, myself, for this habit, by those who contend that such a small hole would be no larger than those formed by the mesh of the gauze. They seem to forget that the glass globe has no cooling principle like that attributed to wire gauze. Not only would a loosely assembled lamp be unable to withstand a strong blast of air, but it would easily pass flame in an explosive mixture.

As further proof of the importance of examining safety lamps and applying this practical test before taking them into the mine, I have in more than one instance, discovered Marsaut and Mueseler lamps assembled without gauzes. These lamps are provided with slip bonnets that slip over and protect the gauze chimney of the lamp. When this slip bonnet was removed for the purpose of inspecting, the gauze would sometimes be found missing.

NEED OF GOOD EXPANSION RINGS

Now a word about the danger of the glass cracking when that has become heated, the lamp being screwed up tight and there being no expansion washers to allow for the expansion of the glass by the heat. I understand that comparatively few lamps have these expansion rings and in few of these is the ring really efficient.

When a lamp is tightened up on a hard-fibre washer that is non-resilient, there is no yielding to allow for the expansion of the glass. Even with a resilient washer, such as asbestos, the globe is sometimes cracked when the lamp becomes excessively heated in a gas-charged atmosphere.

Many experienced fire bosses with whom I am personally acquainted have long had the habit of not screwing the lamp tight against the globe, until later when the lamp will have become warm on the top and bottom. These men claim they are very particular about tightening up their lamps before leaving the main intake airway, by which time the globes have become fairly warm and expanded. The same men are emphatic in their claim of globes having been broken by tightening them up too soon.

LAMP GLOBES CRACKED BY HEAT

On more than one occasion, I have seen the globe crack when a lamp was hanging on a prop and had become overheated, perhaps by reason of the presence of more than the usual amount of gas in the air.

In a little book edited by L. S. Hawkins, chief of the Division for Vocational Education, in the trade-extension classes organized in coal-mining communities, occurs the following reference:

The expansion ring holds the glass sufficiently firm to prevent shattering and rattling and to keep tight joints, but it has given enough to allow for expansion, if the expansion ring is properly designed it will render it practically impossible to break the glass by screwing the font or lower ring up too tightly.

The United States Bureau of Mines has given much attention to the examination and testing of different types of safety lamps, several of which have been approved by the bureau engineers. One of these lamps, which has an efficient expansion ring, has stood fifty tests in a most explosive mixture of gas and air traveling at a velocity of 2,500 ft. per min., without a single glass being broken or cracked.

Bayview, Ala. JOHN WALL, Sr.

OTHER LETTERS

WITH much surprise I read the account of Joseph Cain, Coal Age, July 13, p. 60, where it is stated that three fire bosses, whose lamps he found to be improperly assembled, gave the excuse that they feared to screw up their lamps tight, believing that the heat would expand and crack the glass.

Such an excuse seems to me more like a grandmother's dream. It is strange to me that there are such fire bosses around. Every one looks to the fire boss as the man whose duty it is to warn them of walking into danger. It is hard to understand how they, themselves, would be guilty of doing the very thing they are supposed to keep others from doing.

HUMOROUS VIEW OF RECKLESS OR CARELESS FIREBOSSES

The fire boss who would prefer to enter a mine with his lamp in an unsafe condition, rather than to make it safe by screwing it up tight, ought not to be bothered with a safety lamp. Taking a carbide lamp, he should suggest to his brethren fire bosses, that they stay outside of the mine while he goes in to make an examination, doubtless, to his own suicide. Better that, than to have a number of men killed through his ignorance.

But, laying joking aside, let me say without hesitation that, in all the gassy mines, in the bituminous region of Pennsylvania, in which I have worked, no fire boss would ever make his second round with a safety lamp in the condition stated by Mr. Cain.

While I agree fully with his suggestion that all safety lamps should be examined and tested before being taken
into the mine, his method of making the test, by blowing around the glass of the lamp, is not the one that I would use to determine the safe condition of the lamp.

In my opinion, the blowing test is insufficient. If such a test should cause a lamp flame to flicker and possibly go out, we might all agree that the lamp was unsafe; but, to my mind, the security of a lamp, under conditions to be met in the mine, has not been proved by blowing against it.

In the blowing test, I would advise having an explosive mixture of gas and air, prepared on the surface at a place so arranged that the lamp could be subjected to such an atmosphere while its action is being observed. I consider the testing of lamps before taking them into the mine an important matter and hope to hear from others along that line. JAMES THOMPSON.

Mayport, Pa.

WHAT seems strange to me, in reading the letter of Joseph Cain, Coal Age, July 13, p. 60, is that he should condemn three lamps as being unsafe, when the cause of the light could be blown out with his breath.

The fact that Mr. Cain only made his special examination of the mine, once in three months, to ascertain its gaseous condition, would indicate that he had every confidence in his three firebosses, who asked to accompany him on this occasion.

HAS LITTLE FAITH IN BLOWING TEST APPLIED TO SAFETY LAMPS

It is well known that the breath from the human body contains carbon dioxide, which would have more or less of an extinctive effect on the flame in a lamp. As I look at it, it is not strange that the three lamps inspected by Mr. Cain could be blown out with his breath.

Let us suppose, for example, that the flame of each lamp was first lowered, as when making a test for gas. Then, if the lamp was grasped tightly with both hands, the fingers covering more or less the openings in the air-admission ring below the glass, it is easy to believe that the flame of each lamp could be blown out with his breath.

Our friend states that he blew hard, just below the glass cylinder where it rested on the brass ring supporting it. It is my belief that it is possible to blow out the light, in any Wolf safety lamp, by blowing hard against the lamp until the air-admission ring below the glass, it is easy to believe that the flame of each lamp could be blown out with his breath.

My conclusion is that this is not a proper test to determine the security of a lamp, and I think that most gas inspectors will agree with me in that regard. It is more important to make a close examination of every lamp and see that all parts are clean and properly assembled, just to make sure that there is no defect or injury apparent in the gauge. But when a lamp has been so prepared and lighted, its flame can generally be blown out with the breath, in the manner described.

OSCAR H. JONES.

Wilder, Tenn.

Heating of Gob Areas

Cause of heating—Use of salt as a preventive—Excluding air from the waste by different means.

I N THE issue of Coal Age, May 25, p. 886, a mining engineer asked for suggestions in regard to eliminating the trouble arising from the heating of gob areas, in longwall advancing. He stated that the primary cause of the heating is the mixture of fine coal, slack and clay cuttings containing pyrites.

It seems that a radialax machine is used for the mining, which was done in a clay hand in the coal, a foot from the roof. Under these conditions, there can be little doubt but that a large amount of fine coal and clay cuttings would accumulate at the working face and have to be either loaded out or stowed in the waste.

Owing to the presence of the sulphur, the stowing of this refuse in the gob would easily cause the waste to heat. To my mind, the suggested application of salt, unless used in excessive quantities, would keep the place moist and have practically the same effect as to saturate the place with water, which it is claimed would increase the trouble.

Not wholly knowing the conditions, it is only possible to make a few suggestions that may or may not be applicable in this instance. Where certain areas are giving trouble by heating, it may be possible to cover up the exposed portion with soil or clay taken from the surface into the mine. Mixed with some salt, this coating would probably remain moist and pack down so as to form an airtight covering, particularly if a light application of water was used.

To be brief, in my experience, there are two ways of fighting these conditions with any degree of satisfaction. The first is, to seal off the area so as to completely exclude the air; or, second, cause a sufficient air current to sweep the waste area to keep it cool by carrying off the heat generated.

Of these two methods, the last named is less practical than the first, because the noxious gases generated are liable to be carried into other parts of the mine. If permitted, I would suggest a combined panel system and modified longwall method of working, in order to eliminate gob-fire troubles.

As shown in the accompanying figure, this proposed method consists in driving the main developing entries three abreast, on a grade favoring the loaded cars. The seam is said to have a moderate pitch and these main entries are driven approximately on the strike but so as to afford a slight grade in favor of the loads. The driving of three narrow and the machine cuttings are loaded out from them.

At intervals of 1,000 ft., branch entries are driven up the pitch, in pairs and on 50-ft. centers, with 55-ft. barrier pillars on either side, leaving solid blocks of coal 1,550 ft. between them to be worked out as panels, in the longwall system. The panels are completed by driving cross-entries, at intervals of 1,250 ft., in pairs, parallel to the main entries and on 50-ft. centers, with 55-ft. barrier pillars on either side.

This makes the size of a working panel 1,500 by 1,000 ft. As these entries, the safest practice is to load out the machine cuttings rather than to gob this material, which will heat if stowed in the crosscuts, as is common practice.

Starting on the main headings, each panel is worked by driving three pairs of butt headings on 50-ft. centers and directly up the pitch, thus leaving 245 ft. of coal on each side of each pair of butt headings, which would be worked out as longwall-retreating facings. The butt headings are driven narrow, 10 ft. wide, through the gob area, which goes to make the working area after which they are widened out to 15 or 18 ft., depending on roof conditions. This extra width not only gives this panel a sufficient ventilation for the gobbing areas, but affords room for storing the cuttings, on the chain-pillar side, between the crosscuts. I want to say, however, that such practice is not recommended, it being advisable to always load out these cuttings.

When a panel is on the retreat system, starting at one end of the pitch, there would be practically six 250-ft. faces or, if worked in steps, thirty 50-ft. faces. Allowing four men working each 50-ft. face and assuming a machine cut of 6 ft., would give an output of, practically, 45 tons, per day, from each face, making the total daily output between 1,200 and 1,500 tons, from a single panel.

The concentration of work thus effected would enable all the coal in a panel to be taken out before much heating took place in the waste. Of course, the coal could be loaded up into the waste to a certain extent, the bottom of the gob being kept open to carry off the heat generated in the gob.
the chain pillars, in the headings, should be pulled as the work proceeds. In case trouble develops, however, the narrow openings, in the 95-ft. barrier pillars, will afford ample opportunity for the building of good airtight stop-

pings sealing off the district.

By making these stoppings sufficiently strong to withstand the pressure of the water, any panel or district could be flooded, if this became necessary. If a district is simply sealed off the usual pipes should be built into the stoppings for drainage and for testing the condition of the air within.

The method I have described, furnishes a means by which the gob-heating problem can be successfully handled. As the development of this system proceeds, the more newly turned branch entries can be used for haulage roads and airways, while pulling the barrier and chain pillars of the cross-entries. With the complete extraction of all the coal in each panel, and allowing for a 20 per cent loss on the barrier and chain pillars, this method should net a 95 per cent extraction of the seam.

Mt. Harris, Colo. Thomas Allen.

Making Americans

Illiterate Americans harder to manage than foreigners—Intimidation of for-

eigners by American leaders—Votes in meetings no criterion—New stand-

ard of Immigration needed.

Reading the excellent article of S. D. Hainley, Coal Age, Apr. 15, p. 619, I am reminded of numerous ex-

periences of my own in the coal fields of Pennsylvania, West Virginia and Kentucky.

While I am in hearty accord with every effort that should be made to edu-

cate the foreigner, in regard to his dilations to the nation, yet my ex-

perience has convinced me that the illiterate American is a harder subject to man-

age than the average foreigner, whom I have found more thirsty, energetic and religiously inclined than the igno-

rant American.

In practically every instance of misery standing with the men, I have found the foreigner always willing to do the right thing, except in cases where he has been intimidated by leaders, who are usually American born. It is these leaders who control the situ-

ation and it is their action that is re-

sponsible for the attitude of foreign mine workers. It is not the money, but the methods adopted that are the true questions of what they assume and believe to be to their interests as workers.

It is a common occurrence for a meet-

ing composed of a majority of foreign miners to be ruled by one or more indi-

viduals acting as their leaders. The votes taken at such a meeting are not the cri-

terion of the real feeling of the men, who are misled and blinded by the rep-

resentation of these leaders.

Taking everything into consideration, I believe it is going too far to expect every man entering our country to be able to read and write the English lan-

guage. This opinion is strengthened when we consider the hundreds of thousands American-born workers, who are illiterate and about whom we ex-

hibit less concern than the foreigner who migrates to our shores. I am speaking now educationally.

In my judgment, a far better standard on which to base our immigration laws would be one based on a higher moral and physical footing. The moral attribute, in a man's character, stands for more than his intellectual attain-

ments when we are striving for citi-

zenship and national ideals. Proceed-

ing on this plan, there will be little doubt but that the educational training required will follow.


Effect of Storage on the Heating Value of Coal

KINDLY permit me to ask a ques-

tion that, at the present time, has a peculiar interest. It relates to the storing of coal during periods when the production exceeds the demand. There has been a well defined prejudice against the use of storage coal, the claim being that the heating value has been impaired and that the coal does not burn as freely as when it is freshly mined.

The present state of the coal industry must impress everyone with the many advantages to be gained by storing coal. Not only is it true that the means of affording miners more steady work, during the dull season when trade is slack and the market demand low; but it would tide over such periods of de-

pression when industrial disputes have closed the mines and the supply of coal is limited.

With these thoughts in mind, I want to ask the question: If coal is pur-

chased and kept in storage for one year prior to its being used does it possess the same heating value as freshly mined coal? In other words, does coal depreciate in heating value and to what extent? Can a furnaces be worked as easily with old coal as with coal fresh from the mine?

New York City.

W. L. Jacobson.

The question of coal storage is, in-

deed, an interesting one at the present time. A large public is brought face to face with a condition that will be appalling if continued but a few weeks longer. As pointed out in this inquiry, the storage of large quantities of coal would have the ad-

vantage of keeping the mines running more regularly during a slack market, or when the supply of cars is wanting. It would eliminate one of the chief hindrances in the work of the miner, by giving him fairly constant employ-

ment. It would help to stabilize the in-

dustry, in the matter of the price paid by the consumer, and avoid the fluctua-

tion that is common to the present sys-

tem. With the guarantee of fairly steady work, the coal miner would not have the excuse he now offers for dem-

anding higher wages, and the present high price of fuel would more quickly become normal.

Referring to the question asked by the inquirer, it can be stated that the heating value of coal that is properly stored and protected to the same ex-

tent as is generally believed. Much depends on the size of the coal and the manner of piling. These factors are more important than the matter of ventilating the pile, which has often been urged as a necessary requirement, and can be overcome by proper glazing and spontaneous combustion.

The result of the experiments made along this line, by the Federal Bureau of Mines, as well as work of a similar nature undertaken by the University of Illinois, shows that the heating value of coal that is properly stored, does not ma-

terially decrease.

Attention has been drawn to the need of eliminating from the coal to be stored, the smaller sizes, including fine coal and slack. It is also needful to prevent the segregation of coal of different sizes, as invariably happens when the coal is dumped at the top of a conical pile. The larger sizes then roll down the sides of the pile, leaving the fine coal at the top.

In order to avoid this condition, the coal should be deposited in uniform layers over the entire area. There is less difficulty of fractional when it is stored under cover, but this is not al-

ways possible or practicable.

The prejudice prevailing more or less widely in respect to the use of stored coal arises largely from one or two sources; namely, the improper piling of the coal and the mixture of refuse gathered from the floor of the pile, in replacing the coal. Naturally, there is a greater loss in the storage of the softer and more friable coal, than occurs in the storage of anthracite and the harder grades of bituminous coal.

Little trouble is experienced in the storage of anthracite, owing to a less Inquiries Of General Interest

Size and Piling of Coal More Important Than Ventilat-

ing the Pile—Experience Proves Heating Value Not Materially Impaired—Prejudice Due to Various Causes

August 17, 1922
tendency to slack; and there is not the same danger from overheating in the pile and spontaneous combustion resulting therefrom. Coal containing sulphur (pyrites) is more subject to overheating and firing, by reason of the oxidation of the sulphur. For these reasons, all coals are not stored with the same degree of success; the softer and inferior grades requiring to be watched more closely than coal of better quality and harder.

When coal is to be stored a large level area should be selected and prepared by removing all refuse and vegetation from the surface. For a permanent storage plant, nothing is better than a concrete floor. Large storage bins, if properly erected, will greatly assist the reclaiming of stored coal. In any event, every precaution must be taken to reduce the breakage of coal in handling and eliminate its rough use of any kind.

Some difference of opinion exists in regard to the ventilating of coal piles. If this is done, however, sufficient air must penetrate the pile to carry off the heat generated. The introduction of a small amount of air only gives rise to oxidation, while not reducing the amount of heat that results.

Consequently, better results will often be obtained by excluding the air and moisture as far as possible. The floor of the pile should be well drained; but tiles, for that purpose, should not be laid beneath the pile, as that would give opportunity for the entry of air to the center of the pile. Every storage pile should be closely watched for the first evidence of heating, and space should be available for the removing of such portions of the pile before the trouble increases.

It should be stated, in closing, that stored coal loses some of its coking qualities and has not the same value for making gas. In storage, the coal loses some of its gas and, in firing, needs to be spread in thinner layers over the firebed. At the same time, its heating value, depending largely on the fixed carbon, is not depreciated.

**Examination Questions Answered**

**Miscellaneous Questions**

(Answered by Request)

**Question**—In a mine giving off 2,250 cu. ft. of marsh gas (CH,) per minute, the volume of air entering the mine being 70,000 cu. ft. per min., what is the percentage of gas in the air current at the outlet?

**Answer**—The total volume of air and gas, at the outlet, in this case, is 72,250 cu. ft. per min. The percentage of gas in this current is, therefore, 

\[
\frac{2,250 \times 100}{72,250} = 3.11\text{ per cent.}
\]

**Question**—What are the duties and qualifications of a shotfirer?

**Answer**—The duties of a shotfirer are determined largely by the company who employs him. In some cases, the shotfirer is charged with the duty of examining, charging and firing all shots prepared by the miners that are, in his judgment, safe. At other times, the miners not only drill their own holes, but charge and tamp them ready for the firing. But, in such cases, the shotfirer must examine every hole before it is charged by the miner. After the men have left the mine, it is the duty of the shotfirer to make his rounds and fire the shot in regular order, starting on the end of the air and proceeding against the air current.

The safest practice, however, is to make the shotfirer responsible for the entire work, locating and drilling all holes, and then charging, tamping and firing them, after the men have left the mine. In that case, the work of the miner is limited to loading the coal into the cars ready to be hauled out of the mine. In other words, the miner becomes a loader only and is not permitted to perform any of the work of blasting the coal.

The qualifications of a good shotfirer are the result of the necessary knowledge, experience and judgment that will enable him to break down the coal in the safest and most economical manner possible. In other words, he must be able to produce the largest amount of coal, with the least weight of powder consumed, and in the best marketable condition. He must be an active, industrious man, cautious and not given to taking chances.

**Question**—Blowout shots: (a) Under what conditions may a blowout shot take place? (b) What danger may arise from the same?

**Answer**—(a) A blowout shot may result from the charge of powder being improperly located or because the shot has not been properly mined or sidetrack, making the line of least resistance correspond more or less closely to the axis of the hole. Again, the hole may be overcharged, improperly tamped, or have too large a diameter; or different grades of powder may have been used in the same hole.

(b) A blowout shot always projects a large volume of flame from the mouth of the hole. If there is any dust accumulated in the place, this is blown into the air by the force of the shot and will probably be ignited by the flame of the burning powder and produce a local explosion of dust, which may or may not be extended throughout the mine, depending on the conditions existing in the workings.

**Question**—Describe how you would timber an entry where the roof alone needs support.

**Answer**—Assuming a fairly good slate or shale roof where the coal is hard, it is common practice to support the roof, at short intervals of, say five or six feet, with good crossbars, set in hitches cut in the top of the coal as shown in Fig. 1. When in position the bars are firmly wedged at each end. Where the roof is more frail and liable to scale off and fail between the crossbars, some form of lagging must be used above the bars.

Where the coal is less hard, the crossbars must be supported on legs, on one or both sides of the entry. If the hardness of the coal will permit, short legs set in hitches cut in the rib, as shown on the left in Fig. 2, are used to support the bars. Otherwise, the long legs, shown on the right of the figure, must be used. At times, in order to avoid the being knocked out by a derailed car, these legs are set back into the rib.

**Question**—Make a sketch of a set of timbers, showing how you would wedge them and give reasons for your method.

**Answer**—As shown in Fig. 2, in the last question, two wedges should be driven between the collar and the roof, near the top of each leg. The effect of this is to transfer the weight from the center to each side post and not permit it to bear on the center of the collar.

**Question**—What is the weight, in tons, of the air constituting the ventilating current of a mine when the combined volume of the several currents or splits is 2,240,000 cu. ft.?

**Answer**—We understand this question as referring to the weight of the entire air volume; therefore, to determine its weight, it is necessary, however, to know both the temperature of the air and the barometric pressure. Assuming a temperature of 60 deg. F. and a barometer of 30 in., the weight of a cubic foot of air is 0.0766 lb. The weight of the given volume, in short tons, is then 

\[
\frac{2,240,000 \times 0.0766}{2,000} = 85.8\text{ tons.}
\]
Is Western Kentucky Lolling in a Bed of Wealth?

Many Coal Producers Reap Unheard-of Profits—One Lucky Striker Pays $1,500 for "Pot Hole" and Gets $2,200 for Four Carloads—But Car Shortages and Few Contracts Restrict Earnings in Feast-or-Famine Field

BY A. W. WILLIAMS
Louisville, Ky.

T

HE EYES of the coal industry have been turned on western Kentucky during the past few weeks, and few questions are heard oftener than the one concerning "enormous profits." However, giving the devil his due, it is necessary to look at both sides of the situation impartially. Some western Kentucky operators are making big money. Some are doing well. Some have been barel "skating along."

Western Kentucky for many years has been a field that failed to make much progress or any large amount of money. While West Virginia and Pennsylvania operators were looking upon us as "coal barons," western Kentucky operators were having a hard time in operating their mines and getting interest out of their investment. For years western Kentucky had a quite fair demand for domestic sizes in the Louisville, St. Louis, Nashville, Memphis and some Southern markets. Freight rates were against her in almost every port of the Ohio River. There was cheap coal in Illinois and Indiana, Ohio, Alabama, Tennessee and eastern Kentucky, and production was cheaper as a result of western Kentucky being a pit-mining section, while many other fields were using drift methods.

Old timers tell interesting stories of how they tipped scowlings into cars free of charge to railroads for use in building fills and grades. There was no demand to speak of for mine-run other than a little railroad demand. In producing lump coal at a low price in order to compete with other fields it was necessary to give away or bank the screenings. There were no big industrial cities that could take western Kentucky fuel profitably at a price that would allow the operators to make money. The fuel was consistently "knocked" by competitors because some of it was poorly mined and of poor quality. However, most of western Kentucky's fuel is of good quality—a little high in sulphur, a little high in ash, but also quite high in heat units.

The operators finally pulled themselves up by their bootstraps, so to speak. They put in a first-class traffic department and ended up in charge of a competent lawyer. They worked for equitable rates to the North, West and South, and were signal fortunate in improving their condition. During the war period Pittsburgh coal dropped out of the Ohio Valley and Southern markets as Ohio River transportation methods fell into the discard, and war activities took the entire production of the Pittsburgh district. Western Kentucky coal then moved into a wider area and made good.

Following the war there were periods of feast and famine. In 1920 the field made some money. It was not amenable to the efforts to enforce fair prices, as Federal Judge Evans, of the U. S. District Court for Western Kentucky, at Louisville, believed in the laws of supply and demand, and held that any effort to force a so-called fair price was unconstitutional. Western Kentucky asked her own prices and obtained them.

In 1921 between higher production costs and trouble in meeting competition some mines lost part of the profits they made in 1920. Then the eastern Kentucky sections, which were non-union, cut back to the 1917 wage scale, and offered western Kentucky a brand of competition that it was impossible to meet profitably, except in a few cases where freight rates favored.

However, back in the spring of 1920, when the old wage agreements had been up for renewal with the unions operating in western Kentucky, the operators were foresighted enough to hold out for a protecting clause when the strike came off. The strike lasted a short time, and finally an agreement was reached whereby the same general wage scale was offered as that in effect in Indiana, Illinois and elsewhere, but with one amendment concerning the question of returning to work. The so-called "strike clause," under which the workers would not go out on strike if the mine were in need of additional coal strike, provided the operators paid the peak wage, as called for in the contract, and continued paying this wage until the national strike was settled and a new general basis was arranged for mine labor.

The western Kentucky operators realized that a national strike was inevitable in 1922, when it was a foregone conclusion that the producers of the nation's coal endeavor to lower the wage scale which was forced upon the industry by war-time demand and conditions in the labor markets.

The consequence of the good work of the western Kentucky operators was that when the national strike came off there was no labor trouble in the field. However, Mr. Hoover in distributing that as a return basis of $3.50 a ton for all fields was equitable and fair. He told the operators to put the cart before the horse in the judgment of western Kentucky. Such a basis if fair for eastern Kentucky and West Virginia, operating on a 1917 wage-scale basis, was held to be unfair for western Kentucky, operating on the peak scale. Western Kentucky offered to accept $4.25 mine-run basis, but was turned down. That maneuver left the field under no obligation to the first Hoover conference.

SUPPLY AND DEMAND ONLY REAL PRICE BASIS

As demand for industrial and rail fuel increased and stocks in hands of public utilities, railroads, industrial concerns, etc., were reduced, prices began climbing. The old laws of supply and demand came into their own. Western Kentucky holds that there is no real price basis other than supply and demand, and any other effort to shape prices causes a fictitious market.

The operators proceeded to mine all the coal they could and sell it for the top price offered. Mine disability, some shortage of labor in a field that has not had opportunity to operate at capacity, some car shortage caused through poor service of equipment, and the fact that the physical capacity of the roads was not equal to the capacity of the mines prevented full-time production. However, prices hung at between $3 and $4 a ton until the walkout of shopmen resulted in severe car shortage, not only in the western Kentucky union field but in the non-union fields elsewhere.

Districts which had never purchased a pound of coal in western Kentucky began to demand it. Coal became coal, and there was no agreement concerning size, prices being the same for any size. Long freight hauls, which under ordinary conditions would prevent purchase of western Kentucky coal, were forgotten. In June many consumers held off and refused to buy while waiting for the freight-rate reductions of July 1, which resulted in a rush of buying after that date, along with the rail strike.

Why should western Kentucky coal sell at $3.50 a ton in districts where she had not had any previous business and no prospects of future business, if this same coal could be sold for $7 or $11 a ton? Seven and eleven were always triumphant numbers.

Buyers representing jobbers were active in the fields, searching for coal that could be supplied on demand or on announced tonnage. Buyers of concern of public utilities were in the fields, from the industrial plants and from every line of steam consumption. Retailers for a time were interested, but didn't buy much coal, figuring that if the strike broke right, they could obtain it cheaper later on.

As prices advanced jobbers demanded a larger fee for handling coal. In taking the financing of $7 to $11 coal the
jobber had to carry big credits, and at 15c. a ton couldn't get his interest out of investment. He demanded up to 50c. a ton and got it.

From July 1 forward car supply has been one of the most uncertain of all uncertain things. On one day there are no cars at many terminals. The next day there may be a supply of 33 per cent, or 50 per cent. Railroad figures showing cars asked and cars supplied don't always tell a true story. Operators assert that they haven't received nearly the percentage of cars asked. Many cars loaded with coal were days and even weeks in getting away from the mines, due to shortage of engines and to congestion in terminals. Other connecting roads were unable to handle cars turned over to them or to get empty cars back to the originating lines.

Getting down to cases, any mine producing full capacity and selling at $7 to $11 a ton would clean up. A mine with a daily capacity of 3,000 tons, produced at an average of $2 a ton and sold at an average of $5 a ton, would coin $18,000 a day, or something over a million dollars in sixty working days. However, there are not many 3,000-ton capacity mines or companies in western Kentucky and, unfortunately none of them has been able to run at capacity, or even 50 per cent of capacity as an average.

Production costs on full time operation, it is alleged, could be held at $1.90 or under even on the peak wage scale, although some operators argue that the lump costs is $2.25 a ton and that it runs up to around $2.50 a ton on only part-time operation. However, anything over $2@$2.25 a ton appears mythical, in view of the fact much lower prices were quoted in the spring, when mines were not busy.

Take, for instance, the week of Feb. 13—prices quoted at that time through jobbers showed lump, $2.25@$2.75; mine-run, $1.90@$2.00; slack, $1.60@$1.75. mines were charging the early spring sold at under a dollar, with no appreciable increase in lump. Operators asserted that they were losing money, but were forced to run to hold their trade and to take care of contracts.

PLAYING FAIR WITH RAILROADS INSURES CAR SUPPLY

Contracts—another feature overlooked by those who assert that western Kentucky is cleaning up—have been taking coal from more than one mine at prices ranging from $2.25 to $2.75 a ton. This accounts for a part of the small production that has been available in the market during the last few weeks and left less coal for the open market than the early figures show.

One operator without business last season was treated white by the Illinois Central R. R., which took his production at $2.60 a ton. Just recently the road is reported to have offered to take his production at $2.75 a ton, and the operator played fair and accepted the proposition at a time when he could have sold his production on the open market for much a higher figure. However, he is getting car supply.

So there have been all sorts of obstacles to getting rich quick. The big operators are not as likely to have been making big money as the "pot hole" operators. One small mine was sold a few months ago for $1,500, it being little more than an opening in the side of a hill. On Saturday, July 25, the operator offered $2,200 for the four-ton cars he had loaded, the average being $11 a ton. In buying the mine he took a chance, played his hunch, and made money.

Under ordinary conditions he would merely have a hole in the ground. As he couldn't hope to compete with the large mines, with fine equipment for producing at a low cost, his mine would be idle and he would be paying taxes on a hopeless investment. As it was his production cost for the four cars was much higher than at well-equipped mines, yet those four cars paid for the whole mine.

Railroads have been taking a great deal of the production in western Kentucky, paying all the way from $2.60 to $3.50 a ton where purchased by the line on which the mine is located. Outside railroads, such as the Rock Island, have not taken the market. The advantage in treating the originating line right lies in car supply. There have been some contracts at $2.25@$2.50, and in some cases agreements have been reached whereby the price was advanced and deliveries continued.

Throughout the period of high prices car supply on the Illinois Central R. R. to western Kentucky mines has been fair, running up to around 75 per cent most of the time. This would indicate that mines which have been fortunate enough to be located on the Illinois Central, are the ones that have been cleaning up. Of course the Illinois Central has been drawing the bulk of its tonnage from these mines, reducing the available supply for open market. However, on the Henderson and Ohio & Northern divisions of the Louisville & Nashville R. R., car supply has been rather steadily under 50 per cent average, running a little better than that on the Henderson perhaps, and down to 30 per cent on the Ohio & Northern.

Some production is expected to resume in two weeks without moving, Madisonville, Ky., reporting coal loaded on July 11 finally moving out on July 24. This is in the "interesting if true" category.

It is held that the potential capacity of the western Kentucky fields is around 1,900 cars daily. However, the railroads can't handle that amount of tonnage. In a recent big western auction you are bested prices we fuel in competition would show about 1,330 cars a day, although, generally speaking, operators assert that railroad capacity is around 1,500 cars a day. It is said that the Illinois Central R. R. on Tuesday, July 25, handled 878 cars of coal from its western Kentucky mines, but this cannot be verified. Total production of the field probably has been around 750 to 1,000 cars a day, according to some well-posted coal men.

FEEL ENTITLED TO CLEAN UP IF ABLE TO

Whether western Kentucky is cleaning up is a matter of conjecture. The field frankly enough feels it is entitled to do so if it can get away with it. As one coal man aptly expressed it: "There ain't no one that ain't going to sell when ever he is selling for all he can git for it." Another coal man remarked: "There isn't anyone that is going to buy our coal from us unless they can get better coal for less money from us than from anybody else. They are not going to pay us any more than they have to pay in some other field. They are not going to pay a higher freight rate to get our coal under normal conditions than they will pay to get a lower grade coal from another field. On emergency business if you are having a hard time getting it elsewhere, you can turn another crack at, it is the price is the governing commodity in ordinary fuel coal. If we can meet the price of the other field we can't always meet the freight rate. A lot of good it would do us to take care of a lot of buyers who have never been in the field before and who never will be in it again, merely for the hopes of getting some of their business when conditions round on the railroads that way.

"The western Kentucky coal man is being blamed for a lot of things over which he has no control. He is not given credit for being an intelligent business man. The old talk of the orphans and cold tenements is bobbing up, but it is still a long time before cold weather, and all immediate production is emergency production, which wouldn't go to the retail 30 cents. Coal is in a position in which it is going to reduce prices that the mine operator will pay for his blasting powder, for his picks, shovels, mine cars, etc. The cost is being paid by the utilities, which do a lot of gorging whenever they have the opportunity; by the railroads, by big industries, etc., and of course the consumer has to pay a little of the cost himself. However, the coal game is a deal of interest there is nothing in the world.

The general motto has been: "Get it while the getting is good." The coal trade in western Kentucky is generally described as one in which either a feast or a famine prevails. The leftovers from the feast take care of the periods of famine; otherwise most companies would be broke.

THE AMERICAN FEDERATION OF LABOR has discontinued its mining department which had been maintained at the Washington headquarters for special consideration of mining matters. James Lord, who has been president of the department, has taken the field as a labor organizer and will operate in the Pacific Coast region. It is said the abolition of the department was due to a large extent to differences which have arisen between Samuel Gompers, president of the American Federation of Labor and John L. Lewis, president of the United Mine Workers.
Washington Officials View Outcome at Cleveland As Makeshift Truce—Public the Loser

BY PAUL WOOTON
Washington Correspondent of Coal Age

EVENTS at Cleveland have progressed to the point where they foreshadow the beginning of the end, observers in Washington believe. The agreement promises to bear enough semblance to a national arrangement to save Mr. Lewis’ face. It is regarded here, however, as very evident that Mr. Lewis has lost his fight for a national agreement. It was regarded as a farce to follow out the old plan of two operators and two miners from each state where the votes from Ohio represented practically all of the tonnage covered by the agreement they proposed.

Federal officials are inclined to regard the result as something of a draw. The strength of the union has been clearly demonstrated. The mine workers have successfully resisted a reduction in their pay. The check-off will continue and working conditions remain unchanged. The operators at least have broken up the central competitive field. The prospects are that the union will lose the weakly-organized districts. No one of the fundamentalills of the coal industry has been remedied. Every issue involved in this strike must be fought out again. A truce now appears to be a certainty, but it will be a make-shift one.

The public is more concerned with the net effect of the strike. There has been a great industrial set-back. There has been widespread unemployment. The nation’s fuel bill for 1922 will be $300,000,000 more than it was in 1921. One-half of one per cent of the population has taken an advantage of its freedom to dominate the supply of a necessity of life. The interests of 99.5 per cent of the population have been affected adversely. There has been no humbling of the organization responsible. No industrial disciplining has resulted. Nothing of permanent value to the public has come from the strike.

While there is no doubt that many operators will not hold out long against the restoration of the 1920 wage scale, it is recognized that should Pittsburgh or any of the other individual districts refuse to become parties to the Lewis agreement, they must make up their minds to take severe punishment. They are certain to get it. With many union men working, strike benefits soon could be paid which would enable the men in those districts to hold out longer. It would be particularly difficult to reduce wages when even the non-union fields are pushing wages to the 1920 level.

As more and more is learned of the situation, it is being revealed that the United Mine Workers were on the ragged edge when they induced the President to call the conference in Washington. They appealed for arbitration as a last refuge. They knew that arbitration meant a reduction in the wage scale. But before the conferences had progressed very far, the railroad shop crafts went on strike and demonstrated unexpected strength.

This change in the situation put a new face on the whole matter. Mr. Lewis was quick to take full advantage of it, but he over-reached himself. He thought the operators would be forced to push themselves through the needle’s eye that he held up for them at Cleveland. In that effort there is evidence that he was bolstered and encouraged by coal operators in eastern Ohio. The response to his invitation was a great disappointment but the real need for a national agreement had passed so Mr. Lewis has been willing to negotiate with eight per cent of the country’s normal tonnage. His previous declarations that he would deal only with the bulk of the tonnage were abandoned without explanation.

One of the big factors influencing operators to get back to work is the fear that they will lose markets permanently to the non-union districts which have a better coal. Reports to Washington indicate that many industries, now that they have had a taste of high-grade coal, intend to use it permanently. Other companies fear the loss of business.

Interference of Priority with Contracts to Be Limited Except in Emergency

THE Federal Fuel Committee is giving serious attention to the problem of transporting coal supplies from Kentucky and the Virginias up the Great Lakes before navigation is suspended. It has been agreed tentatively that at present $25,000 tons per week will be allotted to this service, but this figure may be changed at any time as the daily coal production and movement varies.

The problem of the distribution of car supply between mines engaged in the shipment of coal classified under No. 1 priority and those shipping coal to public utilities and other consignees under previously-made contracts continues to demand the attention of the Fuel Committee according to a statement issued on Aug. 10. Though the committee desires to preserve the integrity of contracts as far as possible, its feeling is that general contracts must in a measure take secondary position to the meeting of particularly urgent coal necessities created under an exigency which has arisen since such contracts were made.

Present plans of the Fuel Distribution Committee are that orders for Class No. 1 coal shall be so distributed as not to disturb seriously the proper distribution of cars. All orders for coal considered to be within that classification will go to the district committees who will apportion the orders among the mines in their districts. In such apportioning of orders it is expected that contracts outside the area will be considered. In this connection, it is pointed out that many operators, having in mind the maintenance of their normal business relations, would prefer to devote their energies to filling their regular contracts.

The Fuel Committee is seeking a practical method of insuring that coal ordered through a retail dealer for the use of public utilities or hospitals will not be diverted to other channels. Where it is manifest that an order for coal comes
within a particular classification, no certification to the railroad will be necessary to obtain priority under order No. 23, of the Interstate Commerce Commission.

Where, however, the consignee of a shipment does not show the character of the coal and its uses it will be necessary for the shipper to obtain a certificate from the State Fuel Administrator that the coal is to be used in Class 2 priority, and a certificate should accompany the consignee's order to the mine. This will obviate taking matters of this kind to the Washington Central Committee, as it will give the mine operator the information needed to enable him to obtain from the railroad, cars to which he is entitled in making shipments of priority coal.

The Surveyor of the Virginia, which has been doing considerable amount of business in the Virginia, has been diverted to the Virginian Ry. Shipments of coal from southeastern Kentucky are being retarded to some extent by conditions at Corbin, Ky., where more than 300 railway mechanical employees are said to have left their employment because of threats of violence, but in the western Kentucky field coal production has been accelerated by a 100 per cent car supply.

The Department of Justice has rendered an opinion to the effect that priority orders for coal issued under Classification No. 1 of the Interstate Commerce Commission, have preference over other orders which operators may have on their books.

Washington, Aug. 12—After checking up ship charters, the National Merchant Marine Association estimates that imports of British coal during the next month will approximate 1,000,000 tons. Practically half of that amount will be carried in vessels flying the American flag. The rush to charter coal ships is welcomed by the Merchant Marine Association for the effect it is having on the idle fleet of the United States Shipping Board. In the course of its study of the situation, the Association found that 2,000,000 tons a month is the absolute limit of British exports at this time. The capacity was greater during the war, but much of the coal handling machinery at tidewater no longer is serviceable. Since Great Britain is not likely to neglect its regular export coal trade to look after the temporary needs of the American market, the Merchant Marine Association reaches the conclusion that exports from England to the United States are not likely to exceed 1,000,000 tons a month. Secretary Hoover states that the cancellations of orders placed in Great Britain, which have been mentioned in the press, only applied to orders which the British could not fill.

Fuel Distributor Spencer states that wholesalers are being allowed to charge the commissions provided under Dr. Garfield's regulations. This commission is not allowed, however, when railroad coal is purchased through a sales agency, Mr. Spencer stated. While weak spots have developed in the supply of coal for public utilities, Mr. Spencer states that谈恋爱 generally not filled by the State

Holbrook, of Bureau of Mines, New Head of School of Mines at Penn State

E. A. HOLBROOK, the assistant director of the United States Bureau of Mines, has accepted an appointment as dean of the School of Mines of Pennsylvania State College.

Mr. Holbrook frankly admits that he is leaving the government service with reluctance. He says that the work has been particularly congenial and that the opportunity offered to do valuable public service never was greater. He believes, however, that he has made all the contribution to the public service that he can afford and has accepted this new position because of the very material salary difference.

The resignation of Mr. Holbrook has been called to the attention of the congressional committees studying reclassification of government salaries and cited as an example of the loss of highly necessary technical skill which absolutely cannot be replaced at present salaries.

The salary of the assistant director of the Bureau of Mines has stood still for ten years. Formerly, salaries in educational institutions were on about the same level for comparable positions in the federal service. During the period that federal salaries have remained the same, college salaries have more than doubled.

Priorities Reduce Steel-Mill Operations

UNDER priority orders as well as under the system of car distribution now in effect steel mills in the Wheeling District and in the neighboring states of Ohio and Pennsylvania are suffering from a fuel shortage which has resulted either in restricted operations or in a complete suspension. It is next to impossible for many of the mills to obtain fuel owing to the preference given the railroads and utilities. Other industries are also suffering from a lack of fuel, but the shortage is making itself felt to a greater extent in the steel industry than in others where there was not as much activity. Steel mills had already been adversely affected by the rail strike but with their fuel cut off and with open-tops being given to the mines to the exclusion of other industries, steel mills have found it impossible to transport their products to market.
Illinois Operators Determinedly Hold Out at Chicago When Lewis Refuses Arbitration

BY E. W. DAVIDSON

ARBITRATION was the one important issue which prevented President Lewis of the United Mine Workers of America from drawing Illinois into his Cleveland conference last week. For four days from Tuesday until Friday, the operators of Illinois remained in session at Chicago, burning up the telephone and telegraph wires to all points of the compass making suggestions and proposals that would have opened the way to their taking part in the Cleveland conference—a basis of straight-out arbitration. That state even sent a delegation composed of Andrew J. Maloney, J. W. Needham and H. C. Perry to Toledo to meet W. A. Glasgow, attorney for the miners, but it refused to approach Cleveland unless arbitration was agreed to. This Lewis refused. So Friday at noon the operators adjourned sine die and went home saying Lewis might sign up a string of operators in some sections but that their job was to keep Illinois men out of it.

Before the Illinois men adjourned, they cast a heavy bomb into the labor camp by publishing a letter from President Harding endorsing their position. All week long they offered to deal with Lewis, sending the miners back to work at the 1920 wages and conditions provided he would agree to arbitration. He failed to practically Lewis made out. They wired Frank Farrington, Illinois miners' president, who was talking at the Cleveland conference, that their previous one-state offer to him to reopen the mines at the old scale for the winter pending arbitration still held. It was a week of determined refusal to surrender. Illinois said it would not go to Cleveland to deal with Lewis on his terms and it didn't.

During these days of the split of the operators there was a strong sentiment in favor of capitulation. There were operators who said there was no use kicking any longer against the price, and that the attainable price of coal this fall and winter would justify Illinois in surrendering. But stern stuff prevailed. The majority clung to the belief that if Lewis would not agree to arbitration when all his other points were conceded to April 1, 1923, then he would be hanging himself if he were allowed to go ahead and make a wage scale with as many operators as he could line up.

"It's a fight to a showdown," was the final word of W. K. Kavanaugh, president of the 5th and 9th District Operators' Association as he started for his home in St. Louis at the end of the week.

"There is nothing we honestly could to produce a strike settlement out of this occasion," said an operators' official. "Having been in great doubt as to just exactly what Lewis was willing to do since he was trying to reach us through outside parties—and being unable to find out any other way, we sent our delegation of three to Toledo to meet Mr. Glasgow and find out. We found out Mr. Lewis had nothing to offer that we could accept. Mr. Lewis cannot say hereafter that we did not give him very opportunity to meet us on the fair basis we proposed."

There is no doubt but that the action of Alfred M. Ogle, president of the National Coal Association helped to strengthen the unity of the Illinois men against Lewis' conference basis. When it became known that Lewis had met Ogle in Philadelphia previous to the Cleveland conference, and that Ogle had tried his best to bring Illinois and Indiana into the meeting, the feeling against Ogle in Illinois was bitter. There is much discussion about withdrawals of western groups from the National, as a result.

All week long there were preparations being made at many of the Illinois mines clearing the works for production. Boilers were fired, mules were taken from pastures down shafts and pumps and fans were speeded up. Officially the operators denied that this meant any weakening on their part. Certain owners believed they might have opportunity to dig coal all of a sudden, and they were getting ready; that was all. Union officials throughout the state prophesied they would all be back at work soon.

"If they are," commented an operator at the close of the week in Chicago, "then it will be because we have made a separate state agreement with Farrington. That, it seems to me now, is the most likely outcome of this whole case."

The letter of President Harding to the Illinois operators, addressed to Dr. F. C. Honnold, written Tuesday, Aug. 8, follows:

"I am writing to make acknowledgement of your telegram of Aug. 4, in which you convey to me the proposition made to the mine workers in the State of Illinois. I am frank to say I do not see how your workmen can refuse such a proposal. If terms can not be settled on so liberal an offer it is manifest that the mining situation is very badly tied up, and the government must find for itself some way of extrication."

The final message to President Lewis on Friday noon was this:

"The operators of the State of Illinois have today adjourned their conference. They are willing to reconvene to consider any proposal of the miners of the State of Illinois that carries with it a final and unconditional the most liberal arbitration proposal recently made by the President of the United States, carrying old scale of wages and conditions. We regret exceedingly your arbitrary position and your refusal to consider any plan except the unfair and unreasonable one you have offered. The people of the United States must now draw their own conclusions and we are willing to have our hands cast in the ballot box."

The telegram to Farrington renewing the Illinois offer to reopen the mines at the old wages and fix a new scale and set of working conditions by unbiased arbitration was:

"The operators of the state of Illinois have adjourned their conference today subject to the call of the three presidents. They are prepared to reconvene at any time to discuss with the miners of Illinois the proposition of resumption of mining along the lines heretofore submitted to you as their president. We will not attend the conference at Cleveland as Mr. Lewis has refused to discuss the propositions submitted by the President of the United States, and that provided arbitration points on which we will be unable to agree.

"We ask you again to carry out your contract with us to provide a contract to settle the mining scale in Illinois, and we again renew our proposition to open our mines at once on the old scale and conditions with an agreed submission of all disputed points to a board of arbitration composed of fair-minded citizens of the state of Illinois who are not in any way connected with the coal industry, their findings to be accepted without reservation by both sides and to be effective April 1, 1923."

The Illinois case as it stood at the end of the week is set forth to the public thus: "The adjournment of the meeting of Illinois operators who have been constantly in session here throughout the last four days, and their repeated refusal to attend the present meeting at Cleveland, Ohio, which was called by Mr. Lewis, is due to the following facts. The question involved is the right of the public to have a voice, through arbitration in the determination of industrial disputes, thereby preventing the abusive use of power by labor leaders."

2. The four state conference method of determining wage scales and working agreements in the coal industry has proven its ineffectiveness, its lack of fairness as a method of determining scale of wages and working conditions has been challenged by the courts as being an illegal and improper procedure.

3. The mine workers' plan of a national conference of operators and miners is open to the same objections; and in addition thereto would practically guarantee a country-wide monopoly of mine labor such as that now prevailing in the state of Illinois.

4. The Illinois operators have submitted to the mine workers several very fair proposals for a settlement. The operators have given the most careful and thorough consideration and reply to every proposal by the mine workers, or submitted by public officials or public spirited citizens.
They have accepted without reservation the proposal of the President of the United States and have continually offered to confer or negotiate, provided that, in the event of failure to agree, there should be public arbitration of disputed points and thereby avoidance of a repetition of the present tie-up. Mr. Lewis has constantly declined every proposal which carries bona fide arbitration of disputed points, and has always refused to meet except after acceptance of his own conditions. Four solid weeks.

"The Illinois operators, after twenty-five years' experience, are convinced that joint collective bargaining such as now prevails in the coal industry, is not only unsatisfactory but inimical alike to the coal miners, to the coal operators and to the coal consuming public, and that for such procedure negotiation supplemented by fair arbitration must be substituted."

"The present meeting in Cleveland is in no sense representative of the coal industry. Operators producing possibly 30,000,000 tons of coal per annum, out of about 500,000,000 for the country and 225,000,000 tons for the former Central Competitive field, are there. The states of Illinois and Indiana, producing more than half of the old Central Competitive field tonnage are practically unrepresented."

"We have renewed our demands that the Illinois mine workers honor their contract obligation to meet us in State conference—and have also renewed our offer of Aug. 4 to re-open the mines on the old wage basis until March 31, 1923, pending negotiation and arbitration of a new wage scale."

Ford's Plan to Run Corbin Shops Fails
L. & N. Says It's "Unthinkable"

HENRY FORD'S efforts, aided by Governor Groesbeck of Michigan, to obtain control of the L. & N. shops at Corbin, Ky., regarded as the key to the coal supply of the Northwest, has so far failed. Governor Morrow of Kentucky, who was understood to be lined up for the Ford proposal, did not come to Louisville for the conference between the L. & N. and Ford's representatives, but went to Corbin, the "railroad neck" between Kentucky coal fields and the Northwest, to investigate rumors of disorder. Mr. Morrow said the Ford proposal would not be accepted by the men.

Several representatives of Mr. Ford held a conference with President Mapother, of the L. & N. last week, after which Mr. Mapother made "cable" telegrams that Mr. Ford be allowed to take over the Corbin shops and operate them with his own men. Mr. Mapother pointed out that Mr. Ford would institute a wage scale which the L. & N. would not maintain when the emergency had passed.

Peabody Predicts Failure of Priority System

"The government's system of priority distribution of coal is bound to fail this fall and winter," F. S. Peabody, chairman of the board of the Peabody Coal Co., told 300 members of the Chicago Association of Commerce last week. "It is to be operated on entirely the wrong basis and will lead to such confusion that the railroads will be hampered rather than helped in distribution."

Mr. Peabody said the Hoover plan thus far has operated to keep coal down to $3.50 where cars are short and to hoist prices out of sight wherever cars are numerous. In L. & N. territory the supply of cars has been much less than even 10 per cent of the mines where the $3.50 price has been prevailing generally, whereas the Illinois Central has been giving nearly 100 per cent car service and the coal that road has hauled to the commercial market was selling at $10@$11 on the day Mr. Peabody spoke.

"We have a mine down on the L. & N.," said Mr. Peabody. "One day recently we were allotted 15 cars. Every single one of the 15 was shipped out on a different priority order. That illustrates what is happening and will continue to happen under the Hoover system. Imagine the tremendous and complicated work of billing and switching and juggling of cars under all the priority orders that will be issued!"

He declared the mines of the country would be working within two weeks and that if they were enabled to work their limit they could produce a billion tons of coal in the next eight months. However, he said railroad service will be so hampered by one thing and another that the country will be able to get just barely enough coal to prevent industrial and domestic distress.

Mr. Peabody freely lambasted the national administration, declaring that governmental delay and interference in the strike situation had delayed a possible settlement by five weeks.

State Prods Williamson Officials—Sheriff Makes a Few Motions

GOVERNOR LEN SMALL of Illinois, under fire at a conference in Chicago late last week with important business organizations, promised he would do something about the Herrin massacre in which 19 non-union workers were killed and 30 wounded June 22 after they had surrendered to a mob which attacked them at a strip mine. He said he would not declare martial law in "Bloody" Williamson County to hasten the administration of justice, however, until he had given the county officials another chance. On Friday the sheriff and county attorney announced they were doing some sleuthing but that no arrests would be made until the September term of the county grand jury. That is all that has happened. Every instigator and participant in the Herrin horror remains as free as he was the day of the slaughter.

At the Chicago conference the governor was urged by the Illinois Manufacturers' Association and the Chicago Association of Commerce to throw troops into the county at once and make a thorough and complete job of gathering evidence and pushing the administration of justice. He was also urged to call a special session of the legislature and recommend that it create a state constabulary. He did not take kindly to the idea.

The public clamor for a special session to repeal the coal miners' qualification act so that non-union men can get into the mines to dig on the Hendricks mines will have been nothing short of a form of hood treatment by the governor. He has done nothing about it and gives no sign of doing anything. Members of the legislature have said they doubted whether a quorum could be assembled because the representatives have already drawn their annual salary of $2,500 for this year and probably nothing would get them back to Springfield this year except extra pay.

Coal Retailers Make Survey of Stocks, Regional Reserves Compared

A survey of the stocks of anthracite and bituminous coal on hand in various sections of the country as of July 8, 1922, has been made by the National Retail Coal Merchants' Association, Philadelphia, the information being collected for the use of Secretary Hoover. Based on consumption during the preceding thirty days, stocks of hard coal ranged from 60 days' supply at Albany to practically nothing in the Middle West, the tonnage tapping off as the result of the supply of coal grew greater. Bituminous coal stocks, on the other hand, were more adequate throughout Ohio, Michigan and other Middle and Central Western states than in the Eastern centers. Exceptions were New York City, with three to four weeks' supply, and New England, with 60 days' stocks.

The Southern Appalachian Operators' Association, in a public statement, has charged the Kentucky-Tennessee Operators' Association with trying to "break up the arrangement brought about by the government to hold down the price of coal," in that the Kentucky-Tennessee operators have made a deal with union officials raising wages $2.50 a day for day workers, 24c. a ton to tonnage men and 20 per cent extra on dead work and yardage. The Southern Appalachian Association reiterated its intention never to deal with the miners' union again.
NEGOTIATIONS between the United Mine Workers and several groups of soft coal operators, in session since Monday, Aug. 7, were brought to a conclusion on Tuesday, Aug. 15, when Lewis abandoned his policy of a four-state contract or nothing and opened the way for individual producers to sit down with the miners.

All through the first week of the negotiations at Cleveland the union fought to gather in a skeleton representation from the old Central Competitive Field, but when the skeleton was erected it refused to stand, for a few of the more prominent of the Ohio operators, although supporting the idea of the interstate contract, refused to sign at the high wage scale demanded by the miners unless they in turn would agree to arbitrate the scale to follow after April 1 next. The conference had sufficient semblance to the real thing to hold back Farrington from delivering the Illinois miners as a district.

Late on Monday, Lewis opened the doors to any and all coal operators in Cleveland to participate in the meeting. On the Thursday previous he had ordered them out of the room, where none were allowed save from the old Central Competitive Field. For a week T. H. Watkins and a group from Central Pennsylvania had been waiting that opportunity. They had reached a tentative understanding with the union that it would give consideration to their plan, adapted from the Crews-Glasgow plan, providing for compulsory investigation and a fact finding commission. Substantial tonnages from other outlying districts and smaller towns, along the route not represented in the conference, were lined up to back Mr. Watkins' proposal. When Mr. Gallagher and Mr. Robbins broke away from the negotiations because they could not force arbitration on the miners, Lewis opened the doors to the others.

AGREEMENT REACHED AFTER MIDNIGHT, MONDAY

On the basis of the tentative plan prepared by T. H. Watkins, this new conference began negotiations at once and by 1 a.m. on Tuesday had reached a temporary agreement. This was referred to the policy committee of the miners on Tuesday morning when the assembled operators also took it under advisement.

Tuesday afternoon the joint conference ratified the agreement and extended an invitation to the operators not present to come out as shown by the dotted line, and the strike in the soft coal fields was considered broken if not ended.

At the end of the first week the situation at Cleveland may be summed up as follows:

The cut and dried program laid out by Lewis and announced from Philadelphia the previous week had been wrecked by delay. The program provided that the Ohio operators, with sufficient tonnage from the other three districts making up the old Central Competitive Field to give semblance to its continuance, were to march up and sign a new four-state contract.

The first delay was caused by the sudden interjection of a substitute plan by Ogle, known as the Crews-Glasgow plan. This stalled the conference on Monday, held it over until Wednesday with no action, and delayed the final settlement until Thursday. On Thursday morning the miners were in a high ferment and the miners and their leaders were there, and it was in the hope that they would decide to come to Cleveland on the terms of the Ogle plan.

The second important delay followed the sudden and determined resistance of certain of the more important eastern Ohio operators to any settlement that did not include arbitration of the next wage scale. The demand was made further on Friday that the miners had understood that no such question would be raised by the producers. President Harding's message to the Illinois operators released on Friday was important in developing this situation. In fact it was this particular matter of arbitration and the division in the ranks of the Ohio producers that finally broke up all hope on the part of the miners for their long cherished desire for an interstate wage agreement.

A day was lost getting the legal aspects straightened out and thus a week passed with no contract, with the miners' delegates becoming impatient and the strength of the operators gaining perceptibly.

As hope of even a skeleton four-state contract was fading, Lewis had in the background a substantial tonnage of outside tonnage assembled in Cleveland ready to make terms with him. The terms they would accept were acceptable to Lewis personally, it seems, but it was essential for him to prepare the ground in advance with his own people before advocating their acceptance.

UNION POLICY DEMANDS INTERSTATE CONTRACT

To grasp the significance of the meetings at Cleveland it is essential to review the events leading up to it. The United Mine Workers have been maintaining their policy of not meeting with the coal operators unless they are permitted to do so through the medium of an interstate conference, that is a conference with the four states comprising the old Central Competitive Field. To this program the miners were finally agreed, and the operators of Illinois and Indiana, willing at first to take up the old form of conference have since been reluctant to engage in such an undertaking. Eastern Ohio has from the first been willing and it might be said, anxious to participate in that form of conference, but the Mine Workers could not meet with this group alone and be considered for any settlement.

On the first of August John Lewis, then in Philadelphia, announced that he had assurances from operators in the four states comprising the old Central Competitive Field that they would answer a call for a meeting to negotiate a new scale and bring the strike to an end. He said that he had some 75,000,000 or more tons of annual production in hand and he called a conference at Cleveland for Aug. 7. He stated that the miners would not have to take any reduction in wages and that the mines would be in operation within a week or so. It was generally admitted that if he should in fact succeed in getting a bona-fide four-state contract he would have won the strike.

In accordance with schedule the meeting was convened at Cleveland on Monday, Aug. 7. The entire official roster of the miners was present and A. M. Ogle, president of the National Coal Operators Association, was a member of the policy committee of that organization. Many Ohio operators and a scattering representation from other fields were on hand, but it was not clear how many of those who were there purposed to participate in the conference and how many had come there simply as observers. The meeting that day was of short duration. It selected officers and adjourned to meet on Wednesday. The news leaked out that a new plan had been proposed that bid fair to bring in all the outstanding tonnage. The meeting would wait a day or so to give those not present opportunity to come.

The plan that was hopefully expected to do this was not officially given out. It was known as the Crews-Glasgow plan. It was reported to have the approval of John Lewis and A. M. Ogle, president of the National Coal Operators Association. The general terms of the agreement were as outlined in last week's issue of Coal Age. Nothing came of this effort, for, according to Mr. Ogle, it "was killed by too much premature publicity." Mr. Lewis stated on Thursday that it was definitely out of the running.

The miners and operators assembled on Wednesday at 3 o'clock. According to them, nothing was accomplished, for they were still playing for time, waiting, in the hope that Illinois and Indiana would agree to come to Cleveland.

Thursday morning the policy committee of the miners met and in the afternoon the joint conference convened. By that time the miners had been notified that Illinois and Indiana were not coming. It is true that a ray of hope was held out by the fact that Mr. Glasgow, the chief legal ad-
visor to the miners suddenly left Cleveland by automobile bound for Toledo late Wednesday night, his purposes being to meet representatives of the operators from four states, one from Illinois, who had refused to put in an appearance at Cleveland. The Illinois men were headed by Andrew Maloney, vice president of the Chicago, Wilmington & Franklin Coal Co. They were generally understood to represent the sentiment from their state that opposed making any settlement with the miners that does not embrace arbitration. No announcement of what transpired at Toledo has been vouchedsafe from a waiting public. Mr. Glasgow returned to Cleveland on Friday evening and reported, but John Lewis said, nevertheless, that he could tell nothing of what had transpired. It is fair to assume that the Illinois men were told that the miners were unalterably opposed to arbitration, and that Mr. Glasgow was informed that the Illinois operators were joining the four-state operators who have been invited to the meetings, but that there was no assurance that anything the miners want. They were known at the Cleveland Conference as the “tonnage-hungry crowd.” They were not in harmony with any move to hold back a settlement for such little matters (so they viewed them) as an agreement to arbitrate or investigate. They said, “Let the next contract take care of itself.” Time enough for that when the time comes. The debate over the operators’ ranks has been going on all week to the impatience of the miners, who think that they have won and want signatures on a contract so that they can go to work. This sentiment is expressed both at the mines and at the Cleveland Conference.

The position taken and so firmly held by the Illinois operators against settlement without arbitration, has had a profound influence on many of the operators of Ohio and western Pennsylvania who are attending the meeting. Publication Friday night of the letter from President Harding to the Illinois operators sustaining their stand put heart in those who are holding for that kind of settlement and made the miners furious.

Another of holding a joint scale meeting, the miners and operators met separately on Saturday morning. It was quite apparent to the small army of observers about the hotel corridors that something was wrong, that things were not going according to schedule. Ohio interests substantially responsible for the bringing of the meeting together suddenly developed a powerful desire to force arbitration on the miners. To persist in that stand meant a break-up of the conference.

Conference Disposes of Legal Complications

Another question loomed large when Friday night word was received that the government would look on an interstate agreement as possibly illegal; that is, in contravention of the Sherman Law. This complication was taken up by some of the operators as a means of stalling the proceedings, if appeared, but John Lewis got around the trouble by saying that the Illinois state district and the operators would be between the United Mine Workers, and the operators as individuals. On this point the conference, on adjourning at 5 in the afternoon, issued the following statement, signed by Lewis and Gallagher:

“In order to allay the misapprehension which exists in some quarters as to the purpose of the meeting of operators and miners now in session in the City of Cleveland, Ohio, this statement is issued.

“We are assembled for the purpose of negotiating, if possible, a new wage agreement between the representatives of the United Mine Workers and the individual operating interests represented in this meeting. The conference is in no sense what may be termed a four-state conference and does not undertake to represent the operators of any particular state or district or interests not represented herein. Its sole purpose is to promote a mutuality of understanding as between the operators participating and the representatives of their employees.

“This statement is the joint action of the meeting assembled.”

Justice interpreted, despite the assertions of the labor leaders that it bore no such significance, as a distinct concession on the part of the miners. It said in so many words that there was no longer a Central Competitive Field. It was explained that the miners could and would agree on a base scale for that district and that this would preserve the form of the old contract, and that the operators would simply be called on to sign as individuals. This legal hurdle having been surmounted, the conference adjourned until Monday morning.

Illinois and Indiana Hold Back

“It still appears that Indiana and Illinois associations are sharply divided and engaged in prolonged debate about the advisability of entering this conference. We will be glad to have you continue their arbitral refusal it will make no difference. We will proceed with the work of this conference. In any event, we have assurances—the definite assurances—that if a scale is reached here important producers will break away from Illinois and Indiana associations and sign the scale.

“I confidently predict that when a scale is made here, that 75 per cent of all bituminous tonnage now on strike will sign the scale in one week. A settlement in the anthracite fields will naturally follow.

“The miners have won their fight and it is practically over. There is no longer a thought in any quarter that wage reductions will be imposed on the mining industry. The question here is one of procedure without undue humiliation of the operators. We have no desire to humiliate them. We wish to have immediate reumption of mining; and the return to work of the men and the relief of the public.”

After the meeting on Thursday afternoon Mr. Gallagher, chairman of the convention stated that “progress had been made.” The names of a committee on credentials and rules were given out. This committee was as follows: S. H. Robbins, Ohio; Jas. Paisley, western Pennsylvania; F. O. Parker, Indiana, and Judge Campbell, Illinois, for the operators; and P. T. Fagan, Lee Hall, Peters, Hessel and Frank Farrington for the miners. It was stated that over 40,000,000 tons of annual production from the old Central Competitive Field was in the meeting divided as follows: Ohio, 27,000,000 tons; Pittsburgh and Freepoint, 9,500,000 tons; Illinois, 1,500,000 tons; Indiana, 2,000,000 tons.

Outlying Field Operators Thrown Out

The most significant move at the meeting Friday afternoon was the ejection from the conference, on demand of the miners, of all operators not in the old Central Competitive Field, and the statement of John Lewis, after the meeting that the miners had not deviated in any respect from their original policy. It was to be no wage reductions and a four-state settlement, just that and nothing else.

Friday was devoted to a scale-committee meeting. The representatives for the operators on the scale committee were five from eastern Ohio, S. H. Robbins, T. K. Maher, R. L. Wildermuth, W. H. Haskins, A. A. Augustus; one from Indiana, W. A. Satterlee; one from Illinois, Richard Carver; and one from western Pennsylvania, Jas. Paisley. There were eight representatives from Pennsylvania, H. F. Greer, and Geo. Savage from Ohio, Farrington and Fishwick from Illinois, Hessler and Roberts from Indiana and Fagan and Hargrett from Pittsburgh. John Lewis, William Green and Van Bittner for the miners, Michael Gallagher and W. L. Robison for the operators were included in the group.

The scale committee had two meetings on Friday and got nowhere. To the surprise of many and perhaps of the miners who had gained an idea that the agreement was all cut and dried, the operators registered a demand for the 1917 wage scale and arbitration of the scale for 1923. Quite naturally the miners would not consider this. There is nothing they can gain by the demand except what the operators’ ranks has been going on all week to the impatience of the miners, who think that they have won and want signatures on a contract so that they can go to work. This sentiment is expressed both at the mines and at the Cleveland Conference.

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Contract Negotiated and Signed at Cleveland Conference

Following is the scale report approved at the Cleveland conference Aug. 15, 1922:

Report of the sub-scale committee Aug. 14, 1922:

The operators represented here in this joint conference which are now on strike, are to be opened immediately upon the execution of supplementary contracts extending to March 31, 1923, in all instances of strikes which are now pending or affecting such mines are to be as they respectively existed on May 14, 1922, except as to renewal of continuation clauses in such contracts.

The participants of this conference agree to send and this conference invites the bituminous coal operators of the United States to send representative delegates from coal producing districts, or from substantial groups of coal operators which delegates shall as far as possible be representative of the bituminous coal industry of the district, or groups, to meet with the operators, to be appointed in joint conference in Cleveland, Oct. 2, 1922. This joint conference shall appoint a commission of equal numbers of representative operators and miners, which commission shall be deemed a joint committee of inquiry, to be followed by the bituminous coal industry in the negotiation of agreements which may be justly and peaceably assembled in joint conference in Cleveland, Oct. 2, 1922. This joint conference shall appoint a commission of equal numbers of representative operators and miners, which commission shall as far as possible be representative of the bituminous coal industry of the United States, such delegates to meet in joint conference Oct. 2, 1922, at such place as may be determined to by joint conference held Oct. 2, 1922. This joint conference shall receive the presentation of the committee of inquiry and shall be furnished by the committee of inquiry and such committee shall be furnished with all information desired and aided in every manner deemed necessary by the operators and miners.

In the event such joint conference shall fail to agree upon the method of settling of the dispute, the parties may at any time petition the President of the United States to appoint the members thereof in his discretion and the President of the United States shall act as such by appointment. The cost of such committee of inquiry shall be paid by the Industry, one-half by the operators and the other half by the United Mine Workers of America. Such committee after developing all the facts shall make such recommendations as it may deem proper and advisable and shall so far as possible embody these recommendations in a report to be submitted to the joint conference to be convened Jan. 3, 1923, as hereinafter provided.

In order to reach a final and proper determination of the controversies in the bituminous coal industry, joint conferences of miners and operators and the public as well, the following principles are presented for consideration by the committee of inquiry: The wage rate in any district shall, as far as reasonable, be competitive within the mining industry and shall at the same time be fully compensatory to the miners being sufficient to afford not only a living wage but also to allow reasonable opportunity for accumulating savings. The encouragement of a proper spirit of obligation and responsibility on the part of all parties will be sought by the adoption of proper machinery, both local and national, for promiss determination and settlement of any points of dispute and of any local, state, district or district adjusted by the joint conference.

The determination of a proper policy to encourage efficiency of operation, not only on the part of mine management in the maintenance of the mines and operation of the mines, but also on the part of individual miners in the performance of their daily work.

The participants in this conference agree to send, and this conference invites the bituminous coal operators of the United States to send representative delegates from coal producing districts, or from substantial groups of coal operators which delegates shall as far as possible be representative of the bituminous coal industry of the United States, such delegates to meet in joint conference Aug. 14, 1922, at such place as may be determined to by joint conference held Aug. 14, 1922. This joint conference shall receive the presentation of the committee of inquiry and such committee shall be furnished with all information desired and aided in every manner deemed necessary by the operators and miners.

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WATKINS PRAISES CLEVELAND CONFERENCE

Reason Restored. He Says

At the adjournment of the conference on Tuesday T. H. Watkins said: "As the result of conciliatory efforts inaugurated by President Harding at the Washington conference, the situation in the anthracite area consequent to the recent Cleveland meeting, the Central Competitive Field conference to which we attribute most of our past difficulties was definitely broken up and abandoned yesterday and the meeting was thrown open to operators and miners from every district in the United States. The formation of new contracts expiring March 31, 1923, is left to a joint committee of operators and miners which will report on Jan. 3, 1923. All parties have engaged themselves to make a most exhaustive investigation of the whole industry and to lay down recommendations on which voluntary agreements can be negotiated on sound economic lines between the operators and the miners. For the first time in the coal industry important labor leaders and employers have joined together in a crisis and voluntarily set up the machinery not only for a resumption of work but for the establishment of a public tribunal before whom they engage themselves to appear with all the facts of the industrial activities of both parties. The recommendations of this commission are to be the guide for necessary steps toward a permanent settlement without further strikes. We are all agreed that we want to negotiate without interference or compulsion except as both sides may bow to the powerful influence of opinion of a well informed public. The document means that reason has been restored. The exercise of force whether through strike, compulsory awards, or arbitrary procedure, has no place in the program upon which we have agreed. Compulsory arbitration has failed too often in recent industrial crises to offer a fair and effective solution which requires a basic solution, not merely a reconciliation of immediate differences. We believe that the door has been opened to a new era in the coal industry in which the coming public as well as those producing coal will have access to the essential facts of the industry and will be an influence in guiding it into more peaceful channels.

Anthractitie Negotiations To Be Resumed on August 17 at Philadelphia

EVIDENCE that the union is slowly yielding to the pressure of public opinion is found in the sudden interval taken in the anthracite situation. On Friday, Aug. 14, Lewis wired the operators of the important coal region saying that the miners were ready to again meet the operators to discuss a new contract. He said: "Replying to your wire, representatives of the United Mine Workers are not making anthracite negotiations secondary to bituminous negotiations, despite all reports to the contrary. We have understood attitude of anthracite operators to be that they would refuse to make any settlement in advance of bare being made in bituminous. If this is not now true, and it is developed that anthracite operators are ready to go into direct negotiations with the United Mine Workers on the basis of the old wage scale and demands of the Shamokin convention, we will be glad to attend a joint conference on any date designated by the anthracite operators' representative.

Mr. Warriner lost no time in making reply, asking Mr. Lewis to meet the anthracite operators in Philadelphia on Wednesday, Aug. 16.

The meeting has been postponed until Thursday, Aug. 17, to give the union officials time to finish their business at Cleveland.

NEARLY ALL IMPORTANT Operations in Nova Scotia were closed on Tuesday by a strike of more than 12,000 miners. Five thousand Cape Breton workers at a mass meeting at Glace Bay and another large meeting at New Waterford repudiated the agreement which their officers made with the operators and declared the strike. Other fields joined, thus tying up a source of supply that has been utilized by the United States since early in the present strike.

The companies' offer raised wages from $2.85 to $3.25, and contract rates 10 per cent, about 29 per cent below the wages of 1921, which the miners are asking.
Coal Price Legislation May Supplant Voluntary Control, Hoover Asserts—Lake Shipments Speeded Up

Forecasting legislation aimed to control the price and distribution of coal during the emergency this winter, Secretary Hoover, on Tuesday, Aug. 15, said: "If the control over prices and distribution is maintained, Congress must provide legislation." It is impracticable, he said, "to try to continue the control indefinitely on a voluntary basis." While 60 or 70 per cent are always willing to do the square thing, in the flush of the prosperity, this was fair for them to have the remainder in a position to profit by taking advantage of the situation. The legislation necessary has not been worked out. A number of alternatives are under consideration but no decision will be reached until the depth of the problem is known.

In discussing the co-operation he had received in the control of prices and distribution, Secretary Hoover said he had been given a few days' time for co-operation in the smokeless field, and almost as good a performance in Virginia and other parts of West Virginia.

Advices reaching Washington are that British gas coal arriving in New York is not readily salable. It also has been found that no coal rates are in effect from New York to Inland points.

The possibility of expediting coal shipments to the Upper Great Lakes region in order to attain the necessary total movement to that territory before the close of navigation is a problem being given the serious attention of the Federal Fuel Distribution Committee. The Federal Fuel Distributor expects shipments aggregating 250,000 tons of coal will be made to the Lakes in the present week as compared with an estimated shipment of 147,000 tons for last week. A figure of 400,000 tons has been set for Lake movement during the week beginning Aug. 21.

The ability to supply urgent Lake requirements depends largely upon the coal production situation in Pennsylvania. Mines in Pennsylvania that ordinarily ship Lake coal are at present closed and the question of whether Pennsylvania coal will be available in considerable quantity for early Lake shipment has largely on the question of the various coal tonnage produced in Pennsylvania will be sufficient to take care of that state's own urgent needs and to allow of a supply for diversion to the Lake country. A partial solution to the problem may be found by replacing Pennsylvania Lake shipments by importations into that state of Tennessee coal from the southern Appalachian district.

The move of 60,000 cars to be made for coal mined in the various Pennsylvania districts is expected to be definitely settled at a meeting in Harrisburg, Tuesday, Aug. 15, between the Pennsylvania Public Service Commission and a committee of coal operators. This meeting is a continuation of the session held in Philadelphia Friday and Saturday of last week, at which sessions the matter of definite price fixing was deferred for a few days for further investigation. The Pennsylvania Public Service Commission, which is acting as the State Fuel Administration is engaged in making an inventory of the urgent fuel requirements of that state.

A total of 13,528 cars of coal were loaded throughout the country, Friday, Aug. 11. This represents an increase of 769 car-loadings over the same day of the previous week. Loadings of 60,000 cars were reported for the first five days of last week, an increase of 5,800 cars over the corresponding number of days of the previous week. Loadings on the Chesapeake and Ohio system Friday amounted to 1,319 cars; on the Norfolk and Western, 2,115 cars; and on the Louisville and Nashville system, 1,609 cars. Coal loadings on these three lines represent an increase of more than 100 cars over the figures for Friday of the previous week.

An estimate of the fuel requirements for public utilities and domestic consumers in the District of Columbia has been submitted by the board of commissioners of the district.

Governor Hardwick of Georgia has designated the Georgia State Railroad Committee to act as the State Fuel Committee. A fuel distribution committee for the city of St. Louis has been appointed by Governor Hyde of that state to function under the general direction of the State Fuel Committee. This committee will co-operate with the St. Louis Chamber of Commerce.

The necessity for giving preferred classification to smithing coal has been presented to the Fuel Distribution Committee. Various organizations representing the steam laundry trade have set forth the fuel requirements of the various districts. They have been informed that each laundry should take up with its state fuel committee the matter of fuel needs.

Inquiries from Kansas and other trans-Mississippi states relative to the obtaining of coal supplies from producers in the Rocky Mountain region are being referred by the Central Fuel Committee to the coal distribution agencies in the states now producing coal in that territory.

Representatives of a large industrial concern owning its own coal mines conferred today with the fuel distribution committee relative to placing the entire coal production of this mine, subject to the orders of the fuel committee for use by essential industries.

Senator Swanson and representatives Harrison and Blund of Virginia, accompanied by Maj. Alexander Forward, State Fuel Administrator, reached Norfolk, and a delegation of prominent citizens of the state, called upon Fuel Distributor Spencer today to ask that a specific allotment of coal be turned over to the Virginia committee for distribution among essential industries in accordance with the plans of the federal organization.

The suggestion was made by the central committee that an organization for the distribution of fuel supplies be formed in Virginia similar to organizations in other states, to co-operate with the state fuel administrator.

Fuel supplies of the various branches of the federal government have for some time been fairly well assured and no special efforts to safeguard these supplies are required just at this time. Naval fuel reserves are said to be in especially good shape.

A South Carolina delegation conferred with the fuel distributor relative to its situation in that state. The delegation declared that the matter of fuel distribution was progressing satisfactorily in South Carolina and that available fuel supplies were being distributed to those industries where the need was the most keen.

The I.C.C. on Tuesday reprimanded the carriers for controlling the coal loads under priority orders. Calling attention to the increasing frequency of this practice, the commission declared it tended to defeat the efforts of the government to insure equitable distribution of the curtailed supply of coal. The roads were ordered to refrain from such action.

National Coal Directors Meet in New York

Peace and harmony prevailed at the meeting of the board of directors of the National Coal Association in New York on Monday, Aug. 14, despite predictions to the contrary from several quarters. About 20 directors were present, mainly from the East and South. Those from the West were not able to attend because of the acute labor situations in their respective districts.

The meeting lasted all day, during the course of which many routine matters were considered and matters of policy of the National Coal Association were considered at length. After the meeting A. M. Ogle, president of the Association, said:

"It always has been and is now the policy of the National Coal Association not to interfere in any way with wage negotiations of the directors under the existing policy within any district in the bituminous coal fields. The Association does not undertake to settle strikes. This is a matter which must be determined by representatives of the several districts involved. It does undertake, however, to properly represent the bituminous industry generally in all its phases before the public."
A peculiar situation exists in the spot coal market. Prices are high but are not soaring, for coal is even more limited than a week ago, but the demand has declined apace with the amount of tonnage offering.

Procrastination has ruled the coal buyer. The Cleveland conference gave hope of resumption of mining, and consumers pared their purchases to the quick in order to be able to take advantage of the easier flow of coal when union-mined tonnage is again available. The diminution of demand has been accomplished in many cases by the curtailment or complete shut-down of plants by those who feel that this is preferable to paying the high premiums now being secured by spot coal shippers.

Priorities Rule on Bulk of Tonnage Moving

Those who must keep in operation, and this class includes the railroads and "essential" industries, are actively bidding for the meager current production that is available to the spot buyer. Priorities rule on the bulk of the tonnage moving but there is much confusion as yet in carrying out these orders and railroad confiscations are heavy. The situation is further complicated by the rail trouble and consumers on the preferred list are often forced to pay the going price to replace delayed shipments of coal.

There is little of this spot coal available, for, although production is increasing, most of it is needed on priorities. Spot coal prices have risen to an average of $6.66 per net ton at the mines, Coal Age Index on Aug. 14 going to $5.50 as compared with $1.50 for the previous week. This is a rise of 39 points for the index and 48c. in the average price for the week. The coal commission at Washington, recognizing unusual expenses of certain operators now producing, has sanctioned an increase from the original $3.50 Hoover level to $4.50 for New River and $4.75 for Kanawha.

Railroads are functioning better but the traffic congestion is still acute and lack of motive power is hampering dispatch of loads and the placement of empties. The roads are gradually enforcing the priority orders but State and Federal committees have not yet clamped the lid down on high prices. The fear, however, that a settlement of the strike may find them with a large tonnage of high-priced coal en route is causing jobbers to be extremely cautious. Orders are taken on a day-to-day basis now, and there is less tendency to exact all that the consumer might pay. Quick turnovers are the rule and the desire for large premiums and commissions are not allowed to delay present sales.

The edge is off the market for British coals. Cargoes are arriving daily but consignees are for the most part essential industries who will be the first served after the strike. As this British coal is relatively higher priced than our own fuel and the British market is sold well into September there will be few additional orders placed since mining will be resumed at an early date.

The situation at Hampton Roads is slowly improving, as the railroads are able to clear their lines. An embargo has been placed on exports, and bunkers are due for a slump as priorities leave little tonnage for vessel fuel. The accumulation at the piers is running down and tonnage awaiting cargo is heavy.

Shippers are being deluged with requests for quotas.

---

**Estimates of Production**

<table>
<thead>
<tr>
<th>Coal Type</th>
<th>Week Ended</th>
<th>July 22</th>
<th>July 29 (a)</th>
<th>Aug. 5 (a)</th>
<th>Daily average</th>
<th>Daily average per year</th>
<th>Calendar year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bituminous</td>
<td>1921</td>
<td>7,310,000</td>
<td>7,310,000</td>
<td>7,310,000</td>
<td>7,310,000</td>
<td>231,915,000</td>
<td>207,600,000</td>
</tr>
<tr>
<td>Anthracite</td>
<td>1921</td>
<td>1,872,000</td>
<td>1,872,000</td>
<td>1,872,000</td>
<td>1,872,000</td>
<td>57,186,000</td>
<td>57,186,000</td>
</tr>
<tr>
<td>Coke</td>
<td>1921</td>
<td>45,000</td>
<td>45,000</td>
<td>45,000</td>
<td>45,000</td>
<td>1,485,000</td>
<td>1,485,000</td>
</tr>
</tbody>
</table>

Note: (a) Subject to revision. (b) Revised from last report.
tions and the prospect that coal mining is to be resumed has brought many orders for delivery "immediately after the strike." The price question is being carefully left open and shippers are accepting orders on that basis, promising delivery at the earliest possible moment.

BITUMINOUS

"The nineteenth week of the strike (Aug. 7-12) opened with a decided increase in production," according to the Geological Survey. "Returns so far received indicate an output of soft coal of about 4,800,000 net tons, or 500,000 tons more than the week before. The increase is due to gradual improvement in traffic conditions on the railroads serving non-union fields and also, but only in a very small way, to increased production in fields hitherto throttled by the strike. Despite this increase in bituminous coal output the nineteenth week finds production still about 550,000 tons below the level reached before the shopmen's strike.

"The total output of all coal, anthracite and bituminous, in round numbers is 7,880,000 tons in the corresponding week of 1921, 7,771,000 tons of bituminous coal and 1,772,000 tons of anthracite were produced.

"Detailed records of shipments from each district indicate that the increase to the coal supply from mines that have reopened is small, although four weeks have elapsed since the invitation to resume production was extended. There have been only very small gains in a few of the stronger organized districts.

"In the middle and southern Appalachians, which have been the principal sources of supply, production has been curtailed by the shopmen's strike but has gradually increased during August. The unorganized districts of this territory has gained, by relief from traffic congestion, about 200,000 tons over the output of last week. The non-union and partly organized fields of this region are now furnishing about 41 per cent of the total output in the United States, whereas they furnished 54 per cent in the week of July 17.

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

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Smokeless lump run...</td>
<td>Columbus...</td>
<td>$3.95 $8.50 $5.60 $8.00 $8.50 $8.00 $8.00 $8.50 $8.00 $8.50 $8.00 $8.50 $8.00 $8.00 $8.50 $8.00</td>
</tr>
<tr>
<td>Smokeless mine run...</td>
<td>Columbus...</td>
<td>3.75 8.15 5.25 7.50 7.50 8.00 8.00 8.00 8.00 8.00 8.00 8.00 8.00 8.00 8.00</td>
</tr>
<tr>
<td>Smokeless screenings...</td>
<td>Columbus...</td>
<td>4.15 8.40 6.75 8.75 8.75 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00</td>
</tr>
<tr>
<td>Smokeless lump run...</td>
<td>Chicago...</td>
<td>4.15 8.60 6.75 8.75 8.75 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00</td>
</tr>
<tr>
<td>Smokeless mine run...</td>
<td>Cincinnati...</td>
<td>4.30 8.80 7.00 9.00 9.00 9.25 9.25 9.25 9.00 9.00 9.00 9.00 9.00 9.00 9.00</td>
</tr>
<tr>
<td>Smokeless screenings...</td>
<td>Cincinnati...</td>
<td>4.50 9.10 7.00 9.00 9.00 9.25 9.25 9.25 9.00 9.00 9.00 9.00 9.00 9.00 9.00</td>
</tr>
<tr>
<td>*Smokeless mine run...</td>
<td>Cleveland...</td>
<td>3.25 6.50 4.50 7.00 7.25 7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00</td>
</tr>
<tr>
<td>Clearfield mine run...</td>
<td>Boston...</td>
<td>6.55 8.15 6.90 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00</td>
</tr>
<tr>
<td>Cambria mine run...</td>
<td>Boston...</td>
<td>3.40 6.00 4.90 7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00</td>
</tr>
<tr>
<td>Somerset mine run...</td>
<td>New York...</td>
<td>3.30 6.00 4.90 7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00</td>
</tr>
<tr>
<td>Pool 9 (Super Low Vol.)...</td>
<td>New York...</td>
<td>4.75 8.25 6.75 9.25 9.00 9.25 9.25 9.25 9.00 9.00 9.00 9.00 9.00 9.00 9.00</td>
</tr>
<tr>
<td>Pool 10 (H.G. Low Vol.)...</td>
<td>Philadelphia...</td>
<td>4.50 7.25 6.25 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00</td>
</tr>
<tr>
<td>Pool 10 (H.G. Low Vol.)...</td>
<td>Pittsburgh...</td>
<td>4.80 7.50 6.75 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00</td>
</tr>
<tr>
<td>Pool 10 (H.G. Low Vol.)...</td>
<td>Baltimore...</td>
<td>4.40 7.00 5.90 7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00</td>
</tr>
<tr>
<td>Pool 11 (Low Vol.)...</td>
<td>New York...</td>
<td>4.40 8.00 7.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00</td>
</tr>
<tr>
<td>Pool 11 (Low Vol.)...</td>
<td>New York...</td>
<td>4.30 7.75 6.75 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pool 54-64 (Goo and No.)...</td>
<td>New York...</td>
<td>4.70 7.75 7.50 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00</td>
</tr>
<tr>
<td>Pool 54-64 (Goo and St.)...</td>
<td>Philadelphia...</td>
<td>5.00 7.00 6.75 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00</td>
</tr>
<tr>
<td>Kanawha lump...</td>
<td>Columbus...</td>
<td>4.50 7.75 6.75 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00</td>
</tr>
<tr>
<td>Kanawha mine run...</td>
<td>Columbus...</td>
<td>4.60 7.75 6.75 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00</td>
</tr>
<tr>
<td>Kanawha screenings...</td>
<td>Columbus...</td>
<td>4.30 7.75 6.75 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00</td>
</tr>
<tr>
<td>W. Va. Spalt lump...</td>
<td>Cincinnati...</td>
<td>4.25 6.40 5.85 7.50 7.50 7.50 7.50 7.50 7.50 7.50 7.50 7.50 7.50 7.50 7.50</td>
</tr>
<tr>
<td>W. Va. Gas lump...</td>
<td>Cincinnati...</td>
<td>4.25 6.40 5.85 7.50 7.50 7.50 7.50 7.50 7.50 7.50 7.50 7.50 7.50 7.50 7.50</td>
</tr>
<tr>
<td>W. Va. mine run...</td>
<td>Cincinnati...</td>
<td>4.00 6.00 5.50 7.50 7.50 7.50 7.50 7.50 7.50 7.50 7.50 7.50 7.50 7.50 7.50</td>
</tr>
</tbody>
</table>

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

NOTE—Smokeless prices now include New River and Pocahontas.
ended June 24. The districts in Pennsylvania and the central competitive field and those west of the Mississippi have been less affected by the coal curtailments. Changes in shipment rates measure better the direct influences of efforts to overcome the strike. In Pennsylvania the output since the last week of July has increased somewhat. Union districts in West Virginia also reported slight increases.

The Northwest is in desperate need of coal and the coal distribution committee has issued priority orders on cargo and vessel fuel in an effort to get a supply to the upper lakes. It is hoped that this will be possible. Dampings at Lake Erie ports during the week ended Aug. 14 recovered from the extreme slump of the week before. The total dumped was 147,358 net tons—123,121 tons cargo and 24,237 tons vessel fuel—compared with 92,747 tons during the week ended Aug. 7. The total movement for the season is only 4,776,684 tons; last year's figure was 14,789,941 tons.

Tidewater dampings at Hampton Roads increased during the week ended Aug. 10 as the carriers have been able to clear up some of the congestion between the mines and piers. The dumpings were 306,258 net tons as compared with 277,072 in the previous week.

July witnessed a decline in Tidewater dampings. In comparison with June the total dropped 21 per cent, principally caused by decreased movement from Hampton Roads to New England.

TIDWATER SHIPMENTS FOR JULY, 1922

(Thousands of Net Tons)

<table>
<thead>
<tr>
<th>Destination</th>
<th>New Phila</th>
<th>Balti</th>
<th>Hampton</th>
<th>Charles</th>
<th>July</th>
<th>June</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constable to New England</td>
<td>16</td>
<td>9</td>
<td>663</td>
<td>22</td>
<td>710</td>
<td>574</td>
</tr>
<tr>
<td>Exports</td>
<td>36</td>
<td>11</td>
<td>3</td>
<td>147</td>
<td>8</td>
<td>255</td>
</tr>
<tr>
<td>Bureau</td>
<td>4,881</td>
<td>0</td>
<td>4,881</td>
<td>5,527</td>
<td>5,114</td>
<td></td>
</tr>
<tr>
<td>Inside casks</td>
<td>113</td>
<td>10</td>
<td>503</td>
<td>126</td>
<td>764</td>
<td></td>
</tr>
<tr>
<td>Other tonnage</td>
<td>2,015</td>
<td>34</td>
<td>1,945</td>
<td>34</td>
<td>2,333</td>
<td></td>
</tr>
<tr>
<td>Total, July</td>
<td>215</td>
<td>53</td>
<td>2,184</td>
<td>61</td>
<td>1,832</td>
<td></td>
</tr>
<tr>
<td>Total, June</td>
<td>269</td>
<td>51</td>
<td>3,195</td>
<td>35</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Because the strike has curtailed shipments to the three Northern ports—New York, Philadelphia and Baltimore—the cumulative Tidewater movement from Jan. 1 to July 31 was much below normal. Shipments during the first seven months of 1922 were 29 per cent less than the average for the corresponding period in the three years preceding. The chief element in the decrease was a sharp decline in exports. Shipments to New England were greater than in any of the 3 years preceding, because of the effort of New England consumers to obtain water-borne coal to replace dwindling all-rail shipments.

CUMULATIVE TIDWATER SHIPMENTS, JANUARY-JULY, 1918-1922

(Net Tons)

<table>
<thead>
<tr>
<th>Destination</th>
<th>1919</th>
<th>1920</th>
<th>1921</th>
<th>1922</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constable to New England</td>
<td>4,674,000</td>
<td>5,824,000</td>
<td>4,347,000</td>
<td>6,548,000</td>
</tr>
<tr>
<td>Exports</td>
<td>3,406,000</td>
<td>10,748,000</td>
<td>8,294,000</td>
<td>1,230,000</td>
</tr>
<tr>
<td>Bureau</td>
<td>6,891,000</td>
<td>4,010,000</td>
<td>5,527,000</td>
<td>5,114,000</td>
</tr>
<tr>
<td>Inside casks</td>
<td>1,984,000</td>
<td>1,825,000</td>
<td>1,802,000</td>
<td>1,813,000</td>
</tr>
<tr>
<td>Other tonnage</td>
<td>6,961,000</td>
<td>4,660,000</td>
<td>5,177,000</td>
<td>6,693,000</td>
</tr>
<tr>
<td>Total</td>
<td>20,016,000</td>
<td>28,155,000</td>
<td>24,197,000</td>
<td>17,160,000</td>
</tr>
</tbody>
</table>

ANTHRACITE

The hard coal situation is unchanged. Production is nil except for a weekly output of less than 30,000 tons of steam coals dredged from the rivers. Pea coal is all that is moving and even this is slowing down as railroads are reserving tonnage at the mines for their own use.

Anthracite wage questions will be discussed in the coming conference which follows the Cleveland soft-coal negotiations. An early resumption of hard-coal production is likely to result therefrom.

COKE

Production of beehive coke continues to increase slowly. During the week ended Aug. 5, 116,000 net tons were produced, 4,000 tons in excess of the previous week. There is less spot coke offering, however, demand is lighter and there is more dickering over price as users are forced to close rather than pay any further premiums. Only those foundries with most pressing business are attempting to remain open.

The growing scarcity of coal was reflected in a decrease in the output of byproduct coke in July. The total production for the month was 2,486,000 net tons against 2,580,000 tons in June.

How the Coal Fields Are Working

<table>
<thead>
<tr>
<th></th>
<th>U.S. Total</th>
<th>Non-Union</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1920</td>
<td>1921</td>
</tr>
<tr>
<td></td>
<td>54.6</td>
<td>45.8</td>
</tr>
<tr>
<td>Alabama</td>
<td>63.5</td>
<td>64.6</td>
</tr>
<tr>
<td>Somerset County</td>
<td>55.3</td>
<td>57.4</td>
</tr>
<tr>
<td>Pennsylvania W. Va.</td>
<td>35.4</td>
<td>36.8</td>
</tr>
<tr>
<td>Virginia</td>
<td>54.8</td>
<td>59.9</td>
</tr>
<tr>
<td>Maryland</td>
<td>53.4</td>
<td>54.8</td>
</tr>
<tr>
<td>Hazard</td>
<td>51.7</td>
<td>58.4</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>40.8</td>
<td>60.0</td>
</tr>
<tr>
<td>Tug River</td>
<td>48.1</td>
<td>63.7</td>
</tr>
<tr>
<td>Louisville</td>
<td>47.6</td>
<td>51.6</td>
</tr>
<tr>
<td>Cumberland-Piedmont</td>
<td>46.6</td>
<td>56.6</td>
</tr>
<tr>
<td>Winding Gulf</td>
<td>45.7</td>
<td>64.5</td>
</tr>
<tr>
<td>Kentucky-Henry</td>
<td>48.6</td>
<td>50.5</td>
</tr>
<tr>
<td>N. E. Kentucky</td>
<td>32.9</td>
<td>47.7</td>
</tr>
<tr>
<td>New River</td>
<td>34.3</td>
<td>37.9</td>
</tr>
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</table>

Car Loadings and Surpluses

<table>
<thead>
<tr>
<th></th>
<th>All Cars</th>
<th>Coal Cars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week ended July 29, 1922</td>
<td>203,322</td>
<td>74,072</td>
</tr>
<tr>
<td>Previous week</td>
<td>232,594</td>
<td>76,060</td>
</tr>
<tr>
<td>Same week a year ago</td>
<td>795,432</td>
<td>149,439</td>
</tr>
</tbody>
</table>

In spite of the decrease as compared with June, the July rate of output was within 3 per cent of the average for 1920, the year of maximum output. The byproduct plants of the country continue to run, but curtailed by the strike in the Connellsville region and elsewhere. The beehive ovens produced only 450,000 tons in June.

MONTHLY OUTPUT OF BYPRODUCT AND BEEHIVE COKE

<table>
<thead>
<tr>
<th></th>
<th>(Net Tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Byproduct Coke</td>
<td>Beehive Coke</td>
</tr>
<tr>
<td>1917 Monthly average</td>
<td>1,570,000</td>
</tr>
<tr>
<td>1918 Monthly average</td>
<td>2,846,000</td>
</tr>
<tr>
<td>1919 Monthly average</td>
<td>2,095,000</td>
</tr>
<tr>
<td>1920 Monthly average</td>
<td>2,563,000</td>
</tr>
<tr>
<td>1921 Monthly average</td>
<td>1,660,000</td>
</tr>
<tr>
<td>April, 1922</td>
<td>2,208,000</td>
</tr>
<tr>
<td>May, 1922</td>
<td>2,537,000</td>
</tr>
<tr>
<td>June, 1922</td>
<td>2,546,000</td>
</tr>
<tr>
<td>July, 1922</td>
<td>2,486,000</td>
</tr>
</tbody>
</table>

The coal consumed in the manufacture of coke in July is estimated at 4,281,000 tons, of which 3,571,000 tons was charged in byproduct ovens and 710,000 in beehive ovens. That this rate of consumption cannot be continued long unless the production of coal is greatly increased over the previous rate, will be apparent from the fact that the coal used in the manufacture of coke in July was only 28 per cent of the coal mined that month. This was possible because the byproduct ovens were able to draw upon coal held in storage.

ESTIMATED MONTHLY CONSUMPTION OF COAL FOR MANUFACTURE OF COKE

<table>
<thead>
<tr>
<th></th>
<th>(Net Tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumed in</td>
<td>2,281,000</td>
</tr>
<tr>
<td>Byproduct Ovens</td>
<td>2,281,000</td>
</tr>
<tr>
<td>Beehive Ovens</td>
<td>1,281,000</td>
</tr>
</tbody>
</table>

(A) Assuming a yield in merchantable coke of 65.6 per cent of the coal charged in byproduct ovens, and 85.4 per cent in beehive ovens.

(C) Total Coal.
Foreign Market
And Export News

American Orders Have Bolstered British Prices
And Quieted Threatened Labor Troubles

The advance of British prices as
a result of the American demand
has been little short of miraculous.
Recently, in the closing down of
steam coal sales in America, the
prices of steam coal in Wales are
now nearly 10s. higher. The extent
of the American demand in Wales is
do not known, as no figures of much value
are disclosed. It is evident, however, that
steamers were sent to Cardiff and
were ready at Cardiff to be off before Aug. 17.
The American buyers were able to
obtain their coal comparatively cheaply
because they arrived on the market
at a time when colliery owners were
in no mood to keep their pits open and how to dispose of their accumu-
lated stocks.

Production during the week ended
July 29 was 4,989,000 gross tons as
recorded by "Coal Age." This is a consid-
erable increase from the previous week's
figure of 4,391,000.

Coincident with the demand from the
United States there sprung up a brisk
trade with South America, which had
disappeared since 1914. At the same
time merchants on the Continent, who
had been delaying getting their autumn
requirements in view of the fear of a
further fall in price, hurried their orders,
so that they got them before the Ameri-
cans were able to cause a further rise.

There is no sign of any labor trouble.
The miners do not know the destination
of the particular coal they are pro-
ducing, and, apart from that, they are
not at all anxious to find any cause
for stopping.

Some hundreds of thousands of tons
of gas coal and coking coals have been con-
tacted for in northern England, and the
total output field is operating at
full pressure to cope with the orders.
As a result Northumberland and Dur-
ham pits are entirely booked up until
the end of September. European
contracts include one of 20,000 tons of
gas coals at 22s. 3d. for Bergen and 60,000
tons of special gas coals at 26s. for
Amsterdam.

On the whole, the attitude in North
England has been transformed from
 pessimism into optimism. The present
position is that business is restricted
only by the need for further shipping
facilities.

French Production During May

Production of coal in France in May
was divided as follows between the
various coal fields:

<table>
<thead>
<tr>
<th>Metric Tons</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nord and...</td>
<td>631,801</td>
<td></td>
</tr>
<tr>
<td>Pass-de-Calais...</td>
<td>621,993</td>
<td></td>
</tr>
<tr>
<td>Centre coal fields</td>
<td>269,480</td>
<td></td>
</tr>
<tr>
<td>Southern coal fields</td>
<td>556,387</td>
<td></td>
</tr>
<tr>
<td>Western coal fields</td>
<td>61,698</td>
<td></td>
</tr>
<tr>
<td>Eastern areas</td>
<td>8,459</td>
<td></td>
</tr>
<tr>
<td>Lorraine coal field</td>
<td>346,165</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2,595,391</td>
<td></td>
</tr>
</tbody>
</table>

International Trade
Import.

<table>
<thead>
<tr>
<th>Import in May and Year to Date</th>
<th>May, 1922</th>
<th>May, 1921</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sarre</td>
<td>255,924</td>
<td>137,353</td>
</tr>
<tr>
<td>Great Britain</td>
<td>668,134</td>
<td>510,999</td>
</tr>
<tr>
<td>Belgium</td>
<td>198,973</td>
<td>1,019,918</td>
</tr>
<tr>
<td>United States</td>
<td>552,514</td>
<td>1,651,975</td>
</tr>
<tr>
<td>Germany</td>
<td>79,886</td>
<td>342,432</td>
</tr>
<tr>
<td>Various countries</td>
<td>39</td>
<td>3,272</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2,058,448</td>
<td>9,506,506</td>
</tr>
</tbody>
</table>

Hampton Roads Pier Situation

<table>
<thead>
<tr>
<th>Week Ended</th>
<th>N. &amp; W. Piers, Lamberts Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/22</td>
<td>706</td>
</tr>
<tr>
<td>8/23</td>
<td>600</td>
</tr>
<tr>
<td>8/24</td>
<td>512</td>
</tr>
<tr>
<td>8/25</td>
<td>466</td>
</tr>
<tr>
<td>8/26</td>
<td>418</td>
</tr>
<tr>
<td>8/27</td>
<td>408</td>
</tr>
<tr>
<td>8/28</td>
<td>408</td>
</tr>
<tr>
<td>8/29</td>
<td>408</td>
</tr>
<tr>
<td>8/30</td>
<td>408</td>
</tr>
<tr>
<td>8/31</td>
<td>408</td>
</tr>
</tbody>
</table>

Inland Demand Cuts Supply at Roads

The market was quieter last week
than during the earlier period of the
strike, although quotations remained
firm at advanced levels. From the
spectacular point of view, emphasis
was shifted from the inland to the
inland demand on account of the numer-
ous appeals for fuel which have be-
sieged shippers at Norfolk since the
lack of coal in Virginia and North
Carolina became acute.

The movement has been in about the
same proportion as in the previous
week on all three railroads. Stocks
at Tide have contracted slightly, but
have hovered very close to 100,000 tons
for the greater part of the time.

Coal Paragraphs from Foreign Lands

Italy—The market is dull. Imports
during May totaled 1,043,000 tons,
of which 52,000 tons were from the United
States, 5,362,000 from the United King-
dom, 318,000 from Germany.

Cardiff steam first is now 42s. 6d.,
according to a cable to "Coal Age." Last
week's quotation was 40s. 9d.

Germay—New coal prices, caused
by the increase in miners' wages which
had come into force on July 1, show an
addition of about 30 per cent. Pat
coln now costs about 1,200 m. per ton
at the mine, which is about 100 times
above the pre-war figure. Before the
war the price was 12d. 12s. per ton.
Other coal has advanced relatively.

Price in the Ruhr district for the
week ended July 29 was 1,802,000
metric tons, according to a cable to
"Coal Age," 2,000 tons in excess of the
previous week's output. The Inter-
national Miners' Congress is urging
members to the Reparation Commission
to request a modification of the spa
coal commission.

Export Clearances, Week Ended
Aug. 10, 1922

**From Hampton Roads:**

<table>
<thead>
<tr>
<th>Foreign Islands</th>
<th>Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nor. S.S. Fram</td>
<td>4,004</td>
</tr>
<tr>
<td>Fier Cuba</td>
<td>2,344</td>
</tr>
<tr>
<td>Br. S.S. Berwindale</td>
<td>7,735</td>
</tr>
<tr>
<td>Am. Sch. Edna M. McIntyre</td>
<td>1,874</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Foreign Pricing, Gross Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piers</td>
</tr>
<tr>
<td>Pool 1, New York</td>
</tr>
<tr>
<td>Pool 2, New York</td>
</tr>
<tr>
<td>Pool 1, Hemp Rds.</td>
</tr>
<tr>
<td>Pool 2, Hemp Rds.</td>
</tr>
<tr>
<td>Bunkers</td>
</tr>
<tr>
<td>Pool 1, New York</td>
</tr>
<tr>
<td>Pool 2, New York</td>
</tr>
<tr>
<td>Pool 1, Hemp Rds.</td>
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<tr>
<td>Pool 2, Hemp Rds.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Current Quotations British Coal f.o.b. Port, Gross Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign Countries</td>
</tr>
<tr>
<td>Port</td>
</tr>
<tr>
<td>Newcastle</td>
</tr>
<tr>
<td>Best Bunkers</td>
</tr>
</tbody>
</table>

(Advances over previous week shown in heavy type; declines in italics.)
Non-Essential Industries

Hot After Meager Tonnage

Production Increases, but Little Coal Left for Spot Market—British and Southern Territories Aid—Impending Strike Settled. Loosed Flood of Orders and Inquiries.

Non-ESSENTIAL industries are active bidders in the spot market. Demand is exceedingly strong and receipts are heavier, but quotations are not soaring as there is more of a tendency to observe fair prices. State committees are securing a few cars for needy points, railroads are taking much of the current output and the remaining spot tonnage is exceedingly light. Cargoes of British coal are now arriving. Southern coals, via water from Hampton Roads, are also moving better, filling a few gaps in the market.

Coal houses are being deluged with inquiries and many orders are being placed, for delivery after the settlement of the strike, but the question of price is being left open.

NEW YORK

The arrival of the first cargo of British coal in this harbor during the present strike was the feature of last week's market. This arrived in an Italian vessel and was reported as having been sold to a public utility corporation. It was followed a couple of days later in the week by another vessel which docked in Brooklyn. Other cargoes of foreign coal are expected almost daily.

Offers of British coal are being made to local dealers, and one house received an offer of Scotch coal at about $11, c.i.f., or about $12 alongside in small barges. Quotations for British coal, c.i.f., for late August or September delivery, ranged about as follows: Durham, first class, 42s.; Durham, second class, 40s.; Northumberland, un-screened, 40s., and Admiralty, 49s.

While the demand was strong and coal moving in better shape, there was a tendency to keep prices nearer the Hoover schedules, although no quotations were available as low as those figures. There were 429 cars at the local piers on Aug. 11, and it was estimated that less than 25 per cent of these were available for spot buyers.

The state fuel commission is busy formulating plans for seeing that all public utilities and essentials secure coal. The railroads are heavy buyers. Demand along the line is much stronger than at Tidewater. Southern coals are coming forward in slightly heavier volume, with quotations around $13, this harbor, in small barges. B. R. & P. coals are quoted $7.75@8, with similar quotations for Pittsburgh.

UPPER POTOMAC

Virtually all mines in the Upper Potomac region on the West Virginia side of the river between Thomas and Piedmont, are now in operation. On the Maryland side fewer mines are at work owing to the lack of co-operation of Maryland. Production is being steadily increased and is averaging about half of normal. A few mines in the Georges Creek region also are operating. Railroad fuel is moving at about $3.50 a ton but the quotation generally on coal in the various pools is about $6.

PHILADELPHIA

That reserves of consumers are being fast eaten into is shown by an increase of direct inquiries to shipping houses. Many of these concerns have April contracts of 5,000 tons which is it with the greatest reluctance that they make small purchases at the current figures.

Prices have not materially deviated from last week's quotations. Generally, though, when no grade is specified the price has been about $8, with Pool 10 classification taking the top figure. August orders are yet to become effective, although it does seem to have had the effect of automatically giving better shipments to utilities. Usually such concerns having contracts have been in receipt of more coal. While this has been of considerable help, yet it has not been sufficient to permit the larger users of coal to keep out of the priority market, and many of them have recently paid the maximum prices to keep a margin of safety in stocks.

The edge, at least temporarily, seems to have been taken off the foreign coal market. Of course rising prices of coal and freight on the other side of the river has had something to do with it, but no doubt purchasers are also desirous of having some of the coal in hand to make certain that it will meet their requirements.

FAIRMONT

By the end of the first week of August there had been so much improvement that conditions were better than they had been at any time since the beginning of the strike. More mines were at work—200—more men were at work and production was larger. About 550,000 tons were now producing coal. Transportation conditions are also proving to be conducive to a larger output.

CENTRAL PENNSYLVANIA

There are approximately 1,000 more men at work than before troops and state police were sent into the field. A noticeable increase in production is reported. The company has gone from 600 to 700 cars per day.

No important developments marked the progress of the strike last week. A 100 per cent car distribution is reported on all railroads entering the field. On the South Fork branch of the P. R. R. 392 cars were loaded during the first five days of August, with the number slightly on the increase each succeeding week. The first week of July showed 113 cars on the first five days.

The Pennsylvania company is repairing freight cars as fast as they are turned into the shops at Altoona. Coal operators and officers of the Central Pennsylvania Coal Producers' Association attended the conference with Governor Sproul in Philadelphia at the end of the week.

BALTIMORE

With the Maryland coal committee beginning to function the market remains stiff and rather acute in spots. The commission is headed by W. M. Malloy, of the Public Service Commission, and the practical director is L. Eaton, of the B. & O., who arrived this week to act as vice-chairman. He found calls from a number of Maryland towns which claimed to be without fuel for industries or hotels, etc., and this was taken care of through some operators who could spare a car or so of coal here and there.

Governor Ritchie appealed by wire to John L. Lewis, president of the United Mine Workers, to attempt to settle the Maryland situation immediately after the Cleveland conference. He received a reply that action would be taken in the case the situation following the Cleveland conference warranted such a move for the Maryland field. Despite union statements to the contrary, the B. & O., the Pennsylvania and Western Maryland officials continue to report more than enough cars in all producing territory to remove all difficulties.

Prices remain high. Consumers are entirely willing to pay $6@8 a net ton, f.o.b. mines, for the coal that is offering. At that the coal is cheaper than the Pennsylvania coal which commands $10@12 at the piers. West

SALT LAKE CITY

Utah needs no fuel administration. Governor, Chas. R. Smith, retiring, Hooper, Utah is producing 73 per cent of the normal output of coal. Domestic consumers are asking for coal. There is, however, no rush. There appears to be enough cars and the strike situation is about the same. The soldiers are still in charge.

July production was 374,854 net tons. In July last year the figures were 273,092, but in 1920 they were a round half-million.

KANSAS CITY

The peaceful situation that existed in the Kansas coal field a short time ago has taken wings and the lamb-like demeanor of Howatt followers has changed. Very little coal is being produced in that state. The long continued strike is causing steam plants to turn to oil and a great many are installing oil burning equipment. The Kansas City, Mo., municipal plants will change over to oil at once and a great many manufacturing plants are also changing to oil.

Coal is hard to obtain that at any time since the strike and the price is anything the seller asks. Some Kansas mill coal sold for $7 f.o.b. mines this week.
COAL AGE  Vol. 22, No. 7

Anthracite

Early Scarcity Is Inevitable
Substitute Fuels Are Urged

Household Consumer Fully Awakened
to Gravity of Situation—Retailers
Besieged With Orders—Stocks Being
Rationed—Pea Coal Disappears as
Railroads Take Mine Stocks for
Steam Substitute.

The public is now thoroughly
aware of the serious aspect of
the situation for the winter. Retail-
ers are besieged with orders, but are
doing little else than file these for
attention at the earliest possible
moment.Domestic stocks are being
rationed out only to hospitals, hotels
and other urgent points of consump-
tion. Even pea coal, which has been
in plentiful supply, is disappearing
from the market, as mine stocks are
being held for the hard-coal burning
railroads.

Substitution of other fuels is now
being urged in the East, for the first
part of the season at least, as it is
realized that even if mining is
resumed in the near future the needs
of the Northwest would take much
of the current production well into
the time when domestic coal fires
are lighted.

NEW YORK

With the naming of a fuel commis-
sion to look after the distribution of
coal the public is thoroughly aroused
to conditions and consumers are realizing
the mistake they made in the early
spring by not putting away their next
winter's coal.

It is possible that coal will be doled
out in bags by some retail dealers,
whose yards are in the poorer sections,
the consumer taking it away himself.
This system has been followed in some
instances during previous coal short-
ages. Retail dealers' books are carry-
ing many orders but no one knows when
to expect delivery.

A few loaded boats of pea were re-
ported as afloat in the harbor but their
number was so negligible as to amount
to practically nothing. The companies
have nothing to offer to the trade and
most independent operators are keep-
ing their supplies for their own use at
the mines.

Some river barley was offered here
toward the end of the week at
$2.50@2.75.

BALTIMORE

The situation continues to cause
much worry. Many consumers will un-
doubtedly have to face the early weeks
of cold weather without hard coal, no
matter how soon mining begins. Some
dealers are advising consumers to take
lump soft coal, or the English coals
coming in. Few of the household heat-
ing plants are adapted to use soft coal
without great trouble.

The State Forestry Division is en-
deavoring to get rural users of hard
coal to take wood, offering to see that
thistles are washed. If it was successful in
full it would save a consump-
tion of about 600,000 tons of an-
thracite. At last the public is awaken-
ing to the real dangers of a coal short-
age. As the cold weather during the
both consumers and coal men grow
nervous. It is far from a healthy
situation.

PHILADELPHIA

The appointment of a fuel commis-
sion by Governor Sproul seems to have
brought home to the consumer the ex-
treme shortage that is likely to prevail.
When it is voted, but that wise days
will bring us into general coal burning
weather, the wonder is expressed where
the coal is going to come from, even
though mining could be resumed at once.

Consumers begin to realize how help-
less the dealer is to assist them, even
though he does promise to make de-
liveries when coal is received.

The movement of pea coal into the
cellars goes on actively, and shipments
from the companies are somewhat
light, although heavy ton-
ages on order, in fact it is believed
that the amount actually ordered will
exceed the tonnage in stock. A good
deal of this coal is going to distant
territories, who, while they do not or-
dinarily use much of this size, yet be-
gan placing orders for it somewhat
earlier than local retailers.

There seems new something more
definite than mere rumor upon which
to base a decision to have but two sizes
of family coal when shipments are re-
sumed. It is believed that the larger
companies have already adjusted the
screens at the breakers with this idea in
view.

In steam coal, which means river
barley, the quotations are still very little
changed, $2.50@3, although a small
quantity of low-grade material has
been moved at $1.85, being coal with a
larger percentage of pebbles than usual.

BOSTON

A few last clean-up cargoes of pea
are being received, but as a result of the
recent movement, they are practically nil.
Retail dealers are reduced to extremely small
reserves of prepared sizes, but coal is
still being distributed through usual
channels and there is no dealer of any
size has yet thrown up his hands.

The wholesale trade feels that when
mining is resumed prepared sizes will
be distributed by representatives of the
producers, much as in 1918, and
that no effort will be made by the
administration to supplant the usual
channels of supply. The subject was
gone into in great detail during the
war, and it would be hard to believe
the experience of that period would
be thrust aside.

BUFFALO

One jobber reports some hundreds of
carloads still held in storage, which he
will sell at a premium of only 75c, a
ton. It must be that his company has
the hoarding habit in a very marked
degree, or this coal would have been
gone long ago. Still the consumer
appears to be reconciled to the indefinite
waiting.

It seems to be the idea that nothing
is to be done until the bituminous
miners are at work. The indifference
of the men and their readiness to
remain idle indefinitely at the command
of their leaders is still as hard to
explain as ever.

SOUTH

BIRMINGHAM

The strong demand which has pre-
vailed for some time past is still well
sustained and there is a scarcity of all
grades. The bulk of the output, as
anticipated, has been pretty well sold
up for some weeks ahead, with several
hundred cars moving daily to Western
railroads and to lines operating in the
district. The industrial demand and
the call from Municipal plants and
smokestacks in every direction is large in
the aggregate.

Prices are generally a matter of elec-
tion of the seller, and mine run and
washed range $4.50@5.50 mines, with
little or no regard to quality. Spot
domestic is equally as scarce as com-
mercial coal and dealers generally are
manifesting activity such as has not
been shown in a long while, but are
making little progress in placing
orders.

Despite the car shortage and crippled
transportation conditions, record pro-
duction is being maintained, running to
375,000 and 380,000 tons during the
last three weeks. With an ample
supply of equipment for loading and
hauling, service could be increased easily 50,000 to 75,000 tons
per week. The lines are showing steady
improvement in service.

VIRGINIA

Not much more than 50 per cent of
potential capacity is being produced.
Any increase in production has been
limited to the mines on the N. & W.
and the Southern, mines on the former
road having increased their production
to the extent of 15 per cent and on the
Southern by 5 per cent.
Abnormality Is Normal

Now in Midwest Region


THE Midwest is getting hardened to upset conditions. Uncertainty in everything to do with the coal trade has calloused coal traders to a point of calmness. Prices remain high and coal is almost impossible to get for open market except from western Kentucky, whose output sold at the end of the week for more than $8 in most cities hereabout. Buyers are now so confident of the end of the strike that they are buying only where it is absolutely essential. Jobbers are declining to sign up with producers for any more coal except on a day-to-day basis.

The machinery of controlling distribution of coal from the Kentucky fields has not got well into its stride. The result is a large part of the output is still going into the open market. Priority orders are growing more numerous every day but even this is uncertain because of conflicting efforts of those supposed to grant priority. Coal supply continues to be limited.

A good deal of the coal produced by the eastern Kentucky fields is going to railroads and utilities at the Hoover prices. West Kentucky continues recalcitrant and while its committee wrangles with Washington to get an increase in the Hoover maximum, most of that region’s coal sells higher than $8 at the mine.

CHICAGO

A state of uncertainty has prevailed so long on this market that it now is accepted as normal. Hence its continuance during the past week while the strike gave signs of ending at the Cleveland conference, upset nobody. A little coal from Kentucky was traded here every day at prices that preceded around $8@9 all week, closing Saturday at $8@8.50. At no time was there any heavy trading nor was the market level. Wild quotations were quoted from time to time to unwise buyers, resulting in an occasional sale at $11 or even $12.

Practically no coal other than a small volume from western Kentucky moved through this market except one batch of Pittsburgh No. 8, which was offered on Wednesday first at $9 and finally as low as $7.50 before it was cleaned up on Friday. A scattering few cars of West Virginia high-volatile also appeared and sold at the same levels. Practically no smokeless or eastern Kentucky figured in the week’s business.

A great deal of interest was stirred up by various business organizations who raised their voices over the approaching fuel famine in the city. Dealers ended a canvass showing practically empty yards and a survey of shipyards showed the supply of coal was left. Chicago is pleading with Washington for freer shipments to this region.

SOUTHERN ILLINOIS

Mules are going down the mines, presumably for the purpose of cleaning up, but it is likely they will stay down. At least, that seems to be the impression among the miners. Several mines are in first-class condition to produce coal in the event of a settlement but others may need several weeks to get in shape. Everybody is optimistic. There is no trouble in the Carterville or Du Quoin fields. There is some activity in the Mt. Olive and in the Standard districts toward cleaning up.

The shippers of Madison and St. Clair counties have been busy trying to prevent clashes between striking miners and the loaders of coal from the slack piles. Belleville loading has been stopped by the miners. Loading continues at one Collinsville pile, protected by a U. S. District Court injunction.

INDIANAPOLIS

The call for coal in Indiana is increasing but there is no coal. The demand is due to indications of an end to the strike and to the fact that the industrial plants which have been skimping along on low reserves for weeks, wish to get in on the ground floor. No contracts are being written as high as they likely will get.

During the past two weeks there has been a revival of business in some of the staple lines in the state and this is calling for more fuel. Many plants have had to close down during the past week because of lack of coal. Utilities appear to be suffering, but not to the point of shut-downs. Some are burning cobs. The state operation of strip mines has resulted in a total of only eight cars, a disappointment to Gov. Meriwether, who expected a larger production in the eight days the State has had control.

WESTERN KENTUCKY

Although priority orders are controlling the movement, use and destination of coal, and billing is refused by the producers, except when shipped on such orders, the price question is not being policed by the railroads, with the result that about the lowest quotations for Western Kentucky coal are around $7 and ranging upward to $8 and higher. This is a drop from $9@10 from July 5.

Western Kentucky has never agreed to Hoover prices. For several days past an effort has been made to secure a $4.25 maximum, and press reports from Washington, indicate a favorable consideration, but no definite action. It is claimed that Washington has been countermanded $3.75 as the maximum. Production is somewhat better. There is a ready demand for all coal that can be produced at $7@8 a ton, and the industry is showing much inclination to accept $3.50, believing now is for railroad and industrial use principally, and does not represent much domestic fuel.

LOUISVILLE

Regardless of conferences this week of representatives of Kentucky, Indiana, and Chicago (H. A. Hoover and of the Kentucky Fuel Commission along with railroad officials, about the only change noted in the general situation is that all coal produced is moving on class 2, priority orders. Prices continue at $7@8 in both eastern and western Kentucky, although a few producers may be maintaining the $6.50. Jobs are taking orders, enforcing priority rulings, but the State and Federal boards are not controlling distribution.

Railroads and railroads are paying the $7@8 asked, without much argument. Michigan is raising a lot of noise concerning inability to move Kentucky’s production direct to Detroit, but Governor Morrow, of Kentucky, argues that Kentucky comes first. Jobbers report that they are not buying any coal or taking any chances on orders that may be countermanded if the strike blows up at Cleveland.

Discussion locally indicates that if any effort is made to refuse cars to customers which can afford to pay the freight but who charge over the Hoover price, there may be an effort to secure Federal court injunctions to force equitable car distribution, on the basis that no state or Federal department has the right to endeavor to regulate prices, and that such action through misuse of the powers of the Interstate Commerce Commission are unconstitutional.

ST. LOUIS

St. Louis is almost out of coal. A little is moving into the city but the situation is critical. Several small plants are running on short time and some have suspended, and it is estimated that about 5,000 tons of coal per day are being displaced in the St. Louis district by oil burners. Oil transportation is beginning to get serious. A peculiarity about it is that the oil companies are paying $8@10 a ton at the mine for the coal and are selling oil to non-essentials.

The domestic trade is easy and patent waiting, but the dealers are out of coal for small essential plants and railroads are beginning to feel the pinch in a severe way. The fuel commission has set mine prices on Missouri coal but no retail prices were set. The prices quoted at the mines on Kentucky coal range $8@9, $10, and 88c@$1, and at those of $7@8, and no other coal are available.

The general impression here is that the strike will be settled within a week, and the market should take advantage of it. St. Louis will begin to get any commercial coal and the situation is such this winter that the average supply of coal will not be normal in St. Louis unless the market is springing on account of the depleted stocks.
Eastern Inland

Buyers Reduce Orders, Awaiting Strike’s End

Cut in Consumption Necessary With Lowered Spot Demand—Priorities Leave Little Free Coal—Lake Trade Will Be Assisted by Issuance of Preferential Orders.

Priorities rule on the bulk of the coal moving. The buyer is not bidding up the market, preferring to await the early resumption of union mining which has been assured. Demand is off, but in many cases this has been accompanied by a curtailment or complete industrial shutdown as buying had lately been largely for day-to-day consumption. Prices are a trifle softer than last week.

The Lake trade has been hard hit by the scarcity and rail congestion, but the latter is clearing slowly and the issuance of priority orders for vessel and cargo coal is designed to remedy the situation.

Columbus

Operators and shippers are marking time, waiting for the results of the Cleveland conference. There is a good deal of optimism shown in producing circles and a general feeling that matters may be straightened out by the conference. The state fuel commission is functioning and only a small amount of coal is available.

Prices are erratic at the extreme. Some free coal is selling around $6.50@$6, and in some cases higher. Shippers asked by the fuel commission are made generally at Hoover levels. So far no large user has been compelled to close down because of lack of fuel although quite a few are close to the bottom of their bins. Railroads are taking the main bulk of the production.

Quite a few Lake shippers are in the market. Offers of $4@$4.75 have not been taken up and producers are content to await developments. The H. V. docks at Toledo loaded 55,911 tons during the week ended Aug. 9, as compared with 42,101 tons the previous week. The Northwest is clamoring for coal and some priorities to insure shipments to that section are being issued.

Buffalo

The situation here is just as quiet as ever. Jobbers have regular understandings with reliable mine owners, and are doing a ragged sort of business, with some cars one day and perhaps none the next. Others hold off, with the idea that prices will go down fast as soon as the mining settlement is made.

The more determined of the operators say that mining at former wages merely means another fight next April. It will not answer to go on in this way indefinitely.

The price situation is as unsteady as ever. Now and then a car comes out that was bought at $3, again one sold for $9. Between these extremes a good average is $7.50@$8.50.

The company getting Lake fuel continues, but the fleet manages to obtain it somehow. With new crops heavy the Lake activity will need to continue.

Cleveland

Hope of an early settlement of the strike has caused a peculiar situation in the Cleveland market. Buying is not as strong as it was two weeks ago and consumers who are not forced to take their supplies on a day-to-day basis are delaying in the hope that they will soon be able to place orders for union-mined coal at more reasonable prices.

Industrial plants are steadily losing time through individual fuel shortages. The danger point has been reached by railroads and public utilities, and these industries are most active in seeking tonnage. Pressure is being taken on an increasing volume of the non-union output and the Lake situation is being given some attention by the issuance of preferential orders for the movement of bunker coal, as well as the placing of a priority on cargo coal shipments.

Prices show a wide range, but have little significance as rail congestion and priority orders allow but little tonnage to seep through.

Eastern Ohio

Even though the supply of available coal in the market has averaged prices at a minimum, steam users are purposely procrastinating as to any steps looking toward replenishing their stocks because of renewed hope that mining will be resumed soon.

Inquiries are not so numerous as several weeks ago, notwithstanding that many large industrial plants as well as railroads and public utilities are nearing the danger point of fuel scarcity. Likewise, confiscations by the railroads are becoming more frequent, evidenced particularly by the inability of consignees to get non-union coal consigned to them from West Virginia and eastern Kentucky. Congestion at Ohio River gateways continues to be the main barrier to a more rapid volume of arrivals. Receipts of bituminous coal at Cleveland during the week ended Aug. 5 slumped considerably, total arrivals being but 62,000 tons. This registers a decrease of 21,616 cars under the receipts for the week ended July 29.

Eastern Ohio stripping mines continue to produce between 30,000 and 40,000 tons daily, probably being unable to attain the former maximum output, which some six weeks ago was averaging a little above 50,000 tons.

Spot prices have varied during the week, quotations on eastern Ohio stripping and West Virginia Panhandle, any grade, ranging $7@$7.50. Eastern Kentucky and West Virginia were quoted $4.50@$8.00, but information in the trade is that these latter quotations were not without some signs of impossibility to get this coal through. Considerable shifting as well as delays in Lake shipping are reported because of inability to get bunker coal and in isolated cases as much as $10 has been paid.

Detroit

With only about 300 cars arriving daily to meet requirements amounting to 45,000 to 50,000 tons, Detroit is steadily reducing reserve stocks.

Efforts of the D. T. & I. R., controlled by Henry Ford, to arrange an agreement are still above the underas the former might send motive power and train crews to move several hundred loaded coal cars, held back on the Benedum & Western Pennsylvania, being of Corbin, Ky., have been unsuccessful, the management of the L. & N. taking the attitude that it would be an injustice to other parts of the country to permit this excessive movement of the coal to Michigan.

Word comes from Washington that Michigan’s fuel administrator, who presented priority orders for more than 300,000 tons, has been promised the immediate shipment of consignments amounting to 8,750 tons.

So far the various fuel administrators have taken no steps to obtain coal to supply the needs of household consumers, all efforts being for the relief of utilities.

Pittsburgh

The Pittsburgh Coal Producers’ Association, as a body, refused to have anything to do with the Cleveland convention, representation at the convention being merely of a few scattered mines. The evident intention of the district as a whole is to resume operations when feasible on an open-shop basis.

The remark that the districts represented at Cleveland were moved by financial considerations. A similar incentive, it is said, does not obtain with the typical Pittsburgh district operator.

The only important market in the past week has been in Connellsville steam grade, the price of which has ruled steady at a range of $7.75@$7.50, being a shade stiffer than a week ago, but easier than late in July, when the top price of $8.50 had been reached.

Occasionally a little Connellsville by-product coal is bought at $8.50 but there is little demand, consumers considering the price prohibitive. More coal, however, $8.50@$9, being taken chiefly by gas companies.

While reports continue to be made of gains in coal production in the Connellsville region, it seems to be beyond question that the offerings in the open market are lighter than 30 days ago.

Northern Panhandle

Although production is not as large as it was before the rail strike, it is being maintained at about 40,000 tons a week. Additional mines have not been able to resume operation, however. The Ohio, however, but appear to be declining somewhat, the general average being about $6 per ton.
Upper Lake Region Is in Desperate Need of Coal

Hopefully Awaits Coal Now on Way From Kentucky—Survey Shows Supply on Hand Is Gone—Propaganda Works Well—Prices Are Climbing.

WITH docks swept almost clean and with supplies everywhere down to a few days' life, the North-west anxiously awaits the arrival of the first cargoes which the government's new distribution system is going to deliver. Already 530 car-loads are ordered for it under the first priority for the Upper Lakes states. These 530 cars are beginning to come out of the Harlan, Hazard and other Kentucky fields for shipment through the Ore & Coal Exchange at Cleveland.

The Northwest needs it. Surveys by sections show the region is in a desperate plight which good propaganda and much activity by politicians have described effectively to the country. Prices are climbing to $8@$9 but there is practically no free coal and contract orders are being filled in small dribs.

DULUTH

Dock operators and dealers on this market are being besieged on all sides for supplies when they have no free coal. What little remains is being held for consumers entitled to priority. They are endeavoring to supply 1,000,000 tons to threshing outfits over the northwest. That, with bunking coal for the steamers, the railroads and other consumers in the favored class will have to come from allotments to be furnished the northwest.

A survey taken by a committee of the Duluth Chamber of Commerce showed that fuel supplies of many industrial consumers are nearing exhaustion. The report of the committee set out that seventeen mining companies operating on the Minnesota ranges are short 1,000,000 tons. The hard coal situation at Duluth and over the northwest was claimed in the report to be desperate. Record shipments for the season were made from Duluth and Superior docks during July, the total being 27,069 cars. Last year 26,664 cars were loaded out in June and 13,448 cars in July. Only 105,474 cars of coal were received at this harbor this season, being 27,069 cars. Last year 26,664 cars were loaded out in June and 13,448 cars in July. Only 105,474 cars of coal were received at this harbor this season, being 27,069 cars.

Compared with the same period last year, anorth coal receipts decreased 788,461 tons and bituminous receipts 8,445,174 tons. Shipments of 19,000 Hampton Roads because priorities have been placed on new factory installations, have been planned according to the principle that coal is to be used when it is needed and not when it is surplus. With the future uncertain, a small supply of coal has been gained, but it is known to be extremely short.

MINNEAPOLIS

Political propagation on behalf of the coal requirements of the Northwest may help win priorities and real service for this section. The governor of this state urged the government to take over the coal-carrying roads from the non-union fields to the lower Lake Erie ports. Whether a sequence or coincidence immediately after the governor's statement was made came a Federal promise of concentrating on these coal-carrying roads to get service.

Members of the coal trade insist that regardless of the settlement of the miners' wage situation, the big difficulty will continue to be the failure of the railroads to perform their functions. Senator Kellogg and Governor Preus, both of Minnesota are campaigning for coal. Nothing is being neglected that might possibly serve to bring about fuel deliveries. A coal survey is being made throughout the state. A great many large users and public service concerns are reported very low on fuel, some with less than three weeks' store.

MILWAUKEE

Milwaukee's coal market is at a complete standstill. Only two cargoes have been received thus far in August, and the docks are about swept clean. Everybody clamoring for coal, space is rare. The state fuel administration is functioning and strenuous efforts are being made to bring about urgency consigning of coal. One priority shipment of forty cars to the Milwaukee Gas Co. was confiscated en route by an eastern railway. A small cargo of soft coal is on the way here from Quebec, and other small steamers plying in the wheat trade to Montreal may bring additional cargoes.

Receipts of coal thus far in August aggregate 7,500 tons of soft coal, making the season's receipts to date 781,560 tons, against 1,604,424 tons during the same period last year. Up to this time last year 547,400 tons of anthracite had been received over the docks. Not a cargo has been received this year.

The price list on hard coal has not been changed as yet, as none is to be had. What the present rates will be when coal commences to move is a matter of conjecture. An offer of anthracite from Vancouver, B. C., at $18 a ton has been refused. Soft coal prices continue at the 50c. advance noted last week.

New England

Receipts from Hampton Roads Cut by Priorities

High Quotations Rumored for Coal Diverted from New England—Only Slight Interest Shown in Market—Buyers Profess Ability to Await Lower-Cost Coal.

A SIDE from diminished receipts on contract there is practically not a thing doing in this market. Sundry quotations are rumored, as high as $13 having been asked for small lots on cars Boston or Providence, but in most instances there is so little free coal that no one is much interested. Rehandlers are applying coal on orders entered into some weeks or months ago, and at this end thus far there has been no attempted interference.

Buyers have reasonably comfortable reserves and are by no means panickey over conditions. There is talk of replacing anthracite prepared sizes with bituminous for household use, and the public is now being advised to buy soft coal enough for two months.

Fewer transactions are possible at Hampton Roads because priorities have been placed on new factory installations, and it is not to be expected that the output will soon be increased either through some understanding reached with the unions or that the operators will themselves resume operations regardless of union leaders. So long, however, as meetings and conferences are continued such action will be very difficult for not only do such "negotiations" tend to hold operators back but they also influence mine workers themselves to hold out further in the hope some arrangement can be made on the peak wage basis.

COAL AGE
Growing Effect of Priorities Reduces Spot Offerings

Prices Are Lower as Free Tonnage Has Moved Out—Lakes Hampered by Priority Orders—Walkout Cripples L. & N. Service.

The movement of coal through this gateway the past week was a little heavier, despite the confusion of establishing priority plans for the distribution of fuel. Under anticipated priority conditions but little coal was placed for Lake shipment, the L. & N. refusing to set cars for loading for the Lakes, although inconstant operators with contract orders besieged the offices in desperation. Harlan and Bell counties are tied up by a walkout of the Big Four brotherhoods employed by the Cumberland Division of the L. & N.

Prices have been depressed by the growing effect of priority orders. There is, however, some coal now coming through, loaded before the issuance of these orders, and delayed by the transportation trouble. This is regarded as the last of the high-priced product.

CINCINNATI

For the week ended Aug. 5 the rail movement into and through Cincinnati was better and showed considerable recovery on the part of the coal roads. Total interchange of cars was 13,481, of which 5,842 were coal loads, a matter of 534 cars increase over the movement of the preceding week for coal. Of this increase the L. & N. contributed 375 cars, a fine record, taking into account handicaps. The C. & O. contributed 156 cars and the N. & W. 3 cars.

Congestion at distributing centers is being gradually overcome regardless of strike conditions and this is freeing some coal loaded before the issuance of priority orders. This has turned into the market some coal which has sold from $7.50@$9, which is regarded as the last of the high-priced product.

It is understood that the fuel committee organization is taking into account production costs and is permitting an additional charge in some cases, notably the New River district, of $1 additional to counter overhead costs, and that a few bituminous producers are advanced $1.25 over Hoover fair prices for the same reason.

HIGH-VOLATILE FIELDS

LOGAN AND THACKER

Logan mines are not getting more than one-tenth of the car supply wanted. The trouble is not local but is due to the difficulty in getting empties back from Western connections. Market conditions are highly conducive to a large production in this territory if the coal could only be moved. Many contract customers have been deprived of a supply; this is especially true of the steel industry.

Transportation conditions are being gradually improved in the Kenova-Thacker field. Mines are now averaging about 40 per cent improvement is due in part to the increased number of shopmen at work on the N. & W. and to a larger flow of empties back from the West. Priority orders are interrupting the usual flow of coal.

NORTHEASTERN KENTUCKY

Unfavorable transportation conditions are still barring many mines from operating at a time when market conditions make it necessary to produce a larger tonnage. The first few days of August, however, saw a slight improvement in conditions. Labor is available for a large output if mines can only secure an adequate supply of cars.

KANAWHA

Although mines are still laboring under transportation difficulties, yet the output remains at about 60,000 tons per week, with more than half the mines in the region still in operation and with a prospect that additional mines will resume under more favorable transportation conditions. The market is most urgent and inquiries cannot be taken care of owing to priority orders.

LOW-VOLATILE FIELDS

NEW RIVER AND THE GULF

Although all New River mines are operating, it is only after a fashion, owing to the difficulty experienced in getting cars and in getting coal moved. This is holding production down to a little over 100,000 tons a week. Production is gradually getting back to a normal basis, however, owing to the increase in transportation facilities. The movement to Tidewater has been small. With tonnage still so low prices continue on a rather high level, although government regulations are having a tendency to force a decline.

The Virginian has been handicapped by lack of motive power and production in the Winding Gulf for a time was reduced to a point below 100,000 tons a week, but with a slight improvement in transportation facilities mines are managing to increase the output. Tidewater shipments have been greatly restricted.

POCAHONTAS AND TUG RIVER

With transportation conditions on the N. & W. somewhat improved, it is possible for the mines in this field to increase its output, the increase within a week amounting to about 60,000 tons. Shopmen from other roads are now at work on the N. & W. and that is making it possible to use more motive power.

Coke

UNIONTOWN

Miners in the Connelsville region face the prospect of seeing at least a portion of the union miners returning to work under a patched-up agreement with themselves no nearer their goal than the day they walked out.

Meantime production is increasing steadily as is also the number of dynamite outrages. Labor, mostly negroes from the Southern fields, are arriving and these miners are distributed at the various plants, apparently carrying out a policy of reorganizing labor forces. The condition of the striking miners in some cases has reached the point of a crisis. At the Palmer tent colony an epidemic of typhoid fever broke out which resulted in a score being sent to the hospital.

The market remains high with no attempt yet made at restrictions of price or diverting of tonnage to priority consumers. Railroads are now the buyers, and regular rates are being made at $7@$7.50 for all tonnage offered. The coke market remains a missing quantity.

CONNELSVILLE

Coke offerings in the open market appear to be somewhat decreased, as compared with a fortnight or a month ago, although in many quarters it is thought that the market is more active than ever before, and this is the mark of good business. The market is high with no attempt yet made at restrictions of price or diverting of tonnage to priority consumers. Railroads are now the buyers, and regular rates are being made at $7@$7.50 for all tonnage offered. The coke market remains a missing quantity.

BUFFALO

Jobbers are hardly able to get anything with a little more competition from the beech districts. A little coke can be had now, though, where there was none formerly. The figures run up to $15 and $72. Connelsville foundry coke is $9@$10 for chestnut size, adding $.38 for freight to Buffalo. Mines are working approximately three days a week. The Tidewater movement has been slow.

All Tug River mines are running, but only at a full-time basis, owing to the difficulty in securing cars. Production is limited to about 62,000 tons per week, with signs pointing to an increase as lines are opened for the movement of coal, and as cars are moved into the field more freely from the West.
COAL AGE

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*NEWS ITEMS*

From Field and Trade

ALABAMA

Forty-nine applicants for mine positions took the semi-annual examination before Chief Mine Inspector C. H. Neibitt and his assistants held at the Alabama State Mines Department. The examinations were issued to eighteen who successfully stood the examination for positions as first-class mine foremen, twenty-three for second-class mine foremen and three to men who wished to fill positions as miners.

Roy R. Con, of Montgomery, has been appointed fuel administrator for Alabama. At a recent meeting of Alabama operators to discuss and take action on the plan of the government for the operation of lands in Jackson and DeKalb counties. It is understood that the company is making an attempt to bring the adjoining counties with an acreage of approximately 100,000, and plans to build a railroad a distance of about four miles to strike the natural gas in these blocks to be constructed at the terminus of the line. The capital stock is said to be $500,000 and the location is in the counties of Montgomery and Crenshaw. Sheridan W. Baker, Santa Rosa, Cal., is said to be the principal stockholder.

COLORADO

Much criticism has arisen because the new advisory coal committee fixed coal prices higher than did the fuel administration during the Gardner and Collings, and with the approval of the committee, refused to approve the sale. Other members are James Dalywraith, state fuel commissioner; Fred W. Bennett, T. C. Hitchings, Harrington, W. R. Childers, and William R. Russian. The committee's report will be $3.50 per ton. The Colorado Fuel Commission's report will be $3.80 per ton. It is expected that the prices will be about $3.50 per ton.

ILLINOIS

The Sangamon County Coal Mining Co. is installing improvements at its mine near Lindon during the entire strike. The entire plant is to be electrified with the exception of the switchboard. Many of the improvements will be possible by the extension of a power line. The improvements will be made at the expense of the company.

Gordon Mason purchased the Morgantown property of the Producers' Coal Co., at considerably lower prices than the mining company's offer of $6,000.

The Harrisburg Coal Mining Co., Harrisburg, III., has completed the installation of three Krueger engines, loading booms at the Blue Bird mine.

The Donk Bros., Coal & Coke Co., with main offices in St. Louis and sales offices at Calumet, Chicago, A. H. Speulda, for sometime sales manager for the company, has been put in charge of the new office.

An announcement has been made by the West Virginia Coal Co., St. Louis, Mo., of the purchase of the New Marilla mine near Marion. The newly acquired property is an up to date mine with an output of from 3,000 to 5,000 tons a day. The equipment of the mine is considered to be worth approximately $1,500,000. In addition, the company has control of additional mines in the area.

H. A. Requa, sales manager for the Columbus Mining Co. at Chicago, spent the first six months of the year in Wisconsin, receiving the so-called observation that the stories of fuel famine now gnawing Wisconsin from door to door are simply not true.

C. S. Peabody, chairman of the board of the Peabody Coal Co., has returned to Chi-
cago after a trip to New York and to Eastern markets. He is expected any day to announce a large purchase of new coal from the west. The coal is in demand by Eastern industries which need it more keenly than Western householders will see to it. He said the last coal

bank has been cleaned up and the last anthracite rail below Big Foot.

Joseph Harrington, well known as the designer of the Harrington stoker, has been named chief engineer of the Dillon Coal Co., as combustion engineer.

DIANA

The discontinued branch of the C. & E. I. Railroad, known as the "Coal-Road" in western Indiana, has been bought by a number of business men living along the line, and, according to report, will soon be in operation to the great benefit of a number of small industries that have been cut off from railroad service.

KENTUCKY

Better market conditions have resulted in new mining companies beginning to spring up again. Some of these are small companies which will only operate the mines and others will operate mines which have been previously abandoned. No large

new developments are being reported.

Among recently chartered companies are the Toco Mining Co., Providence; Thomas O. Long, George W. Williams; Mrs. O. L. Smith, and E. C. Hollingsworth, Lemon King, all of Providence.


The Hazel Coal Co., a new company at the meeting in Cincinnati, approved the plan of the committee, and with the approval of the members of the distribution committee. The members said that the Hazle coal would soon be offered to the public at a price of $3.50 per ton.

MICHIGAN

Charles F. Dunn, wholesaler in Detroit for some years, has been selected as Wayne County fuel commissioner, following the their announce- ment of the Michigan Central freight de-

r. in connection with the work.

Ivan Bowen, of the Minnesota railroad fund, has been named a member of the distribution committee. He has started a canning of the 2,500 retail dealers with the request to ascertain how many there have been on hand, what they have been assured they will get and what their absolute needs to serve the winter, are.

MISSOURI

The El Dorado Springs Development Co., reported by news personal, has been placed under a large contract for the composition of a new coal mine. The company has been given a five-year extension of the contract to ascertain how many there are on hand, what they have been assured they will get and what their absolute needs to serve the winter, are.

The Mine of the Liberty Coal Co. of Mo., has been reopened under agreement with the local union of the United Mine Workers of America and will mine enough coal to keep the plant of the Liberty Light & Power Co. going.

NEW YORK

The Floradale Equipment Co. has been organized by C. H. Floradale with offices at 150 and 152 West St., New York, to handle the Conveyors of America, Chicago, a manufacturer and distributor of high grade, steamjet ash and conveyor the American transit company.

The Buffalo Chamber of Commerce has appointed Charles. L. Couch, president of the Buffalo Coal Co., as a member of the committee to look after coal supply and distribution. A preliminary meeting has been held at which a sub-committee was appointed to be the supply and needs of Anthracite will be locked away.

W. P. Smith and W. Denny, of Buffalo, have been appointed by the organization of a new company, to be operated under the name of the Smith Denny Coal Co. Mr. Smith was the representative of W. C. Stone & Co., of Uniona, Pa., until the office was closed. The company is supposed to be in the coal business in Toronto.

E. M. Host, of Inverness, Coal & Coke Co. for the three months ended June 30, shows a

ports gross earnings of $320,742 against $321,533 for the same period last year. The earnings totaled $56,519, after allowing for all charges, including interest and taxes. After allowing for the regular preferred dividend, the balance was $17,555. The annual dividend is $2 per share, to be paid on January 15, 1923.

Pennsylvania

Governor Sprout on Aug. 8 announced that he had named a State Fuel Commissi-

on to operate with the Federal Fuel Commission. There are seven members of the Pennsylvania Fuel Commission, in addition to a special committee upon distribution. The Pennsylvania Fuel Commission has been appointed a number of special agents to do the work.

The following bituminous coal companies have been granted state charters recently: Washington Coal Co., of Altoona, capital $300,000; treasurer, Edward K. Cook; directors, Paul F. Min. Missouri City Coal & Coke Co., of Kansas City, capital $100,000; treasurer, Samuel E. Cook; directors, George H. Min. The companies are the incorporators.

Edwin E. N. Young, of Detroit; E. E. E. N. Young, of Detroit; E. E. E. N. Young, of Detroit; E. E. E. N. Young, of Detroit; E. E. E. N. Young, of Detroit; E. E. E. N. Young, of Detroit; E. E. E. N. Young, of Detroit;

The School of Mines of the Pennsylvania State College has over 1,900 students enrolled this year. The college is in residence on the campus during the four regular residence courses in mining engineering, mining geology and mining mechanics.
that the School of Mines, in common with other schools of its kind, may take in a larger number of students making application for admission, and that a number of the companies in the State University with accommodations for 10,000 students.

UTAH

J. T. and E. L. Raines, A. H. Jenkinson, R. V. Wing, J. J. Geer, W. M. Strong, Lake City, and Wm. Stevens, Cedar City, have been granted permits to mine coal in this state.

The Carbon County R. R. has been organized, with offices at Casper, Wyoming. The company was recently formed with a capital of $150,000, and has purchased 2,000 acres of land in the county for a terminal.

The companies of the railroad company will be head of the railroad company.

WEST VIRGINIA

It has been necessary to institute suits of ejectment against most of the sixty-two miners occupying houses owned by the B. D. Nealy & Co., in Monongalia County, in view of the failure of the miners to move out, and their eviction has been ordered.

The company promises that if they are not able to pay the outstanding accounts, they will be required to vacate the premises. The suits have been filed.

The Coalburg Collieries Co., of Eldora, on Cabin Creek in the Kanawha County field, has filed in the Court of Common Pleas of Kanawha County application for a mandamus injunction to obtain possession of the coal rents and interest coupons and receivers' certificates of the Monongahela & Monongahla River Coal Co., and to prevent them from interfering with the company's operations.

The orders are necessary, as the company has been unable to pay the rent due on the coal.

The coal deposits in this area are valuable, and the company wishes to continue its operations.

Traffic News

Deciding the complaint of the Lehigh Valley Coal Co. against the Director General of Railroads, the Superior Court of Pennsylvania, in Monongalia County, has ruled that the rates are not unreasonable.

The complaint of the Lehigh Valley Coal Co. against the Director General of Railroads in Pennsylvania, has been dismissed.

Rear rates from the Pittston Coal Co., at Scranton, to other collieries in the Lehigh and Wyoming regions of Pennsylvania to breakers in the same region, have been reduced.

The rates have been reduced from $1.50 per ton to $1.25.

Unreasonable rates on coal from various points to Omaha are alleged in a complaint filed by the Metropolitan Utilities District, of Omaha.

The operation of a line of railroad already constructed has been requested in an application for franchise, made by the Thompson & Thompson Railroad, the line being from Thompson and Thompson Co., and to provide service for coal mines in the vicinity.

The “eastern” coal case, in which Indiana shippers are seeking a reduction in rates, has been decided. The railroads to the East, and the Blackfoot & Thompson Railroad, the line being from Thompson and Thompson Co., have also been ordered to reduce their rates.

The price of coal has been reduced from $2.50 per ton to $2.00.

Recent Patents


Miner's Lamp Tool. Herman W. Hoff, Beaver, Pa. Filed Nov. 19, 1921; serial No. 515,595.

Coal Breaker. Frank Pardee, Hazleton, Pa. Filed Nov. 19, 1921; serial No. 515,385.

Mining Machine. Morris R. Holman, Canby, Ore. Assigned to the Jeffrey Mfg. Co., Columbus, Ohio, Filed Nov. 19, 1921; serial No. 515,865.

Switch System for Mine Locomotives. Wm. & H. Wolfe, Pittsfield, Pa. Filed Apr. 18, 1922; serial No. 315,728.

Mining Machinery. Stephen E. Odell and Frank L. Clift, Bellingham, Wash. Filed Apr. 18, 1922; serial No. 315,326.


Coming Meetings

New York State Coal Merchants' Associa-
tion will hold its annual meeting at Rich-
field Springs, N. Y., Sept. 7-9. Executive
secretary, W. F. Woodside, Arkay Blg.,
New York City.

Coal and Industrial Exhibition under the auspices of the Huntingdon Chamber of Commerce, will be held in the Chamber of Commerce Bldg., Huntingdon, W. Va. The exhibition is sponsored by the National Association of Mine, Mechanical and Electric Engineers, and will be held in the same building during the exposition.

American Mining Congress will hold its national meeting at the Grand Central Palace, New York City, July 10-15. President, Charles H. Kott, Pittsburgh, Pa.

National Safety Congress will hold its eleventh annual Safety Congress at the Mayflower Hotel, 11-15. President, W. F. Whitaker, Denver, Col.

American Chemical Society's annual fall meeting will be held in the Grand Country Club, Pittsburgh, Pa. Divisions will be held separately, with general meetings at Carnegie Music Hall.

The Rocky Mountain Coal Mining Institute will hold its 11th annual meeting at the Grand City, Salt Lake City, Sept. 7-8. Secretary, W. F. Whitaker, Denver, Col.
Quixotic Sacrifices

At CLEVELAND the United Mine Workers announced the terms on which they would go back to work. The terms are now well known. The miners did not ask for further conferences. The matter was settled. All that was therefor required was for the operators as individuals, or as groups if they preferred, to step up and sign the contract—one the dotted line.

Some persist in referring to the outcome as individual settlements. It is anything but individual settlements—for all it is individual signatures. There is no point in trying to cover over the extent of the defeat suffered by the operators. The only feature to which they can point as a gain is the breaking up of the old Central Competitive Field. Lewis did not get that treasure restored, and, as we have said before, it was, after all, not an essential to him.

Large groups of operators have not signed the Cleveland agreement. Some are trying to effect outright district agreements as such and thereby establish the fact of district contracts, for which they have been contending. To accomplish this they are finding that they are being called on to concede more than even the terms imposed by Lewis at Cleveland. Illinois at this writing is endeavoring to wrest from the union a contract more favorable to the Illinois mine workers than that offered by Lewis last week. They are still pinning their hope on Frank Farrington, who has delivered nothing as yet. It is an admirable enterprise in which they are embarked—that of breaking Lewis' hold by re-establishing Farrington to power through their sacrifices. So might a shipwrecked, starving mariner, clinging to a log, resist the friendly wind blowing him toward shore whilst he carved his log to a stately ship that he might ride to port in style.

Guerilla warfare annoys and hinders, it does not overcome an organized enemy.

The President's Message

To PRESIDENT HARDING the coal industry owes a debt for his message to Congress on Aug. 18, the theme of which was the present disturbed industrial conditions of the country and the major subject of which was coal. Like every student who writes a thesis as a result of his first study of an interesting subject, the President has discoursed at length on coal. He has found it an absorbing if disturbing subject.

Going back to last October, when the administration initiated its efforts to forestall the coal strike by seeking an agreement in advance between the miners and operators to arbitrate their differences—an agreement, by the way, that the operators were then wholly willing to make but which the miners refused—the President carries the narrative down to the present. His remarks on the rail strike are really supplementary because to the government at Washington the early settlement of the rail strike has been considered of first importance because of its influence on the coal strike.

Those Americans who read Mr. Harding's message with even casual care will be impressed with the hopelessness he expresses. After telling of his efforts to get the disputants together this summer he says with respect to his proposal of July 10: "Appraising correctly the hopelessness of the situation I again invited both operators and workers to meet with me, and tendered a means of settlement so justly inspired that it was difficult to see how anyone believing in industrial peace and justice to all concerned could decline it." Yet, he notes, "the mine workers refused to resume work under the arbitration plan" and "a considerable minority [of the bituminous coal operators] declined the proposal." The cause of his despair, as it has been of the despair of the coal industry since the Cleveland meeting early this month is summed up in his highly significant words:

"The simple and significant truth was revealed that, except for such coal as comes from the districts worked by unorganized miners, the country is at the mercy of the United Mine Workers." Merciful heavens! How John L. Lewis must have swelled to bursting with pride in his kingship when the President of the United States admitted so much!

Pointing out that at every stage the government has been a neutral regarding wage scales and working contracts and that there are fundamental evils in our "present system of producing and distribution which make the wage problem difficult," Mr. Harding, believing that the "public interest demands the investigation and the finding of the facts" for the public, asks Congress for authority to create a commission of investigation of the whole coal industry "with provision for its lawful activities and bestowal of authority to reveal every phase of coal production, sale and distribution."

In speaking thus he rightfully says that he is speaking in the interest of the mine worker, the mine operator and the public.

Praising the coal operators who have scrupulously held to the maximum prices set by Mr. Hoover, the President glories in the "revelation of business conscience stronger than the temptation to profit by a people's misfortune," and makes "grateful acknowledgment to those who preferred to contribute to national welfare rather than profit by a nation's distress."

It is not because Mr. Harding offers solutions for the problems of the coal industry or sets out to get a commission to assemble facts that we are grateful for his message on coal. It is because to an intelligent public his words will carry the knowledge of a troublesome and difficult problem and conviction that when a chief executive throws up his hands in despair over the strike there is perhaps after all something more than plain hardheadedness on the part of the coal operators to explain the duration of the strike and the loss of the fight to the miners.
Coal and the Tariff

IN THE boom year of 1920 the spot price of bituminous coal rose to unheard-of heights, passing in some isolated instances $20 per ton at the mines. Throughout the greater part of the year prices were high, yet the official figures of the Geological Survey show that the average for all soft coal produced was but $3.74, an increase of $1.25 over the average for 1919. On a normal output of 500,000,000 tons this would mean less than two-thirds of a billion dollars added to the cost of coal one year over the other. This increase was in fact taken in part by the advances in wages to the miners and in part went to the coal operators as profits.

A strenuous effort has been made this year to reduce the wages of coal-mine labor in consonance with commodity prices, the cost of living and wages in other industries. It has signally failed. The President in his message to Congress tells us why—the unconquerable United Mine Workers. Coal will therefore be no cheaper this winter; for many it will be higher than last year. The fight within the industry has resulted in a decision calling for more money from the public. For this the industry will be lambasted from one end of the country to the other, and—here is the point—from one wing of the Capitol to the other. Congressmen and Senators will lay the lash to the coal industry for robbing the people, for depriving it of coal and for profiteering in a commodity that is essential to keep people warm.

At the same time these same Congressmen have passed a tariff bill that adds more to the cost of necessary clothing for warmth—that is to say, for wool—than all the coal industry will exact. Sober-minded citizens are saying that were any set of men outside of Congress to have conceived and carried out the plundering of the people of the country for the benefit and profit of the few—some of whom, it appears, sponsored the bill—that this tariff contemplates, those men would be subject to indictment for conspiracy under the anti-trust law.

Wool, sugar and thousands of articles and commodities necessary to the everyday life of the common people are to suffer tribute to these organized plunderers in Congress. The President is proud of his neutrality in the coal and rail strikes. But where is neutrality between the builders of this unprecedented and unholy tariff and the consumer?

Is This Unionphobia or What?

ABOUT three weeks ago Donk Brothers Coal & Coke Co., of St. Louis, obtained permission from Frank Farrington, president of the United Mine Workers of American in Illinois, and from district officers of the union to proceed with construction of the main shaft at the company's new mine near Edwardsville, Ill. This was entirely according to Hoyle under the terms of the 1920-1922 contract—a contract which the International union was struggling to maintain. With all the necessary preliminaries completed, the company and the contractors started shipment of tools and machinery toward Edwardsville, ordered superintendents and job foremen to that town and placed considerable orders for electrical equipment and material. Work was to start with a rush and be pushed to completion as quickly as possible, thus providing immediate employment at union wages for a good many striking union men—some of them hungry after four months of layoff—and future employment to a good many more as fast as the mine was developed.

It was reasonable to suppose that the men of Edwardsville, fully authorized by their own leaders, would go to work forthwith and gladly. But did they? They did not. Instead they held a local meeting, decided their state and district officers were incompetent to pass upon their case, and proceeded to take the matter into their own hands. They delivered an ultimatum to the mine owners and to their own officials. No construction on that mine should start until the strike in Illinois is over. Construction on other mines in Illinois was proceeding under the contract, but it did not at Edwardsville. So energy expended in getting ready to finish the mine was wasted. Shipments were stopped; orders cancelled. Hungry union men continued hungry.

The whole trouble was that union men refused to obey their chosen leaders. There is no use searching for some devious method of reasoning by which the men reached their peculiar decision. In all probability reason played no part in the case whatever. The International miners' union does not preach reason into its members. It has spent years diligently instructing them in dogmatism and the infallibility of unionism. It has so successfully instilled within them a mental attitude of disregard for authority and the rights of others that today, becoming an irresponsible rabble, the membership sometimes does not hesitate to disregard its own constituted authority. When mine unionism reaches that point its foundations are cracking. The drunkenness of power may bring it down in ruins.

How Much Strength in the Law's Arm?

OUT in Illinois public and private pressure is slowly compelling officers of the law to do something about the Herrin massacre. There have been one or two gestures before. Now we see a circuit court judge issuing a summons for a special grand jury to meet Aug. 28 at Marion, 10 miles from the scene of the June 22 horror, to begin an official investigation. The law has been slow in the Herrin case.

Those who hopefully study the case in its present status are able to perceive certain indications that the call for a special grand jury is not to be merely a gesture. For one thing, the judge declined to permit the county sheriff to serve the summonses. The sheriff may be one of those upon whom painful justice will be meted out when justice finally prevails. For another, it is known that a quiet effort is to be made eventually to take the case out of "bloody" Williamson County, even at the cost of a change in the state constitution, if it becomes evident that a fair and fearless jury cannot be impanelled from among the citizens of that county. And finally, the plea of the state that it has not sufficient funds for a proper prosecution of such an elaborate case may be met with private funds in plenty. Already the Illinois Chamber of Commerce has begun accumulating them and other agencies may do likewise.

It remains highly doubtful whether justice can be done in the "bloody" county. But if it cannot, the sooner the people of the United States find it out the better. It will remain then for the world to learn whether a small community can successfully defy the will of a sovereign nation.
Low-Cost Methods Enable Thin-Seam Mine in Montana To Compete with Thick Coal Found in That State

Semi-Automatic Equipment Eliminates Hoist Engineer and Pumper—Five-Car Tracks Paralleling the Faces Aid the Loading Of Coal—Low Cars Prevent Much Breakage and Save Labor

By C. M. SCHLOSS
Denver, Colo.

The mining fraternity of the Rocky Mountains, accustomed as it is to operations in thick beds, views dubiously the possibility of economically mining the thinner seams. Most attempts in this direction have been unsuccessful. It is difficult for the thin-seam operator to compete in production cost with his neighbors mining beds ranging in thickness from 5 to 65 ft. It is difficult, but that it is not impossible is proved by the success of the Keene mine of the Bair-Collins Co., four miles west of Roundup, Montana, on the main line of the Chicago, Milwaukee & St. Paul R.R.

Keene, originally a wagon mine, was opened by a slope. When the Bair-Collins Co. became owners in 1920 they immediately sank a shaft and began to develop the mine to produce a daily output of 600 tons, which they do not expect to exceed. The superintendent, Albert Griffin, says, "With an output of only 600 tons a day we can keep down our investment in equipment and the consequent interest and depreciation on that equipment; we can keep our workings concentrated and our expense for supervising bosses low. With us, a production of 600 tons a day is the point where the economic law of diminishing returns begins to act."

The 34-in. coal bed lies from 80 to 130 ft. below the surface on a uniform pitch dipping 4 per cent slightly north of east. Immediately superimposed on the coal is an 8-in. layer of drawslate and a thick stratum of sandstone; the floor being entirely of the latter material. The excellent roof and floor and the light overburden make possible wide rooms and entries with narrow pillars. Squeezes are rare. A few props are used, more as a precautionary measure than because they are actually needed. The operation is on the lower half of the Roundup bed which is here split by 11 ft. of rock.

FIG. 1—BUTTS AND MAIN ENTRIES CROSS AT 20 DEG.
Keene mine has a layout plan that seems to have been pushed over from the vertical. All the right angles of the ordinary mine are 90 or 130 deg. The arrangement makes the faces abnormally long and unusually easy to approach with a curved rail. In consequence no difficulty is met in placing a line of five cars at the face at one time for the men to load. This saves double shoveling or worse.
FIG. 2. CAR WHICH NOT ONLY CAN GO INTO LOW PLACES BUT, WHEN THERE, CAN BE EASILY LOADED FROM THE SIDE

At 1 will be noted a small angle iron which runs all along the side of the car. Its function is to prevent the wood from being "chewed away" by the loading of coal and to lock the coal in place after it is built up on the side of the car. The back of the car is made low as at B so as to make it easy to load at this point. The top of the board B is 131 in. above the rail, and the top of the angle A, 161 in. Note also the heavy brace C which supports the flare of the car which is in this instance merely a level shelf. D is a check hook on the front band of the car, well protected by the angle brace.

From the shaft bottom the mine spreads out in a fan-tail as shown by the map, permitting easy grades into the rooms. Main entries are driven 30 ft. wide and over the haulage roads they are brushed to a height of 5 ft. for a width of 12 ft. Rock shot down from the roof is gobbled on both sides of the track forming walls to protect the entries from squeezes, or heavings of the floor, should they occur.

Cross-entries are brushed to a height of 4 ft. 6 in. Rooms are driven at an angle of 30 deg. with the butt entries and are 50 ft. wide, on a grade of 1 per cent in favor of the loads. The room faces parallel the butt entries.

A track is laid in each room paralleling the inclined face and at a short distance from it. A curved section connects this standing road with the track laid along the rib. The face track is thrown over as the room advances. By this means five cars can be spotted along the face at one time and filled with coal as they stand. This saves much extra shoveling. When the only track in the room parallels the rib and when under those circumstances more than one car is spotted at a time much effort is wasted in reshoveling such coal as is not lying convenient to the cars.

Steel ties are used in the rooms so as to keep the track as near the floor as possible. To increase the height in rooms the 8-in. layer of drawslate above the coal is removed but no other brushing done. The room centers are 70 ft. apart and a 20-ft. pillar is left between rooms.

The illustration of the Keene car is worthy of attention. The wagon is unusually and purposely low, for two valid reasons, the first being obvious—the restricted height of the working places—and the second one, not so readily recognized—a reduction of the height to which large lumps must be lifted. Lowering this lift decreases the work of the loaders.

“We have made it easy for the men to load large lump coal,” says the superintendent “and showed them that it is less laborious than breaking the lumps up before loading; 54 per cent of our product is lump.” The car is built essentially on labor-saving lines for it weighs only 1,200 lb. and is equipped with roller-bearing wheels.

The mine buys alternating current from the Montana Power Co. transforming it down to 440 volts for the two alternating-current cutting machines used at this mine and for uses other than those met by the 50-kw. motor-generator set.

Up to the present, mules have hauled all the coal from the room necks to the bottom; but a combination trolley- and storage-battery locomotive, which can be charged from the trolley, is about to go into service. At night, when little work is being done, it will be used throughout the entire mine for the hauling of coal. During the day it will handle merely main-line movements, the mules gathering the cars from the rooms and hauling them to partings, ready for the locomotive. The Bair-Collins Co. believes that operating costs can be greatly reduced by semi-automatic machinery without the large investment necessary to purchase fully automatic equipment. One example of this is the main hoist with push-button control, operated by the weighman upon a signal.
from the bottom, thus eliminating hoisting engineers. The weighman touches the button, the contactor panels connect the motor to the line, accelerate it, decelerate it, and a limit-switch and electric brake stop it when the cage has reached its dumping position in the long-radius dumping guides. A second example is the centrifugal pump at the shaft-bottom, which dewater the mine.

A float in the sump is connected by a system of levers to the motor starter; when the level of the water rises to a predetermined point the float closes the starter and the pump becomes operative; vice versa, when the water drops to a second point the motor and pump are stopped by the same means.

The shaker-screen is started or stopped by a push button operated by the weighman; it can be stopped by a remote-control button below, operated by the yardman under the tipple. He cannot, however, start the screens himself, but must signal the weighman to start when the latter is ready, using an 110-volt electric vibrating bell for the signal. The automatic idea is incorporated in the induction motor-generator set supplying direct current for the locomotive. This has features which make it practically automatic.

Keene coal is classed as sub-bituminous and its analysis is as in Table I.

At the Keene mine the superintendent keeps a daily cost sheet which enables him at the close of the day’s work to analyze the expenditures for the day and cut down thereafter any item which is excessive, before it has been magnified twenty to thirty times as it would be if the excessive cost were not made manifest before it reaches the monthly cost sheet. A copy of this daily sheet appears as Fig. 6 in this article. It is simple and short, but effective—a moneysaver.

One can check off on the fingers of one hand the reasons for the financial success of this property: (1) Small investment and overhead, (2) small supervision expense, (3) an economical system of mining, (4) reduction in “non-productive” or company men, and (5) most important of all, good management.

"IT’S AGAINST THE RULES to smoke in this mine, but t’ell with th’ rules. I got to smoke.”

He smoked—and went up in it.

DON’T WORRY ABOUT WHO WILL LOSE THE COAL STRIKE. You’ll find out when you price a ton of coal next fall—Wall Street Journal.
A Screen That Imitates the Effective Way In Which a Hand Sieve Is Manipulated

For many years the reciprocating or shaking screen has been used almost exclusively in sizing coal both anthracite and bituminous. True, the revolving screen has been employed to some extent, but as it was extravagant in its consumption of power and degraded the coal excessively, the shaking screen with spring-board or rod suspension and with elastic wooden or rigid steel connecting rods was generally adopted.

Recently, however, H. W. Falkner of Ashland, Pa., through the Tamaqua Manufacturing Works, of Tamaqua, Pa., has introduced a type of shaking screen that differs more or less radically from any that have preceded it. This new device is known as the Economy Gyrating Screen. As may be seen in the accompanying illustration, the screen or screens, for there may be almost any number, are mounted on a suitable inclination and hung by rods provided at the top with a joint permitting movement in two directions. As a matter of fact this latter usually takes the form of an eyebolt or its equivalent, connecting with an eyed rod. On one side of each screen deck or set of decks near either end, an eccentric strap is rigidly attached. These encircle eccentrics upon two vertical shafts. The two eccentrics actuating a single screen or deck are set at 180 deg. from each other and the shafts revolve in opposite directions. The screen deck as a whole is thus given a peculiar half gyratory half oscillating motion and “shakes” as much sidewise as it does endwise. Building the machine with decks to the number of two or some multiple of two permits balancing of the screens to a large degree.

It will be apparent from the above description and the accompanying drawings that one point upon each screen surface will have a simple reciprocating motion
equal in amount to the throw of the eccentrics. All other points on the screen will have not only this oscillatory movement but a side shake as well, the amplitude of which will vary from zero at the center to a maximum at the ends.

As a result of its construction several advantages are claimed for this machine as compared with the ordinary shaker. Among these might be mentioned: The material treated spreads itself evenly over the screen area; the efficiency of the screen is greatly increased; far less tendency is present for the holes to wear elliptical; little unbalanced “shake” is transmitted to the building in which the screen is housed or by which it is supported.

Cherokee-Crawford Field of Kansas Has Prospective Rival in Linn County Coal

BY C. M. Young* Lawrence, Kan.

Throughout all but the first years of the history of coal production in Kansas the principal output has come from near the bottom of the Cherokee shales, which outcrop in the southeastern corner of the state. By far the larger part of the output comes from Cherokee and Crawford Counties, but coal is also mined from the same horizon in Leavenworth County, though the Leavenworth or Beaver coal has never been definitely correlated with the Weir-Pittsburg coal of the southeast part of the state.

At the present time somewhat more than half of the known available acreage of the Weir-Pittsburg field has been mined out. At the general rate of production of recent years about 50 per cent of the remainder of the coal will be exhausted in 10 years. The date of final exhaustion cannot be predicted.

Though the Weir-Pittsburg field has been quite thoroughly prospected in the southeast corner of the state, the remainder of the coal area of the state has not been thoroughly tested. It is known that the occurrence of coal is a possibility over an area extending from

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Doniphan County, the extreme northeast County of the state to Montgomery County, on the south line of the state about 70 miles from the Missouri border. The boundary of the coal district is very uncertain, but the strike of the coal-measure rocks indicates roughly such a line as is suggested. Coal has been mined in a small way at Troy, near the center of Doniphan Country, and quite recently some large areas of coal land have been acquired by prominent coal producers south of Coffeyville, which is near the south line of Montgomery County where coal may be found in the lower coal measures. There is a larger area, extending considerably farther west in which the upper coal measures occur and may produce coal, as they do in Osage County.

Because of the importance of Kansas coal to the district which it naturally supplies, future developments are of interest. The probable scene of greatest activity in the future is Linn County, which lies half way between Kansas City and the southern line of the state, and roughly 70 miles south of Kansas City. This is sometimes known as the Pleasanton district.

Coal was found in this district at about the same time as in the south part of the state, and was worked extensively in 1903 and 1904. Work was nearly abandoned about 1908 to 1910, though work at one mine, the Thurwell, later called the American Eagle, and now the King Coal Co. mine, was never entirely abandoned.

The extent of the Pleasanton district is not definitely known. The coal being mined there is apparently the same as that being worked on a small scale at Worland, just across the state line in Missouri, which is the Mulberry coal of the Missouri State Geological Survey. The coal outcrops at various places and has been worked to some extent on the outcrop by stripping. It is known that the coal is found at Prescott, about 8 miles south of Pleasanton, and that it is found to the northeast as far north as 8 miles north of Worland. The extent to the west is doubtful, as the field has not been thoroughly explored in this direction. One report is that the coal outcrops in the hills just west of Pleasanton, being upturned there. Another report is that this is not the same coal but that the coal being mined at Pleasanton persists to the west, though growing thinner. The geological conditions indicate that the latter view is the correct one, and that this bed is not upturned, though the extent to the west and the thickness are not known.

At the present time coal has not been traced to the south beyond Prescott. About 3 miles south of La Cygne, which is about 12 miles to the north and a little west of Pleasanton, the Kaw Valley Coal and Mining Co. is operating a seam from 3 ft. to 3 ft. 4 in. thick with a good top. About one half mile west of La Cygne the coal is being mined at a depth of about 140 ft., the thickness of the coal being 3 ft. and the top being good. This same coal is being mined at a short distance to the east of La Cygne, and again 5 miles east of La Cygne, where it has a thickness of 3 ft. with a good top. It occurs at a depth of only 50 ft. Another bed of 3-ft. coal has been found by drilling over an area of about 1,100 acres in the area just mentioned.

At Boicourt, about half way between Pleasanton and La Cygne, coal has been found at a depth of about 70 ft. This has a poor "soapstone" top. Whether this is the same coal found at La Cygne is not known, but the character of the top and the facts that the coal with a good top is found at a depth of 50 ft. 5 miles east of La Cygne and that this Boicourt coal is at a depth of 70 ft., give some indication that the latter coal occurs at a lower horizon than the former.

It is also reported that records of drilling show four seams of coal at Fontana, which is near the south edge of Miami County, and about 6 miles northwest of La Cygne, and 18 miles north and a little west of Pleasanton. It is said that there are two 3-ft., one 4-ft., and one 5-ft. bed, the last occurring at a depth of about 480 ft. with a limestone top. None of these beds has been exploited, and the report of their existence is based on the rather uncertain evidence of boreholes sunk with churndrills.

There is however sufficient probability behind these reports to justify prospecting, and to make it likely that extensive developments may follow if the coal proves to be of good quality. It is possible that this coal may be the same as the lower Rich Hill coal which has been quite extensively mined near Rich Hill in Bates County, Missouri. If so it occupies approximately the same horizon as the Weir-Pittsburg coal of southeast Kansas, and the Bevier or Leavenworth coal of the northern part of the state.

As has been stated already coal mining in this district has been almost abandoned for some years, but rather recently has been revived. At the present time, early summer of 1922, the mines of this district are being operated non-union though not to their full capacity, most of the mines of the remainder of the states being closed because of the strike.

The earlier mines were operated by stripping, where they were located near the outcrop and by a few shaft mines where the cover was heavier. The shaft mines were worked on the longwall system, most of them by hand mining, though in one case a longwall machine was tried, and in another case a compressed air-puncher. Difficulties were encountered in working the coal by longwall, although this seemed at first to nearly all observers the proper method to be employed in this seam. Unfortunately the character of the top is such that it will not stand well at the face, though this method might be applied if operations were continuous.

Quite recently one of the operators has been trying the longwall method using a machine with a 3-ft. bar. Though the coal was propped and sprayed after cutting and props were placed less than 12 in. from the face the roof would sometimes break. The next time the
cutting was made the roof would not bring sufficient weight on the coal for it to fall without shooting. The next cut would sometimes give another break of perhaps 6 ft. This experience has convinced the operator that the longwall method cannot be satisfactorily applied at his mine, and it is being converted to the room-and-pillar system. Similar experiences have convinced most other operators that the method cannot be successful, at least so long as operations are intermittent.

In general the coal of this district varies from about 27 in. to about 3 ft. in thickness. In most places the roof will stand well in the entries, though there are some places where it occasionally falls. Most of the mines are dry, though some of them are troubled with surface water. There is little gas, but in some places a small quantity comes from the top.

Up to the present most of the mines have been opened on a small scale, most of them having an output of only 50 to 100 tons per day. The largest of these smaller mines, that of the Pleasanton Coal & Mining Co., can produce possibly 250 tons per day. The Douglas mine, about 6 miles east of Pleasanton, has been planned for an output of about 1,000 tons per day, but it is still in the development stage.

The illustration shows the tipple of the Pleasanton Coal & Mining Co., which though simple is one of the most elaborate in the district. Most of the tipples are provided only with gravity screens, and make only two sizes, lump and mine run.

A few notes on the operations of the Pleasanton Coal & Mining Co. will give an idea of the plan followed at the mines of this district. Entries are driven from 16 to 20 ft. wide, and gobbled on one side. The entry pillar is 12 ft. wide. Entries are driven to a height of 5½ ft. above the rail. Rooms are propped where necessary, with props 32 to 34 in. long. Three holes are drilled per room, and about 6 in. of black powder used per hole. The powder used has been FF and FFF; in future the latter will be used.

Though these operations, which are in a way pioneering operations, are on a very small scale, it seems probable that work will be continuous in this district and that it will increase in importance. This field is much nearer to Kansas City, which is a natural market for it, than the field in the southeast corner of the state. Railroad connections are satisfactory, the district being traversed by both the St. Louis & San Francisco, and the Missouri Pacific.

I am indebted for much of the information given in this paper to James A. Sherwood, chief mine inspector of Kansas, whose wide experience gives weight to his opinion that the future of this district will be important.

As to the character of the coal, it may be said that in general the coals of the Kansas field decrease somewhat in value from the Weir-Pittsburg bed upward, and the coal of Linn County, so far as known, is not quite equal to the Cherokee coal. Two samples cut at the face by Mr. Sherwood which I was enabled to examine, show an average heat value of 12,123 B.t.u., which is only a little below the average value of Cherokee coal. However this determination of the heat value of the coal in the Linn County field is the result of analyses of only two samples. This is too small a number to form the basis of any definite opinion as to quality of the fuel.

Dabney Mine Before Coal Strike Stored Coal to Maintain Steady Output

IT IS indeed unfortunate that the producers of coal took such an optimistic view prior to April 1 that they stored little or no coal in anticipation of the strike. The buyer and retailer for the most part put in stocks almost to capacity and seemed to sense the coming storm. But the coal producer, realizing that storage would require larger equipment than he possessed would not venture his money or was awakened too late to the possibilities that the protracted shutdown offered.

It has been stated and is generally realized as a fact that a steady run pays better than one that is discontinuous and that it is better to run at a small loss than to shut down entirely. For both these reasons it would have seemed well to have done, like some West Virginia mines, put coal in storage when orders were insufficient or cars were not available. The fear that coal would be produced cheaper after the strike than it was before held back union mines, but it had no effect on those in non-union regions which had already made the reductions anticipated at union mines.

Not all coals are of a nature favorable to storage,
and probably only those bituminous coals may be stored that are low in sulphur as, for instance, the Eagle seam of the Kanawha Group that is mined at the Dabney mine of the Thurmond Coal Co. This operation is located on Rum Creek, five miles west of Logan. The coal attains a thickness of 5½ ft., and has as an average less than 0.6 per cent of sulphur. It is clean except for a 4-in. cap of dirty coal near the roof which is of slate. The nature of this coal commends it as suitable for storing, and advantage is taken of that fact at the Dabney mine.

The present output is only about 600 tons in eight hours. However, since January, 1921, it has been operating at two-thirds capacity or 400-tons per day, without losing many working days. During all this time there were other mines in the field working part time. The Dabney mine was enabled to operate continuously solely because coal was stored on the surface when the demand fell off. On both ends of the tipple on either side of the track mine-run coal was piled to a depth of 25 ft. and to a width of 60 ft. The dump extended for a total length of 600-ft. In the process of storing coal was loaded in the ordinary manner into railroad cars; these were dropped down the track and unloaded by means of a steam shovel having a 1½-yd. bucket on a 48-ft. boom. In this manner as much as 20,000 tons of coal was strewed over the yard at one time, only to be loaded out again when orders have to be filled which in aggregate exceed the tonnage that the mine is able to supply from its daily output.

In order to load the coal from the piles a smaller shovel, weighing 30 tons and having a 3-yd. bucket, is utilized to sweep the coal within reach of the larger shovel. This is necessary because the large shovel is mounted on a railroad truck which travels on the same track as the cars that it loads and, consequently, the limit of reach of the shovel is equivalent only to the length of the boom. The main shovel is manned by three men, an engineer, a fireman, and a helper. The latter drops the cars, trims them when loaded, and removes lumber and other debris such as may find its way to an exposed coal pile. Only two men, the engineer and the fireman, are needed on the small shovel. As many as twenty-one railroad cars have been loaded out by these five men in eight hours, although the average loading during the months of May and June was ten cars per day.

Coal was not stored at the Dabney mine with a view of making money; an “even break” was all that was desired. The venture was made only to keep the miners employed, possibly not at full time but to an extent that would insure a living. It might be said that the present output of 600-tons is loaded out by 35 to 45 loaders; the average output per loader is 17.8 tons per shift. It is obvious that having such good men, something had to be done to keep them on the job. It is true that the loaders in this mine, who have this large tonnage record, are not required to lay their own track or set their own timbers, but the time occupied in these duties would not subtract many tons from the average output per loader even if he were asked to perform these tasks.
Fuel and Refractory Materials

After many years W. B. Davidson has essayed to bring A. Humboldt Sexton's masterly book on "Fuel and Refractory Materials" up to the minute, and the revised work has been published for American circulation by Van Nostrand Co. In its 382 interesting and authoritative pages, missing in minutest detail and authoritative books, will be found articles on combustion, heating power of fuels, and solid prepared fuels such as coke. This book is doubtless regarded as entirely up to date, but what book really is? You will look in vain for the Piette or the Roberts oven. The treatment of coal washing in this volume is so inadequate that it almost would have been better if the author had left it out. The Robinson and the Luhrig washer are the only two to be found. Reference to other washers is made in a short paragraph which includes a word or so on the froth flotation process and nothing as to table washing, the chance system and the air washer. The author admits the incompleteness of this section, and it need not be proved.

Articles follow on liquid fuel and gaseous fuel (combustion gas producers). One rarely sees so long an array of these devices in the author has assembled. By-products and low-temperature carbonization follow. These subjects are treated in a manner neither up to date nor adequate. The subjects following are furiances for metallurgical processes, smoke and its prevention, pyrometry, calorimetry and testing fuels.

The closing chapter, being on refractory bricks, blocks and tiles, justifies the last part of the title "refractory materials."

The book is a substantial contribution to the literature of fuels. Its failure to treat washing adequately is not a fault and it cannot be held blamable in that it does not treat complete combustion in a detailed manner. It was not the original purpose to give either detail or attention. It follows from the most modern practice is a common fault of all books and the little attention paid to foreign development, American and other, is a fault not peculiar to this book or to British books alone.

It must be remembered that the first edition was written for steel makers by the past president of the West of Scotland Iron & Steel Institute, and consequently is said in it and according to modern practice as a common fault of all books and the little attention paid to foreign development, American and other, is a fault not peculiar to this book or to British books alone.

What a Visitor to Non-Union Mines Found

Forecasting the present attempt to organize the non-union coal fields of Pennsylvania, the Bureau of Industrial Research recently issued a pamphlet by Powers Hapgood entitled "In Non-Union Mines." Powers Hapgood is described as a member of the United Mine Workers of America and as one who left Harvard in 1920 to work in the coal mines of Montana and Colorado. This booklet is his diary of wanderings in 1921 through the non-union coal fields of central Pennsylvania, in and about Johnstown in Cambria and Somerset counties.

The chronicle itself is the story of a man who worked a few days in this mine and then moved on to another, doing various sorts of mining under a variety of conditions. He tells us in minutest detail the things as they happen, and when he lights his carbide lamp, when he goes underground, to how the fireboss' alarm clock woke him early in the morning. An itinerant, a few days at each mine, he was put to work at odd jobs, here cleaning up rooms, there loading pillar coal.

Being a "human" document it must needs have a touch of suffering, so we are told of the poor mine rat found "torn and bleeding in the middle of the track," where a shot had caught him. "We felt sorry for him. Down in the darkness one appreciates all forms of life."

Everyone who at any time in his life has plied pick and shovel knows that such labor is unusual and that the mine is a dangerous place. There is little added to one's knowledge of the coal industry by this recital, which withholds every evidence of being a true narrative of what the Harvard man encountered on his travels. We would suggest, however, that he study his Pennsylvania mining law somewhat more carefully.

One can but wonder, however, what would have been recorded had the Bureau of Industrial Research delegated this task to him, saying that the book would have visited mine after mine that recognized the scale that the Harvard man failure but not working at that or any scale, and upon inquiry he would have learned that the mines had been closed by the unequal competition of the mining plants visited by the man from Harvard. The union is such a good thing that many union men are working in mines where the union is unrecognized.

Colliery Fireman's Pocket Book

Hardly a month passes without an elementary textbook on mining appearing in Great Britain, and they are all good books, painstakingly written, prepared for beginners but carrying the reader well forward in the subject discussed. Some—indeed most—see anxious to tell too much for the particular class of men to which they are directed. This colliery fireman's manual, for instance, might be entitled "Colliery Superintendent's Pocket Book," and would less belittle its name than it does now, not to say that everything can be understood by all who understand English as "she is spoke" in the British mines.

The book comprises 230 pages, contains 88 illustrations and diagrams, measures 5x8 in., and is published by Thomas Wall & Sons, Ltd., of Wigan, England, the firm that issues "The Science and Art of Mining." It is written by Thomas Bryson, who is a lecturer in mining and has been an examiner for the certification of mine firemen.

Much about mine gases and ventilation, coal dust and safety lamps, supporting of roof and sides, explosives and blasting, may suit the fireman, but methods of working, haulage and haulage appliances, mine drainage, surface and leveling are hardly firemen's subjects.

Coal-Mining Costs

A. T. Shurick has compiled a book bearing the engaging title "Coal-Mining Costs." We are sorry to find that he has failed in almost all cases to credit the sources of his information except in a general statement of the various types of authorities. Gracefully and truthfully he avers that "the technical press has been drawn upon liberally." Apparently it is not necessary to name the papers drawn on or the authors who contributed the original articles. Such articles as are there are marked, "Author's name.

The name of the author of the book should have shared the fate of the other names and the book should have appeared without that record.

Truth to say, the authors thus shorn of their glory have done quite well. They prepared these data partly that the mining world might be grateful and recognize, and partly that the service, if ill required, has been well done. The book contains many things that the reader will want. Some parts are deficient, some difficult to apply owing to changing labor prices and material costs, but the work is valuable even if it demands some knowledge of past wage and material scales and some good judgment in its use. It could not be otherwise than of value, containing as it does a cross-section of the work of the best engineers of the country. The volume contains 515 pages, measures 5x9 in. and is issued by the McGraw-Hill Book Co.
Enlisting the Turntable in Mechanical Coal Loading

Turntable Is Located on Room Track Opposite a Line of Crosscuts Which Intersect Five Consecutive Rooms and Give a Storage Road for Cars Near the Loading Machine

By E. N. Zern
Pittsburgh, Pa.

It is generally conceded that before mechanical loading can be successfully applied to coal mines some method of co-ordinating the processes of loading and transportation must be found. For twenty years experiments with various types of equipment have been made for the purpose of finding some means of displacing labor in the work of transferring coal from the mine floor to the car.

During this period machines have been evolved that have developed and maintained capacities of a ton per minute. It is true that in the testing of these devices weaknesses in design and structure have been revealed, but where the principle of operation has been proved correct parts can be strengthened without difficulty.

The validity of the statement that coal-loading equipment, practical from the standpoint of mechanical construction, is today available, will hardly be questioned. On the other hand the assertion that a practical loading machine has been taken into a mine and successfully operated would be generally disputed—and with good reason. This adverse opinion admittedly must be correct for it is based on the failures which litter a score of years. The cause of this distrust is therefore of lively interest to all mining men, and, stated briefly may be said to lie in the neglect of the mine management to so arrange haulage facilities that a loader may be worked at something near its possibilities.

The failure to realize this essential point is astonishing to those who, within recent years, have witnessed loaders being placed in mines where not a single preparation for their reception was made in advance of their introduction. The inevitable result, of course, was failure, and coincident with failure the condemnation of all such "ornery contraptions." Many, perhaps all, these disappointments might have been averted had one of the lessons of the late war been applied.

What quality of military leadership would a general possess who would urge on his troops without first making sure that transportation in the rear was well arranged so that supplies and reinforcements could be immediately brought to hand? The success of a mine is no less dependent upon proper transportation facilities than is the success of an army. To bring the analogy up to the present day, it is just as reasonable to expect satisfactory results from a radio receiving set that is

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*Editor of "Mining Catalog," Pittsburgh, Pa.

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FIG. 1—METHOD OF WORKING SUITED TO MECHANICAL COAL LOADING

Among unusual features are the turntables T, the car house X, the line of crosscuts intersecting four or five rooms, a few curved room necks and crosscuts and the bypass entry. Otherwise it is hard to realize that this is not a room-and-pillar design for a mine operated without the use of machines for loading.

Groups of five rooms are formed, and each has a loading machine and a locomotive apportioned to it. The turntables are moved up as often as the five-room crosscuts are completed. In order to meet the difficulty arising from the instability of having five crosscuts in a row, each five-room section can have its crosscuts in a different line from those in the adjacent five, thus staggering them.
FIG. 2.
Method of Working

This shows twenty rooms to a panel. These may be made 360 ft. long, but with conditions as here laid down little reason can be found for not making the rooms 400 ft. long. Every fifth room has a curved neck and crosscuts fitted to receive rails turned to a radius of 40 ft.

without the range of a broadcasting station as it is to look for favorable returns from a loading machine that lacks the benefits of adequate haulage.

So much for the location of the difficulty; the important question is what is to be done about it? The problem resolves itself into two parts, first, to evolve a system of haulage usable in connection with mechanical loading or conveying in longwall workings, and, second, to evolve a system usable with room-and-pillar workings. The first problem mentioned is fairly easy of solution, but as so little of American mining is done by this method, most attention naturally will be given to devising haulages that are applicable to room-and-pillar development.

In our search for a solution we are obliged to face five unalterable conditions: (1) The room-and-pillar method of working is here to stay (at least, for a long time) and no radical changes in working methods should be attempted, (2) the haulage system should be such as will insure the rapid and unrestricted movement of loaded and empty cars, (3) abundant storage room must be provided for trips both loaded and empty, (4) trackage arrangements must be such that cars can be loaded at different parts of the entry without interference in the movement of trips, (5) the method must be practicable, conducive to large output and economical in operation.

**Turntable Is a Simple and Effective Device**

The method of haulage herein described is suited to all the usual procedure characterizing the panel system of working and also fulfills the five conditions just outlined. Room work is begun at the last necks on the entry, and pillars are drawn on the retreat although the advance method of working may be used. In the plan of entries, Fig. 2, twenty rooms are shown. These, for purposes of operation, are divided into groups of five rooms each. Four rooms of each group, (see Fig. 1) are provided with a turntable. Possibly this is the one and only peculiar feature of the entire plan.

The use of turntables may appear like a reversion to the obsolete. Such a feeling can, perhaps, be best explained by borrowing an expression from the same country as has furnished the idea, "Such things are not done with us." A little investigation of turntables, however, reveals the fact that they are not as formidable as they might appear. In reality they are extremely simple devices and can be supplied by several manufacturers fitted with either ball or roller bearings; they are capable of carrying as great a weight as ten tons, are not over 6 in. high, weigh about 1,200 lb., and sell at a price varying from $150 to $175. It will be noted from the description which follows that rotation on the turntable is restricted to the empty wagon, for the loaded wagon and the locomotive merely cross it. They are easy to operate, are strongly built and compact, so that moving them ahead from one to the next line of crosscuts, as is intended, offers no unusual difficulty.

For the purpose of explanation we will assume that the coal being worked is 6 ft. thick, that the rooms are 300 ft. long and are driven on 60-ft. centers, 20 ft. of which is ascribed to room width and 40 ft. to the width of the pillar. The length of room, though assumed as being 300 ft., in view of the ability of the modern locomotive justifiably might be extended to twice this distance, thus effecting many economies. An undercut of 61 ft. in this coal will produce about 32 tons, or 16 car-loads if these are figured at 2 tons each. All cutting is to be done on the night shift, except that in starting room work on group No. 4 (the last group) rooms Nos. 18, 19 and 20 may be started at the same time and cut as frequently as possible. After these are driven in a sufficient distance, room No. 17 is started, then No. 16, and so on. As the rooms advance their faces should be brought in step as is customary with this system even when operating without mechanical loaders.

A strict adherence to system is a *sine qua non*. After rooms are under way on the entire entry, the order in which they are loaded out becomes a matter of the greatest importance, as the success of the method depends upon this detail. It has already been stated that there are four groups, each containing five rooms.

**Loading is done simultaneously in each of the following rooms, reading across the column:**

<table>
<thead>
<tr>
<th>Group No. 1</th>
<th>Group No. 2</th>
<th>Group No. 3</th>
<th>Group No. 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>12</td>
<td>17</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
<td>14</td>
<td>19</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>15</td>
<td>20</td>
</tr>
</tbody>
</table>

It is apparent that full working will be attained only after a certain period of time has elapsed, but the grouping is correct, no matter at what stage the work may be. Thus, when one-half the number of rooms is working, the last two columns in the table indicate the proper order of loading, when three-fourths of the number are working, the last three columns indicate the order and when all rooms are being driven all columns apply.

It should be stated here that this grouping is based on sixteen-car trips for each room, as well as upon other data already given on the coal bed, such as widths of
room and pillar, undercut, etc. If 3- or 4-ton capacity cars were to be used, there would be allowable one to two room variations in the order given. Changes in dimensions can be calculated in advance of laying out the work, but these will not affect the method. We will now follow the actual operations which take place in coal loading and removal.

Let us suppose that the gathering locomotive has pushed sixteen empty cars into room No. 16 and from here to the storage crosscut. Curves of 40-ft. radius are provided in this room and also in rooms Nos. 1, 6, and 11, which likewise lead to storage cross-cuts. The first car is placed on the turntable, T, in room No. 20 (see Fig. 1), rotated into proper position, and then drawn to the face by a winch attached to the loading machine. In order to minimize labor in pushing, all cars either should have roller bearings or be fitted with an easy-running type of plain bearing. After the car is loaded it is promptly withdrawn by the locomotive and as soon as the loaded car has passed the turntable, the process of supplying an empty is repeated.

After several empties have been taken from storage, the remainder can be drawn close up to the turntable by a small room-hoist located at point X, or the same service may be performed by the winch on the loader or a crab on the locomotive, with the help of a sheave or snatch block, placed between the rails. The loads from room No. 20 are stored on trackage provided on the entry, and thence may be pulled out to the main entry, either by way of the butt or by the bypass entry.

No Time Need Be Lost

The empty cars for room No. 15 are placed as described above, the procedure of moving both empties and loads being also similar. The sixteen empty cars needed for room No. 15 are pushed in by the locomotive belonging to this group of rooms and halted on the entry, a few feet from the switch points at this room. While the locomotive is cutting loose, passing through the motor chute at room No. 10, and proceeding thence to the front of the trip, an empty car may be detached and drawn to the room face by the winch on the loader. This car, and all others subsequently loaded from this room, will be placed on the butt-entry tracks between rooms Nos. 16 and 19. An inspection of the plans will show that this position of the loaded cars does not interfere with the passing of trips to and from the group beyond—in short, there is no interference either with the movement of cars within a group of rooms or with those in any other group. Also it will be noted that the loads from either group can be taken to the main entry by means of the bypass at any time desired.

The procedure for room No. 20 is as already given. By the time room No. 10 is ready for loading, the crosscut entry which serves the third group of rooms may possibly be connected up so that empties for room No. 15 can be stored on it by passing them through room No. 11. If, however, the storage crosscut is not available, sufficient room will be found on the butt entry between rooms Nos. 10 and 15 to accommodate both loaded and empty cars. The procedure in either case for room No. 15 is similar to that already explained, the loads being placed, as before, between rooms Nos. 16 and 19. The method of supplying cars to room No. 10 is the same as described in the previous paragraph for room No. 15, the loads, however, being stored on the butt entry between rooms Nos. 10 and 13.

For the purpose of showing the ready adaptability of the track arrangement, it may be assumed that loading is taking place in the mid-group rooms. The empty cars for room No. 18 are stored on the track in the storage crosscut, on both sides of the room, and the loads are placed on the butt-entry storage beyond room No. 20. The empty cars for room No. 13 are placed to the left of the room switch, as heretofore described, and the loads are split, six being placed on the butt-entry track between rooms Nos. 16 and 18 and ten between rooms Nos. 13 and 15. This leaves a way open at all times for empties passing to the fourth group of rooms.

Each group of rooms is to have its own locomotive, loading machine and undercutting machine, and its own working force, which, counting all machine operators, a timberman and a trackman, makes a total of eight men. A few foremen, drillers and shotfriers will take care of the needs of the four groups, the grand total for the entry not exceeding 36 men.

As all rooms are driven on sights, standardized lengths of track can be used in the crosscuts between all turntables. The use of steel ties will make it easy to assemble and dissemble such sections.

In driving a crosscut it is possible to reap the benefit of machine loading by placing a turntable in the room track at the position it will ultimately occupy when all crosscuts in the line are completed. As the crosscut advances into the rib, a temporary set of rails leading from the turntable will enable the car to follow the machine.

One of the striking advantages of this proposed system lies in keeping the empty cars close to the loader at all times. This is particularly emphasized if the rooms be driven to a length of, say 600 ft. The empty cars will be, as always, within 100 ft. of the loader. The loaded wagons are relatively far away from their storage, but it is not necessary to take each car out of the room when loaded. The motorman, by merely coupling up the loads and pulling the train past the turntable, so that an empty car may be released, can cut down to two, three or four the number of trips from the room to the loaded-car storage.

An objection may be raised against the weakening effect on the roof of the continuous line of crosscuts running across five rooms. Any possible injury from this source could be brought within limits by placing the crosscuts in one group 10 to 20 ft. beyond the line in an adjacent group, or, in other words, the crosscuts can be staggered by groups.

The inevitable question will arise, what tonnage can be expected with such a system? The oft-repeated capacity figure given for loading machines, "one ton per minute," is no doubt realized where coal is loaded on the outside from a storage pile, but when applied to underground coal piles it breeds mischief. But such a capacity is not necessary for success. A few minutes with figures will show that in the case here assumed, sixteen wagons, or 32 tons, are presumed to be loaded from one room, which figures multiplied by five rooms makes 80 wagons, or 160 tons, from the group. The loading time for each wagon in an 8-hr. day is, therefore, 6 min. Considering the neatness and abundance of empty cars in each case, this time allowance per wagon appears to be reasonable. The four groups on the entry will produce 640 tons with a total working force of about 36 men, making an average of 18 tons of coal per man per day.
Safety Man Car Which Will Not Run Away
On a Steep Incline When Rope Is Severed

Men familiar with mines seldom object to riding on a man hoist or plane any more than they hesitate about doing any one of a hundred other dangerous things. They have been educated to danger and believe that their calling demands that they take a chance. Many, if not most, mines are literally covered with signs cautioning safety, yet because mining men have been educated to danger they continue to face an obvious risk. Therefore as men will jump on board the cars traveling up or down a plane regardless of the danger and notices forbidding such action it becomes necessary to provide means to assure safety and preserve the life that the average mine worker so freely jeopardizes.

The accompanying illustrations show a man car for use on slopes and inclines. The principle upon which the operation of this car is based is that of friction. Two extra ropes are laid throughout the entire length of the incline. At the top these are attached securely to a concrete foundation; at the bottom sufficient tension is applied to make them operative at a given load in the car. Within the mechanism of the car these ropes are guided around a V-grooved pulley provided with a brakeway upon which pressure may be applied either by means of a governor or through the medium of a handwheel.

In operation, therefore, the grooved wheel may be either tight or loose, depending upon whether or not the brake is applied. Any desired degree of tightness may, of course, be obtained. The proper tension to be applied to the lower end of the ropes is determined from dynamometer tests made when the car is fully loaded.

In construction the mechanism is solid and substantial. The sheave wheel is a steel casting and in addition to the brake carries a ratchet, which, in conjunction with a pawl, provides an extra assurance of safety. A governor of the flyball type furnishes automatic actuation of the brake band.

The accompanying photographs show the making of tests on a car of this kind on the plane of the Amherst Coal Co., at Amherstdale, W. Va. This plane is 850 ft. long, and the grade varies from 25 deg. at the bottom to 38 deg. at the top or just below the knuckle. In his report to the chief of the Department of Mines J. F. White, a state mine inspector, says: "First a short manila-roping hitching was made from the hoisting cable

**FIG. 1. SAFETY MAN CAR ON AMHERSTDALE PLANE**

Grade varies from 25 to 38 deg. In the illustration the hoisting rope is shown disconnected and the car with its load of human freight is being held by the brakes, which cause the car to become firmly hitched to the two ropes visible in the part of the plane above the car.

**FIG. 2. MAN CAR DESIGNED TO ACCOMMODATE THIRTY-SIX MEN ON STEEP PLANE**

It will be noted that the ropes travel around three pulleys much as in the arrangement that is sometimes used in lowering cars from rooms in mines where steep pitches are encountered. The brake can be put into operation either by a governor or the operation of a hand wheel. Where the hoisting rope was cut with two men in the car the latter traveled down the hill only about 3 in.
to the car. This was provided so that the rope could readily be severed. The car was hoisted about two-thirds of the way up the plane, at which point the rope was cut. It traveled back down the hill not more than 3 in. The car contained two occupants, one of whom cut the line. It did not seem to make any appreciable movement when the rope was severed.

"As a second test men were stationed on the incline at approximately 100-ft. intervals. The car was hoisted to the top of the plane, the hoisting rope was disconnected, and with one man operating the hand brake the car descended the hill, stopped at the different points and picked up the entire party, bringing them to the bottom of the plane.

"The next demonstration was conducted entirely at the top of the hill. Two thousand three hundred pounds of dead weight was loaded onto the car, after which it was turned loose over the knuckle. This was accomplished in the following manner: A short manila-ropa hitching was made as before, this being severed with a knife as the car came onto the steep grade. The car with its load started down the hill but stopped automatically 25 ft. 7 in. from the top at a point where I would say the pitch was 35 deg."

After the above-described tests the Amherst Coal Co. was given permission to carry as many men per trip on this car as it would hold. The dimensions of this particular car are shown in the accompanying line drawing. It will be observed that these dimensions are greater than those of the ordinary mine wagon, but the size of the car need by no means be limited to the measurements given.

The fact that this car is much heavier than the ordinary mine wagon used for hoisting men on planes and inclines brings up the question of rope stress and cost of operation. Computations based upon assumed conditions closely paralleling those existing at Amherstdale show that although the maximum rope stress resulting from the use of the new man car is almost three times that encountered with the ordinary mine car, yet because the new car holds many more men than the old and consequently makes fewer trips, the power consumed and the cost of operation are appreciably less.

This device, known, after its inventor, as the Proctor safety car, is being built by the Safety Appliance Co., of Huntington, W. Va.
Problems of Operating Men

Overcoming Difficulties in Working Low Coal

Low Hard Roof Debars Both Trolley and Reel Locomotive — Storage-Battery Locomotive Employed

Scheme to Increase Hauling Capacity of Locomotive

Reading the interesting article entitled "How Locomotives May Be Made to Gather More Cars," by F. C. Cornet, Coal Age, June 1, p. 921, has struck a responsive chord in my mental cogitations. The subject is one to which I have devoted much thought, in general as well as in specific instances.

In the planning of mining operations, time, and again, I have tried to work out some scheme that would reduce the innumerable trips that a gathering locomotive must generally make to the working face where a single car is set in and loaded at a time.

Recently I was confronted with a situation that required driving the rooms up an 8 per cent pitch. The coal was low and the state mining laws forbade the installation of trolley wires, unless they were guarded by boards or hung in trenches channelled in the roof. Both of these measures were impracticable, the former because of the small headroom and the latter owing to the expense of cutting the hard roof, which was a tough sandstone.

Storage-Battery Locomotive for Use in Low Coal

These conditions automatically eliminated the use of both trolley and reel locomotives from further consideration, in the proportion solved itself, therefore, into selecting a low type of storage-battery locomotive, which was adopted forthwith.

Here again, however, difficulties confronted us, both natural and artificial, so to speak. First, the 8 per cent grade made it necessary to drive the rooms across the pitch, or at such an angle with the entry that would enable the locomotive to handle the cars to and from the faces of the rooms.

Second, a single track being laid against the rib, in each room, the management rightly decided that it would work an overburden on the men if the locomotive was to set in more than one car at a time, in each room. This would increase greatly the number of trips the machine would have to make in gathering and placing cars at the faces of the rooms. Investigation showed that it would be impossible to get sufficient battery capacity, even with two sets of cells in the locomotive.

After carefully studying the problem, it appeared to me that the only possible solution was to adopt the plan described in the article of Mr. Cornet, to which I have referred. That was to drive wide rooms that would permit of setting in two or three cars along each face of the time, by curving the track at the head of the room and extending it along the face, as shown on the left in the accompanying figure.

If the roof conditions would not permit driving such wide rooms the necessary length of track along the face each be secured by cutting the face at an angle with the axis of the room, as shown on the right in the same figure.

It will interest the readers of Coal Age to know that a similar method is being employed at the Keene mine of the Bair-Collins Co., located four miles west of Roundup, Montana, on the main line of the Chicago, Milwaukee & St. Paul R. R.

This mine has an output of only 500 or 600 tons a day. It is working a seam of sub-bituminous coal that pitches 4 per cent to the northeast and lies at a depth of 130 ft. below the surface. The seam, which is but 34 in. thick, is overlaid with an 8-in. drawslate, above which is from 8 to 9 ft. of sandstone.

In working, the drawslate is taken down and gobbled. Under the strong sandstone roof and light cover, it is possible to drive wide openings with narrow pillars between them. The entries are 30 ft. wide and braced to 4 ft. 6 in., in the butts and 5 ft., on the main roads, for a width of 12 ft.

The rooms are driven 50 ft. wide, at an angle of 30 deg. with the entry, which makes a 11 per cent grade in favor of the loaded cars. The face of the coal is cut parallel to the entry, for the full width of the room.

The curved section of track, at the head of the room, is advanced with the face. In this arrangement, it is possible to place from four to five cars at a time along the face. The cars each have a capacity of 2,300 lb. and are loaded over the sides, being very low. At present, the cars are pushed to the mouth of each room, by the men; but a gathering locomotive is being installed, which will greatly simplify the work.

Charles M. Schloss.

Denver, Colo.

Unsafe Roof Conditions Often Develop Suddenly

Conditions in roof strata vary widely—Danger may develop in a short time after examination.

One writer, discussing the question of how a fireboss may prove that he examined a place, when his marks made at the face and on the side of the coal have been destroyed by a roof fall before the miner enters for work, says such a fall could hardly destroy both marks.

Another writer claims that if the face was driven in the solid coal and had been properly examined by the fireboss that morning, it could hardly happen that a fall of roof would occur in the short time that would elapse before the men entered for work.

Now, it is clear to my mind that men who will make such statements as these have always worked under good roof. Either that, or they have had little or no experience in the work of firebossing. They do not realize that conditions may and often do exist that make both of these occurrences possible.

From my own experience, I recall several instances where places driven in the solid coal, as well as others where pillars were being drawn, caved badly shortly after those places were examined by mine officials and mine inspectors.

Instances Recalled Where Roof Has Caved Suddenly

Even now, I could name at least a dozen places that caved in between the early examination made by the fireboss and the time for the men to enter for work. Many of these places still showed the marks made by the firebosses on the face of the coal, the sides and often on the roof and timbers. At times, it would happen that the marks were destroyed by the fall.

By way of illustration, let me assume that this fall occurred in the first pair of entries examined by the fireboss and found safe for work, and
perhaps he may have eight or ten more entries to examine if his territory is large.

No one will deny that four hours may pass between the time the first pair of entries were examined and the men entered their places for work. Nor can any one fail to realize what might happen in that time. All practical miners will agree that it does not take hours for roof conditions to change or a place to cave.

Many miners have left their places and run for their lives, without stopping to pick up tools or dinner pails, and these men will tell you that it took but a few minutes for a roof that they supposed was safe to give signs of imminent danger.

PROVING A FIREBOSs' WORK

Now a word in reference to a fireboss proving that he made his examination and marked the place as required by law, the same morning when those marks had been destroyed by a fall that occurred between the time of his examination and the entrance of the men for work.

As has already been mentioned by other writers, any fireboss who performs his work carefully should have the confidence of his employers and all who are associated with him. His marks in adjoining places should be evidence that he had examined the place where the fall occurred.

One would be remembered that the marks of a fireboss do not prevent a fall taking place but a short time after the examination. If it was possible for a fireboss to look into the strata and know its real condition, there would be fewer accidents from falls of roof in our mines.

MINE FOREMAN.

Seal Panels in Pittsburgh Seam When Abandoned

What experience teaches—Peculiar features met in working the Pittsburgh seam—Panels must be sealed as soon as worked out and abandoned.

The discussion of how best to deal with the problem of safeguarding abandoned areas, in mines, has been both interesting and instructive. In reading the several letters that have appeared on the subject, one cannot but feel that the variance of conditions, in different localities, must determine the question of sealing off or ventilating areas that are worked out and abandoned.

Speaking from experience in the Pittsburgh district to which my remarks must be confined, I must say that it is almost impossible and quite impracticable to properly ventilate the abandoned panels that characterize the working of coal seams in this locality.

When all the coal in a panel has been extracted and the pillars and stumps robbed, it is found to be practically impossible to circulate the air over and around the falls that have taken place within the territory. The whole area has caved badly and any one familiar with the working of the Pittsburgh seam will realize the truth of my statement.

The little air that would seep or creep through the labyrinth of falls that occur within the area of an abandoned panel, in this seam, would be just sufficient to render more dangerous what otherwise might be given off on the falls. It would have no effect to sweep away these gases or dilute them to an extent that would render them harmless.

SEALING COMMON PRACTICE IN THE PITTSBURGH DISTRICT

In the most modern mines in this district, it is the common practice to seal off these panels, at both ends, by building solid 9-in. brick walls in the openings, as soon as the extraction of coal is complete in that area. At each end, there is left in a seal an opening of sufficient size to permit a man to crawl through and make a regular examination of the panel. These openings are closed with tightly fitting double doors.

The examination of abandoned panels has shown that they fill up with black-damp, which prevents spontaneous combustion taking place and helps to render explosive the firedamp mixture that would become very dangerous if diluted with air, but, in its present condition, is harmless with reference to explosion.

In closing, let me endorse the statement emphasized by Ostel Bullock, in a recent letter, to the effect that the success of any plan depends on the manner in which the work is carried on.

AVELLA, Pa.

AUGUST CARMAZI.

Mine Foreman.

DIFFICULTIES IN SUPERINTENDING

Things the superintendent must know—His numerous perplexities—His life a burden.

It was interesting to read the remarks of S. D. Hainley on "Ideals in Superintendence," Coal Age, June 8, p. 967. Evidently, Mr. Hainley knows a little of what a mine superintendent must endure.

One cannot think of a single subject that the superintendent of a mine is not expected to understand and be able to explain, from the growing of panspins to telling the size and shape of the moon.

To my mind, these things are only preliminary to his duties in opening up a mine. He may be a college graduate and have a sound of information, but what will not make him a successful superintendent of a coal mine.

THE SUPERINTENDENT BESET

The superintendent of a large mine has a thousand and one things to occupy his thoughts that the public know little or nothing about. It would be useless, if not impossible, to enumerate the numerous difficulties and perplexities that are the inheritance of the man who fills the office of superintendent.

If a piece of machinery breaks down and is thrown out of commission for a brief period, for the reason that a small repair part that should have been kept on hand in the supply room is found lacking, the superintendent must explain the cause of the accident and why the repairs are not quickly made.

Again, he is liable to be called out of a comfortable bed, at any hour of the night, because the fire boss cannot get water into the boiler; or the basin pump has lost its water and the pumpman is unable to start the pump, being a new man; or the fireboss, making his early rounds has found a fire in a heading; caused by a shot the night previous, there is trouble with the generator in the engine house; or the fan is running hot; and other things too numerous to mention.

DOMESTIC TROUBLES

Worst of all are the many domestic difficulties brought to the superintendent for solution. For example, Angelo Pronco's boarder threw up his rooms, claiming Mrs. Pronco's cooking was terrible; the fireboss's wife is throwing both Anglo and his wife out of the house and, "Would the superintendent please come down at once?" Mrs. Sudisky, burning a lot of rubbish, has started a fire in the flue of her chimney and it is feared that the house might take at me as I go by, bedad me and me man will git out and take our boarders all with us.

Then, Mrs. Murphy is on hand at the office to greet the superintendent with the information that the two Refalysky boys broke a pane of glass in her front window. She is always talking, in walks John Labio and tells the superintendent that Mike Melisky is moving out and could be, himself, move in. "Mike has built a pighouse and I have bought it and want to move in today." "Not in the pighouse, I hope," remarks the superintendent blandly.

THE PIT COMMITTEE

Answering a 'phone call from the tippie, telling of a broken horn at the dump, the superintendent orders another horn from the supplyhouse and hastens out, only to be met by the pit committee, who bring a complaint from the men about the scales, which they want tested and a new tare put on the cars.

To meet the demands of the company, the chain of command, the children's playground and the welfare organization, the purse of the mine superintendent is always empty. He is lucky if he can keep out of politics in the town, but in ninety-nine times in a hundred that is out of the question.

There are two churches in the place and the superintendent attends one of them regularly, he must be sure that none of its members hold too many of the good jobs in the mine; he
will be accused of favoritism. Having a son, if he gives him a fairly good job, it is reported around that the boy "gets his money for nothing." Indeed, a volume could be filled regarding matters that perplex and worry a superintendent, until his life is a burden often times.

THOMAS HOGARTH.

Indiana, Pa.

Gaining the Confidence of Men

Confidence the first essential in getting results—Men will work for bosses whom they trust.

SPEAKING of getting results in the work of mining coal, I find that different writers, and even different writers on different days, write in different ways of treating their men. My experience as a mine foreman has taught me that there is only one way to deal with men and that is to treat them as you would like to be treated if in their place.

The first thing that a mine foreman must do if he hopes to succeed, is to gain the full confidence of the men in his charge. Gaining the confidence of one's men is, indeed, the first essential in getting results. Today, the boss who fails to gain the confidence of his men will not be able to handle them successfully in the interest of the company.

KIND TREATMENT WINS WHERE OTHER METHODS FAIL.

It is frequently the case that the failure of a boss along this line means much to the company who employs him. In other words, in order to get work done, numerous concessions must often be made and favors granted, by a boss who has failed to win over his men; and these add materially to the cost of operation. Where a foreman deals squarely and kindly with his men, it is not necessary for him to throw away his company's money to get work done.

When I was assistant foreman, it was part of my duties to fire the shots, see that the timbers were properly set and look after many other details of the work. Of the fifty-live men under my charge, there was not a man but that would willingly do anything I asked.

My rounds were made every thirty minutes and, such was the confidence of the men, they would wait for my advice to tell a hole, get to point it, and what weight of powder to use. This information was always given thoughtfully and carefully.

FAMILIAR WITH HIS MEN.

Observing the roof in a place, I would say, "Jack, you need a timber here," and the man would jump for his ax at once. If there was slate to be moved there was never any trouble to get a man for the job, knowing that he would be paid what was promised and would make good money at the work.

It was pleasing, one day, to overhear a new man asking an old miner why he had set so many timbers in his place, which was more than the rules of the mine required. The reply was, "Well, George, my boss told me to set them while I had time between cars. He said it would make my place safer and the work easier for drawing back the pillars and he knows." In closing, let me say that men will work for a boss in whom they have confidence. When a company has confidence in its manager, the manager confidence in the superintendent, the superintendent confidence in the mine foreman, and the foreman has gained the confidence of his men trouble will end and harmony prevail.

THORPE, W. Va.

G. W. BREEDEN.

Inquiries Of General Interest

Method of Working to Reduce Danger from Sudden Outbursts of Gas

Outbursts More Frequent in Disturbed Areas—Occurrences Often Give Little Warning—Numerous Attempts to Drain Gas Prove Futile—Pillar-and-Stall Method Safest

BELIEVING that the danger from sudden outbursts of gas, in mines, can be greatly reduced by adopting measures for their prevention, I am taking the liberty of asking the opinion of the editor of Coal Age and its practical readers, on this subject. I am particularly anxious to know what is generally regarded as the safest method of working to employ in working coal subject to these conditions.

In this district, there have occurred a number of outbursts of gas that have thrown down much coal, and many of them have given little warning of their coming. In a few instances, miners have been caught and buried under tons of fine coal broken down by the pressure of the gas in the formation.

The coal we are working is soft and friable, with occasional harder faces. While the surface is practically level, the seam has a pitch of about 20 deg.; and we are now working under about 1,500 ft. of cover. Shotfiring is strictly prohibited in the mine.

On previous occasions, it has been estimated that outbursts of gas have reached 1,000,000 cu.ft., in four hours, and that as much as 800 tons of coal have been displaced by the pressure of the escaping gas. Frequent attempts have been made to drain off the gas, by keeping boreholes ahead of the working faces; but the flow of gas from these holes appears to be little more than in ordinary workings.

In view of these facts, the plan has been suggested of shooting the coal with permissible explosives, after the men have left the mine. Electric firing would be employed, all shots being connected in series and fired from the outside of the mine.

The purpose of this plan is to invite the occurrence of an outburst at a time when the men are not in the mine. It is thought that the shock of blasting would have the effect to precipitate an outburst that might be imminent. The question arises, however, regarding the danger of fires being started in the mine if the coal is blasted in this manner.

I would like to ask if there is danger to be feared from fires being started from blasting with permissible powder. Has the practice been followed, in any mines in the United States, of firing all the shots from the surface when no one is in the mine? What, if any, danger may be anticipated in employing that method of firing?

It is understood, of course, that a thorough inspection of the mine would be made by the firebosses, after the shots have been fired from the surface and before the men are again permitted to enter the mine for work. I shall appreciate very much what information may be given or any suggestions offered that will minimize the danger from the source I have mentioned.

— B. C. Canada. MINE MANAGER.

The mining of coal, in districts where the formations have been much disturbed, is always more or less hazardous. Probably no danger to which a miner is exposed presents a more difficult problem for solution than that due to the imminence of sudden outbursts of gas to which this correspondent has referred.

The subject is one that has long baffled the ingenuity and experience of many of the most practical mining men in the Northwest, where the phenomenon has been most developed. After an experience of eight years, in the development of the Morrissey mine, in British Columbia, the Crows Nest Pass Coal Co., was compelled, in 1902, to abandon its further working.

Probably the safest method is that known as the "pillar-and-stall method," in which narrow openings or stalls, 8 or 10 ft. in width, are driven up in the first working. These stalls are separated by pillars of somewhat greater width, which are then drawn back after the usual manner.

The disturbed condition of the strata, geologically, affords every opportunity
for movement and slipping in the formations. This is undoubtedly accompanied with the working of the gas confined in the strata, and the action increases as the mine workings are developed. Such movement and settlement of large rock masses causes an ominous pounding, which the miners term "bumps."

In an interesting article on the "Outburst of Gas in Crowstone Field," Coal Age, Vol. 14, p. 443, Mining Engineer James Ashworth, draws attention to the analyses of gases from that field, as showing the presence of gases of the higher hydrocarbon series. Mr. Ashworth there expresses the belief that some of these gases are in the liquid form in the coal; and that, on the pressure being relieved, they volatilize and break down the coal in the finest dust. The conditions, however, outreach our present knowledge of the subject, which renders our conclusions mere speculations at the best.

In regard to firing the shots in a mine electrically, from the surface, it can be stated that as far as permissible explosives are concerned, their use practically eliminates the danger of fire being started in the mine by blasting. While this practice of firing is by no means universal, there are instances where it has been followed. At one time, the Stag Canon Fuel Co., at Dawson, New Mexico, used this method of hoisting the mine when no one was underground, the firing of the shots being accomplished by means of an electric battery at the surface.

**Examination Questions Answered**

**Miscellaneous Examination Questions**

(Answered by Request)

**Question—To what extent does the pressure in a boiler exceed that in the cylinder of an engine? A boiler pressure of 60 lb. per sq. in. would be how much in the cylinder of the engine, and where is the difference employed?**

**Answer—The steam-cylinder pressure is always less than the pressure indicated by the gage on the boiler. The amount by which the boiler pressure exceeds that in the cylinder depends primarily on the distance the engine is located from the boiler, the size of the steam pipe conducting the steam to the engine, kind of valves and type of engine. For an ordinary slide-valve engine located a short distance from the boiler and with fairly good pipe connection between the two, it is customary to assume a cylinder pressure 2 or 3 lb. less than the gage pressure in the boiler. This, of course, has reference to the full cylinder pressure before the cutoff valve closes. The mean effective pressure in the cylinder is considerably less than this initial pressure depending on the point at which the engine cuts off steam, amount of clearance and other data.**

**Question—What kind and size of hoisting engine would you install to hoist 1,200 tons of coal from a shaft 400 ft. deep in 8 hr., with a steam pressure of 70 lb. per sq. in., the weight of coal in each car being 3,000 lb. and allowing 20 per cent for resistance of engines, ropes, and pulleys, and making due allowance for the time consumed in caging the coal?**

**Answer—Assuming a double-compartment hoist in which the two cars and cages balance each other, and adding 20 per cent to the weight of coal hoisted each trip, to allow for frictional resistances, gives for the load on the engine, 3,000 × 1.20 = 3,600 lb. Hoisting 3,000 lb. of coal each trip will require (1,200 × 2,000) ÷ 3,000 = 800 hoists, in a day of 8 hr. or 8 × 60 = 480 min. Again, assuming a speed of hoisting of 20 ft. per sec. and allowing, say 13 sec. per hoist, for caging the coal and starting and stopping each trip, gives 400 ÷ 20 + 13 = 33 sec. as the time required for making a single hoist. The total time of hoisting is, therefore, (800 × 33) ÷ 60 = 440 min. This will allow 420 ÷ 440 = 0.90 min. for unavoidable delays each day. To hoist a load of 3,600 lb., at a speed of 20 × 60 = 1,200 ft. per min., will require (1,200 × 3,600) ÷ 33,000 = 130.9 effective horse power. Then, assuming a cutoff, giving a mean effective pressure of, say 60 lb. per sq. in., in the steam cylinder, and taking the ratio of length of stroke to diameter of cylinder as 1.5, the engine making, say 450 strokes per minute and having an efficiency of 90 per cent, the required diameter of the cylinder is

\[ d = \frac{80}{\sqrt{130.9}} \times \frac{0.90 \times (60 \times 1.5 \times 450)}{60} \]

say 12 in.

The length of stroke is then 1.5 × 12 = 18 in. and the size of engine required is 12 × 18 in.

**Question—It is required to raise 800 loaded mine cars a distance of 98 yards, in a two-compartment shaft, 400 yd. deep. Give the general dimensions of the engine, drum, diameter of rope, etc., necessary to properly perform the work. Assume the weight of the coal to be 33 tons, the weight of the cars 14 tons, the weight of the cage 11 tons and the steam pressure 50 lb. per sq. in.**

**Answer—The load on the rope when the cage is at the bottom of the shaft is: coal, 31 tons; cars, 13 tons; cage, 11 tons; total, 6 tons; to which must be added, say 500 lb. (1 ton) for friction. In estimating the size of rope required, allowance must be made for the weight of the rope itself, based on the weight of a 1-in. rope (1.5 lb. per ft.), the weight increasing with the size of the diameter of the rope. The breaking strain of a 1-in., cast steel, 6-strand, 19-wire hoisting rope is 39 tons. Then, using a factor of safety of 8, in this deep shaft (1,200 ft.), the diameter of the required rope will be given by the formula

\[ d = \sqrt[3]{\frac{8 \times 61 \times 2,000}{39 - 1.58/2,000 (8 \times 1,200)}} = 1.26, \text{ say } 11 \text{ in.} \]

The weight of this rope is 1.58 (14)\(^2\) = 2.15 lb. per ft. and the total weight of the rope hanging in the shaft is 1,200 × 2.15 = 2580, say 3,000 lb.

The next step is to compute the unbalanced load on the engine. In a double-compartment shaft, the two cages and two cars balance each other, which makes the unbalanced load on the engine: coal, 31 × 2,000 = 65,000 lb.; rope, 3,000 lb.; friction, 500 lb.; total, 68,500 lb.

In order to avoid an undue bending strain on the rope, the minimum diameter of drum, for a 11 in. rope of 6 strands, 19 wires, should be 50 times the diameter of the rope; or 50 × 11 = say 60 in. or 5 ft. When hoisting at a speed of 2,400 ft. per min. in a 5-ft. drum must run 2,400 ÷ (3.1416 × 5) = 152.8 r.p.m. A direct-connected engine will therefore make 2 × 152.8 = 305.6 strokes per min.

Now, assuming a maximum speed of hoisting, for this depth of shaft say 40 ft. per sec. (2,400 ft. per min.), gives for the time of making a single hoist, allowing, say 13 sec. for caging the coal, 1,200 ÷ 40 + 13 = 33 sec. But, in order to hoist 800 cars in 8 hr., the total time consumed in hoisting is (800 × 33) ÷ 60 = 440 min. This allows 8 × 60 = 440 ÷ 40 = 11 min. for unavoidable delays in a day. A slide-valve engine, cutting off steam at 8 stroke, the mean effective steam pressure in the cylinder, corresponding to 90 lb. gage pressure, is, say 70 lb. per sq. in.; and assuming the ratio of length of stroke to diameter of cylinder as 1.5, the diameter of steam cylinder required is

\[ d = \sqrt{\frac{808}{70 \times 1.5 \times 305.5}} = 24 \text{ in.} \]

The length of stroke is then 1.5 × 24 = 36 in. There will be, therefore, required for this hoist a direct-connected 24 × 36 in. slide-valve engine, running at a speed of 152.8 r.p.m. and winding on a 5-ft. drum.
Draft Legislation for President’s Plan for Coal Agency; Hoover Price Raised to $4.50

BY PAUL WOOTON
Washington Correspondent of Coal Age

Washington, D. C., Aug. 22.—Legislation intended to carry into effect the President’s plan for a national coal agency, which is “to purchase, sell and distribute coal which is carried in interstate shipment,” is being drafted in the Department of Justice. Two or three alternative propositions are being formulated, all of which will be submitted to the President’s coal committee for criticism and suggestion before they are sent to the Congressional committees.

Secretary Hoover stated this morning that he anticipated that the Governor of Ohio would have no difficulty in arranging price matters with Ohio operators at the conference called to meet in Columbus to-morrow.

On the recommendation of the Governor of Tennessee the maximum price for coal being produced in that State has been increased to $4.50. This action was taken when the Governor certified that increased wage and production costs justified the higher maximum. Since the $4.50 price had been granted in West Virginia and Kentucky as well, it also was extended to Virginia.

The Fuel Distributor states that everything possible is being done to speed up the Lake movement and that the volume of coal moving to the Northwest has been increased materially by the new production from Ohio. Arrangements are being perfected to supply Michigan with a considerable tonnage of emergency coal. The State fund of $1,000,000 should be made available, the Fuel Distributor has advised the Michigan authorities, in the form of a bank deposit, so as to facilitate certification for the handling of coal orders.

Requests have been received from Missouri and Kansas asking that Service Order No. 23 be extended to the territory west of the Mississippi River. It is stated that the price of coal is being boosted in those states by competitive bidding, particularly on the part of railroads. Fuel Distributor Spencer, however, is of the opinion that the situation can be corrected through co-operation with the railroads operating in those states.

Advices reaching Washington are to the effect that all operators are on the point of signing the Cleveland agreement. It is fully expected here that all coal mines in the union field will be producing by next week.

A TRUCE, with the contestants retaining their arms and preparing for a resumption of hostilities on a larger scale, describes the situation in the coal industry. It is an opinion in Washington almost unanimously held that all the operators eventually will accept the Cleveland agreement. So far as government officials are concerned, they will have little patience with any other course. Their position is that the public’s need of coal is more important at this time than any issue involved in the strike. The viewpoint of government officials and members of the Congressional bodies is important not so much from any law the government can invoke as from the fact that they are assured complete publicity for their opinions on this subject and in that way can crystallize public opinion.

The public does not recognize that this is a fight between an arrogant labor union and mine owners who want to manage their own property. On the other hand there is acute public consciousness that it is going to be difficult, if not impossible, to get enough coal. There was public support for the operators’ position early in the strike, based on the belief that it would mean cheaper coal if the operators were to win. Now it is recognized that for the operators to hold out longer would simply mean additional shortage and higher prices. The argument that it would result in lower prices at some future time is too vague to be impressive as winter approaches.

Despite these facts there are some who would like to see no further signatures affixed to the Cleveland agreement. If they have the courage to hold out, it is argued, and offer to take back their men at the 1920 wage scale, but without signing the Cleveland contract, it will not be long until the leaders cannot hold their men and a hole will have been kicked in the bottom of Mr. Lewis’ boat. In some cases it might be possible, it is said, for separate contracts to be made with the men. Such a contract need differ only slightly from that adopted at Cleveland to keep the Cleveland settlement from becoming a national one.

The men might give their leaders trouble were they to be held out of employment for technical reasons after nearly five months without work. Since only 40,000,000 tons of production are represented by the Cleveland agreement today, there could be no large amount of strike benefits paid were the remainder of the operators to stand pat. Mr. Lewis has staked everything on the operators giving in before the men. It may be said, however, that those favoring such a course are in the minority. Even among the operators the majority seem to favor the resumption of work at the earliest possible time.

If the entire Central Competitive Field can get under way within ten days, it is believed that the situation can be tidied over so that industry can be kept going. It is realized that the country’s coal reserves are about gone. Widespread stoppage of industry will show itself soon unless capacity production is attained quickly. The ability of the country to produce coal is well known, therefore holding would soon cease. Such reserves as remain will be used up first with the knowledge that better prices are more likely to be obtained the longer purchases can be deferred.

The non-union fields are in a position to produce a record tonnage. Not only have many new mines been opened but it is predicted that all non-union operators will be paying the 1920 wage scale before Labor Day. All of this is on the assumption that normal transportation facilities will be available.

The suggestion has been made that since there will not be enough anthracite to go around, such supplies as become available should be allotted in a way that each community will know how much of that kind of coal is to be available. The average domestic consumer, secure in the knowledge that the strike is settled, is passing more probably to have a sign of relief and expect to obtain his full quota of anthracite. Even those who realize that there must be extensive substitution will expect his neighbor to do the substituting and as a result a real attempt to obtain fuel for the winter may be delayed too long.

Secretary Hoover is outspoken in his praise of the large percentage of coal operators who have continued to sell coal at the agreed price when they could have had $8 or $10 for the asking. At the same time he deprecates in no uncertain terms what he refers to as “bootlegging in coal.” He points out the impossibility of continuing such an arrangement indefinitely, especially when it must apply to a large number of additional districts.

To Restrict Prices at Reopening Mines

THAT the mines reopening in the union fields will be subjected to price restraint is foreshadowed in the following message from Secretary Hoover to Governor Davis, of Ohio:

As you will note from the President’s message, the proposed federal legislation will fix a maximum price for anthracite at $8.50 per ton for shipments at the mine or $8.00 per ton for shipments at a point nearer to the consumer. The $2.50 differential is intended to provide for transportation from the mine to the point of shipment, plus an additional $2.00 allow for handling and revenue. As such prices are based on the principle of relative value and under the conditions of the mining and transportation business today, such a price is not high, but as you know, it will be limited to interstate movement of coal. But if we are to have proper protection of the public on mine prices for intrastate production and margins made on resale of coal wholesale and retail
it must be accomplished through agencies established by state governors. Moreover, we need immediate action pending any legal proceedings.

I am informed that coal mines now opening under the Cleveland agreements in Ohio are demanding from $7 to $10 a ton for coal. In the meantime the public utilities of Ohio are asking us for priority orders against Southern fields where the price is $3.50. You will observe that this situation is the same as in Tennessee. It was not just to either the operators or to persons in great need of coal, but the public utilities and the State of Ohio in particular must be considered. The situation is not only urgent, but it is necessary to believe what you are told. The situation exists in Ohio.

I have had communication with operators in Ohio who are anxious to do the fair thing by the public and I believe you will welcome from you some sort of voluntary arrangement for establishing fair prices in Ohio. The rates made under the Garfield scale you will find in the Pittsburgh News to be $10, the average price of coal to run-of-mine was about $3.50. The recent signed wage scale is a large increase over the basic in use at the time the Garfield prices were made. The situation warrants a general understanding between the operators and the public to the effect that any increase in the prices of the operator shall be an enormous saving to the public over prices now being paid from Ohio mines.

I cannot make any more than that if the people of Ohio and surrounding states are to be protected, there should be a voluntary arrangement, with the necessary committees to enforce it under the direction of your fuel committee, by which some fair manner of running and similar voluntary arrangements and enforcement is set up in respect to wholesale and retail handling of coal. The Federal Fuel Distributor would gladly co-operate in making such an arrangement as this.

Governor Morrow of Kentucky after an examination of the situation, has written me that the public utilities and similar voluntary arrangement and enforcement is set up in respect to wholesale and retail handling of coal. The Federal Fuel Distributor would gladly co-operate in making such an arrangement as this.

Governor Davis asked Secretary Hoover to name Ohio coal profiteers.

In answer to a telegram of Mr. Hoover's on Saturday, Aug. 19, which had been said he had informed that some Ohio operators, under the Cleveland agreement, were asking $7 to $10 a ton for coal, and that "coal operators would welcome some sort of a voluntary arrangement to establish a fair price for coal in Ohio," Governor Davis asked Secretary of Commerce Hoover on Aug. 21 to make known the names of Ohio coal operators who are profiteering, if he knows who they are, that "they may be dealt with as they deserve." The 'serious nature of your Saturday's telegram, both in its charges and in the grave effects on the Ohio public of such as you outline, compels me to ask you for more specific information," the Governor's telegraphic reply to Mr. Hoover declared. "If there are coal operators in Ohio who are so utterly calloused to every principle of fair play in dealing with the public as to seek to extort exorbitant prices such as you point out, the people of Ohio want, and I believe they have a right to know who these concerns or individuals are. I request, therefore, that you make public the names of these operators that they may be dealt with as they deserve."

Middle West Keen for Coal as Negotiations Progress Toward End of Mine Strike

The Middle West looked anxiously as negotiations progressed in Chicago and Terre Haute late last week for the end of the mines' strike in those states. The facts are that practically every user of coal is seriously worried and some, including many a necessary industry, are suffering. The strain through the past summer has been too much for the country. It didn't turn out to be a case of the union mines supplying all the summer needs of the land—thanks to transportation that did not transport. And while coal users are strong for an immediate resumption of mining, the miners of the region, especially those in southern Illinois, have been giving every encouragement to their exultant cockiness by hounding coal trains and causing local coal to seek out cars of coal for them to destroy. This bit of tactics supplanted sniping at train crews, which was the order of the day in the week of the Lewis Cleveland conference.

In St. Louis and surrounding Missouri territory the coal famine is as painful as anywhere. Some industries have closed down, public utilities are up against it for fuel, the Terminal Railroad is working from day to day on the day's supply, and the new state fuel committee which determined that 50 cars a day were necessary for only the essentials of the St. Louis region, could buy and deliver only 15 or 20 cars. When Kentucky shipments consigned to St. Louis were set out and dumped in southern Illinois by miners, E. J. Wallace, of the fuel committee, protested to Governor Small. Adjutant General Carlos Black, of the state guard, at once notified the operators of the mines involved that if they could not stop that sort of thing, state troops would appear on the scene to do it for them.

In Wisconsin, public utilities have been wound up by the recent announcement of the state railroad commission that no matter how necessary the industry, it would not get a coal priority order issued to it unless it had coal under contract. The railroad commission is handling the question of priority in that state to relieve the present situation.

The railroad commission has sent out questionnaires to all big fuel consumers asking for stocks on hand as of July 31 and estimates of fuel needs for the next few weeks. Unless these are returned at once, the commission says, those who fail cannot get priority orders. On the whole, with stocks dwindled down to next to nothing, Wisconsin is in a bad way.

Illinois manufacturers are scraping the bottoms of their coal bins, the Illinois Manufacturers' Association announced in Chicago Friday after completing a survey of its members. Out of 499 replies received by the association, coal supplies on hand average but 18 days and that average was based on figures which in some instances were a week old. The report that the actual coal supply at the time the report was issued was good for little more than a week in some cases.

The total tonnage for the 499 manufacturers was but 351,025. The best supplied plant was good for 40 days. More than 100 were out of coal and running on only what they could get from day to day. They all protested at having to pay $10 and $11 for "dirt" and for low-grade fuel which contained 25 per cent ash and as little heating value as 9,000 B.t.u. and which was bought last winter for $1.50 and $1.60.

Confusion has arisen in many quarters over the priority plan. In Kentucky it is working better, probably, than anywhere else, and even there men with priorities cannot get the coal allowed them and when they do get it they often pay the top price of $8 or $9 instead of the Hoover level. In Missouri the commission has had exactly the same difficulty. In Indiana very little coal has been handled by the state's martial law scheme. In the northern states, where not a ton is coming out of the ground, about all the state committees could do was to holler and in Illinois everything is at loose ends because, after appointing R. L. Medill as state food administrator, Governor Small did not name the committees with Mr. Medill and there were no funds for the committee's work.

Mr. Medill has set up an office in Chicago with volunteer aids and is receiving requests for coal priorities. But he doesn't know what to do with them when he gets them. So he merely forwards them to Washington, hoping they will do somebody some good. The Governor does not complete the fuel organization because he doesn't know yet what it will have to do or what its powers may be. He is waiting for development.

After all this the difficulty which coal consumers—even those with government priority ratings—have been having in getting coal because strike-crippled railroads cannot haul it out of the fields, because railroads have confiscated fuel in terminals and because unscrupulous jobbers have worked all sorts of trickery and treachery out of the business. It is easy to see why the people of the Middle West want the strike settled at once and coal mined on any old terms. The pressure they have been bringing to bear upon the operators was calculated to hurry proceedings.

Coal Age Index

The indexes to "Coal Age" are furnished free to all who ask for them. The index for the first half of 1921 is now ready for distribution, and a copy can be had by addressing a postcard to the subscription department of "Coal Age."
Watkins Deprecates Compulsory Arbitration

A TELEGRAM to President Harding under date of Aug. 29, has been made public by W. H. Watkins, president of the Pennsylvania Coal & Coke Corporation, who attended the Cleveland conference in company with two of the large central Pennsylvania producers—F. E. Herriman, president of the Clearfield Bituminous Coal Corporation, and D. C. Morgan, president of the Pittsburgh & Shawmut R.R. and the Allegheny River Coal Mining Co. According to Mr. Watkins within 24 hours after his telegram was dispatched, the Cleveland Commission, a body composed of one representative from each of the three coal fields involved in the dispute, was formed to look into the cause of the quarrel, was disrupted, and machinery established for the immediate resumption of mining and an exhaustive public investigation in the industry prior to April 1 next. The miners' policy committee with the operators present agreed unanimously on the principle set forth in the telegram, which reads as follows:

It is my judgment that a prompt settlement of the coal strike must depend upon compulsory arbitration as against compulsory inquiry applicable to the fixation of a scale of wage to become effective April 1, 1923, when the apparent over inflation of visioned scale wages will expire.

It is admitted by both parties to this dispute that a method must be found not only to procure a prompt resumption of mining but to prevent a recurrence of this deplorable crisis.

The commission of operators that the only effective way to guarantee the peaceful settlement of the wage scale question, thereby securing to the United Mine Workers at this time a commitment to submit their case to arbitration and to bind themselves now to accept the award of such an impartial commission.

An agreement to accept arbitration for April 1 next cannot be secured without the report of an impartial commission. An agreement wrung from an unwilling party is dangerous and not for the future peace of the industry which is now bought by all parties concerned. The whole principle of compulsory arbitration is at variance with the traditions and spirit of the Free enterprise institution. Some of the present national strikes which deprived the public of the necessities of life, the triumph of the spirit of civilization and fair play.

An impartial compulsory arbitration in future disputes was exhaustively studied by the Roosevelt Anthracite Strike Commission of 1902, of which I had the honor to be a member. The seven years previous reports of President Roosevelt as follows:

"...if the present peace hold, a public against long-contested controversy and to make a coal famine or a famine in any other direction practically impossible we deem it essential that there should be a neutral authority to conduct just such investigations as that you called upon us to make."

The operators have urged the commission to recommend the adoption of compulsory arbitration, so-called, as the means of this desired result, but we cannot see our way to recommend any such drastic measures. We do not believe that in the United States such a system would meet with general approval, nor would it be possible for such a commission to be established by a most of the American people in any similar controversy.

"...the chief benefit to be derived from the suggestion herein made lies in placing the real facts and the responsibility for such condition clearly upon the heads of the coal operators, who have long been crystals and make it their full worth.

A thorough experience in the coal industry I have had no occasion to doubt the wisdom of this award, and on the other hand I have had ample evidence of the turmoil, the ill-feeling and the breach of faith that are the atmosphere of compulsory awards.

The proposed compulsory inquiry advocated by the Roosevelt commission of 1902 leaves both parties free to negotiate willing on the basis of the recommendations of an impartial commission which has had access to all the facts and whose findings will have the force of law, so far as necessary and of democratic society.

The fact is that the limited conference to which I am not a party, now in session in Cleveland, should shun and that the whole industry, and not the parties, should immediately assemble and call on the national scale commission of the United Mine Workers to meet them and any other operators, and to bring an agreement containing the apparent desire of all parties, and submit this agreement containing the apparent wish of all parties, and submit this agreement to the members of the commission to recommend the fixing of a scale effective until April 1, 1923, together with a provision for the fixing of a scale at monthly intervals for the period of compulsory arbitration, or if more than seven impartial citizens of commanding public reputation have been agreed by a thorough examination of the whole industry and on the return to you as the president of the Senate of my recommendation, not only in the report of this informal commission to the Governor but to make a study of the whole industry, and on the return to you as the president of the Senate of my recommendation."

Keeney Says Friendly Operators May Clean Up Mines Preparatory to Resumption

FEELING absolutely confident that whatever settlement might be effected at Cleveland, northern West Virginia operators as a whole would fall into line, C. F. Keeney, president of District 17, let it be known while the Cleveland parley was in session that operators who have been friendly to the union and had made no effort to operate their mines on an open-shop basis or on any other basis, since April 1, might begin the work of cleaning up the mines preparatory to operation. The statement made by Keeney was as follows:

"Operators who have been favorable to the United Mine Workers since this suspension began, April 1, 1922, have permission to clean up their mines, provided they pay the former scale with the check-off dues and assessments, with the understanding that they will not try to dump any coal until the settlement is effected between the operators and the United Mine Workers of America. This does not, however, apply to the operators who have been unfair with the United Mine Workers of America since this suspension took place and have attempted to operate their mines on an open-shop basis. If after the mines have been cleaned up for the operators who have been favorable a contract has not been reached we will ask our men to again cease work until further notice from the United Mine Workers of America.

As for the operators listed as unfair most of them are now operating their mines so that refusal of permission meant nothing in their case.

Miller Calls Special Session of Legislature To Name Fuel Administrator

GOVERNOR MILLER issued a proclamation Aug. 21 calling the New York State Legislature into extraordinary session for Monday, Aug. 28. The primary object of the call is to create a fuel administrator, clothed with sufficient authority to regulate equitable distribution and fair prices of fuel in this State during the coming winter. A few weeks ago Governor Miller, without any particular authority of law, named a state fuel commission consisting of a number of representative people, of which Eugene H. Outerbridge was making chairman. Mr. Outerbridge has been forced to resign because of ill health, however. Prof. Charles E. Locuck, of Columbia University, will take Mr. Outerbridge's place.

This commission has been making an informal survey of fuel on hand in the State, the sources of supply and the extent of distribution and it is upon the basis of the report of this informal commission to the Governor that the Legislature will be asked to clothe officially a state fuel administrator with legal authority over distribution and price fixing.

Quiet in Utah; One Guard Troop Withdrawn

THERE is little change in the strike situation in Utah. All is quiet on the surface. One troop of the National Guard has been sent home, but at the request of the community from which it was drawn and because it was feared the crops were in danger of going unharvested. The withdrawal of the troopers gave the public the impression that the strike was collapsing. A correspondent of Coal Age inquired of a state official if it was the intention to recall all the members of the Guard, and he replied "Very far from it!"
Borah and Winslow Coal-Commission Bills Reported Favorably; Early Passage Forecast

The Senate Committee on Education and Labor and the House Committee on Interstate and Foreign Commerce both ordered favorable reports on Aug. 22 on bills to create a fact-finding commission to investigate the coal industry. The Senate committee adopted the Borah bill with modifications and the House committee adopted the Winslow bill, which was introduced only Monday.

Efforts will be made to speed action on each measure in the respective houses, the first reading was today. The Borah bill, which was introduced several weeks ago, provided for, a commission of five members to be named by the President without restriction as to personnel. As originally drawn this bill provided a commission of three—one from the coal operators, one from the union miners and the third from the general public. The salary to be paid was reduced to $7,500 a year today from the original figure of $8,000. The committee modified the provision calling for a report on the "necessity" of nationalization of the mines to read the "wisdom" of such a step. The time for submission of a report was reduced from nine months to five. The commission would report on a standardized day's work as well as a standardized cost of living.

The Winslow bill, introduced in the House by the Massachusetts member, who is chairman of the Interstate Commission committee, is agreed to by the conference committee only after six hours' debate Monday and Tuesday. The House bill was drafted after Representative Winslow had had a conference with President Harding. Some of its provisions were rephrased but there was no material change made in sense from the original text, which is as follows:

"That for the purpose of securing information in connection with questions relative to interstate commerce in coal and other questions and problems arising out of and connected with the coal industry, there is hereby established a Governmental agency to be known as 'The United States Coal Commission,' to be composed of not more than nine members to be appointed by the President of the United States. No member of the United States Senate or of the House of Representatives or person who has any interest in or is connected with the coal industry shall be eligible to serve on said commission. Each member of said commission shall receive a salary of $10,000 a year. Said commission shall cease to exist one year after the taking effect of this act."

"It shall be the duty of said commission to investigate and ascertain facts in the coal industry as to ownership of coal mines, prices of coal, wages, wage contracts, conditions of employment, distribution, waste of coal, profits realized by owners or operators of coal mines or by other persons or corporations having to do with the production, distribution or sale of coal, and any other material facts in connection with the coal industry generally and the organizations and persons connected with it. Said commission shall report to the President and to Congress its findings of fact and such recommendations as to methods and measures as in its judgment will promote continuity of production and efficiency in mining and distribution and maintain the uninterrupted movement of coal in interstate commerce and safeguard the interests of the workers, operators and the general public. Said commission shall submit its first report not later than Jan. 1, 1933.

"The said commission shall have power to administer oaths, subpoena and examine witnesses and to compel the production of any book, paper, document or other evidence, and to take the deposition of any person before any person having power to administer oaths. In the case of a deposition, the testimony shall be reduced to writing by the person taking the deposition or by persons under his direction. No person shall be exculpated from so attending and testifying and depositing or from producing any book, paper, document or other evidence on the ground that the testimony or evidence, documentary or otherwise, may tend to incriminate him or subject him to a penalty or forfeiture; but no testimony, deposition or evidence taken under this act shall be elsewhere used in any prosecution of any person who has testified, deposited or produced any such book, document or other evidence. But no person shall be exempt from prosecution and punishment for perjury committed in so testifying and, and this act shall not be construed as exempting any person from attending and testifying elsewhere or as denying the right to compel the production of any book, document or other evidence elsewhere in any action or proceeding."

"Any member of the commission or agent of the commission duly authorized in writing shall at all reasonable times for the purposes of examination have access to and the right to copy any book, account, record, document, correspondence or paper relating to any matter which the commission is authorized by this act to investigate."

"Any person who shall willfully refuse to attend and testify or depose or to produce or permit access to any book, account, record, document, correspondence or paper as herein provided for, or who shall testify or depose falsely in any material particular, shall upon conviction be punished by a fine of not more than $5,000 or by imprisonment for not more than one year, or by both such fine and imprisonment."

"The commission may appoint, remove and fix the compensation of such employees, make such expenditure and make such rules and regulations as may be necessary for the efficient administration of this act. The necessary expenses of the commission shall be allowed and paid upon the presentation of itemized vouchers therefore, approved by the chairman of the commission.

"There is hereby authorized to be appropriated out of any money in the treasury not otherwise appropriated, the sum of $500,000, or so much thereof as may be necessary, to be available until expended, for carrying out the provisions of this act."

It is the administration's plan, it was revealed at the White House on Tuesday, to constitute the fact-finding commission, if Congress should authorize one, entirely of representatives of the public. To attempt partisan representation on the commission would be difficult, it was pointed out, because of the different elements within the industry which would have to be taken into consideration. Particular reference was made to separate representation on the part of the non-union and union industries, the central fields and the non-union fields. The chief duty of the commission, it was agreed, is to create a committee in the interest of the American public, particularly since the coal operators and mine workers are creating their own machinery for a study of the situation.

The following telegram was sent by A. M. Ogle, president of the National Coal Association, from New York, Aug. 18, to President Harding:

"The strike in the bituminous coal fields emphatically has demonstrated the immediate need of a non-partisan tribunal that will thoroughly investigate, in the interest of all parties, every phase of the industry and make public at an early date its findings with such recommendations as it may deem proper and advisable. Coal mining is an involved and intricate industry and great confusion exists concerning it not only in the public mind but within the industry itself. The immediate resumption of mining may be most important in the minds of many but if we are to avoid further conflict in the mining industry, beginning April, 1928, resulting in inconvenience to the consuming public and in hinderance with industrial progress, all the existing bargaining fields and the non-union fields. The chief duty of the commission, it was agreed, is to create a committee in the interest of the American public, particularly since the coal operators and mine workers are creating their own machinery for a study of the situation."

"The immediate resumption of mining may be most important in the minds of many but if we are to avoid further conflict in the mining industry, beginning April, 1928, resulting in inconvenience to the consuming public and in hinderance with industrial progress, all the existing bargaining fields and the non-union fields. The chief duty of the commission, it was agreed, is to create a committee in the interest of the American public, particularly since the coal operators and mine workers are creating their own machinery for a study of the situation."
Wage Increases in Non-Union Fields

Cause Price Advance of $1

Acting upon recommendations set forth in a telegraphic communication from Governor E. F. Morgan, of West Virginia, the Federal Fuel Distributor on Aug. 19 instructed district fuel committees that the recommended fair price for coal from all West Virginia districts has been raised to $4.50 per ton. The previous price prevailing in most West Virginia districts was $3.50 per ton. Governor Morgan's telegram was as follows:

"In view of the relationships between operators and United Mine Workers providing for resumption of work on the scale effective when the strike was declared, they will soon make an announcement of a new scale of prices. This would benefit coal producers in West Virginia, as it is expected that the miners will now work to the scale agreed upon." This new scale of prices is expected to increase the coal sold under the fair price in the smokeless fields as compared with the profitter coke from those districts.

The raising of stock prices in the West Virginia districts in the latter part of July started a buying panic and it became necessary to take further action. To this end the various districts, through their committees, have been given the authority to lay down a schedule of prices under the fair price act, under which they hope to continue a fair price for coal. The committees were instructed to do so in order to make sure of the distribution of coal under these prices and the necessary administrative machinery was put into operation. In the various districts, the operators have been notified that they must carry their orders for coal on the fair price list, and that they must fill their orders for coal on the public on prices. This plan was being made effective in maintaining the fair price of coal in the state. It was not effective, however, where there were ample supplies on hand.

While the coal industry is generally healthy, there are still many areas in which the coal industry is not enjoying prosperous times. In many cases, the coal industry is faced with declining prices, and the operators are forced to lower their prices in order to remain competitive. In some cases, the operators are forced to accept losses in order to keep their businesses afloat. This is particularly true in the case of the coal mines in the eastern United States, where the competition from the southern and western coal fields is intense.

The operators have been faced with the problem of maintaining a fair price for coal, but they have also had to contend with the problem of maintaining a fair price for coal. The operators have been forced to accept lower prices in order to maintain a fair price for coal, and this has resulted in a decrease in the price of coal. In order to maintain a fair price for coal, the operators have had to lower the price of coal, and this has resulted in a decrease in the price of coal.
Accepting Cleveland Agreement, Illinois Operators
In Part Sign as Individuals

BY E. W. DAVIDSON
Western Editor of Coal Age

ILLINOIS made peace with the miners late Tuesday afternoon in Chicago, on the exact basis laid down at John L. Lewis’ conference with operators in Cleveland. No arbitration is provided for. Illinois did not sign solidly as a state, however. After a final fight among the operators, President Frank Farrington for the union accepted the signatures of the Fifth and Ninth District Operators’ Association as a unit, the Illinois Operators’ Association as a unit except the Peabody Coal Co. and the Old Ben Coal Corporation, both of which signed individually, and of all the members of the Central Illinois Association as individuals. The agreements, all identical, were signed late in the afternoon and before dark mine-plant whistles all over Illinois were sounding the three joyous blasts which meant work the next day—work the first time since April 1—and a complete union victory.

Of the eighty million tons represented, about twenty million tons signed individually, led by the Peabody interests and the Old Ben Corporation, which made a mighty fight on Tuesday, the last of five perspiring, hot-worded days of conference. They argued that group signing of any contract with the miners would expose the operators again to indictments such as they suffered after the 1919 contract was made.

Thus the fight in Illinois ended with defeat of the operators who were holding out so solidly for arbitration. That issue was lost in the struggle early at Chicago. During the five hard days Farrington spent a lot of time trying to get a contract at the old wages for nineteen months and finally everybody quit struggling to overdo the Lewis plan and went back to it in its entirety, signed both collectively and individually and rushed plans for getting coal out of the ground.

The momentous Chicago conference, full of possibilities for unexpected things because both Farrington and the operators were dead against signing a Lewis-made agreement, convened Friday morning at 10 o’clock. Wise operators went into that session predicting under their breaths that not quite all the surrendering was going to be done by their side. Indiana eyes and Indiana ears were trained on the meeting, for the Indiana men had already met John Hessler, Hoosier state union president, over in Terre Haute, and had adjourned until Monday in order to see what Illinois would do beginning at the zero hour of 10 Friday. Little enough was done. A process of taking plenty of time to this serious business was adopted. At the request of Farrington, the conference adjourned from 10 until noon and then from noon until Saturday morning in order to give Farrington a chance to get his scale committee together and talk to them, he said.

The operators had met on Thursday and had announced that it was to be arbitration or nothing so far as they were concerned. Farrington, hearing of this, said it would have to be nothing, then, for he could sign no agreement that varied from the detested one prescribed by the Lewis meeting in Cleveland.

Nevertheless he and his scale committee took occasion to pay their respects to Lewis and the plan they said he compelled them to abide by. He said Lewis had "deserted Illinois miners" in the sectional scheme decided upon. They passed a resolution unanimously approving of the stand Farrington had taken at Cleveland against the Lewis nation-wide program of contract making. Farrington stood there against Lewis had been that he would not sign any national agreement because to operators of his state were there and therefore the document, so far as Illinois was concerned, meant exactly nothing.

That was about all that happened in formal session Friday. After the noon adjournment both sides took themselves into shirt-sleeve sessions here and there and began the struggle to find a way to make a deal in Illinois that would meet three conditions: (1) Come near enough to Lewis’ plan so that the International could not prove it to be in violation; (2) embarrass Lewis to the utmost degree possible under the conditions; (3) embarrass the Illinois operators as little as possible.

Saturday morning the conference got away to a good start. It organized for its future meetings, both sides stated their case—the miners for the Cleveland plan though they condemned it, and the operators for arbitration—and then the conference went into executive session behind doors that were by no means soundproof against some of the positive, full-blast articulation which ensued.

Farrington, speaking the miners’ piece, recited the terms framed at Cleveland, repeating that the union in Illinois is compelled to come to an agreement with the operators only on those terms. W. K. Kavanaugh, of St. Louis, president of the 5th and 9th District Operators’ Association, stated the operators’ case, declaring for arbitration—"the American way" of settling industrial disputes—and renewing the operators’ peace offer of Aug. 4 calling for a return to work of miners at the old scale while a non-partisan commission decided what the scale and working conditions should be after March 31, 1923. Farrington replied that arbitration would spell, for the union, the loss of a large part of the ground it has gained in recent years, and therefore could not be considered.

Long debate followed in which some sulphurous language was touched off. It ended at noon with the decision to take the matter out of the hands of the big and unwieldy conference for the time being and lay it in the hands of a committee of six to produce a plan of agreement and then to put the conference up to the contract of six consisted of the three operators’ association presidents, W. K. Kavanaugh of the 5th and 9th, Rice Miller of the Illinois Operators, and Harry C. Adams of the Central Illinois Operators, and three union officials, President Frank Farrington, Vice-president Harry Fishwick and Secretary Walter Nesbit.

The one outstanding and vital declaration of the day by Farrington was that he absolutely would not sign any contract with individual mine owners of six. All Illinois miners would. Farrington then added that he and his individual mine owners of six would go back to work together or none would go, he declared. This firm position by Farrington meant a good deal to the closely knit factions of operators who were making the fight for the state. It meant Farrington would do some of their own work for them by holding wobbly operators in line for a general state settlement whether they wanted to stay in line or not.

Saturday night the Congress Hotel, where the committee of six was working, was full of operators from all over the state who were hanging around the conference keen for the first chance to sign the dotted line and wire their mine superintendents to blow the whistle. More than one of them said flatly that they would have signed with Farrington then, as fast as they could have on the arbitration plan. Moreover, they added, they were pulling strong for a quick decision. The idea of the conference stewing along in Chicago for a week or more trying to make an agreement was highly distasteful.

Nothing, however, came out of the committee of six all day and all evening Saturday. This morning the committee settled down to it again and wrangled all day and well into the evening. The only thing that leaked out was that Farrington was proposing and the operators counterproposing all sorts of shifts and changes in a settlement of the Cleveland type but that nothing definite was determined.

The hope of Farrington seemed to be to obtain a contract to run nineteen months to April, 1924, at the old wages instead of running only to next April, as Lewis
Big Association Groups Slow to Accept Cleveland Pact

PROGRESS, slow but apparently sure, is being made over the country in the resumption of mining in the union coal fields that have been on strike since April 1.

In addition to the substantial increments to output furnished by the three large producers in central Pennsylvania, the Pennsylvania Coal & Coke Corporation, Clearfield Bituminous Coal Corporation and Allegheny River Mining Co., a number of the smaller operators have signed up and started their mines.

Meanwhile approximately 200 association coal operators of the central Pennsylvania field met at Clearfield on Aug. 17 and rejected the Cleveland agreement as a working plan and arranged with the United Mine Workers' leaders for a joint conference in Altoona on Aug. 21.

Following a meeting in Cumberland, Md., on Aug. 18, at which representatives of coal companies and individuals operating coal mines decided to refuse to recognize the miners' union, Maryland operators in the Georges Creek region, on Saturday, Aug. 19, posted notices at the mine openings that they would reopen on the 1920 wage scale.

At a meeting last week of the Southern Ohio Coal Exchange action was taken leaving the question of signing the Cleveland scale to the individual operators. The meeting was long and a good deal of opposition to the scale developed.

The central fuel committee at Washington was advised on Aug. 19 by George T. Poor, chairman of the Ohio Fuel Committee, that the production of coal in Ohio is expected to be practically on a normal basis by the first of this week with an anticipated possible output of 5,000 cars per day.

Numerous breaks from a policy of non-acceptance of the Cleveland agreement are reported in the ranks of the Pittsburg and the Lehigh Basin. The coal operators have indicated that union membership will not bar them from employment here but it also has been made clear that there will be no recognition of the union.

The first material break in the ranks of operators in northern West Virginia came when fifty coal companies operating in that part of the state signed an agreement with the United Mine Workers on Aug. 17 to operate on a union basis under conditions prescribed in the Cleveland agreement. Among the larger concerns which signed the contract was the Consolidation Coal Co.

The agreement was entered into after a meeting of the Northern West Virginia Association at which it was decided to take no association action. Despite this action most of the mines now operating in this field are on an open-shop basis.

As this issue of Coal Age goes to press on Tuesday night no announcement has been received from the meeting of Indiana operators at Terre Haute, where acceptance of the Cleveland agreement was being considered for several days pending the outcome of the Illinois conference described elsewhere in this issue.

Ogle Disavows Attempt to Deliver Illinois And Indiana at Cleveland

PERSISTENT reports from Illinois that A. M. Ogle, president of the National Coal Association, had exceeded his authority and had misrepresented his constituents when he held a conference on Aug. 6 with John L. Lewis, president of the United Mine Workers, at Pittsburgh, are discounted in the East. It is being pointed out that what Mr. Ogle did was to deliver a plan of settlement to the coal operators' attorneys representing both sides and to offer to put it before the union coal operators. It is reported that the Indiana operators are indignant over the insinuations from Illinois and are backing Mr. Ogle. By some it is charged that certain Illinois influences are at work to disrupt the National Coal Association.

Following the meeting of the directors of the association in New York last week Mr. Ogle sent the following word to the operators: "Reports and rumors going out from Cleveland last week to the effect that I had agreed to deliver Illinois and Indiana into the meeting called by Lewis at Cleveland are completely without foundation. It seems strange that anyone with intelligence would make a charge so palpably absurd on the face of it and almost equally strange that anyone should give it credence. That such groundless rumors have been so readily accepted is probably due to the strain under which everyone has been laboring during the tense and trying situations that we have been compelled to meet almost daily. It is fortunate that our National Association has developed sufficient strength to stand steady against the shocks caused by such temporary dissensions and misunderstandings."

By this time tension in the committee had grown severe and nerves were rasping. For an hour the committee talked sharply back and forth. Then the door flew open and out tramped Farrington clamping on his hat. "If I can't get a chance to talk in this meeting, I'm through," said he.

It appears the controversy had grown quite heated. However, before he got far away he was pacified by an operator commander and so the subcommittee merely adjourned until evening to cool off. That night if anything was decided by the committee that fact did not leak out. But a level best effort was made because a separate meeting of the miners' whole scale committee was slated for Tuesday morning at 10, an operators' meeting at 11 and the reconvening of the joint conference at 12, and if no final report was ready for that noon session nobody knew how serious a crash might ensue.

The Tuesday struggle became hopelessly tied up during the middle of the day when, with arbitration and the nineteen months proposition both scrapped, there remained only a battle among operators as to whether they would sign in a group or individually, and whether the miners would sign them both ways. When the committee of six could not pull the operators together, Farrington got permission of his men to sign them both ways. The final general conference was called, the two-way plan was agreed upon and the agreement was signed, thus ending the strike in Illinois.
HESITATION continues to mark the progress of the industrial coal buyer. Those, like the railroads and utilities, that must have coal as they go along are getting it with the help of the government. They are not confining themselves to the Hoover prices either, but are paying premiums as they go. Current production is just about equal to the current consumption of the essentials, as transportation and utilities, with perhaps a little left over for such as hospitals. Everyone appears to be waiting for the union mines that have signed up with John L. Lewis to begin work. Last week there was little evidence that these long idle union mines furnished much coal to the country, but the indications are that more will be forthcoming this week. Estimates place the total output this week a little short of 6,000,000 tons.

RESUMING MINES NOT YET OUT OF TROUBLE

So far none of the large operators' associations has signed up as a group. This has not prevented individuals from putting their names on the dotted line and many mines in Ohio and Pennsylvania have started work in the past few days by this route. But those who attempt to start up find their troubles are not over, for men are scattered, some having left the country and others being away on other jobs, and it is going to take more time than many anticipated to get normal output from those mines that start, and much longer to get them all started.

Thus the consumers who are sitting back waiting for a flush production are going to have to wait for some time. Their holding back is the factor mainly responsible for the continual staggering march of coal prices. It requires a stiff demand to hold prices at some of the high levels recorded in recent weeks and when a portion of that demand is withdrawn the market sags. This is what happened during the past week: The result is that on Monday of this week Coal Age Index of spot prices of bituminous coal dropped 20 points to 530 from 550 a week ago. The corresponding average price was $6.41. One curious feature of this figure is that while the high range on Kentucky coal dropped $1.50 to $3 last week, the low range was raised a dollar by the change in the Hoover price from $3.50 to $4.50.

The government program of priorities is not working with all the smoothness that might be hoped for. In fact it seems to be functioning with some difficulty. Plainly the trouble is lack of complete co-operation and lack of understanding all around—even in Washington—of what it is designed and desired to accomplish. Certainly it has not operated so far as a price controller. The railroads are following orders as regards distribution but apparently have no influence on prices when it comes to placing cars.

A desperate effort is being made to get coal started up the Lakes and it is here that the real test is coming. Priorities have put coal up the Lakes before and doubtless will do so again.

Hopefulness prevails with respect to early resumption of mining in the hard-coal region and there is little more to be said on the subject. There is no hard coal to distribute and consumers have not become urgent for supplies. Coke is being turned into domestic fuel channels in order to get it moved under favorable priorities.

Estimates of Production

<table>
<thead>
<tr>
<th>(Net Tons)</th>
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</thead>
<tbody>
<tr>
<td>BITUMINOUS</td>
</tr>
<tr>
<td>Week ended: 1921</td>
</tr>
<tr>
<td>July 29</td>
</tr>
<tr>
<td>Aug. 5 (6)</td>
</tr>
<tr>
<td>Aug. 12 (6)</td>
</tr>
<tr>
<td>Daily average...</td>
</tr>
<tr>
<td>Calendar year</td>
</tr>
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<td>Daily av. cal year</td>
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<table>
<thead>
<tr>
<th>ANTHRACITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 29</td>
</tr>
<tr>
<td>Aug. 5 (6)</td>
</tr>
<tr>
<td>Aug. 12 (6)</td>
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</table>

<table>
<thead>
<tr>
<th>COKE</th>
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<tbody>
<tr>
<td>Aug. 5 (6)</td>
</tr>
<tr>
<td>Aug. 12 (6)</td>
</tr>
<tr>
<td>Calendar year</td>
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</tbody>
</table>

A Subject to revision 0% Hoover and 10% last report.
BITUMINOUS

This is the first full week that any of the union coal miners have been at work and it will be some days before it can be ascertained how much they will add to the current coal output. According to the report of the Geological Survey for last week the best that was hoped for in the few days following the Cleveland conference was a few hundred thousand tons, mainly from Ohio and Pennsylvania. Illinois and Indiana were still holding out and but few mines had started up in the Southwest. Northern West Virginia was getting under way.

Great anxiety was being experienced by many operators about getting their mines to work now that they were willing to sign the pact that the United Mine Workers drew up at Cleveland, for every day at the high spot prices means many dollars of profit. Furthermore these operators are anxious to be the first to get to work, as they anticipate a decided car shortage when the districts as a whole get going.

Loadings on Monday, Aug. 14, according to the railroads, were 15,722 cars, a decrease of 3 per cent as compared with the week preceding. Thereafter they declined steadily to 12,530 cars on Wednesday. The loadings on Thursday, 15,469 cars, gave the first indication of shipments from mines reopened under the Cleveland agreement.

Car supply improved in certain districts of southern West Virginia and Kentucky, but in Harlan County and adjacent fields of southeastern Kentucky and Tennessee.

The following statement shows the number of cars on all railroads loaded daily:

<table>
<thead>
<tr>
<th>Week</th>
<th>12th</th>
<th>13th</th>
<th>14th</th>
<th>15th</th>
<th>16th</th>
<th>17th</th>
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<td>11,336</td>
<td>11,142</td>
<td>13,993</td>
<td>11,090</td>
<td>11,446</td>
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<td>Tuesday</td>
<td>16,073</td>
<td>16,153</td>
<td>16,622</td>
<td>10,932</td>
<td>16,229</td>
<td>11,461</td>
</tr>
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<td>Wednesday</td>
<td>11,437</td>
<td>10,932</td>
<td>11,461</td>
<td>12,447</td>
<td>11,336</td>
<td>10,821</td>
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<td>Thursday</td>
<td>10,821</td>
<td>10,932</td>
<td>11,461</td>
<td>12,447</td>
<td>11,336</td>
<td>10,821</td>
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<tr>
<td>Friday</td>
<td>16,229</td>
<td>11,461</td>
<td>12,447</td>
<td>11,336</td>
<td>11,090</td>
<td>11,446</td>
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<tr>
<td>Saturday</td>
<td>8,888</td>
<td>13,193</td>
<td>9,664</td>
<td>11,446</td>
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Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

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<tr>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Smokeless lump</td>
<td>Columbus</td>
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<tr>
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<td>Columbus</td>
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<td>Smokeless screenings</td>
<td>Columbus</td>
<td>6.00</td>
</tr>
<tr>
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</tr>
<tr>
<td>Smokeless mine run</td>
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<td>Smokeless mine run</td>
<td>Chicago</td>
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<td>Smokeless screenings</td>
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<tr>
<td>Smokeless mine run</td>
<td>Cincinnati</td>
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<tr>
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<td>Louisville</td>
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<td>Smokeless mine run</td>
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<td>Smokeless screenings</td>
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<td>Smokeless screenings</td>
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<td>Chicago</td>
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<td>Smokeless screenings</td>
<td>Pittsburgh</td>
<td>7.25</td>
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</table>

Coal Age Index 530, Week of Aug. 21, 1922. Average spot price for same period $1.41. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the total output of the United States, weighted in accordance 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, 1913-1914," published by the Geological Survey and the War Industries Board. (Pittsburgh District, Indiana and eastern Ohio prices not included in figures for last week.)

19th Week in Vol. 22, No. 8

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

**Advances over previous week shown by blue type, declines in italic.

NOTE—Smokeless prices now include New River and Pocahontas.
transportation was for a time almost completely blocked. Western Kentucky also reported acute transportation loss.

There was no compensating increase in shipments from the non-union fields of Pennsylvania, according to the Geological Survey.

Final returns show production of all coal in the nineteenth week of the strike as 4,605,000 tons, including 29,000 tons of anthracite. In the corresponding week of 1921, the output of bituminous was 7,770,000 tons and of anthracite, 1,770,000 tons, a total for all coal raised of 9,540,000 tons; the year before that the total was 12,280,000 tons. Considering anthracite and bituminous coal as a common source of supply, the present weekly output is five or six million tons below normal.

Lake dumpings increased last week to 162,162 tons, of which 104,112 tons were cargo and 58,050 tons were bunker fuel. Lake dumpings are disturbing as the owners of the Federal Fuel Distributor all coal loaded on Monday, Wednesday and Saturday of this week in the Kenova-Thacker, Logan and Kanawha on the C. & O., Big Sandy, Hazard, Elk Horn and Harlan fields is to be consigned to the Lakes. The loadings from these fields on the corresponding days of two weeks ago were a little short of 400,000 tons. Lake shipments are now about 10,000,000 tons behind last year.

Not only is the movement of Lake coal behind past season's but the distribution of the coal actually dumped has differed from other years. Shipments to Canada have decreased much more sharply than those to American destinations. Of the total dumped, only 11.7 per cent went to Canadian ports as against 28.5 per cent in 1920. There has been a great increase in shipments to Buffalo and other Lake Erie ports, with over 14,000 tons of a total of 89,000 tons being shipped to Lake Erie ports on the American side as against 12,550 tons in 1920.

Still more striking has been the increase in the proportion moving to Lake Michigan, to which 43.1 per cent of this season's dumpings has been consigned in comparison with 25.5 per cent two years ago. In like manner the sharpest decrease has been in the movement to Lake Superior by 15.5 per cent of the total—had been consigned to American ports on Lake Superior up to July 31. Yet these ports absorbed 51.4 per cent of the movement in 1921 and 36.5 per cent in 1920.

The reserve of coal on the commercial docks at the head of Lake Superior decreased sharply during July whereas it normally increases at this season. According to the Northwestern Coal Dock Operators' Association, the stocks of bituminous coal at Duluth, Superior, Ashland and Wabush dropped from 1,498,000 tons on July 1 to 601,000 tons on Aug. 1. Stocks of anthracite declined during the same period from 364,000 to 170,000 tons.

In comparison with last year the present reserve appears very small, but it must be remembered that in 1921 stocks were above the average, says the Geological Survey.

### Stocks on Lake Superior Docks

- **Anthracite:**
  - July 1, 1922: 367,771
  - July 1, 1921: 400,395
  - Aug. 1, 1922: 417,254
  - Aug. 1, 1921: 3,513,539

- **Bituminous:**
  - July 1, 1922: 1,498,276
  - July 1, 1921: 4,342,467
  - Aug. 1, 1922: 668,858
  - Aug. 1, 1921: 2,355,624

According to the Geological Survey mines in Pennsylvania, Maryland and northern West Virginia shipped less coal during the week ended Aug. 19 than during the previous week.

The all-rail movement to New England increased to 688 cars in the week ended Aug. 12 from 437 cars the week before. In addition to this figure 226 cars were reported to have been shipped from Rouses Point, up near the Canadian border. In the same weeks of last year the movement was in excess of 2,000 cars per week. Anthracite movement to the same territory was 226 cars during the second week of August, mainly of steam sizes. A slight gain in tidewater dumping at Hampton Roads was recorded in the week of Aug. 17. In that week the total was 307,182 tons compared with 306,258 tons in the previous week. Many vessels are reported waiting for cargoes and the supply at the piers is gaining. Lambert's Point the N. & W. piers gained but Sewalls Point lost. The
North American Orders Strain British Export Facilities; Production Nears Record

The British market is very active. Prices are strong and the emergency demand from Canada and the United States is straining the exporting facilities of the country. Spanish demand is showing unexpected strength.

Exports to North America are expected to reach 200,000 tons per week and may soon exceed the pre-war record. Some American business extends into October, although most of the orders are for delivery within the next 30 days.

Production reached 5,122,000 gross tons during the week ended Aug. 3, according to a cable to Coal Age, the heaviest since early in April. The preceding week's output was 4,898,000 tons.

There is a slight lull in the north of England industry due to the fact that the entire output during August has been booked up, and shipping facilities beyond the end of this month are not certain. The Scottish coal market is disappointed at the non-materialization of American orders. It appears that Scotland was on holiday when the English pits were working, and were taking their time over filling the orders to America which they believed were ready to their hand. When the Scottish pits prepared to deal with the American requirements they discovered that no orders were coming their way. England and Wales had got busy, with the results that inquiries gravitated south.

The June audit in Wales, on which August wages are based, shows the worst figures since the National Agreement, and the proceeds were not enough to cover the standard costs. During this month revenue was £3,136,000 and costs £3,243,000. The owners have had to surrender £283,000. In these circumstances wages will remain on the minimum. The July audit will show little improvement, so that wages will remain about the same until October when the results of the American demand during August will be felt and wages will rise in sympathy.

The miners have is the regularity of employment.

French Feel Effects of U. S. Strike

Important purchases of British coals by the United States have been felt on the French market, which has materially improved since about the middle of July. Arrivals of British coals in France are decreasing. Pithead stocks are still so high that French collieries would particularly welcome a few substantial orders from America. The collieries of the Nord and Pas-de-Calais have a joint selling agency. Le Comptoir d'Expansion Commerciale des Mines du Nord de la France, 26 rue Saint-Jean, at Douai (Nord), and this organization could certainly arrange for coal exports to America as it did last year to Great Britain during the miners' strike in that country.

Other facts just now concur in improving the French market. A strike of river craft personnel on the Lower Rhine hinders the arrival of German coals; good deliveries are being made abroad of Sarre coals, which sell now in south Germany to the extent of 170,000 tons per month.

At a meeting of the Nord coal field miners' union, a resolution was adopted deprecating any reduction in wages.

Coal Paragraphs From Foreign Lands

ITALY—The price of Cardiff steam first was quoted at 42s. 6d. Aug. 19, according to a cable dispatch to Coal Age.

GERMANY—The production of coal in the Ruhr district for the week ended Aug. 5, according to a cablegram to Coal Age, was 1,731,000 tons.

Prices Soften at Hampton Roads

Vessel requirements registered at the piers expanded slightly during the past week, but there was no further tightening of the market here in consequence. Perhaps in keeping with the general relaxation of the market, prices declined, although there is that there is so little free tonnage in the market made the quotations nominal. Movement at the piers grew larger at Lambert's Point and at Newport News, but declined at Sewalls Point. Some delays to steamers calling for cargoes were reported. As a whole the bunker demand has not cut much figure in the market, however, as foreign trade vessels are taking their fuel on the other side. Among the vessels chartered or awaiting charter in the coal trade here is the largest fleet of sailing craft that has been anchored in Hampton Roads for several years.

Demands for tonnage for use in manufacturing plants and at public utilities appear to be following a more orderly and composed course, following the strike conference. Earlier in the month shippers here were beset with frantic appeals for small tonnages to avoid what the vessel-purchasers described as serious crises.

Hampton Roads Bunker Prices, Gross Tons

N. & W. Piers, Lambert's Point

<table>
<thead>
<tr>
<th>Week Ended</th>
<th>Tons</th>
<th>T. &amp; B.</th>
<th>Cost</th>
<th>T. &amp; B.</th>
<th>C.</th>
<th>FOB.</th>
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<tr>
<td>Aug. 10</td>
<td>808</td>
<td>1,196</td>
<td>382</td>
<td>547</td>
<td>114-115</td>
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<td>Aug. 17</td>
<td>459</td>
<td>646</td>
<td>296</td>
<td>434</td>
<td>112-112</td>
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<tr>
<td>Aug. 24</td>
<td>630</td>
<td>902</td>
<td>525</td>
<td>686</td>
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<tr>
<td>Aug. 31</td>
<td>650</td>
<td>905</td>
<td>543</td>
<td>666</td>
<td>114-114</td>
<td>114-114</td>
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</tbody>
</table>

Export Clearances, Week Ending Aug. 17, 1922

FROM HAMPTON ROADS: For Antwerp, Belgium, 29,522 Tons. For Curacao, 3,743 Tons. For Madeira, 2,840 Tons. For South America, 7,741 Tons.

Pier and Bunker Prices, Gross Tons

PIERS

<table>
<thead>
<tr>
<th>Week Ended</th>
<th>Tons</th>
<th>T. &amp; B.</th>
<th>Cost</th>
<th>T. &amp; B.</th>
<th>C.</th>
<th>FOB.</th>
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<td>Aug. 12</td>
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<td>11.00</td>
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<tr>
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<td>12.00</td>
<td>750</td>
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BUNKERS

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<th>Cost</th>
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<th>C.</th>
<th>FOB.</th>
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<td>750</td>
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Current Quotations British Coal f.o.b.

Port, Gross Tons

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<tr>
<td>Newcastle</td>
<td>42s. 6d.</td>
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<tr>
<td>Southampton</td>
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Foreign Quotations by Cable to Coal Age.
Trade Tastes Dose of Optimism; Prices Soften

Output Gains in Pennsylvania and Northern West Virginia Help Market

—Southern Coals in Bigger Volume—

British Fuel Disappoints—Priorities Absorb Most of Available Product.

INCREASE in production in Pennsylvania and northern West Virginia is proving a great help to the market along the northern Atlantic seaboard. These gains in output are small as mining is first resumed, but absence of car shortage and an evident purpose on the part of the miners to return to work again as soon as the individual mine owners sign the Cleveland contract has given the trade a dose of optimism and softened prices.

Demand is not insistent, but rather is holding back awaiting more production. Southern coals are in better volume at Northern ports. The first experiences with British coals, now flowing in, are not particularly happy. Some of our equipment is proving to be not adapted to this coal.

Priorities continue to absorb most of the coal available for the market.

NEW YORK.

The outcome of the Cleveland conferences and the probability that many mines that supply this market would soon reopen put a damper on the local demand last week. Quotations softened at various times during the week.

The enthusiasm which prevailed over the possibility of believing the situation by the introduction of British coal was not so pronounced toward the end of the week when it became known that one of the public service corporations had experienced some difficulty in using it to advantage. During the first five days of the week there were 67,026 tons received here in eleven vessels, all of it apparently on order.

Southern coals are coming forward in good shape and with quotations at Hampton Roads ranging $10.25@10.75, quotations, c.i.f. New York, having ranged $11.25@$12.55 in big bottoms and $13.00 in small barges.

The railroads are heavy buyers, although they have priority rights. Some dealers continue to buy and have their coal conspired. It was said that some railroads have been able to buy B. & O. coals at around $5 f.o.b. mine.

There is no indication of lowering their coal quotations and it is not believed that operators will be willing to bind themselves for the balance of the coal year. While some believe it will be possible to get at least $5 at the mine, others believe the minimum figure will be around $6.

FAIRMONT

Although the Cleveland conference created more or less of a feeling of uncertainty, operators not knowing to what extent the conference might affect the mines already operating on an open snap basis, nevertheless producers continued to increase the output. About 220 mines were in operation, the largest number since the beginning of the strike. Prices were still on a high level, the maximum being about $7.25.

PHILADELPHIA

The general run of consumers seem to have taken it for granted that the Cleveland conference ended the coal strike and as a result they have ceased to inquire for coal. Some plants with barely enough coal to keep them going for a few weeks are taking the stand that by waiting prices will be much easier.

The indications are strong that the rail strike will soon be settled, and this being the case there will be a greatly increased movement of coal to the consumer and considerable reduction in prices.

There has been some softening in prices, although the cuts have not been deep. Indications are that there will be still further recessions during the next week.

CENTRAL PENNSYLVANIA

Operators pretty generally have agreed to the settlement and already many mines are working. The operators of th Pennsylvania Coal & Coke Co., thirty-five in number, are at work. The Stineman mines at South Fork, the Miller Run Coal Co. and the Clark Coal Co., at Hastings, the Barnes & Tucker Co. and the Maderia Hill Co., at Barnesboro, with mines in good condition, were ready to start operations at once.

Word from every mining community in the field is that the effect of operations will be gotten under way as fast as the equipment permits when they are gotten back into the mines. It is predicted that practically all mines in the district will be in operation before the end of the present week.

There is not likely to be a shortage of cars. The railroad shopmen's strike did not affect the repair shops in Altoona and all equipment is in good condition for handling the increased output of coal that will now be called upon to handle.

BALTIMORE

Prices for soft coal have not fallen as a result of the impending strike settlement and in the face of the general transportation situation and the deploration of stocks it is impossible to make much headway in cutting down prices. The railroad situation is such that all the coal moving is on priority basis, it has not broken down the situation in which coal consumers readily pay high prices to get immediate supplies.

Fairly high grade gas coals are still being offered at this time around $7.50 per net ton f.o.b. mines. What little steam coal is offering is taken up rapidly at $7.50@8.

The Baltimore industries have been running on narrow margins of reserves and therefore the receipt through a local concern of nearly 100,000 tons of Virginia coals by barge proved a real boon. The same is true of /importing between 75,000 and 100,000 tons of British lump coal of high grade for the Baltimore trade. The first of this coal is expected this week and a considerable demand for it already in evidence from householders to replace anthracite.

Both the Virginia coal and the British coal have been placed on a price basis that is not prohibitive.

UPPER POTOMAC

The number of mines operating in the Upper Potomac region is increasing from week to week and about the only plants not producing now are those on the Maryland side of the Potomac where little or no protection has been accorded by local authorities. No trouble is being experienced in securing all the cars necessary. Prices are ranging $6@$7.25.

SOUTH

VIRGINIA

Under improved transportation conditions, the field is showing further signs of recovery from the slump caused by a break-down in car and coal supply and movement. Improvement has been more marked on the N. & W. than in any other section of the state. Notwithstanding this increased production there is an acute shortage in the state and some industrial plants have found it necessary to close down.

BIRMINGHAM

Relief from the stress in demand on this field by forward consumers is already evident. The Missouri Pacific placed a large tonnage a day or so prior to the strike settlement affecting a portion of the Local Competitive Field and almost immediately canceled some. A priority was recently granted the Rock Island in the matter of car supplies to mines at which contracts had been placed for fuel in this district. The road not having been able to secure sufficient coal otherwise on account of shortage of equipment.

It looks as though the buying movement in normal Alabama territory has now received sufficient impetus to warrant assurance of further advance. A steady weekly production will be easily absorbed when shipments to outside territory are cut off.

The strong pressure in the coal market continuing through the past week maintained prices at high levels, ranging $6@$6 per ton, and like figures are expected to continue through the coming week. Continued pressure from emergency orders prior to the inauguration of Hoover schedules ranged $2.50@$3.50 per ton.

Production for the period of Aug. 5 reached 400,000 tons, although some orders were held at mines on all lines on account of shortage in the car supply.

Anthracite

Trade Concerned at Task of Spreading Short Fuel Supply
Sees Possibility of Trouble in Accumulated Demand—Dealers Dole Out Stocks Only Where Need Is Urgent—Householders Optimistic.

No ALARM is manifested over the Eastern anthracite-coal consuming territory as the end of summer approaches and production of hard coal continues at a standstill. The trade itself—retailers, wholesalers and producers—is greatly concerned and fully recognizes the possibility for trouble when it comes to spreading out a short supply over an accumulated summer and early fall demand.

Dealers are holding to their stocks—quite scanty in most yards—and are doling out supplies only where urgently needed. Pea is the only size that is moving at all and that now is very difficult to get. River coal, size and quality not guaranteed, but at stiff prices, is available to meet the demands of particularly needy consumers.

Substitution of bituminous coal for anthracite is not in evidence to any marked extent as yet. Not until people really feel the pinch of a shortage of hard coal will they turn to soft coal. There is yet abundant optimism among those householders who give next winter’s coal supply a thought, that the mines will soon start and that they will then have all the coal they want.

PHILADELPHIA
Retail dealers take it for granted that the miners and operators will get together, and are prepared to resume deliveries. Of course, in formulating their plans the dealers are going ahead without taking into consideration any rules that might be decided upon by the fuel commission. The hope is strong that the commission will continue to itself the distribution of fuel to the dealers, allowing them to work out their own method of placing the coal to the best advantage.

Due to the fact that there is no probability of a wage reduction it goes almost without saying that prices will be about the same as they have been during the past year, unless the dealers will pass along the entire freight reduction, which amounts to about 25c. a ton.

Pea coal continues to come in, and retailers are making immediate deliveries, with the result that when winter comes there will be a lack of the usual reserve yard stocks of pea.

There is still a plentiful supply of river barley and if anything prices are a trifle easier, running $2@2.75. Some concerns, in fact most, have found that the mixture of fine anthracite with soft coal generally works out advantageous, and this, combined with a promise of better bituminous shipments, is responsible for the easier prices.

BOSTON
Dealers are holding their small reserves of egg, stove and chestnut for such emergency needs as may develop, and are doling out what pea coal is available. Only small and scattered lots of bituminous are being delivered in place of anthracite, most housekeepers having elected to take pea as long as it lasts.

At whatever the trade has been much encouraged over the prospect for settlement. It is realized, however, that an agreement has not been reached yet and that several weeks may elapse before such a settlement is reached. Meanwhile, what pea is in storage is being saved for locomotive use until the bituminous situation has improved sufficiently to justify its release.

NEW YORK
Outside of small tonnages of pea, buckwheat and river barley producers and wholesale dealers have nothing to offer. Pea coal is being used largely by the railroads, who find it more economical to burn than bituminous coal at the current quotations.

There is almost none of the larger sizes in the local retail yards. Demand for buckwheat and the smaller river products was easier last week, due to the conferences in Philadelphia, and the resumption of mining in some of the bituminous areas. No apparent change in quotations, however.

Buckwheat was scarce and was quoted by some dealers at around $12 along with. Buckwheat was quoted $36@3.25 at point of loading.

Some independent buckwheat was offered here at $9 f.o.b. mine and during the week a stray lot of rice was quoted at $7 f.o.b. mine. Independent pea coal was quoted at around $14, f.o.b. piers.

BALTIMORE
Hard-coal dealers are not particularly disturbed at the thought that British lump soft coal will be used in a number of homes hereabouts during the early winter. They believe that the advantage of anthracite over any class of soft coal for household use is such that hard coal will become once more the exclusive, fuel for the home as soon as it is available.

No delusions are entertained that the entire hard-coal demand for the early autumn and winter can be met, no matter how favorably the situation at the hard-coal mines may develop within the next few weeks. The Maryland Fuel Distribution Commission is allotting priority orders in cases of emergency, all of which are reported as being filled fairly promptly.

BUFFALO
As a rule the handlers of hard coal do not look for a supply for some weeks yet, even if the men go to work soon, as is supposed to be the program. The output is so much more slow and difficult than in the case of soft coal that no shipments of account will be made right away. So far as this market goes the situation is just as it was.

The consumers will be glad when the Larkin housewives can get coal. After all, the coal dealer can be turned in here and there will be coal enough. It is doubtful if the old close adherence to anthracite and certain sizes at that for certain purposes, will ever be returned to. It is found that with the regulation sort and sizes as a foundation it is easy to use something else as a filler with good results.

SALT LAKE CITY
The domestic consumer is buying more coal now than he has done in any August for two or three years. This is due to the prices and the published reports of the Commercial Club’s offer to help the state executive to distribute coal when necessary. Further, there is some talk among coal operators of increasing the price of lump and stove coal and although nothing has appeared in the papers about it, it is presumed dealers are making it known to their customers.

Producers are all a long way behind on their orders and dealers are finding it difficult to obtain sufficient coal for immediate delivery, that filling up of their yards being out of the question.

KANSAS CITY
Better feeling prevails in the market here with the approach of the end of the strike. Production in the fields near here will be at full tide soon and that—baring a complete collapse of railroad service—enough coal will be shipped to satisfy immediate demands. During the week that closed the main business of the coal man was pacifying consumers who demanded coal he could not get for them.

Union officials assert that 1,200 men have gone back to work in Arkansas and Oklahoma within a week. A conference for Tuesday, Aug. 22, was slated between union officials and Harry N. Taylor, president of the Southwestern Interstate Operators’ Association. It is possible that a general resumption of mining will follow.

DENVER
Demand for coal from almost all classes of consumers grows heavier daily. Production is a little better to match and as a sort of background for the local markets the Pueblo steel mills closed down last week, thus removing a large consumer from the market. Peace reigns in almost every mining region. Troops have been sent home from Frederick.
Entire Region Awaits
End of Strike Parleys
Prices Tend Downward, as Resumption of Mining Is Expected Daily—Supply of Cars Keeps Most Fields in Hot Water—Indiana Coal on Market.

All the Midwest region sits on the edge of its chair awaiting the outcome of the conferences going on at the close of last week and the first of this week between operators and miners in Indiana and Illinois looking toward a resumption of mining. Since general operation of mines is expected almost hourly, buyers have largely withdrawn from the market and prices are on the downgrade. Kentucky, West Virginia and wagonmine Indiana coal sold in various marts in this territory at figures ranging from $7 to $8.50 Aug. 18 and 19. Nobody bought save those compelled to by circumstances and most buyers demanded more than car numbers. There has been too much juggling of them lately.

The shortage of fuel in consumers’ hands is even more acute than last week because of poor car supply and the hampering influence of the railroad shopmen’s strike. Especially is this so around St. Louis.

The priority system of distribution continues to function haphazardly in this territory. Nobody thoroughly understands it, nobody appears to enforce any provision of it, and the railroads serving the mining fields make no efforts to shut off car supply to those who ship on priority orders regardless of the price.

CHICAGO

An expectant calm and downward prices characterized this market during the week just closed. Buyers rushing madly after anything black were not to be seen. Their days appear to be gone forever—until the next time. Such confidence was felt that coal would soon be produced in Indiana and Illinois that by the end of the week prices on Kentucky coal had reached $7.50 a drop of at least $3 for the week before, and were going down. Very little of it was available. Only a few cars of West Virginia fuel got here. It was traded in abundance at the same price as Kentucky.

For the first time in months Indiana coal reappeared here in sizable shipments. Practically all of it was from wagon mines and was of doubtful quality and preparation. But it sold on Saturday for as high as $7.50, though a good deal was offered at varying figures under that.

Great uncertainty as to priorities and price regulation exists here. Robert M. Medley, appointed Special Fuel Administrator, came to Chicago a week ago and set up an office but no state fuel committee has yet been appointed by Governor Small, and the chances are that none will be.

SOUTHERN ILLINOIS

Some excitement in the southern Illinois field arises over the differences between Lewis men and those in favor of Farrington. The different gaits of outlaws in the places that have always caused trouble in the past seemed to be for Lewis, and the quieter and more reserved district will be lined up for Farrington. The Farrington men seem to be far in the majority. There is a desire on the part of all miners to get to work. Operators continue to request miners in shape for operation. Much the same condition prevails in the Mt. Olive and the Standard fields excepting that nearly everybody there is ready.

There has been considerable trouble in the coal fields caused by mobs of miners intimidating and threatening the trainmen on the Illinois Central and Mohawk & Ohio railroads. It is reported that there is no interference with coal moving on the Southern and the L & N.

ST. LOUIS

The situation here is extremely critical. The City Hall is without electric power for lighting or elevators and many factories, including the rolling mills of the American Car & Foundry Co., have been shut down on account of no coal. The essential priorities that are furnished by wagonload through the dealers require 35 cars a day and in the last five days not more than 10 to 15 cars have been released. Some of these small plants that are highly essential are in a critical condition. The Union Electric Light & Power Co. is running from day to day and its load is increasing because the water at the Keokuk power plant is too low to give its normal electric power. The householder in St. Louis is still taking things easy.

The railroad situation here has been bad. The Terminal has been running on less than a half supply of coal every day for several days. It depends upon getting a few cars in each night. For five days the Illinois Central brought no coal through, it all being held up south of Coulterville by the Illinois striking miners. On the 18th a couple of hundred cars came in in four trains.

The country districts are in a serious condition at many points and those who are running have begun to use wood. Kentucky coal sells anywhere from $8 to $9 at the mine, with Alabama ranging $6-$8. No coal has arrived here yet at the Hoover price. Byproduct coke is selling wholesale at $10 per ton f.o.b. St. Louis, and gas house sold at $9.25 until it was exhausted. Byproduct coke retail is $13 and gas house at $12.25.

WESTERN KENTUCKY

Operators report that loaded coal has been on tracks for days without moving and that they are not getting cars to load, and the trainmen’s strike has been only partly settled and traffic conditions are very poor.

It is reported that some mines in Western Kentucky haven’t had more than a day or two of full operation this month. For the first ten days of the month it is reported that on the Illinois Central car loading equaled 93 per cent of total capacity, and on the L & N 68.8 per cent. Normal average for the field being around 63 per cent. However, conditions on the L & N have been no worse for the past week. Washington had $475,000 paid for a fair price for Kentucky. Machinery supplied by the state and federal governments to handle priority orders is beginning to be utilized, but slowly. It is reported that railroads are looking for prices in putting in or pulling cars, it merely being a question of priority and right to ship. It also is reported that priority buying is not making any real effort to buy at Hoover prices. Sales were reported until the end of the week at around $8 a ton. Then the price started down.

LOUISVILLE

Although there is a great deal of talk of severe fuel shortage, it appears as if Louisville industries are fairly well taken care of. The Louisville Gas & Electric Co. has received some contracts from mines in Echols, Ky., and its own fleet of freight cars. The Louisville Railroad Co. has received service from its contract mines without much trouble. The Louisville Water Co. has now bought all the coal it has gotten. Some small companies here and there in southern Indiana and Kentucky are ranting about not being able to obtain fuel, but Kentucky men think that wherever a utility has been forced to close down it has been through refusal to pay the price asked or through bad management in buying ahead of actual demand.

Locally it is believed that the Cleveland agreement will soon begin to have effect on the prices in Kentucky fields.

INDIANAPOLIS

State operated mines in Indiana are a thing of the past, at least for this strike. On Monday the Governor ordered all guards home and announced that he would not longer attempt to run the strip pits. He said that the newly opened shafts and wagon mines will guarantee ample supply to utility and state institutions.

Such Kentucky and West Virginia coal as is being obtained here costs $6@7. Indiana coal is being quoted at from $5.75 to $6.50, depending upon the grade. Anthracite is priced at from $15.50 to $16.75 to the retail consumer and Pocahontas from $8 to $8.50 with forked lump at $9.
Approach to Normal Still Some Weeks Off in Ohio

Much Repair and Cleaning Up Required—Car Shortage Predicted—Many Pittsburgh Operators Refuse to Sign Cleveland Agreement—Lake Situation a Vexing Problem.

It will be several weeks before anything like normal conditions prevail in the coal fields of Ohio. Mines are starting up, but the operating organizations are disrupted, men scattered and mines in need of much repair and cleaning up after nearly five months’ shutdown. Car shortage is predicted almost simultaneously with the resumption of the work. In the Pittsburgh area some mines are resuming work, but a majority are hanging together in a refusal to accept the Cleveland settlement.

The lake situation is the main problem in this region, for until the lake trade is taken care of coal for local users will be scarce. Priorities are being used to force coal to the Northwest, but with little effect so far.

Prices softened some on the news of the Cleveland settlement, but urgent buying has held them firm since then.

EASTERN OHIO

Each day adds signatures of operators to the new Cleveland wage agreement. It is predicted that by the close of the week all Ohio will be signed up. In Ohio it will add three and one-half million tons per month at 1921 rates and will exceed that with maximum car and labor supply.

Prevailing prices on every grade of coal from most any producing district range from $5 to $7.25 per ton f.o.b. mines, the minimum figure indicating a decline of $1 per ton during the last 22 days. It is also reported that there were 10,000 tons of Eastern Ohio No. 8 lump for lake shipment offered at $5.75 per ton f.o.b. mines. The volume of market coal from the South continues to be negligible.

It is reported that, following telegraphic instructions, local unions in Ohio No. 8 started machine men cutting coal on the 17th. Not over 200 cars were loaded on that day, however.

In the lake trade the prediction is made that a pooling and movement similar to that made by Service Order No. 10, issued by the Interstate Commerce Commission during the lake season of 1920, will be made operative soon.

PITTSBURGH

Opinion in Pittsburgh is practically unanimous that the members of the Pittsburgh Coal Operators’ Association will hold out for a district settlement with the miners, or the establishment of a regular open-shop condition. The chief doubt is as to how long this will take, some guesses being that the district will not be running well until two or three months have elapsed.

In some quarters, apparently well posted, coal operators predict that the Connellsville strikes will be ended by about Sept. 1, it being intimated that there will be a moderate wage raise for the miners of Aug. 1, 1921, which was the regular scale of the region last March although some independents were paying less. The new strike is expected to persist for a month, but some semblance of recognition of any union is expected.

The railroads practically dropped out of the coal market for a few days in the past week but are back again in a moderate way and there is now buying by other interests. In the interim the market declined Connellsville steam coal being $6.75 and Westmoreland quiet at about $7.50. There is now a little production in the Pittsburgh district, but not enough to make a market.

BUFFALO

This market is now trying to square itself, with the new state of things, though as yet they are to us only on paper.

As might have been expected there is on the market quite an amount of coal that the owners appear to have been holding for nobody knows what prices. If there is any real distress here it seems to be monopolized by the jobbers.

As a rule the city jobbers refuse to give out prices. They say there are none, for the consumer will not buy. Morning’s mail is almost a blank so far as any communication from consumers is concerned. The price has been about $7.50 to $9 per ton, but a decline is looked for at once, unless some hitch develops. So far only one of the Allegheny Valley companies has announced a time for resumption, which is at once.

The Lake situation does not change. Fuel is still $10 or more and hard to get at that.

NORTHERN PANHANDLE

Operators are keeping production up to more than half full-time capacity, but far from full for regular operation. Much of the tonnage, however, is being utilized for railroad fuel purposes. A little is going to the West, and to Northern markets. Although much of the output is being delivered on contract and at the Hoover maximum, as high as $7.25 is being offered.

COLUMBUS

Active preparations are being made by operators to start work, following the agreement signed at Cleveland. The position of the Ohio coal is stronger than ever. The exchange was against signing as an organization, but the exchange adopted a resolution leaving the matter of signing to the coal operators.

With the Ohio fuel commission functioning, practically all of the coal coming into this territory is under priorities, but the receipts are not up to current requirements. No price has yet been fixed on Ohio coal and consequently it is moving at considerably higher levels than the Hoover figures. Pocahontas and other smokeless grades are selling around $4@$6.50 with the Hoover levels generally maintained.

Lake trade is now attracting a good deal of attention.

The retail trade is at a standstill as dealers’ stocks are pretty thoroughly cleaned up. Retailers, in many instances, are booking orders to be delivered later, with the price question held in abeyance.

DETROIT

So far the functioning of various fuel administrators has been productive of no substantial change for the consumers of bituminous coal in Detroit, and the situation is becoming more acute as existing stocks are reduced without corresponding receipts of coal.

The Detroit Edison, Detroit City Gas and the Ford Motor companies have been hard hit by the strike of trainmen at Corbin, on the Cumberland division of the Chicago, Milwaukee & Nashville. The companies have mines in this field.

After organizing an auxiliary committee to assist Wayne County’s fuel administrator, the positive receipt of coal has been confirmed that the fuel administrator, lacking the support of law, is without authority to control or regulate coal prices or distributors’ coal. The price of coal is reported selling at about $6.75. Retail prices on domestic bituminous range $11.50@$12.50 a ton delivered at the buyer’s sidewalk.
Everybody Feels Better With Strike About Over

This Region Fairly Confident Now That It Will Get Enough Coal, but Promised Shipments Have Not Arrived—Hope for Late Freeze-up.

The Northwest, practically destitute of dock coal, feels great relief at the news that the coal-mining strike is about over and that mines will soon be able to dump great quantities of fuel over the lower lake docks consigned to upper ports. The only question that greatly worries this region is: Will the railroads be able to handle it? If they do, and if heavy shipments begin not later than Sept. 1 and if the freeze-up this winter is a little later than usual, then surely enough coal will reach the Northwest to take care of all its necessities until next summer.

Prices here have been steadily climbing. They have attained such heights, in fact, that one or more protests have been registered at Washington charging profiteering. The Northwest cannot stand $9.25 mine quotations on coal that sold for $3 and $4 before the strike. The latter is more nearly a proper retail price. However there are buyers willing to pay almost any price under protest, so long as they get some coal. Many industries throughout this region have already succumbed to emptiness of coal bins and most public utilities are about to scrape bottom.

MILWAUKEE

Prices of bituminous coal in Milwaukee were advanced 75c. per ton to the consumer, effective Aug. 15. This makes a total advance in soft coal of $1.25 per ton since Aug. 1. The trade is now paying $7.50 at the mines instead of the Hoover rate of $3.50 per ton.

The car supply also is vital. Unless the present shortage is relieved many industries will shut down. Priority orders that are not backed up by recognized authority are of little avail. Coal directed to Lake Michigan ports has been sent elsewhere or has been confiscated by railroads. Until government agencies begin to function reliably the coal trade is bound to continue in a state of demoralization. Electric utilities in Wisconsin, which consume from 60,000 to 10,000 tons of coal per month and gas companies using 30,000 tons are facing suspension.

Five cargoes of soft coal, aggregating 26,802 tons, were received by lake steam last week's report, including 1,500 tons of Nova Scotia coal by way of Quebec. This makes the season's receipts up to this time 890,162 tons of soft coal with no anthracite. Last year's receipts as of this date aggregated 757,079 tons of anthracite and 1,672,155 of soft coal.

The following are the retail prices of soft coal according to the latest advance: Pittsburgh, Hocking and Youggheny, $11; pile run, $9; screenings, $8; West Virginia screened, $9.50; pile run, $9; screenings, $9; Pocahontas screened, $12.50; mine-run, $10.50; screenings, $9; smithing, $10.50; coke, large size, $15; pea and nut, $19.

A carrying in charge of 75c. is made on all except coke. The market is bare of Illinois and Indiana coal and Kanawha gas mine-run.

DULUTH

Duluth and the Northwest generally has heaved a sigh of relief at the news of the termination of the coal strike. The Northwest is in a bad way. The 530 cars from Kentucky allotted last week have barely started but shipments are promised soon.

There were only 632,483 tons of bituminous on the docks Aug. 1 and that quantity was 258,000 tons oversold. The docks at Ashland, Wis., had only 28,500 tons of soft coal and were 68,000 tons oversold. Six cargoes of coal arrived here last week. This was non-union coal sent as a stop gap, and filled a great need of vessels and public utilities. It is the opinion of dock men generally that arrivals of heavy shipments will resume at this port about Sept. 1.

In view of the unusually severe winter last year it is thought that the freeze-up will be long in coming this year. If this proves true it will mean that there will be sufficient time between Sept. 1 and the close of navigation to get the docks replenished.

However, the resuming of the refueling of the Northwest depends to a large extent upon the country dealers and the celerity with which they order stocks. If the tendency is to hold off and trust to a possible break in prices the Northwest will be cold next winter, in spite of the termination of the strike. The docks will become full and the close of navigation will see insufficient supplies. If the country dealers are prompt in their part there is no reason why sufficient coal should not be brought up the lakes to satisfy all demands.

Prices are firm at $8.50 for lump, 50c. less for run of pile, and no market on screenings, of which there are none available.

New England

Midsummer Lull On; Trade Confined to Spot Shipments


There is very little change in the current market. Trade is in a quiet mid-summer state and transactions are confined to limited quantities for spot shipment. The larger consumers have comfortable reserves, considering the almost uniform light business they are doing, and receipts for the present seem to be in sufficient volume to relieve them of any immediate anxiety.

News dispatches the last few days have taken such a favorable turn that buyers are more optimistic than a fortnight ago. No one in the trade really expects much increase in the volume of coal for New England during the next thirty days, but there is an undeniably easier feeling among buyers that probably reflects better reserves than were being counted on. Even users of high-grade gas coals are inclined to await developments, hoping there will be enough increase in output to modify current prices.

In practically every direction there are quotations far above the Hoover level. Inland from rehandling points like Boston, Providence and Portland $10.50 is still the standard coal, while f.o.b. Norfolk and Newport News $10.50 for $11 are the spot quotations on the same grades.

While commercial coal is still reaching Hampton Roads buyers and quite an amount of tonnage is waiting against its arrival, there is increasing confusion over the practical working out of Service Order No. 23. As between the Washington committee and those in the several states requisitions are being round in circles while priority coal is being confined almost exclusively to railroad fuel needs other than in New England. Attempts are made to get coal for various state consignees, but so far as reported at this writing there is none available through such channels.

It is recognized here that Washington labors under great disadvantage, for apparently no one acting on behalf of the President's committee is in position to assume responsibility for anything that under court review might turn out to be discrimination.

Meanwhile, trade agencies continue to distribute as much of their own coal as may be available, and with varying policies as to the "fair price." Shipments on contract are coming forward in good volume, and there is some expectation that they will continue about on the same basis.
Cincinnati Gateway

Market Is Badly Muddled
By Government Restrictions
Quotations Show Wide Range—Increasing Number of Sellers Disregard Hoover's Price List—Peace Efforts Bear the Market—Car Shortage Acute.

A DOZEN divergent angles have done their part to disrupt even a semblance of normal transactions of business through the Cincinnati gateway. Some firms have thrown themselves entirely upon the mercy of the coal permits that have been issued and are sticking strictly to the Hoover prices. Others are taking advantage of the 8 to 10 per cent allowed to wholesalers and are packing on all of the sail that such will stand. Others have resorted to the usual openings that have been left to put their coal on the market at the top prices and it is rather surprising to find that more and more firms that stood solidly back of the Hoover proclamation are beginning to chafe under the restrictions that have been imposed through the permits, privileges and priorities.

The Cleveland conference, followed by announcements of mine reopenings, was a bear to the market and prices have slipped down a peg.

CINCINNATI

Probably the most rasing occurrence of all that have come up in the past three months is the exposé of the fact that over 800 cars from Hazard, Harlan and southeastern Kentucky, as well as a large number from the West Virginia fields, have been moved to the Lake under Permits No. 1. granted to the Pittsburgh Coal Co., which has not been a factor in the Cincinnati trade for years and yet has taken precedence over firms with offices here who have handled this fuel since the fields came into national trade.

The Cleveland negotiations had their effect in lowering the prices. The news that Fairmont intended to start up by the end of the week also was a softening factor.

Smokeless prices seem to be held pretty generally to the Hoover schedule with the exception of some Dry Fork and New River offerings. Cars supplies are short with the N. & W. declaring that they are in the worst position in years. The C. & O. and the L. & N. are resorting to embargoes to get coal moving.

Retail prices have not changed. Some of the companies are having trouble in making deliveries and holding their customers off to a later day when the strain will not be so great.

LOW-VOLATILE FIELDS
NEW RIVER AND THE GULF

Although New River mines are gradually rerelivering from the acute car shortage, production is still at a low ebb, averaging a little over 110,000 tons a week. The market is in rather an unsettled condition owing to the heavy demand and confusion attendant upon the establishment of the priority system which is diverting coal into new channels. So far as the general feeling of the trade is being moved at Hoover prices.

Gulf mines are managing to speed up a little in view of a somewhat better car supply from the Virginian and the C. & O. which were so seriously crippled for a time by the strike of shopmen. Railroads are handling more coal to the piers and much of the congestion has been relieved. Supplies for the general market have been somewhat curtailed as a result of the state of things. The market is still high despite the fact that most producers are not charging more than the Hoover price agreed upon.

POCAHONTAS AND TUG RIVER

Conditions in the Pocahontas field are beginning to assume a semblance of normal once again as mines find it possible to secure the fact that the bulk of the operators are not departing from that list.

HIGH-VOLATILE FIELDS
KANAWHA

Tonnage is gradually increased, especially in view of a more adequate car supply. Much of the coal originating in this region is being applied on priority orders under Class 1 and 2 so that railroads and utilities have been getting the lion's share of the output. Spot prices range $6@ $7.25, despite the fact that the bulk of the tonnage is moving at the Hoover prices.

LOGAN AND THACKER

Under improved transportation conditions, Logan production is once again on the up-grade. Owing to the curtailed output mines have not been able to furnish large tonnages and with a steady supply and priority orders are absorbing much of the coal needed to take care of these customers. Less tonnage is going to utilities and more to the railroads and utilities, with some to the Lakes. Government distribution agencies are functioning, but that the miners have brought prices down appreciably.

Although all the mines in the Williamson field are in operation the point has not been reached where it is possible to work full time, owing to the restricted car supply.

NORTHEASTERN KENTUCKY

The supply of cars is still so short that the output is not over 20 per cent. The field is unable to fill the needs of regular customers or send a very large tonnage to the Lakes. Prices of $6@ $7.25 are being offered in the open market.

COKE
UNIONTOWN

Resumption of some union mines through acceptance of the Cleveland settlement caused a drop of $1.50 per ton in the price of coal in the Connellsville at $15.50 for foundry, $13.00 for rail and in the Tug River at $12.50. A conference the market here was quoted at $7.50@$7.75 per ton. The week closed with a drop to $6 with sufficient orders at that figure to absorb the tonnage produced.

It is now conceded that production is at the highest point since the strike started and is increasing each day. Prices of shipper of shipments for the week are not yet available but railroad officials report an average of 1,000 cars of coal a day and 230 cars of coke per day being delivered by all lines. In most instances the orders at Frick, Rainey and other independent operations are increasing daily with mines being added to the active list each day.

CONNELLSVILLE

The principal change in the strike condition in the past week is that the Frick company is producing considerably more coke and is also shipping coal. Among the independents the operators a slight increase in operations is reported.

The market has continued very narrow, both demand and offerings being light. For many weeks past the demand has been very restricted by the high prices ruling, and has been narrowed down almost to a few foundries, these foundries buying only in a limited way, from hand to mouth. Regular foundry coke is as high as ever, being quoted at $150@$160, while so-called "furnace coke" is easier, at about $13.50@$14.

Reports have become much more definite that the strike in the Connellsville region are disposed to go back to work. The Cleveland settlement, whereby about 15 per cent of the coal operators involved in the agreement with the United Mine Workers, did not help the Connellsville strikers and it is expected that they will shortly realize that they can hope for nothing coming from the company. It is now generally assumed that in due course a moderate wage advance will be posted in the region, above the Frick scale of Aug. 1, 1924, and that in a short time the Connellsville strikes will all be over.

BUFFALO

The price continues strong. The supply is as light as ever. The big coke centers are still depending on a few side ovens and keeping their regular others idle for want of coal. Prices remain $15.50 for foundry and $6.55 (very scarce) for domestic, chestnut size, adding $2.28 for freight to Buffalo.
News Items
From Field and Trade

ALABAMA
C. C. Copperstone, of Carnegie, Pa., has been transferred to the Chicago Title & Trust Co., 10,000 acres of mineral lands in Marshall and DeKalb counties to secure a mortgage of $1,500,000, which will be used in the development of its coal and ore lands in that section.

COLORADO
All coal mines in Colorado with the exception of three Colorado Fuel & Iron Co. mines in Franklin county operated during the week, according to announcement of the commandant of the Colorado Rangers.

Robert Turner, superintendent of the Turner mine in Huerfano county, was arrested on charges of forgery. The miners there that went to the mine to work and that Turner interposed that they would not be safe unless they had a guard of fifteen men. Mr. Turner was charged with妨害公務罪 and released immediately on bond.

KENTUCKY
Troops were sent to Isley on Aug. 15 to protect the Coal & Coke Co. property, after snipers had started firing on civilian guards.

The Morris has named Fred M. Sackett chairman of the State Fuel Commission, which has opened offices at 161 Republic building, Louisville, as food administrator during the war.

The Frederick & Black coal mine at Dublin has filed amended articles increasing its capital stock from $200,000 to $1,000,000.

The Frankfort Elevator Coal Co., which handles and transacts connection and Kentucky river transportation of coal, has been awarded a contract of 5,000 tons, at $5.50 a ton, for transporting rock salt under plans for contract award being made by the Sink Fuel Co.

A. Wallet & Co., grain elevator operators, have filed suit for $37,800 alleged for damages caused by the Owen coal Co., for alleged mining of coal under property owned by them.

The Louisville & Nashville R.L. has opened a few days ago that it had brought its shop forces up to 7,750 men.

The Dutchess Fuel Co., of Milton, Knox County, coal capital $10,000, has been chartered by the Secretary of State. Incorporators are William Evans and William Leofence, all of Knox County, for development purposes.

The Eastpoint Block Coal Co., of Evansville, has been chartered by J. F. Auxier, Faris Bowling and N. C. Auxier, all of Auxier, for development of a mine.

MICHIGAN
John Kraft Coal Co., of Detroit, has increased its capital stock from $5,000 to $125,000.

The Owosso Coal Mining Co., Owosso, has been authorized a capital stock of $350,000. Incorporators are H. A. Bacon, C. D. Bell, C. C. Fitch, J. M. Otter, of Flint, and C. C. Fitch, of Lansing. The company will be managed by J. F. Auxier of the Michigan Securities Commission, has been appointed its attorney and administrator.

The Ford Motor Co. of Detroit was one of the first seekers of a priority order from the fuel commission. The company was a manufacturer's priority order for 7,500 tons daily with an additional 309 tons daily on its representation that it is under contract to deliver 15,000 tons per month to the Detroit City Gas Co. with 2,000,000 cu.ft. of gas daily.

The Zap Coaly Co. has been incorporated at Zap, N. D., to operate a lignite stripping mine. The Pratt interests of Minneapolis are the incorporators. This operation requires removing about 15 ft. of earth to reach a deposit of 15 ft. of lignite. Several other open pit mines in North Dakota.

Ivan Bowen, of the State Railroad and Warehouse Co., has resigned as assistant superintendent of the Berwind Fuel Co. docks at Duathlon.

Missouri
A petition in equity has been filed in the Macoupin County circuit court asking for a dissolution of the partnership in the Star Coal Mines. The petition recites that the parties have had a dispute and that the defendants have stopped the payment of funds to the plaintiff, and seeks an order for the division of the business. The company's property at stake is estimated to be worth from $60,000 to $70,000.

The stockholders of the Callaway County Coal Co., with headquarters at Carrington, are to meet to vote on a resolution to dissolve the company and close up its affairs and dispose of its assets.

Governor Hyde has appointed Hugh J. Macpherson of Joplin, a member of the state public service commission, for the succeeding term, members of a commission to supervise the development of power. The Macpherson commission will be made of either five or seven members and other members will be named by such five or seven members.

Incorporation papers have been granted to the Central Missouri Mining Co., at Centralia. The company plans to mine in the city on an extensive scale, by strip mining.

NEW YORK
The Pond Creek Coal Co. for the six months ended June 30, 1922, reports total production of 94,864 tons and net profits, after all expenses, of $91,343, an increase of 22 per cent over that of the same period last year. Net profits, after all expenses, of $91,343, an increase of 22 per cent over that of the same period last year. Net profits, after all expenses, of $91,343, an increase of 22 per cent over that of the same period last year. Net profits, after all expenses, of $91,343, an increase of 22 per cent over that of the same period last year.

The J. P. Burton Coal Co., Cleveland, has opened an office at Buffalo, with A. F. Meister residing there.

Scheid Engineering Corporation, New York City, has been appointed as the agent for the Fenlur Moore Coal Co., Winnetka, Conn., manufacturer of mining and handling machinery for industrial plants.

OHIO
No bids were received Aug. 11 by the Columbus Board of Education for the purchase of 10,000 tons of lump coal for the various school buildings of the city. This was attributed to the unsettled conditions incidental to the strike. The board re-advertised for bids.

The United States Coal Co. has just announced the initiation of extending its coal mining operations at Bradley, Jefferson County, to Smithfield, where two new shafts will be opened. The company will build a new town near the center of the mining district to extend its road from Bradley to Smithfield and put on passenger service. The Wheeling & Lakeville Railroad, headquarters of the company are located at Wheeling, and H. E. Willard is the general manager.

Sim Buku, who has been with the American Steam Coal Co. for three years, has severed his connections and opened an office on the X. R. Dgegan Coal Co., of Huntington, at the Dixie Terminal Bldg., in Cincinnati.

H. F. Idlett, of the Riddle Coal Co., Chattanooga, and Clyde Palmer, Cincinnati, manager of that company, spent ten days going over and inspecting the mining properties of the company in southeastern Ken-te-tuck and northern Alabama.

K. C. Slupe, president of the Elkher Coal Co., recently returned from a recent visit to the Cincinnati market. Other mining men there were J. H. Roberts, C. G. Cook, Frank Pineville, Ky., J. C. Callihan and W. R. McRae, all of Pineville, Ky., and Safi Allen of Prestonsburg, Ky.

Pennsylvania
N. S. Greenfelder, mining engineer of the Herron Coal Co., Huntingdon, has been attending the summer courses in coal mining at the Carnegie Institute of Technology, Union college of the University of Pittsburgh. His subject was the selection of explosives for the mining of coal. E. T. Stodol is in charge of the summer school at Carnegie Institute, and these courses are given by the Pennsylvania State College.
WEST VIRGINIA

Under arrangements just consummated between the Robinson Coal Co. and the Con-
nington Coal Co., the former company is acquiring the northern West Virginia, the former com-
pany to acquire the Connington Coal Co. operation, better known as the O'Donnell mine on the east side of the Carnegie coal field. This mine has been out of commission for some three months.

One of the largest deals of recent months has been consummated at Fairmount, inter-
state, in the purchase of the Fairmount-Chicago Coal Co., having acquired 2,000 acres of Sawickley for $120,000. Terms of the sale were largely negotiated by the Jefferson Coal Co., a concern in which the Edward Hines coal and lumber inter-
state had a dominating interest.

The understanding is that the purchase price of the property was actually purchased by the Fairmount-
Chicago Coal Co., which is capitalized at $100,000. The company has already perfected arrangements to increase production on a plant near Fathercille and to expend about $280,000 in in-
vesting the new plant. Twenty-five old mines for miners to be 8,800 new mine cars have been ordered and the cars direct from railways. The coal will be handled exclusively by the Fair-
mount-Chicago Coal Co., both having the same offices.

The tipples of the Mutual Coal Co., at Middletown, in the Monongalia field has
been destroyed by fire and two mine locomotives valued at about $20,000 have also been
destroyed. The mine is said by county authorities to have been of inscond-
able importance, and is being operated as an open shop mine since April 1.

ONTARIO

J. A. Ellis, vice-chairman of the OntarioRGB. Board, has been appointed con-
troller for the province with wide powers for regulating the purchase and dis-
tribution of coal and for exercising supervision over coal dealers over the situation and has held a meeting recently in Toronto. The company assigned last July to the Trusts & Guarantee Co., for the purposes stated, now stands with assets of $8,319.75. It is hoped to realize about $6,900 on the assets.

QuebeC

Sir Bertram Chadburt, M. P. for Barrow-

Ontario, England, is in Canada investigat-
ing the coal situation with the view of finding a permanent market here for British coal. He states that it is chiefly a matter of the Canadian market and a reason-
tory price and does not think that the situation can be solved. He feels that the col-

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in South Africa and Britain with all the slides is not worthy of the high price.

Traffic News

Eleven coal companies operating in the

Whiteburg-Honibrode county of Kentucky on
the L. & N. have appealed to the State Rail-
way Commission on the ground that rates from that section to other points in the
state are too high, and that as a result the rates from the Hazard district.

The I. C. C. has decided the following coal rate cases on coal from bituminous
coal from St. Leonard, New Brunswick, to Quebec, Que., is unreasonable. The Re-
quested rates of the stow coal from Bessemer and Lake Erie, Ohio, to stations on the
Rochester, Buffalo 

and Pennsy-"lvanian railroads have been reduced. Rates on bituminous coal from mines in the Bouvier, Ind., district to stations in the adjoining states of Ohio and Ind., during Federal control, were un-
reasonably high. The reduce the complaint of the Cannelton Sewer Pipe Co. Rates on bituminous coal from Century, W. Va., to Pump Station, Ohio, are unreasonable because of the reduction of rate from Strongsville to Pump Station on the New York Central.

Jeffrey Single-Roll Coal Crusher.

The Jeffrey Mfg. Co., Columbus, Ohio, Catalog No. 525, describes Jeffrey Single-Point Crushers. This crusher is illustrated. The coal is fed into the crushing chamber and by the single point of crushing force is reduced to the desired size. It is large enough to meet all conditions of crushing but small enough to meet the demand for a uniform and consistent coal.

The Jeffrey Crushers are used for reducing the classifier of the crusher in service and table of capac-
ity. The Jeffrey Crushers are equipped with crushing various grades of bituminous coal.

Advertiser.

Coal.—Published by Walter Beedock & Co., Thomasville, N. C., publishing and illustrating sections of the company's operations.

Griscom-Russell Evaporator Systems for the Economical Production of Distilled Water.—The Griscom-Russell Co., New York City, Bulletin No. 366. Pp. 7; 8 x 9 in. Illustrated. Describes use of several evaporators, both horizontal and self-sealing evaporators to the power plant for the elimi-


Copperweld Nails.—Copperweld Rods. Copper Clad Steel Co., Rankin, Pa., have issued a descriptive and illustrating the uses of these nails and rods.

Advertiser.

Type LG-LO4 Indoor Disconnecting

Switches and Type QC-C Quick Break

Lever Operated Electric Co., Schen

ectady, N. Y.—Advertiser.


The Terry Turbine Co., Hartford, Conn., Pp. 40; 8 x 11 in.; illustrated. Describing the com-

Advertiser.

Trade Literature

Reducing Valves. Allen Valve Co., New-

W. W. Stetson & Co., Water Main Accessory Mfg. Co., Chicago, Ill., has issued a two-page spread featuring its various grades of valves. Also its Clix-

Galanalloyed copper, giving price-list per hundred pieces.—Advertiser.

Coming Meetings

New York State Coal Merchants' Asso-

ciation.—Will hold its annual meeting at Rich-
field Springs, N. Y., Sept. 7-9, Executive secretary, G. W. F. Woodside, Arkay Bild, Albion, N. Y.

Coal and Industrial Exposition under the auspices of the Huntington Chamber of Commerce will be held Sept. 15-23 in the Chamber of Commerce Bldg., Huntington, N. Y. The exposition is known as the Association of Mine, Mechanical and Elec-

American Mining Congress. Twenty-fifth annual convention and exposition of mines, will be held at Public Hall, Cleveland, Ohio, 9-14. Executive offices, the Hollenden Hotel: E. C. Porter, convention manager.

National Exposition of Power and Mech-

American Institute of Mining and Metal-
lagua de la Co., Mexico, has arranged to hold a meeting during the week of Sept. 25 at San Francisco. The meeting will be held in the Palace Hotel, San Francisco.

American Chemical Society's An-

cial annual fall meeting will be held at Pitt-

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What of the Business Revival?

PRICES and wages are going up. Every indication is for a busy and prosperous winter. Talk of business revival is in the air. The Steel Corporation has increased wages 20 per cent, making the pay of unskilled labor $3.60 per day, in an effort to hold the men that might be attracted to the coal mines, where the wage is again to be $7.50 per day. Liquidation of wages and prices has been estopped for the time being. The big question remaining concerns the permanence of the boom that appears to be on us. This is of interest to the coal industry because of what it portends after March 31, 1923.

It may be premature to speculate on next summer, and quite likely fruitless, but for coal it is important. The industrial storm this year may be largely traced to the effort made to liquidate wages in the unionized coal mines, and the end of the general movement due to the failure of the struggle in coal—that is, failure for all except the coal miner. Whether or not there will be a repetition of the effort next year and whether that effort will be accompanied by a coal strike will depend on the strength of the industrial revival, so called, and on the outcome of efforts yet to be fully inaugurated for preventing open breaks in coal wage negotiations in the coal industry.

The most important and at present the most apparent factor in the quickening of business is the absence of stocks of coal and of iron and steel products, traceable directly, of course, to the shortage of coal. As is noted in the monthly survey of business by the Department of Commerce, production has been descending for some time and prices have been going up. The twin strikes are held accountable for this state of affairs. Iron furnaces have been banked by the score, foundries are without pig, and a huge demand for iron in all forms is backing up on the manufacturers. Deliveries cannot be promised, for the furnaces are actually short of coke and but now are getting the supplies they need.

The railroads have been making a fine showing despite their strike, but they have not met all the demands placed on them and he would be shortsighted who would not anticipate still further and important shortages of transportation as the crops are offered to the rails and as coal mines get back to operation. Prices of coal are dropping from their peak—$8 coal was followed by $7 coal and that in turn by $6 coal. The trade is unsettled but a cross section of opinion seems to hold to the belief that the market will settle down to around $5 for the winter.

Will business function on a boom basis with coal at that figure? Just how sturdy is this revival? If it is predicated only on the making up of shortages caused by the strikes, then it will not be longlived. If it is that and something more, then it will live through. No one thinks that the demand for coal in the coming months will be as insistent as during 1920, that the country can or will absorb as much at as high figures as then. Theoretically stocks of coal in the hands of consumers are reduced to zero, and in fact they are lower than ever before recorded. The demand will be strong until that hole is filled, but beyond that point the strength of the coal market will depend on the persistence of general business activity.

The soft-coal requirements of the United States during the first six months of this year were very close to an average of 8,000,000 net tons per week. Consumption has declined since July 1. The two largest consumers, the railroads and the iron and steel industry, have used less, largely because they could not get it. The coal strike actually caused plants to shut down and fewer trains to move. It is not unlikely that a sum of 8,000,000 tons per week consumption has fallen to nearer 6,000,000 tons in recent weeks. As production gains and prices recede that figure will increase.

If the present revival is the beginning of a secondary period of inflation, to be followed by another effort at deflation, and very competent opinion holds to that view, then we will experience a second effort to lower coal-mine wages after March 31, 1923.

King Lewis I

CREDIT without stint is given the United Mine Workers as the greatest labor organization in the world. On every hand the press and private comment confess to the remarkable victory of the miners in the soft-coal strike. Recorded history, we are told, has no counterpart for the struggle in the coal industry this year. With every factor dead set against the union miners, they pulled themselves out of the hole—even though they may have pulled the shopmen in—and they now stand the acknowledged victors, conquerors alike of the mine management and owner, of the government and of the people.

And John L. Lewis is crowned the hero of it all. He is the mighty force that held the army of 600,000 together, held the bucking bronzes, Farrington and Brophy, in line, encouraged the line force and inspired the heavy artillery of propaganda, pulled the wires in Washington, confounded the administration and walled the operators. Like the boy wonder, the chess player from Austria, he lone-handed moved his pieces on a score of boards, outfitting a score of separate individual operator groups each electing to play its own game. They are all cleaned up now, save one that he has stalemated and one that is not quite played out.

By the editors of the country John L. Lewis is hailed as King, Dictator, and with other equally choice and endearing encomiums. Some refer to the conclusion of the strike as unionism gone wild. Some class him with the renowned and redoubtable George Baer of 20 years ago. His loyal followers flock about him and do lip service, telling him how mighty and how wonderful he is.
It is not necessary, however, to quote the press on the greatness of John L. Lewis. He admits it. We wonder what the public that is getting excited over the revelation of power held by this one man would say were they to hear Mr. Lewis tell how mighty he is. Picture him pacing back and forth across the room where he is supposed to be negotiating a contract with operators—let us say, for instance, in Philadelphia last week with the anthracite producers. Hear him say, for instance: “You ask me why I will not accept arbitration; why I will not accept even recommendatory arbitration with freedom to accept or reject the findings. Why, gentlemen, because I know that by any comparison made, with the cost of living, earnings, wages in other industries, however arrived at, the miners lose. We will not have our wages and earning compared with others to our disadvantage. That method of adjusting wages is out of date for us.”

Or perhaps the subject was the life of the contract, the little matter of wages having been settled in advance as the highest ever recorded. Perhaps the operators have said that they could not agree to pay those wages beyond next April, because they did not know what the price of bituminous coal would be, an important factor in selling steam sizes, comprising from 30 to 40 per cent of their output. Mr. Lewis demands in the hard-coal region a contract to run until March 31, 1924. To the objection of the operators he perhaps said: “Let that not worry you. The price of mining bituminous coal is not coming down. I have the soft-coal men wrapped around my little finger.”

Or as a peroration: “They told me I could not do it. College professors, economists, business men, my best friends and advisers said it was folly to undertake a strike this year, to try to hold coal miners’ wages up to the post-war heights. But, gentlemen, I have done it.” Can’t you just hear the rumble of that basso voice and see the shake of that magnificent mane? What an autobiography John L. Lewis would write today!

**Choose an Able Commission**

Coal legislation in three forms is being considered in Washington. Just plain inquiry heads the list in popularity, some method of controlling prices follows and outright seizure of the mines is latest and last.

The first, a commission of inquiry, is favored on every hand. As to the form of the investigation there is little discussion but the character of the commission has provoked much argument. The miners’ union wants to have some of its people on that body, arguing that unless it is represented the commission cannot get the facts and will not know what to do with the data when it gets them. This argument has much merit, but is completely overshadowed by the counter argument that were they to have representation the commission would have to agree with their contentions entirely or there would be a minority report. The country wants no minority report and it therefore is saying keep both miners and operators off.

We earnestly hope an able commission will be appointed, that it will have ample powers, ample funds and ample time to make its study and report. In its anxiety to save the country from freezing Congress will, it is hoped, come to some better method of getting coal out of the ground than taking over the mines. It is not the ownership that is holding up production of hard coal and laws cannot make the men dig coal.

*British Miners and Coal for America*

*VARIOUS* attempts to restrain the British miner from producing coal for America failed, as they were bound to fail. The fact that the proposal was vetoed at the recent Miners’ International Congress held at Frankfurt-on-Main may be regarded as conclusive evidence that the miners’ leaders desired to abstain from interference in the matter. It has been pointed out that the miners in Great Britain were justified in the course they have taken, owing to the American miners’ refusal to co-operate during the coal stoppage in Britain last year. This seems an excellent reason why the British worker should retaliate, but there is a still more practical one. It is obviously impossible for the miners to stop producing coal for America without ceasing production altogether, since it is not within their knowledge to which of the overseas markets the coal they produce is sent. Furthermore, it was mainly the non-union miners in this country who produced the coal for export that helped to break the strike in Great Britain last year.

British exporters are not reaping a financial harvest from their business in this country. American buying has been judicious in the main and carefully executed. Owing to the dull state of the export trade when the inquiries from this country first began the purchasers were able to obtain what are now considered by London as remarkably favorable terms. As a matter of fact the charter market has been as important an influence in determining the c.i.f. price of British coal in New York or Boston as has the price f.o.b. Cardiff.

It is clear that the British miners are doomed to disappointment in so far as they have been anticipating high wages later resulting from high prices and substantial margins over costs by the British export trade from the American business.

It will be remembered that last year in less than three months Great Britain bought and imported from this country some three million tons of soft coal at her own price. There was no perceptible increase in the market as the result of the British purchase of our coal in 1921. Under similar circumstances of dull market, low prices and idle mines, British coal men selling America not over two-thirds as much coal as we sold them last year record a market rise of 5s. or more in a month.

**Some of the Operator Groups** are reported in the press to consider that they emerge partial victors from this strike. Central Pennsylvania producers, for instance, announce that inasmuch as they negotiated a “district” agreement with District No. 2 of the United Mine Workers in so far as they deviated from the Cleveland contract by omitting provision for a gathering in October they beat John L. Lewis, who held out for no district settlements. These operators are just fooling themselves if they really think that way. Their victory is akin to that of the prisoner in the late war who was permitted to retain his trousers, although his suspenders were removed. Illinois operators, signing exactly similar terms, openly announce that they have been compelled to surrender.

**Kin Hubbard, Hoosier Humorist and originator of Abe Martin,** had this to say of the coal strike settlement: “Th’ coal strike has been all settled fine an’ dandy an’ temporarily.”
Cambria Steel Co. Drops Coal Down Well, Loads It at Bottom and Hauls It to Ovens*

Coal Is Passed Down a 110-Ft. Shaft from an Upper Bed to a Lower and Is Reloaded for Two-Mile Run to Rosedale Ovens—Electrically Actuated Gates Load Through Measuring Hopper

BY GEORGE A. RICHARDSON†

THE excellence of the iron ores in the vicinity of Johnstown, Pa., and the abundance of timber for the manufacture of charcoal fuel resulted in the development of many small iron furnaces in the early part of the last century. The presence of large coal deposits, in turn, aided in stimulating the business and maintaining it after local ores were no longer used.

The inception of what ultimately developed into the Cambria Steel Co. dates back to the year 1842 but it was not until 1855 that the first rolling mill was completed and put in operation. At the same time what is known as the Rolling Mill mine was opened. This mine, with the exception of three years (1888, 1889 and 1890), during which time natural gas displaced coal at the works of the Cambria Iron Co., has been in continuous operation ever since.

ONE SEAM YIELDS 20,000,000 TONS IN 67 YEARS

An excellent idea of the extent of the operations is to be gained from the figures that follow. In the sixty-seven years that have elapsed since the opening of the mine more than 20,000,000 net tons of coal have been produced from the C' seam alone. Despite the large amount that has been removed there is still remaining in the C' seam in the territory allotted to this mine an unmined tonnage of nearly 40,000,000, or twice the tonnage that has been removed since the mine was opened.

The record yearly production for this mine was made during 1905, when 804,188 net tons of coal was produced. The record production for any one month was made in May, 1907, when 79,875 net tons was dumped, and the daily record was made as recently as May 31, 1921, when 3,872 net tons was extracted.

This mine has worked over the largest territory of any single opening in the country, covering an area of approximately 10 square miles. The distance to the farthest working face is 5 miles.

From these figures it will be seen that the transportation problems at this property are unusually difficult and that the tonnages to be handled are larger than those in most single coal-mining operations. These drawbacks make imperative the introduction of the most modern

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*First part of an article on the Rolling Mill mine.
†Midvale Steel & Ordnance Co., Cambria Steel Co.
methods if production is to be maintained and to be performed economically.

At the Rolling Mill mine two seams are workable. Both are in the Allegheny series. The upper, known locally as the Cement seam, is sometimes called the C', but is more generally designated as the Upper Kittanning. From it the Rolling Mill mine has obtained all its tonnage. It is a bright, horizontally bedded coal, the height of which averages about 3 ft. 6 in. At an average depth of about 110 ft. below this seam lies the Lower Kittanning bed, known as the Miller or B seam. The roof is exceptionally good, in general being of black slate. It requires little or no timbering. In the new development which is to be described the main heading in the Miller seam has a length of more than two miles, and throughout its length no timber is used.

Until quite recently this coal was transported by six different kinds of haulage before it was finally dumped on the tipple. These consisted of mules, storage-battery locomotives, trolley locomotives, head-and-tail rope, grip-rope and chain haulage.

Until 1881 all the coal produced in this mine was handled entirely by mules, which hauled it from the mine across the Conemaugh River and directly into the steel works in small mine cars. The coal was all mined by hand.

In 1881 small steam locomotives were introduced to haul the coal from the main sidetrack, which is about a mile and quarter back in the mine, this being a system of haulage that has seldom been attempted in the mines of this country. The coal was delivered to the main sidetrack with mules, and the dinkeys, or

**PLAN SHOWING MINES OF CAMBRIA STEEL CO. WITH PARTS OF THE CITY OF JOHNSTOWN AND SUBURBS AND CROSS SECTIONS OF THE SHAFTS.**

Note the long underground roadway from the Elk Run shaft on the right, at which point coal is dropped down a well from the Cement seam to the Miller seam. The section of this shaft, or coal well, is shown in the upper right-hand corner. The roadway passes under Westmount Borough and under the Conemaugh River on its way to the hoisting shaft of mines Nos. 5 and 6 in Rosedale. This shaft is located on the far side of Hickston run, near the Rosedale coke ovens. At that point a well passes coal from No. 5 mine, Cement seam, down to No. 6 mine in the Miller seam. The section of this shaft is shown in the second illustration in the upper left-hand corner. Had the coal been taken above ground to the Rosedale plant in accordance with the original plans it would have interfered with operations of the Cambria Steel Works and the cost would have been excessive.
steam locomotives, hauled it outside and distributed it directly into the mills.

This method was again changed in 1890, when the present tipple was built and a rope was installed. The mules continued to be used for gathering the coal to the main sidetrack.

As the mine developed further and further under the hill, the need for additional haulage facilities arose. In 1898 a compressed-air plant was installed in the Mill Creek valley, the mine was piped for compressed air and a number of air locomotives were installed and used for hauling the coal from the different sections to the main sidetrack, where it was picked up by the rope haulage. Mules were still used to gather coal from the working faces.

In the same year (1898) compressed-air coal-cutting machines were installed for undercutting the coal, greatly adding to the number of tons per miner.

The development of the mine over a still larger area made necessary the installation of five electric storage-battery locomotives in 1916-17. Until this time the gaseous condition of the mine would not permit of the installation of trolley locomotives and electric coal-cutting machines, but in 1918, owing to the excellence of the mine ventilation and the improvement of the gas conditions, the management and the state mine inspector considered it safe and in keeping with the state mining code to electrify a portion of the mine.

As a result the electric trolley motors were put in use in this mine for the first time in its history, and in January, 1919, this was followed by the installation of a modern electric coal-cutting machine, the first that the Rolling Mill mine has ever used. The introduction of electricity eliminated the use of the compressed-air locomotives, many mules and several air-cutting machines and air pumps. Hence, despite the fact that the mine has been in use practically without a break for 67 years, the equipment is among of the most modern in the country.

WITH NEW OVENS CAME NEW MINE EQUIPMENT

The practice of conveying the coal from the mine to the tipple, located in the Cambria plant, by means of rope haulage was continued until April, 1922. In 1916 what is conceded to be one of the best and most modern byproduct coke-oven plants in the country was designed for a location in a deep valley near the Cambria plant, through which flows Hinckston Run, the new installation known as the Rosedale plant. The carrying out of this design was commenced in 1917 and completed in 1922. Here care is taken of the entire output of the Rolling Mill and Rosedale mines.

One of the most important problems to be solved was the conveyance of the coal from the Rolling Mill mine to the Rosedale shaft. Several plans were considered and in explaining these it will be helpful to refer to the diagram which shows the relative location of the various openings.

The first plan considered involved the construction of an eight-track viaduct over the Conemaugh River from the Rolling Mill mine and the Miller seam into the upper end of the Cambria plant, the building of a new tipple, etc., at an estimated pre-war cost of $1,500,000, which would have meant three to four times as much during the war and the period immediately following. This plan had serious disadvantages. To begin with, the cost was high. More important, however, was the fact that congestion would be increased at a place that was already congested. Johnstown lies in a narrow valley between high, steep-sided hills, and the level space so necessary in steel-plant operation is always at a premium. Lastly, it would be necessary to haul the coal from the tipple to Rosedale, necessitating additional trackage through the plant and the use of still more space that was valuable for other purposes.

The diagram the location of the entrance to the Rolling Mill mine, the space occupied by the rope-haulage system, viaduct, tipple, etc., are all indicated.

The second plan proposed involved a radical departure from the first and there was some question of its practicability. It was finally adopted, however, and brought to a successful completion. This new plan involved the entire abandonment of the old system of rope haulage, the viaduct, tipple, etc., and the introduction of direct communication with the Rosedale plant through a heading from the Elk Run shaft of the Rolling Mill mine driven in the lower coal bed, which is known as the Miller, or B, seam.

The greatest difficulty with this plan and the one which gave rise to a fear that it was impracticable lay in the fact that it was necessary to drive the heading under the Conemaugh River and at a level which allowed
only about 70 ft. or cover. The diagram clearly shows the new route. It was expected that the water encountered in passing under the river would give much trouble.

The total length of the new heading is a little more than two miles and except in the section under the river gave no trouble of any kind. In driving that section drillholes were carried 16 ft. ahead of the gangways for fear that water would enter the workings in unmanageable quantities. Due to crevices in the strata large inflows were encountered on four separate occasions. The crevices, however, were filled with cement and no further difficulty was experienced with them. Today the plan adopted is in successful operation, and it is interesting to note that it was completed at a cost practically the same as that estimated on a pre-war basis for carrying out the first plan.

As might be expected, equipment of the most modern type has been used at this new operation and many new ideas originated by the mining department of the Cambria Steel Co. have been successfully developed. These will be described step by step in connection with the account of the methods used in getting coal to the Rosedale plant.

It has been mentioned already that the operations in the Rolling Mill mine are in the upper, or Cement, seam. Under the new arrangement coal, instead of being taken to the old opening which comes out at the Conemaugh River, is brought as far as the Elk Run shaft, located in the Borough of Westmont and about one-half mile back in the mine. Here a coal well has been sunk to the Miller seam, which at this point is 115.4 ft. below the Cement seam and about 342.6 ft. from the surface.

The equipment for handling coal at this point includes one trip feeder, a car stop, a rotary dump and a trip maker in the Cement seam, with automatic power-driven gates, trip feeder, etc., in the Miller seam. Coal from the Cement seam is weighed in cars before being dumped.

The equipment provided for the Cement seam is capable of handling loaded mine cars in trips not exceeding 110 cars each, advancing and dumping at the rate of six or seven cars per minute and remaking into trips of the same size. The trip feeders at this point are of the chain type with hooks and have a speed of about 65 ft. per minute. Trips of the size mentioned, the number of cars being based on an average load of 3,000 lb. each, can be handled on a 1-per cent favorable grade, enough cars being spragged to keep them from running forward.

A standard car stop is provided at the dump so that the operator has position control of the delivery of cars. This consists of a pair of heavy steel horns seated on heavy steel coil springs. These horns the operative controls by hand with the aid of a system of levers.

The rotary dump is operated by a 10-hp. 250-volt direct-current motor with automatic electric control. It requires no attention other than to start and stop it by the pressing of push buttons. Spring-seated car
The control of the loading machinery is entirely automatic. As each car approaches the gate a contact is formed and the lower gate is set in operation. It opens and discharges its contents into the car while the latter is in motion and then closes automatically. As the lower gate closes the upper gate starts its cycle of operation and the hopper is refilled. When the hopper has been filled both gates remain at rest until the next approaching car forms the contact which starts the apparatus in motion again.

With apparatus of this character cars can be loaded with great rapidity, the average rate being six cars per minute. The trip, both empty and loaded, is moved forward by a chain haul of the same general construction as that used for the feeder in the Cement seam but modified in some details. The speed is 80 ft. per minute instead of 55 and the spacing of the hooks is different. This chain haul can handle 130 cars, the grade being 1 per cent and favorable to the load. The average weight of the loaded cars is 5,000 lb. Enough cars are spragged to keep the trip from running forward.

**Proposed Danger Sign Divided Diagonally**

In the report of the thirteenth annual meeting of the Mine Inspectors Institute of America appearing on page 133 of Coal Age for July 27 last, the description of the proposed underground danger signal was in error. The recommended signal is intended to be arranged as shown in the accompanying illustration. It will be seen at once that the proposed board is divided by diagonal lines into four quarters—an upper, a lower, a right and a left. This arrangement will be less confusing than that described. Had the drawing here presented been at hand when the description referred to was written no such mistake as was made would have been possible.

The personnel of the U. S. Bureau of Mines Car No. 2 recently conducted first-aid and mine-rescue training at Dawson, N. M., and at Cameo, Somerset and Gilman, Col. The city firemen at Trinidad, Col., were given a course in first aid. The crew of Car No. 3 has conducted training at Heelwood, Frugality, Fallen Timber, Blundburg and State College, Pa. Car No. 4 was one of the attractions at the King Coal Carnival recently held at Henryetta, Okla., which was attended by approximately 40,000 people. G. T. Powell, of the Evansville (Ind.) safety station, gave first-aid training in June at Seco, Millsboro, Blackey, Sassafras, and Wico, Ky. K. H. Chisholm, of the Norton (Va.) station, conducted first-aid training at Moss, Va., for the Clinchfield Coal Corporation and at Roaring Fork and Pardee, Va., for the Blackwood Coal Corporation. First-aid Miner Reid, of the Norton station, conducted first-aid training for the Stonestake & Coal Co., at Stonesta and Dunbar, Va., and for the Clinchfield Coal Corporation at Crane's Nest and Clinchfield, Va. J. G. Schoning, foreman miner of the Seattle (Wash.) safety station, conducted training at Issaquah, Burnett and Black Diamond, Wash.

"These safety guys make me tired. It's too much trouble testing out this breathing apparatus."

Well, he didn't care much about breathing any longer, anyway.
By raising 8,218 tons of coal in a single shaft on March 25, 1922, the Orient mine of the Chicago, Wilmington & Franklin Coal Co. established a one-day single-balanced-hoist record that has so far never been beaten. The Zeigler mine of the Bell & Zoller Mining Co. during the same month established the one-month hoist record, producing 164,109 tons, its maximum production in any one day being 7,537 tons.

It will be said doubtless that there are single breakers in the anthracite region that not only handled but actually prepared more coal than the Orient and Zeigler shafts lifted and the surface plants prepared. That is true. Truesdale breaker of the Glen Alden Coal Co. put out in 1921 1,550,014 tons of fresh-mined coal, which would average, it is true, only 129,168 tons per month but the output in the record month of that year was 162,000 tons, and in March, 1922, when Orient and Zeigler made their big record, its production was 202,000 tons. The greatest quantity of coal shipped in one day from Truesdale breaker was 10,314 tons.

Note—The illustration at the top of the left-hand page shows the Orient and that at the top of the right page the Zeigler mine. These plants are only five miles apart and are located in the Franklin County field, where some of the largest producers in the United States are to be found, that county having been left undeveloped for many years owing to the depth of the coal, not one of the mines in that district being mined by drift or slope.

Conditions Under Which Made Wonderful

Orient Dumps a Mine Car Every Three-Eighths Million Tons in One Production—Output per Man per

On March 31 of this year the Truesdale plant mined, hoisted and prepared 12,000 tons, of which 9,500 tons were shipped, and 2,500 tons of coal were held for the boiler plant and in pockets for retail trade. Truesdale has been for many years a consistent producer. Since and including 1913 it has not failed once to ship more than a million tons of coal a year. It has no culm banks or strippings to help it maintain its output, but its coal comes from two shafts, five slopes and two tunnels—nine openings in all.

Plymouth No. 5 also, one of the plants of the Hudson Coal Co., commonly known as the Loree colliery, which has five coal shafts, a slope and three tunnels, put out 1,502,071 tons of fresh-mined coal in 1921 and 1,580,000

Truesdale Breaker

A preparator that for nine years has never failed to produce a million tons yearly and has shipped in a single day 16,314 tons. Tributary to the mammoth breaker are two shafts, five slopes and two tunnels. In 1921 1,550,014 tons of fresh-mined coal was produced. On March 31 this plant mined 12,000 tons, but 2,500 tons was held back to keep the mine free of water during the impending strike.
Orient and Zeigler Mines
One-Hoist Records

Seventeen Seconds—Loads One and Year—Zeigler Has Biggest Monthly Day Six and Three-Quarter Tons
tons including coal from culm banks. These are plant outputs and are not obtained through the handling of a single shaft hoist.

It is useful, however, to recall the gigantic operations of the anthracite region in sizing up and in considering the importance of the records made in the Orient-Zeigler contest and to realize that the tonnage of each of the Illinois shafts all came to one landing and was hoisted up one shaft by one hoist. There was a concentration not only in regard to time but in regard to facilities of operation. This is really the important fact. We might attain the output of the Orient mine by putting in two plants each of which could produce 4,000 tons and get the result desired—an output of 8,000 tons—but the essential point is that the greater cost of two plants was avoided and that one gang of men produced the whole tonnage.

Still it would not have been a particularly creditable performance if to obtain so much coal through the shaft it was necessary to use an undue number of men. After all, economy of operation is the main consideration. Thus Zeigler produced on its best day about 8.1 tons per man and during the whole month averaged 6.78 tons. The average output per loader per day for the whole month was 11.7 tons and per machine man 95.9 tons, the bottom laborers handling 27.9 tons per man and the top laborers 63.3 tons. These records are exceptionally good.

TONNAGE PER MAN EXCEEDS AMERICAN PRACTICE

Is it necessary to call attention to the fact that in the United States the average tonnage per man-shift in whole years, when idle days interspersed among working days made men more anxious to do their best, ran during the period from 1890 to 1918 between 2.56 tons and 3.91 tons and that even in Utah, where coal

<table>
<thead>
<tr>
<th>TABLE 1.—COMPARISON AND ZEIGLER RECORDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum output per day</td>
</tr>
<tr>
<td>Orient</td>
</tr>
<tr>
<td>8,218 tons</td>
</tr>
<tr>
<td>Zeigler</td>
</tr>
<tr>
<td>7,537 tons</td>
</tr>
<tr>
<td>Monthly production (March, 1922)</td>
</tr>
<tr>
<td>162,015 tons</td>
</tr>
<tr>
<td>164,109 tons</td>
</tr>
<tr>
<td>Lowest tonnage per day</td>
</tr>
<tr>
<td>5,241 tons</td>
</tr>
<tr>
<td>Zeigler</td>
</tr>
<tr>
<td>4,161 tons</td>
</tr>
<tr>
<td>Days run</td>
</tr>
<tr>
<td>27</td>
</tr>
<tr>
<td>Depth of shaft, collar to bottom</td>
</tr>
<tr>
<td>510 ft</td>
</tr>
<tr>
<td>417 ft</td>
</tr>
<tr>
<td>Average thickness of coal</td>
</tr>
<tr>
<td>9 to 10 ft</td>
</tr>
<tr>
<td>11 ft</td>
</tr>
<tr>
<td>Hoisting time on day of maximum production</td>
</tr>
<tr>
<td>12 min</td>
</tr>
<tr>
<td>17</td>
</tr>
<tr>
<td>Total time on day of maximum production</td>
</tr>
<tr>
<td>480 min</td>
</tr>
<tr>
<td>480 min</td>
</tr>
<tr>
<td>Number of dumps on day of maximum production</td>
</tr>
<tr>
<td>1,640</td>
</tr>
<tr>
<td>1,965 at bottoms</td>
</tr>
<tr>
<td>Dumps per minute</td>
</tr>
<tr>
<td>3.3</td>
</tr>
<tr>
<td>2.1</td>
</tr>
<tr>
<td>Capacity of mine cars</td>
</tr>
<tr>
<td>3 tons</td>
</tr>
<tr>
<td>4 tons</td>
</tr>
<tr>
<td>Size of skip</td>
</tr>
<tr>
<td>8 tons</td>
</tr>
<tr>
<td>Production in coal year—April 1922</td>
</tr>
<tr>
<td>1,374,953 tons</td>
</tr>
<tr>
<td>1,349,610 tons</td>
</tr>
<tr>
<td>Average tons per hoist</td>
</tr>
<tr>
<td>8.009 tons</td>
</tr>
<tr>
<td>8.1 tons</td>
</tr>
<tr>
<td>Average time per hoist</td>
</tr>
<tr>
<td>57.5 sec</td>
</tr>
<tr>
<td>51.7 sec</td>
</tr>
<tr>
<td>Lower landing to dump</td>
</tr>
<tr>
<td>109 ft</td>
</tr>
<tr>
<td>301 ft</td>
</tr>
<tr>
<td>Two engineers worked in relays of...</td>
</tr>
<tr>
<td>17 12 sec.</td>
</tr>
<tr>
<td>29 75 sec.</td>
</tr>
<tr>
<td>Working relations</td>
</tr>
<tr>
<td>600 ft</td>
</tr>
<tr>
<td>517 ft</td>
</tr>
<tr>
<td>Mine opened</td>
</tr>
<tr>
<td>30 min</td>
</tr>
<tr>
<td>1912-13</td>
</tr>
<tr>
<td>Union mine</td>
</tr>
<tr>
<td>1914</td>
</tr>
<tr>
<td>Mine worked by</td>
</tr>
<tr>
<td>open lights</td>
</tr>
<tr>
<td>one-man</td>
</tr>
<tr>
<td>Method of operation</td>
</tr>
<tr>
<td>run-of-mine-collar</td>
</tr>
<tr>
<td>open lights</td>
</tr>
<tr>
<td>No. 1 collar</td>
</tr>
<tr>
<td>111 x 5 ft</td>
</tr>
<tr>
<td>8 x 12 ft</td>
</tr>
</tbody>
</table>

Cleansing nut coal at Orient Mine

The method of suspending the shaking chute is interesting. Note the evenness of the product. There is a close analogy between the anthracite and Illinois coal shipments, despite the difference in the degree of mineralization of the fuel. The Illinois coals are more carefully prepared than most bituminous coals, the domestic fuel market being fostered with unusual solicitude.
tonnages per man are unusually high, the output in 1918 was only 4.79 and in 1917, 5.40 tons per man per day.

The showing certainly compares favorably with those that Professor Henry Lewis gives for the British mines in 1921—namely, 177.2 tons per year per person. The men in the Zeigler mine beat that record in a single month of twenty-seven working days.

It must be remembered, however, that the coal in Illinois is not so uneven in thickness, so irregular in level and so wet as in Great Britain. Illinois coal is clean. Several true faults are found in the Orient mine but the displacement is relatively small. The grades in sections run to 5 or 6 per cent and in Zeigler even 8 per cent, but there are stretches of half a mile or more where the seam lies practically level or with only a gentle dip. Regular workings with headings driven in any direction without trouble from water give Illinois an advantage over Great Britain and most of the United States. The southern Illinois mines have not failed to take advantage of the favoring conditions. The operating staff has with long experience learned to install such equipment as will render the best account of every opportunity. It must also be remembered that the assurance of a strike on and after April 1 made every man paid by the ton anxious to do his utmost so as to obtain the largest possible cash reserve for the long period of idleness which was in view.

The attached tables will give some idea of the relation between the tonnages and the number of men at work at both mines.

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**Officials at Orient Mine**

In front seated, left to right: George Pollack, mine manager; John Rodenbush, superintendent; Peter Borella, assistant superintendent. In rear, standing, left to right: Joe Spaven, assistant mine foreman; Peter Chiaventone, top foreman; William Nestler, Charles Rodenbush, William McAll, Luther Jones and Jake Rodenbush, assistant mine managers.

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**Zeigler Officials**

Front row, left to right: Lawrence Hawkins, bottom boss; Joe Dudley, section boss; Paul Johnson, assistant mine manager; Ed Prudent, mine manager; Robert Hart, section boss; Michael McElroy, night boss; Ernest Prudent, machine boss; George Brown, section boss; Richard Prudent, section boss. Rear row, left to right: Paul Weir, chief engineer; E. C. Berger, underground superintendent; R. H. Zoller, general manager and vice-president; Joseph Yerly, top superintendent; Ed Ferguson, top electrician; Martin Uhrich, company weightman; John Dudash, section boss; Andrew Leslie, top boss.

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**TABLE II—OUTPUT AND MEN AT WORK, ZEIGLER NO. 1, IN MARCH, 1922**

<table>
<thead>
<tr>
<th>Date</th>
<th>Tonnage</th>
<th>Loaders</th>
<th>Machinemen</th>
<th>Bottom Laborers</th>
<th>Top Laborers</th>
</tr>
</thead>
<tbody>
<tr>
<td>March</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>5,500</td>
<td>462</td>
<td>59</td>
<td>210</td>
<td>130</td>
</tr>
<tr>
<td>2</td>
<td>5,415</td>
<td>308</td>
<td>70</td>
<td>222</td>
<td>96</td>
</tr>
<tr>
<td>3</td>
<td>6,073</td>
<td>279</td>
<td>70</td>
<td>229</td>
<td>96</td>
</tr>
<tr>
<td>4</td>
<td>5,900</td>
<td>274</td>
<td>70</td>
<td>225</td>
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<tr>
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<td>5,600</td>
<td>301</td>
<td>66</td>
<td>217</td>
<td>96</td>
</tr>
<tr>
<td>6</td>
<td>5,700</td>
<td>346</td>
<td>66</td>
<td>232</td>
<td>96</td>
</tr>
<tr>
<td>7</td>
<td>5,900</td>
<td>337</td>
<td>70</td>
<td>236</td>
<td>96</td>
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<td>7,214</td>
<td>335</td>
<td>69</td>
<td>236</td>
<td>96</td>
</tr>
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<td>9</td>
<td>6,210</td>
<td>511</td>
<td>72</td>
<td>232</td>
<td>96</td>
</tr>
<tr>
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<td>6,760</td>
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<td>74</td>
<td>242</td>
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<tr>
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<td>6,415</td>
<td>346</td>
<td>66</td>
<td>232</td>
<td>96</td>
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<tr>
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<td>5,902</td>
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<td>66</td>
<td>232</td>
<td>96</td>
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<td>232</td>
<td>96</td>
</tr>
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<td>96</td>
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<td>96</td>
</tr>
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<td>693</td>
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<td>232</td>
<td>96</td>
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Totals: 106,709; 13,980; 1,717; 5,888; 2,392

Days worked: 27; average loaders, 518; average machinemen, 43; average bottom laborers, 218; average top laborers, 96.

At the Zeigler mine it was an easy matter to handle the coal up the shaft because it was provided with two 8-ton skips. Its main difficulty was getting enough coal to the landing. The interesting methods by which this problem was overcome may be found described in Coal
Thirty-Day Free Storage Given at the New Government Terminals, Mobile, Ala.

BY DAVID HOLT
Mobile, Ala.

ARGES of rough-hewn lumber first brought Alabama coal to Mobile in the early fifties. This could be done, however, only when the rivers were at high stages. The boats usually were sold with the coal and were broken up for the timber they contained. The bargemen returned by steamboat to Tuscaloosa, and thence traveled overland to their homes in Walker County.

No large quantity of water-borne coal ever moved to this seaport. Frequently the coal and barge were sold at Tuscaloosa to save the long drift down the Warrior, Tombigbee and Mobile Rivers. With the extension of railroads through the coal fields this limited use of the natural waterways for coal transportation gradually came to an end, and it was not until after the canalization of the Warrior River was completed in 1915 that the water traffic in coal was revived. Even then lack of facilities for handling water-borne cargo coal at Mobile retarded development of this commerce.

Floating equipment for bunkering steamers long has been ample for the needs of the port. Such equipment can place fuel aboard a vessel as rapidly as it can be trimmed and stored in the bunkers. The Southern Ry. built a tippet with which to handle coal from cars to ship and the Louisville & Nashville RR. did likewise. Then the government built a coal- and ore-handling plant. This was completed last May and now forms an important link in the Mississippi-Warrior service.

A survey of the port compiled by the Mobile Chamber of Commerce for publication in June, 1922, shows that the present coaling facilities exceed 12,000 tons per day of 8 hr., or more than two average ship cargoes. This equipment includes the government tippet, two railroad tipples, five derrick barges of from 50 to 100 tons hourly loading capacity; one collier capable of placing 150 tons of coal aboard ship per hour, and a locomotive crane designed to transfer coal from barge to ship.

Mobile did not advertise itself as “the cheapest coal port on the Gulf of Mexico” until it was prepared to “deliver the goods.” The Mississippi-Warrior service has published and placed in effect its tariff for the delivery and storage of coal at its Mobile plant, which has a capacity of 400 tons per hour from barge or storage pile to ship or other carrier. This publication shows that coal for export or coastwise movement via ocean

### TABLE III—OUTPUT AND MEN AT WORK, ORIENT NO. 1 IN MARCH, 1922

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<th>Date</th>
<th>Tonnage</th>
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<th>Machine Men</th>
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Total 152,513 28,080 16,867 1,549 2,007 6,912 1,488 29,478

Number of days, 31; average number of men, 1,049; average men, 1,049; average leaders, 1.32; average machine men, 57; average two company men, 97; average underground company men, 275; average night shift, 55; average total, 1,021.

At the Orient mine 825 dips aggregating 4,100 tons were made in the morning and 815 dips totalling 4,118 tons were made in the afternoon. Three railroad trains of fifty-eight cars each, or a total of 174 cars, were needed to handle the day's production, the coal being screened into seven sizes over tippet and re-screeener.
vessels, will be handled at the Waterways tipple under the following conditions:

"Delivery will be made directly from barges of the Waterways or from the stock pile into ocean vessels, or from barges to stock pile, the Waterways reserving the right to unload barges immediately upon arrival at Mobile, placing the coal on the stock pile. No charge will be made for delivery of coal into ocean vessels from barges of the Waterways or from stock pile or from barges of the Waterways to stock pile or for storage, provided delivery is completed within 30 days after the arrival of the coal at Mobile. The period of 30 days will be computed from 7 a.m. of the day following the arrival of the barge at Mobile, Ala., Sundays and holidays excepted.

FIFTEEN CENTS PER TON AFTER THIRTY DAYS

"If delivery is made, or if coal is held in storage after the expiration of the 30-day period a charge of 15¢ per ton of 2,000 lb. will be assessed. This charge includes the transference of coal from barge to stock pile, from stock pile to vessel, or from barge to vessel, as well as storage at the tipple. This charge must be paid immediately upon the expiration of the 30-day period referred to in the preceding paragraph."

Under present regulations, no coal will be handled at the tipple by the Waterways except in line service. No railway connects with the plant, which is located on the east side of the Mobile River. The storage capacity of the bins is 40,000 tons, which will permit the accumulation of sufficient coal for several ships' cargoes.

As the plant was placed in commission in June, the greater part of the coal handled by it has gone to Texas ports by ocean barges. One Mobile shipping firm, Page & Jones, has handled four cargoes of coal and coke, or approximately 24,000 tons, from the port of Mobile within as many months. Further exports are anticipated in the near future. The greater part of the cargo coal handled was loaded at the railroad tipples and all of it came to the port by rail. The latest shipment, composed of about 5,000 tons of coke and coal, was made to Callao, Peru, on the Danish S.S. "Nordfarer." This is said to be the beginning of a large movement of Alabama coal and coke to that Peruvian port.

Shipment of pig-iron, iron pipe, steel rails and other manufactured products of the Birmingham district to the Orient and to Pacific coast ports of the United States, via Mobile and the Panama Canal, with return cargoes of wheat, flour, fresh, dried and canned fruits and canned fish, has shown a marked increase during the present year. It is not an uncommon occurrence on the Mobile water front to see a steamer taking metal products from cars on one side and steel rails from Warrior barges on the other. The distribution of freight brought in by these steamers inbound gives the Warrior barges the return cargo that is needed for the successful operation of the line.

The commerce of the port of Mobile is in a flourishing condition and will be further improved after the passage of the proposed Seaport Amendment on which a vote will be taken on Nov. 14, the purpose of which enactment is to permit the State of Alabama to lend $10,000 on its credit for the further improvement of the seaport, by the building of self-supporting terminals, to be owned and controlled by the state, through its harbor commission.

Telegraphic advice from Alaska are to the effect that the Naval Collier Jason is en route south from Alaska with 5,000 tons of washed coal from the Chickaloon mine and 600 tons from the mines of the Behring River Coal Co. This coal is to be given a battleship test. An ingenious application of gold-mine practice has been resorted to in washing the Behring River coal. Gold sluices have been put in for this purpose and are giving splendid results. They are built in parallel, so that while one is being cleaned the other is in service. The plan is so effective that even the fine coal which settles in the bins shows no more than 4 per cent ash. Much of the coal thus far mined has run only 2 per cent in ash. The coal is sacked at the foot of the sluice and there transferred by truck to a canoe landing four and one-half miles away.

"Cap chimpers are toys for kids. I'll use my teeth."
He did. But he has no use for them now.

"This must be a missed shot. I'll dig in and find out." Wham!
Laws Compelling Use of Telephones at Mines and Provisions that Make Them Safe and Durable*

Several States Provide for Their Compulsory Installation—Severe Conditions Imposed Require Specially Constructed Devices—Reliable Transmission and Signaling, Prevention of Burn-outs, and Safety to Users Essential

By D. E. A. Charlton†

A mine not a shift passes in which the usefulness of the telephone fails to be made manifest, and it hardly seems necessary in these days of enlightenment to enact laws making the use of the telephone in mines compulsory.

In June, 1921, the U. S. Bureau of Mines issued a compilation of state safety regulations pertaining to the use of telephones at mines prepared by L. C. Ilsley and R. A. Kearns. This shows that sixteen states have rules or enactments relating to telephones, and I understand that no new state regulations have been enacted since then, although changes may take place at any time. It is of interest that the Federal Leasing Act of Feb. 25, 1920, has the following reference to mine telephones: In each mine where more than 100 men are employed underground on any shift the lessee shall provide and maintain a telephone system between the hoisting-engine room, the ground landing of the shaft or slope, the principal mine exit of drift mines, the fan building when same is located 1,000 ft. or more from the power house or main exit of the mine, and such other points on the surface as the safety of the employees may dictate. The telephone system shall also extend into the mine and telephones be placed on each shaft or slope landing in use and at the inside siding of each of the main haulage roads. The underground telephones shall be so placed that no body of twenty men shall be more than 1,000 ft. from the nearest telephone station. Telephones shall also be placed in each refuge and first-aid chamber.

What Laws of the Several States Require

The following is a résumé of the various state regulations with regard to the use of telephones at mines: The rules of California provide that telephones be maintained in all mines over 500 ft. in depth. Colorado orders the maintenance of an adequate telephone system in all mines, extending from the surface to the bottom of the shaft. Illinois requires that a system of party-line telephones be installed that shall include one telephone at the bottom of the hoisting shaft or, in slope or drift mines, at the first cross entry, and one at each inside parting. Iowa demands that in all mines where the workings extend more than 3,000 ft. from the foot of the slope, shaft, or the mouth of the drift a telephone system shall be installed and that this shall be extended as the works of the mine progress 3,000 ft. therefrom. Kentucky specifies that in any coal mine where more than fifty men are employed underground, one or more telephones shall be installed communicating with the surface. In Kansas it is unlawful to operate or permit any coal mine to be operated not equipped with a party-line telephone system. The New Mexico law apparently exempts metal mines, for it is stated that it shall be the duty of the operator to install and maintain a telephone system in every coal mine. The North Dakota legislation also relates to coal, and specifies that in any coal mine where more than fifty men are employed underground, one or more telephones shall be installed. The Oklahoma laws provide that a telephone system shall be furnished in every coal mine where as many as fifteen men are working.

Pennsylvania, Tennessee, Utah and Wyoming

In the anthracite mines of Pennsylvania means of communication must be provided by telegraph or telephone between mines and collieries, and in the bituminous region of that state the law relates more specifically to communication between the surface and the bottom of the shaft or slope. Tennessee specifies the maintenance of a metal tube from top to bottom of shaft, or a telephone system. Texas also requires that a metal tube or telephone be maintained. The Utah laws provide that in all mines in which ten or more men are working more than 2,000 ft. from the entrance, or in which there are ten or more working places more than 2,000 ft. from the entrance, an underground telephone system shall be installed. Washington specifies that a telephone or metal tube shall be maintained from the top to the bottom of every shaft or slope, and at each alternate working level. Wyoming orders that a system of party-line telephones be provided at each coal mine in operation. In addition, several of the regulations of the various states contain clauses relating to the installation and maintenance of mine telephones.

The severe conditions to which mine telephones are exposed make it necessary to construct them more ruggedly than is necessary in ordinary installations. Underground, the device frequently must be exposed to moisture, gases, acid water, and mechanical sources of injury. Of these, the last, which include falls of ground, blasting concussions and rough handling, are the most frequent; moisture is probably the next. Gas and acid water are in general restricted to coal and copper mines.

Mine telephones are in general housed in a moisture- and rust-proof iron or steel case, of sufficient thickness to provide ample protection from injury. The edges of the case are well rounded, so that water and falling objects will easily slide off, and strong mounting supports are provided to insure rigidity when the telephone is installed. An outer door on the case, provided with a rubber gasket, serves, when closed, completely to protect the mechanism from any disturbing elements.
When this is opened, only the transmitter, receiver, receiver cord, and generator handle are exposed, as an inner door effectually conceals and protects all of the delicate mechanism of the telephone. When necessary, locks or padlocks may be placed on the outer door, the shift bosses or foremen being provided with keys. Binding posts for the line and ground wires are placed in a terminal box, which is either mounted on the underside of the case proper or included as a part of it. The bells, bell mounting, and clapper rod assembly are housed in a dome-shaped casting on the top of the case.

The talking apparatus of the mine telephone consists of a standard long-distance transmitter and receiver, slightly modified for underground service. In the design of these the manufacturers have considered carefully the hard usage to which the mechanism will be subject, and waterproof windings and special insulation are used throughout. The ordinary form of gravity-controlled hook switch is not sufficiently rugged for mine service, and one manufacturer, at least, has devised a positive spring-concentrated hook switch in which the force of gravity is not employed. The receiver, instead of being suspended from a lever which terminates in a fork-shaped yoke, normally rests between the jaws of a special holder. When the receiver is taken out of the jaws a trigger depresses a small plunger which passes through the door and actuates the contact spring of the hook switch.

Mine telephones are usually supplied with ringers of 1,600 or 2,500 ohms resistance and five-bar hand generators. Under average service two standard dry cells will furnish talking current for a year or more, as the transmitter has a fairly high resistance and therefore a low current consumption.

Frequently it is desirable to supply loud-ringing extension bells so that the telephone signals may be heard at some distance or above the noise in that particular place, which may be a shaft station or a pump room. In this event gongs of 6- to 8-in. diameter are supplied, the ringer coils usually having the same resistance as those used in the telephones.

It is customary to protect mine telephones against lightning discharge and accidental crossing with high-tension lighting or power circuits, and for this purpose a protector, consisting of mountings equipped with fuses and carbon-block type open-space cutouts, is used.

**LARGE CHOICE OF TELEPHONE CONDUCTORS**

Conductors of many kinds may be used for mine telephone lines, and many different types of brackets and insulators are available. No one type of installation can be recommended for all conditions. The following kinds of conductors are in general use for wiring mine telephone systems:

**Surface**:
- Triple braid weatherproof copper or iron wire (No. 12 gage);
- Bare copper or iron wire; bridle or drop wire for short runs.

**Underground**:
- Practice greatly differs as to sizes and types of wire used underground. One manufacturer recommends armored cable, Ferrin cable, or twisted-pair drop wire (40-per cent para insulation).
- From a questionnaire which I sent out the replies varied greatly, but in general Nos. 12, 14 and 16 copper wire, rubber-covered and armored, also No. 12 iron wire, tinned, were specified. In some instances, the wires down the shaft are included with the signaling wires, the whole consisting of a single cable with individual strands for the two functions. Where conduits were used, 3-in. metallic carriers were specified.

Not infrequently much trouble is experienced from the breaking of the line by falls of roof and similar happenings. In the installation of wires, particularly in haulage drifts where trolley locomotives are used, it is essential that care be taken in the placing of wires.
so that there shall be no connection between the two circuits. Unless the telephone wire be well insulated, a wooden or insulated conduit should be provided where it crosses over trolley wires.

The location of mine telephones depends of course upon the extent of the operations. Not infrequently a group of mines will be connected from a central switchboard which will serve all important points above and below ground. In most installations, however, it is customary to maintain a single circuit at each mine, connecting the surface with the underground workings and signaling to the different stations by means of code rings. The following buildings will usually be included in such a circuit. For metal mines (surface): Office, engine room, boiler room, shops, change house, first-aid room, and top of shaft; (underground): shaft stations, pump stations, powder magazines, loading pockets, and transmitting levels. For coal mines (surface): Office, engine room, shops, tipple, top of shaft or slope, and first-aid room; (underground): shaft or slope bottom, pump stations, main partings and first-aid rooms.

In a tentative draft* prepared by the U. S. Bureau of Mines the following general requirements have been stated to be used as a basis in establishing a list of telephones which would be permissible for installation in gaseous mines:

**WHAT A PERMISSIBLE TELEPHONE SHOULD EMBODY**

The apparatus shall be so designed and constructed that under no circumstances can its normal operation cause ignition of surrounding explosive mine atmospheres. All parts of the apparatus shall be adequate for the service for which they are intended.

The construction of permissible apparatus shall be especially durable. This requirement shall be applied consistently to all the details of the apparatus under test in order that with proper care and maintenance the permissible qualities of the apparatus will remain unimpaired under the severe conditions imposed by mining service.

All terminals and contacts, and all wiring, shall be adequately protected, and all leads shall pass through the casings of the apparatus by means of adequately insulated devices of approved design.

All parts of the apparatus, such as the magneto, the hook switch, etc., which are capable during normal operation of igniting explosive gas and air mixtures, shall be placed in permissible compartments.

All openings in the casings of permissible compartments shall be tightly closed and it is desirable that such openings shall be as few as possible. All joints in the casings of a permissible compartment shall be metal-to-metal, so designed as to form a path not less than 1 in. long from the inside of the casing to the atmosphere. All bolt holes in the casing shall be bottomed or so arranged that the accidental omission of a bolt will not give an opening through the casing. The compartment shall be provided with an adequate lock or seal to prevent any person from tampering with the apparatus inside the casing.

Battery cells shall be placed in a permissible, or in a locked or sealed adequate compartment, and their terminals and the connections thereto shall be arranged so as to preclude the possibility of anyone meddling or tampering, or making electrical connection with them. The short-circuit current of the battery measured as close as possible to the terminals shall not exceed the following limits: For batteries giving 2.5 volts or less, 100 amperes; for batteries giving 2.5 volts but not more than 4 volts, 85 amperes; for batteries giving more than 6 volts but not more than 6 volt, 45 amperes.

The manufacturer shall permanently attach to the case of the apparatus adequate instructions for the installation and connection of the telephone, so that the safety and efficiency of the apparatus and the system to which it is connected shall not be diminished by its installation. He shall also attach to the instrument an adequate wiring diagram of the apparatus.

Correct wiring and proper installation and maintenance, combined with sensible usage, are essential to the success of mine telephone systems. The telephone is a prime necessity in every mine, for without it today safety and efficiency are impossible.

In the preparation of this paper I am indebted to L. C. Ilsley, electrical engineer of the U. S. Bureau of Mines; the Stromberg-Carlson Telephone Manufacturing Co., the Western Electric Co., and to the several safety engineers and superintendents who have given me specific information concerning telephone installations and various other details of practical operation at their mines.

J. J. Rutledge, superintendent of the Central District experiment station of the U. S. Bureau of Mines, Urbana, Ill., is devoting much time to the study of improved methods of underground work in coal mining which result in increased recovery of coal. Mr. Rutledge recently conferred with operators of Iowa mines regarding a method in use there which recovers 90 per cent of the coal in the bed when conditions will permit its use.

**NUMEROUS TESTS HAVE BEEN MADE at the experimental mine of the U. S. Bureau of Mines near Pittsburgh, Pa., to determine the resistance offered to given quantities of air by placing mine cars in different sections of the air passageway, including timbered sections with timber sets spaced respectively at 5-ft. and 10-ft. centers. Tests were made to determine the equivalent straight-entry lengths corresponding to a right angle turn, respectively without vanes, with one vane, with two vanes, and with two vanes and a Venturi vane. A program of 30 tests was completed in July.**
Inborn Superstition Regarding Mine Accidents

Fatal Accident Starts Men Thinking—Superstitution of Large Class of Mining Men—Death Rate Shown by Statistics—Prevailing Indifference of Workers

In his article entitled "Importance of Checking System," Coal Age, July 20, p. 96, J. W. Powell expresses his deep regret on reading the reports of fatal mine accidents, recorded from time to time, in Coal Age and the public press.

When investigating a recent fatal accident in a mine, I was impressed with the lack of consideration given to these sad occurrences. There seems to be a widely prevailing feeling that accidents will happen in coal mines, in spite of all that can be done to eliminate them.

A remark commonly made is, "When a man takes a job in a mine he assumes his own risk," and Providence only knows how great is that risk. Such an attitude on the part of the worker, it must be acknowledged, does not tend to lessen casualties.

My visit to the mine just mentioned has altered my thinking. The foreman spoke of this accident as "Number one," adding, "We will sure have two more soon." He said that, in all his experience, he had never known it to fail; but when one accident occurred two more were sure to follow.

The remark of the foreman, I have learned, is inborn in a large class of mine workers and mining men in general. It is a superstition that pervades their minds. Many mine workers have come to look on an accident as something mysterious and beyond the comprehension of mortal man and, beyond a small circle of friends and neighbors, the incident goes unheeded. There is not the community interest that the occurrence should awaken in the hope of making labor more safe.

Instead, what do we find? A serious or, perhaps, fatal accident occurring awakens nearby workers to a sense of danger. For a time they are more alert and cautious. But the sense of danger grows less, as time passes, and when a second accident occurs many are hardened and the effect is far less than on the first occurrence.

Again, time passes and a third accident occurs. Then the old indifferent manner of performing their work returns. With evident relief a worker explains, "Well, that is Number three. We are safe now, for a while, anyway."

Importance of Investigation

It is my belief that this attitude of mine workers, call it superstition if you will, is responsible for the great indifference displayed by the average miner, regarding his own personal safety. It explains why an accident out of the ordinary is required to bring men to a realization of the hazards about them and make them, for a time, more careful in their work.

Reflections such as these should bring to our mind the fact that there is much need for improvement in this direction. The proper way to approach the matter is to make every fatal accident the subject of a thorough and immediate investigation. It is important that this should not be delayed, or the impression to be made on the minds of the men will be lost.

At once, on the occurrence of an accident in or about a mine, the superintendent or mine foreman should appoint a committee of three to make a thorough and careful investigation and report the facts to him for submission to the highest official in charge. Throughout the investigation, the aim should be to fix the blame for the occurrence on any one found to have neglected a duty, and make recommendations to avoid a similar occurrence.

The investigation made by the committee, in addition to those made by the state mine inspector and the coroner if the accident is fatal, should make a deep impression on every one connected with the undertaking.

In other words, every one should be made to feel that an accident, be it only a minor, serious or otherwise, is not a thing to be passed over carelessly or lightly set aside. Cause for the occurrence must be found and the responsibility placed on the shoulders where it belongs. Bulletins and pictures strongly emphasizing the fact make a lasting impression on the mind.

George Edwards.

Pikeville, Ky.

The Certificate and Safety

The mine symbolized as a ship—Mine officials are the captain and officers of the ship—Knowledge required to insure safety—Responsibilities of the fireboss.

Permit me to offer a few words in addition to what has already been said regarding the employment of certified men in responsible positions in coal mines. Arguments have been advanced on both sides of the question, but it stands to reason that a certificate of competency honestly gained is an evidence of the holder's intelligence and acquaintance with the principles of mining.

Without doubt, we have many good men who have gained experience through long years of practice and, yet, it cannot be denied that some of these are dangerous men to be given charge of a mine where the conditions require a knowledge that cannot be gained through practical experience alone.

Must Know More Than Practice

Consider for a moment a foreman given charge of a very gaseous mine where the coal is highly inflammable and makes much dust. His previous experience does not guarantee that he will be able to handle successfully the problems that will arise under these conditions. He must have a knowledge of the nature and behavior of gases beyond what practice has taught him.

What is true of the foreman is true, to an even greater extent, of the fireboss in whose hands are placed the health and safety of the men employed in such a mine. Like the foreman, his knowledge must be greater than what one can learn in the practice of firebossing alone.

Let me liken the mine to a great ship voyaging the ocean. The miners and daymen are the passengers and the mine officials, from the superintendent down, are the captain and officers, to whom are entrusted the safety of the ship and its precious burden.
Coal mining, piled is will in practical is within fireboss, safe dilute the gob, cope build knowledge mining, to the accurate thoroughly have reduce eliminate official Oscar may. Then, it mine heating gain am a man it all. As which matter my generated. longwall mining understanding every among motion. Another dust, putting is with the practice. No man with an education would do this. Instead, he will see that sufficient air is used to sweep the place where the gas is accumulated, in volume sufficient to dilute and render harmless the gas.

Another danger requiring a higher knowledge than that gained in practice is the dust menace in mines. Where the fine dust of an inflammable coal is allowed to accumulate on the timbers, roof and sides of the roads and air-courses, or in the working places, it is extremely dangerous. It becomes the prime factor in propagating an explosion throughout the mine that would, for the dust, have had only a local effect.

Mine Officials Require Knowledge Gained Only by Study

The study of appliances to which I have referred gives both the mine foreman and the fireboss a knowledge of the dangers present, and enables them to avoid all conditions that make the mine unsafe. It is up to every mine official to gain this knowledge in addition to his practical experience.

Let me say, in closing, that I am of the opinion that there has been and still exists a close relation between the certificate of competency and mine safety, which every man should recognize. The holder of a certificate should be employed, in any official capacity, in preference to a man who holds no certificate, provided both are practical experienced men.

The certification of mine officials raises the standard of excellence, giving to every such man a knowledge of gases, ventilation, pumping, drainage, timbering and other subjects, including the geology of the coal formations that define him familiar with this. Hence, mine officials will be better able to understand the cost-sheet and reduce the accident list and insurance.

In the last examination, in Kentucky, out of 126 applicants, 114 passed a successful examination and gave evidence of their practical intelligence.


Heating of Gob Areas

Referring to the question of the heating of the gob, as the result of mining a seam, in a clay parting containing sulphur, allow me to give a little of my own experience in keeping the waste cool under similar conditions.

In the first place, let me say the mine should be well ventilated. From the conditions described in this place, there is little doubt but that much fine coal is mixed with the clay cuttings thrown back in the gob and every opportunity is afforded for heating to develop that will create trouble and should be prevented.

Use of Salt in Blasting Advocated to Reduce Heating

In the reply to this inquiry, mention has been made of the use of salt, as a means of countering the tendency to combustion in the waste. This, to my mind, is a good plan; but let me suggest that, before this request is brought into the mine, the face for the purpose of cutting, a layer of salt should be sprinkled broadcast on the bottom rock along the face.

By so doing, there will result a more intimate mixture of salt with the clay cuttings and fine coal. Then, before the refuse is used, the salt should be repeated sprinkled salt. Indeed, the salt should be used without restraint if it is to prove effective. Again, when throwing the refuse into the waste it should be distributed in thin layers and not piled in heaps, in order to reduce the heating, by giving the air current a better opportunity to carry away the heat as it is generated. Also, the gob should never be piled against the coal rib, which should be kept clear and free. This will also prove an advantage by giving cleaner coal when removing the pillars.

Wilders, Tenn.

As has already been suggested, the best way to eliminate the trouble caused by the heating of gob, in the longwall-advancing method of mining, under the conditions described as "Mining Engineer," in Coal Age, May 25, p. 886, is to load out the clay cuttings mixed with fine coal and containing some sulphur. This should not be stored in the gob if trouble is to be avoided.

The suggestion of the use of salt, in an attempt to reduce the tendency of the gob to heat is, in my opinion, well worth trying. We are taught that coal absorbs anywhere from 11 to 3 times its volume of oxygen and the resulting oxidation of the hydrocarbons in the coal develops heat, which if allowed to proceed will eventually fire the coal left in the waste.

Excluding Air from the Gobes Practice in England

My method for preventing this action is to exclude the air from the gob, as far as that is practicable. The gob, in longwall working, should be stored as closely as possible and confined by well-built packwalls. The building of these packwalls, shutting in the gob and reducing the air, is of great importance in longwall advancing, under the conditions named. In some districts in England, the coal seams are subject to gob fires; and it is the custom, there, to build the packs, along the roads or "gates," as they are called, very solid so that they are impervious to air.

At times, these packwalls are made of blocks of clay 9x9x18 in., in size, sent down from the surface into the mine, and these are built up as walls on each side of the goaf. The result is that little air can reach the gob, except at the working face; and, at times, such a wall is built across the face when it becomes necessary to seal off the area because of a fire started in the gob.

WILLIAM DICKINSON.

Lochelly, W. Va.

Some Facts in Coal Mining

Higher accident rate among American miners--Employed in more dangerous work--Causes of waste of coal and materials.

In HIS address before the Clarksburg Mining Institute, a short while ago, R. M. Lambie, chief of the Department of Mines of West Virginia, made one or two statements to which it will be well to refer by way of explanation.

As reported in Coal Age, May 18, p. 825, Mr. Lambie is said to have remarked that "the percentage of accidents among employed Americans is greater among foreigners, claiming that in 1921 there was one fatality for every 342 American miners employed, while the rate among Hungarians in the mine was one for every 645 miners.

A statement is anything but flattering to the American miner, unless the reason for its truth is explained. The speaker went on to say that Negroes, Italians and Spaniards were among the most careful men in avoiding accidents.

A simple statement giving the ratio of fatalities for so many persons employed, it will be generally agreed, is
no criterion by which to judge miners of different nationalities, in respect to their relative freedom from accident.

It is well known that the foreign miner must perform the most dangerous work, in the mine, more often than falls to the lot of a foreign miner. From the very nature of the case, as a class, foreign miners are employed on the less hazardous kinds of work. Few of this class of miners are to be found drawing pillars, timbering high falls and doing other dangerous work.

In one mine where I was recently employed, of the 200 men engaged in loading the coal cut by machines, only 20, or 10 per cent, were Americans and most of these were so employed, temporarily, because of a lack of pillar work and other more hazardous undertakings.

In the same mine, from 75 to 80 per cent of the men employed in the pillar workings were American miners. It is clear from these conditions, and the fact that any ratio of fatalities to the number of men employed has no national significance and must be unfair to American miners to whose lot it falls to perform the more hazardous work.

Waste of Material Due to Large Areas to Be Inspected

In the course of his address, Mr. Lambie referred to the deplorable waste of both coal and material manifest in a large number of mines. Unquestionably, this is true, but the responsibility for this waste is attributed more to the fact that underground officials are given, generally, more territory to supervise than these men can look after efficiently.

Much of the waste can undoubtedly be avoided by giving each foreman and assistant foreman jurisdiction so that he will be able to visit each working place several times a day, instead of having to hurry around in order to visit every man once a day.

More frequent inspection of the working places would have the advantage that the foreman or assistant foreman would be able to see that his orders, given on a previous round, were obeyed and not put over till the next day with the chance that, in the meantime, accident would befall the man.

Large Amount of Coal Lost in Crushing of Pillars

The largest loss of coal occurs in places where the pillars are so badly crushed that work on them is too dangerous and must be abandoned. This condition often results from pillars being left standing for an indefinite period; or because of a haphazard system of working, in respect to driving the rooms and drawing back the pillars.

For example, where the line of pillar work is to parallel the entry, a sufficient number of rooms should be driven up together and, on reaching the limit or boundary, the pillars between them must then be drawn back together. On the other hand, if the rooms are turned in regular order, one after another, the work should be so arranged that they will reach the limit or boundary in regular order and the line of pillar work should then be kept straight and make an angle of about 45 deg. with the entry.

Any delay, either in driving the rooms forward, or pulling back the pillars in regular order, will throw an excessive load on these rooms or pillars that are delayed. This will cause the roof to cave in the rooms and pillars will be crushed. Proper attention to these matters will avoid a very large waste of coal in our mines.

Thomas Allen, Mt. Harris, Colo. Safety Instructor.

Inquiries Of General Interest

Estimating Calorific Value of Mine Feeder Gas

Heating Value of Any Combustible Depends on Its Composition—Heat of Combustion Calculated From Chemical Reaction—Composition of Feeder Gas Variable

Recently my thoughts have dwelt much on the great loss we permit in allowing large volumes of feeder gas to escape into the atmosphere, without making any attempt to utilize its heating value. I believe attention has been drawn to this matter, at different times, in the columns of *Coal Age* and other mining publications.

Lately, the subject has impressed itself strongly on my mind, in connection with the draining of gas from abandoned panels and other large areas that have been sealed off in mines. The gases generated in these areas have been drained to the surface through boreholes sunk for that purpose.

Now, why would it not pay to conduct this gas, by pipes, to the boilerhouse and burn it under the boilers. There may be practical reasons why a system of this kind cannot be used, but that the saving of the heating value of these waste gases would more than compensate for the expense of installing the necessary piping system.

If there are objections to introducing the gas under the boilers, could it not, at least, be conducted to the main flue or base of the stack where it would be ignited and create a motive column that would increase the draft in the stack? Such an arrangement would also greatly assist the drainage of gas from the sealed portions in the mine. If these gases were allowed to escape, they would be converted to carbon, and the chief combustible is the fixed carbon; but the heating value is greatly modified by the amount of volatile combustible matter contained in the coal. The best results are obtained by estimating the heating value of each constituent, in proportion to the percentage present, as determined by the ultimate analysis of the coal.

In the combustion of a gas, the heat of combustion is equal to the excess of the heat of formation of the several products of the combustion, over the heat of formation of the combustible itself. This can only be estimated by means of a thermochemical equation. For the purpose of such a calculation, reference must be had to a table giving the heats of formation of the different mine gases. Such a table is given on page 68, "Mine Gases and Ventilation"—Beard, Eighth Edition.

The entire subject of calculating the heating values of substances and gases is fully treated in those pages. For example, the molecular heat of formation of pure methane (CH₄) is given as 39,060 B.t.u. The products of combustion of this gas are carbon dioxide (CO₂) and water (H₂O) and their respective heats of formation, as given.
in the table, are 174,600 and 126,288 B.t.u. The reaction is shown by the chemical equation.

\[ 2 CO + O_2 \rightarrow 2 CO_2 \]

Their being but one molecule of carbon dioxide and two molecules of water formed in this reaction, as shown in the equation, the total heat of formation of the products of combustion, less the heat of formation of the methane; is 174,600 + 2(126,288) = 39,050 = 388,116 B.t.u., which is the total molecular heat developed when methane is burned. But, the molecular weight of methane being 16, the unit heat of combustion of this gas is 388,116 / 16 = 24,257 B.t.u., which is the theoretical amount obtained by calculation. The experimental heat of combustion of methane, however, is 23,513 B.t.u.

A must be remembered, however, that the composition of the gas is very variable. An analysis of natural gas, in the Pittsburgh district, is given as follows (percentage of volume):
- Methane, 67.0;
- Hydrogen, 22.0;
- Olefines, 6.0;
- Nitrogen, 3.0;
- Carbon monoxide, 0.6;
- Carbon dioxide, 0.6;
- Total volume, approximately, 100.

The heating value of the same gas, as determined by experiment, is given as 892.4 B.t.u. per cu.ft. of the gas at 64 deg. F. An interesting problem is to calculate the heating value of this gas, as a check on the experimental value just given.

**Examination Questions Answered**

**Alabama Mine Foremen's Examination, Birmingham, July 24-27, 1922**

*(Selected First-Class Questions)*

**Question:** If the ventilation of a mine is insufficient, how may it be increased without increasing the power?

**Answer:** Clean up all air-courses, removing every obstruction to the free passage of the air; enlarge all break-throughs and shorten the course of air travel, as far as that is practicable, avoiding all sharp turns in the airways. Wherever the velocity will permit of further dividing the air, this should be done in order to reduce the mine resistance.

**Question:** When coal is shot off the solid how should the holes be drilled and what kind of powder should be used?

**Answer:** The axis of the drillhole should make such an angle with the face of the coal and the charge be so located that the line of least resistance, extending from the charge to the face of the coal, will be less than the depth of the hole. The hole must be well tamped and only permissible powder should be used in charging.

**Question:** Where coal is undercut by machines, is it possible to have a wind or a blowout shot? If so, what would be the cause?

**Answer:** In machine mining, a wind or a blowout shot may result from the hole being drilled beyond the depth of the coal, and making it a shot on the solid. If an undue accumulation of fine cuttings is permitted at the working face, the fine coal and dust will be blown into the air by the force of the shot; and the explosion of the dust clouds thus formed will have, more or less, the same effect as a wind shot. In order to avoid such an occurrence, the fine cuttings of the machines must be removed before any shots are fired.

Much will depend on the soft friable nature of the coal and its inflammability.

**Question:** In a faulting heading where the sides are showing weight and the roof in the face bad, how would you timber to hold the side squeeze and make progress and safe work in the face? Give sketch of timbering.

**Answer:** As shown in the accompanying figure, heavy timber frames should be used, from 10 to 12 in., either round or square. The legs should be well notched into the collars and lagging used above the collar beams and behind the sideposts or legs.

**Question:** How would you timber a room that had bad roof and a soft fireclay bottom? How would you keep your roadway safe?

**Answer:** Under these conditions a systematic form of timbering should be adopted in the room, the posts being set in rows parallel to the face and three or four feet apart, center to center. The posts should be set on footboards or stringers to avoid their sinking into the soft bottom, and long cap-pieces, booms or stringers should be used above the posts to support the frail roof.

On the roadways, the timber frames should be set from 2 to 4 ft. apart, center to center, depending on the depth of cover, and lagging should be used above the collars to prevent the fall of small pieces of slate that would block the roads. The legs of the timber frames should be set on stringers, on each side of the track.

**Question:** If you were firing fire shots in the face of a room, with one shot depending on the other, what precaution would you use to prevent a windy shot?

**Answer:** If five shots are to be fired consecutively, one depending on the other, the only safe method to pursue is to fire each shot separately and in order, starting with the first free shot. Dependent shots must not be fired with fuse, on any condition; neither should they be fired electrically, causing practically the simultaneous explosion of all the shots. In firing the shots separately, as stated, time should be given for the smoke and gases produced by each shot to be carried away, before a succeeding shot is fired; otherwise, a local explosion of these gases and dust may result.

**Question:** In timbering pitch seams, would you underset your props or place them at right angles with the top and bottom? Explain fully with sketch.

**Answer:** In setting post timbers in a pitching seam, the posts should be inclined slightly up the pitch from a normal line. By so doing any slip or movement of the roof down the pitch will tend to tighten the posts. On the left of the accompanying figure, is shown a post set normal in the seam, or in line with ac drawn perpendicular to the strata. Again on the right of the figure is shown a post set inclined up the pitch from the normal line ac, or bd. It is quite evident that any slip or movement of the roof down the pitch will loosen the post on the left, while the same movement would tighten the post on the right of the figure.

**Question:** How and in what parts of a mine is coal dust produced?

**Answer:** In a machine mine, the greatest portion of the dust is produced in cutting the coal. The same is true, but to a less extent, in pick mines. Much dust is produced, in all mines, by coal falling off the cars in transit and being crushed to fine coal and dust by travel on the roads. In mines where blasting is performed by black powder, much dust is produced by the miners using excessive charges of powder. Overcharging the holes is not as common in the use of permissible powder. Generally speaking, the largest quantity of dust is produced at the working face.
Sentiment for Control of Coal Prices Bolstered by Unsettled Conditions on Railroads

BY PAUL WOOTON
Washington Correspondent of Coal Age

WASHINGTON, Aug. 29—The hope that Mr. Ford will not find it necessary to close his plants on account of coal prices was expressed today by Secretary Hoover. He called attention to the fact that Mr. Ford has signified his willingness to pay $4.50 for coal. Mr. Hoover expressed the opinion that the price would not be greatly in excess of that prevailing in the coal centers of the State. The government is said to be in favor of keeping the situation as it is.

That the administration has at no time favored putting the government in the coal business was indicated when Secretary Hoover declared emphatically today that the Cabinet never has seriously discussed the seizure of either anthracite or bituminous mines. Mr. Hoover stated that no less than 25,000 cars loaded with non-union coal are awaiting movement. None of the coal mined under the drastic priority requiring one-half of all non-union coal sent to the Lakes has reached the lower Lake ports as yet, he declared.

Principal emphasis is being placed by those opposed to legislation looking to the control of coal prices and distribution on the argument that such control no longer is needed. Many lawmakers are of the opinion that the situation is such that it can take care of itself. Those who favor the legislation might be willing to accept the argument that they will require that railroads 'move' coal at a high rate of efficiency. With the uncertainty as to railroad operation, however, they contend that this control must be established.

They point out that the emergency will not have passed until coal starts moving to the Northwest at the rate of one million tons a week; until prices show a definite downward tendency; and until the anthracite mines are in operation and careful attention has been given the problem of substitution for that portion of the anthracite production which cannot be made up.

Theoretically at least all stocks of coal now have been wiped out. Whatever stocks there may be in fact are known to be negligible and too low to enter the winter with safety. The market cannot be expected to tranquilize until a considerable amount of coal is to be put in storage. How soon such a point can be reached depends entirely on the service which the railroads can give. The American Railroad Association makes the ambitious estimate that the carriers can transport 9,000,000 tons weekly. At the National Coal Association it is thought that 8,000,000 tons is the maximum. Disinterested traffic men, however, point out that if coal shipments reach 5,000,000 tons of bituminous, in addition to the anthracite that is expected to be moving, and at the same time the usual volume of other freight is handled, the railroads will have performed an extraordinary feat even if there were no strike and if the equipment all was in good condition.

There is an increasing feeling among officials in Washington, however, that the railroad management are not being entirely frank with their employers. They seem to think that the situation with regard to railroad equipment is much worse than the railroads are willing to confess, to say nothing of the question of their ability to attain a high degree of efficiency with the morale of its employees in its present state. The attitude of the railroads is negative in contrast to that of the coal operators when they declared the strike would be terminated by July 1.

Within a week after the Cleveland conference 250,000 tons of production had signed on the dotted line. In no case has anyone of the district settlements departed from the Cleveland contract, unless the action of one district in central Pennsylvania in refusing attendance at the Oct. 3 conference be termed a reservation. Western Pennsylvania, part of northern West Virginia and the Chesapeake & Ohio tonnage in Kanawha are still holding out as this is written, but it is believed here that their effort to get the men back at the 1920 rate, but without signing the contract, will be futile. It seems quite certain that no contract will be signed in western Pennsylvania that does not include the check-off. The operators, officials here believe, have saved nothing out of the wreck, except that they have not gone through with the old-time Central Competitive Field agreement.

In the meantime the United Mine Workers have threatened to call a strike in the New River district with the idea of forcing a contract there. This action is regarded as significant as foreshadowing a series of strikes in the districts formerly organized but lost to the union in 1921. Even in the Central Competitive Field probabilities point to sporadic local troubles, for in many places the men are reported to be returning to work in an arbitrary and arrogant frame of mind.

Fair Price for Pennsylvania Bituminous Fixed; Name Regional Fuel Committees

The Pennsylvania Fuel Commission has established a fair price for bituminous coal but has not as yet attempted to fix a fair price for anthracite. At its meeting on Aug. 22 it fixed bituminous prices according to the type of veins in the coal region, $4.50 a ton, $250 per thousand tons. The price of coal in District No. 1, including the thin-vein mines, and $3.75 a ton, f.o.b., for coal at the mines in District No. 2, containing the thick-vein mines. The districts are those designated in 1918 by the Federal Fuel Administration. A commission not exceeding 25c. a ton was also fixed by the commission.

The commission of itself, has not the power to enforce the rules, but through co-operation with the Interstate Commerce Commission and the Public Service Commission of Pennsylvania holds it can make them effective. Commissioner Clyde Aitchison of the Interstate Commerce Commission will soon confer with the Public Service Commission relative to naming a joint representative of the two commissions as a member of each of the six regional fuel committees represented by the State Fuel Commission. These representatives will be the agents of the Fuel Commission throughout the bituminous districts.

It was originally intended by the State Fuel Commission to name seven regional fuel committees, but the number was reduced to six when the personnel was announced. These committees, to which will be added the joint representative of the Interstate Commerce Commission and the State Public Service Commission, are:

- Western Pennsylvania—Thomas Fisher, Philadelphia; T. W. Guthrie, Pittsburgh, and Thomas Lewis, Johnstown.
- Northwest Pennsylvania—Edward Speidel and Fred Stover (besides S. B. Siller, Samuel Sillars, R. M. Dickson, P. F. Riehle, T. F. Diefenderfer, F. R. Callan, and J. C. Forsyth, Clearfield.
Anthracite Deadlock Blocks Peace in Coal Fields

Although the government has continued to exert pressure to bring the two sides to an agreement, the anthracite operators and miners refuse to recede from their respective positions. Secretary of Labor Davis held a two-hour conference in Philadelphia on Aug. 20 with John L. Lewis and then returned to Washington, where it is understood that he will make a report to President Harding concerning the situation. Anthracite remains the stumbling block to more or less complete peace in the coal fields. Every effort so far has been made to break the deadlock in the negotiations between the operators and miners. The union on the one hand is holding out for a contract at wages and with working conditions that extend until April 1, 1924. The men ask a continuation of the high wages for two winters, as compared with their victory in the soft-coal fields that gave it to them for one—that is, until next April.

The operators have agreed to extend the expired contract until April 1 next, but refuse to commit themselves to paying the maximum wage beyond that date. They say they are willing to make a contract for any number of years covering working conditions, but ask that the wages after April 1 next be subject to arbitration, either by a board appointed by the President or some other outside party and the award to be either binding or to be merely recommendatory.

The miners refuse to agree to the interjection of any outside party or influence in the determination of their wages, either now or at any future date. It is not the wages that are to be paid this winter that is holding up the resumption of hard-coal mining but the matter of how the next scale is to be determined and when.

Many and powerful influences on the outside are being brought to bear on both parties to reach a settlement. The President has used his persuasive powers and Senators and others have been in conference with John Lewis to no avail. The pressure from public interests over the hard-coal-burning East is daily growing stronger. Congress is being flooded with protests and is being urged to do something. With the soft-coal strike largely out of the public mind, attention is rapidly being focused on the deadlock in anthracite.

Samuel D. Warren, spokesman for the anthracite operators, made the following statement Aug. 23, reviewing the steps that have been taken in conferences between the operators and representatives of the anthracite miners:

"Our conferences with the representatives of the anthracite miners, which began on Aug. 17, were brought about in response to the request of the President of the United States, communicated to us by Senator Pepper. The hope was expressed by the President that there might now be found some 'fair basis' on which the suspension of operations in the anthracite fields might be terminated.

"In the proposals we have made to the miners' representatives in the course of the conference we have had in mind not merely the bringing about of a resumption of production, although we think that is most important. We have endeavored to accomplish this, and at the same time to establish a basis looking toward permanent peace and continuous working in the future.

"It was our belief that this could be best secured by a long-term contract with a provision for periodic revision of wages by arbitration, which should be binding upon both parties. We were entirely willing to accept as a board of arbitration a commission or tribunal to be appointed by the President.

"The covering being refused by the miners, we proposed to utilize the existing organization of the Conciliation Board, which in the anthracite field has been adjusting disputes between operators and miners satisfactorily for the past twenty years. In case the Conciliation Board, which is composed of equal numbers of operators and miners, should not be able to agree, we proposed that the presiding Judge of the United States District Court of Appeals for the Third Judicial District should appoint three umpires whose decision should be final and binding upon both parties.

"Unfortunately and, in our opinion, unwisely, the representatives of the miners rejected this proposal.

"In a further effort to meet their opposition to binding arbitration, however impartial, we made the following proposal:

"(a) On Jan. 3, 1923, the Anthracite Board of Conciliation shall meet in conference and determine wages and working conditions in the anthracite field effective for a period of one year beginning April 1, 1923. On Jan. 3, 1924, the board shall meet in like manner to determine wages and working conditions for a period of two years beginning April 1, 1924.

"(b) In case there has been no agreement prior to Feb. 15 in the years 1923 and 1924, the Presiding Judge of the United States Circuit Court of Appeals for the Third Judicial District shall appoint three disinterested citizens of outstanding character and ability, who shall sit with the board to hear the argument and make findings with respect to the matters in dispute. These findings shall be rendered on or before March 15, shall be recommendatory in character, and shall be subject to acceptance or rejection by either party within ten days thereafter.

"This proposal, representing the extreme of concession by the operators, was met by the miners' spokesmen on Aug. 22. We have offered to consider any practical modification of these plans which would not sacrifice the ends sought. The miners' spokesmen declined to make any such suggestions. They can speak for themselves as to their attitude. To us their plan seems to be indefinitely to retain war-time wages regardless of any other considerations.

"It will be noted that the proposal embodies the use of the Conciliation Board instituted in the anthracite field by the Roosevelt Commission in 1903. The board's personnel includes the three district presidents of the miners' organization in the anthracite field in conjunction with three operators. Matters in dispute which the board finds itself unable to adjust are referred to an umpire appointed by the Presiding Judge of the Circuit Court.

"Our suggestion only embodied by way of change, therefore, the appointment of three umpires instead of one, in order that a matter so important as a general contract might receive that impartial consideration necessary to a proper acceptance on the part of those interested, including the spokesmen of anthracite operators.

"While we realize that the proposal now made may be considered defective in that the findings of the umpires are not binding, it is nevertheless hoped and believed that the findings arrived at under such circumstances would afford the basis for a peaceful and orderly settlement and tend to avoid suspensions of mining hereafter.

"The necessity for some method by which recurring periods of idleness in our industry may be avoided, in so far as possible, is conceded by all. The mutual responsibilities of the operators and the miners demanded the most serious consideration and prompt acceptance of this proposal. These responsibilities require that the production of anthracite shall be resumed at the earliest possible date, and that we shall at the same time remove the menace of another suspension next year.

"We are hopeful, in spite of the rejection of our last proposal, that wiser second thought will bring about its acceptance. Continued opposition on the part of the miners to any plan which seeks to avoid another suspension carries with it a heavy responsibility. It means that the officials of the United Mine Workers must assume responsibility for the suffering on the part of the public and the miners themselves that may result from further delay in resumption of production. It means that rather than agree even to an advisory finding as to future wages the miners' representatives are willing to deprive the people of a large section of the United States of essential fuel. We cannot believe that this stand will be maintained. If it is, there can be no question as to where the responsibility lies for the consequences that may follow."
Central Pennsylvania Signs Agreement and Goes to Work; May Be Only a Truce

Central Pennsylvania—that is, the strictly union part of that field—has reached an agreement with the United Mine Workers and gone to work. It took three days of fighting, arguing, and the usual scale-meeting stuff to put it over, but in the larger coal fields and among both sides and the miners were ordered back to work. Prior to this there were several large companies, including the Pennsylvania Coal & Coke Corporation and the Clearfield Bituminous Coal Corporation, that had signed with the union at Cleveland as individuals and have been at work for more than a week.

The operators in the field are going. There are those operators who have both non-union and union mines. Several large companies are in this class, part of them with both kinds in Pennsylvania and some with union mines in other states or fields and non-union mines in this field. The union has adopted a policy of offering such operators the same contract for all their mines, thus forcing them to unionize their open-shop mines or leave the union mines idle.

The agreement is between representatives of the United Mine Workers of District No. 2, the Association of Bituminous Coal Operators of Central Pennsylvania and the Central Coal Association. In accordance with a plan adopted early in the week, a sub-scale committee was appointed to take up all questions, on the part of the operators, that committee was composed of Charles O'Neill, J. Webb Shillingford, J. R. Caseley, C. B. Maxwell, Rembrandt Peale and J. William Wetter. The personnel of the United Mine Workers was President John Brophy, Vice-President James Mark, Secretary Richard Gilbert, Harry Crago, Stanley Hudzinski, Herman Carletti and Rene Godlowski.

Agreements and counter agreements were presented. The sub-committee would meet jointly and then separately and vote down proposals. The whole question finally settled down to a reduction of the Cleveland agreement and the check-off system, which was vigorously attacked by the operators and just as vigorously upheld by the U.M.W.

The end came after a series of sessions lasting for six hours. The final agreement, accepted and signed by both sides, was presented by Charles O'Neill, secretary of the Central Coal Association. The agreement follows:

It is hereby agreed and by between the officers of District No. 2, United Mine Workers of America, the Association of Bituminous Coal Operators of Central Pennsylvania and the Central Coal Association that the working agreement terminating March 31, 1922, is hereby renewed and extended to March 31, 1923, and the agreement as amended and except that part of Rule 25 reading as follows:

"It is hereby agreed and by the officers of District No. 2, United Mine Workers of America, the Association of Bituminous Coal Operators of Central Pennsylvania and the Central Coal Association that the working agreement terminating March 31, 1922, is hereby renewed and extended to March 31, 1923, but that the provisions of the agreement as amended and except that part of Rule 25 reading as follows:"

The scale agreement not having been signed or renewed before March 31, 1922, then that in that event the U.M.W. of A. of District No. 2 will continue all men in mines regularly at work under the wages and conditions of this agreement for the additional thirty days after the date on which the scale committees of the operators and miners hold their first meeting for the purpose of negotiating a scale to succeed this present scale. On reaching an agreement to succeed this present contract the wages paid by the operators to the miners dating from April 1, 1922.

The strike in District 18, which is composed of eastern British Columbia and Alberta, has been settled and the miners were ordered for work Monday, Aug. 28. The terms of settlement practically mean that the Cleveland agreement has been accepted and that the men go back without a reduction in wages.

Miners and operators of western Canada have signed an agreement by which the miners will return to work at 15 per cent wage reduction from 1921 rates, it was announced by the Department of Labor Aug. 25. The operators had asked for a 20 per cent reduction.

Wage Increase for Alabama Miners

Wages of coal miners in the Alabama field will be increased 20 per cent on Sept. 1, according to an announcement from Birmingham Aug. 26. About 26,000 men will get the increase.
Coal-Commission Legislation, If Passed, Likely to Be Combination of Winslow and Borah Bills

Unless displaced by emergency legislation, it is believed that a bill to create the United States Coal Commission with authority to investigate the coal industry and report conclusions and recommendations to Congress and to the President will be enacted into law before another week has passed.

The administration has not indicated a preference between the Winslow bill, passed by the House, and the Borah bill, pending in the Senate. It is said that the President would be satisfied with either. It is probable that in its final shape the law will be a combination of the two bills, put together in conference.

The principal points of difference are that the Winslow bill provides a commission of not more than nine members, while the Borah bill provides for five; the Winslow bill carries an appropriation of $300,000 and the Borah bill, $100,000; the Borah bill goes further than the Winslow bill and instructs the proposed commission to report recommendations on standardization of wages and working conditions, standardization of work to be done for a living wage, standardization of mine efficiency looking to closing of those mines having low efficiency and high productive costs and the advisability or wisdom of nationalization of the mines together with advisability of governmental control and regulation.

The Winslow bill, favorably reported to the House the day after its introduction by Representative Winslow of Massachusetts, chairman of the Committee on Interstate and Foreign Commerce, which considered the measure, was launched with a stormy future due to the rules committee getting out of hand, but through quick work of administration and Representative Mondell, the Borah committee and the committee on rules the bill was passed the same day by the House. The vote was 219 to 55, with four Republicans opposing it and 24 Democrats voting for it.

The bill was amended before passage on motion of Representative Bankhead, Democrat, of Alabama, to reduce the salaries of the commissioners from $10,000 to $7,500 annually and on motion of Representative Moore, Democrat, of Virginia, to reduce the appropriation for the commission from $500,000 to $300,000. Otherwise efforts to amend were rejected, excepting a perfecting amendment to make the intent clear.

In order to report a special rule setting the bill for consideration, the rules committee was called Wednesday morning. This committee, instead of voting a special rule for the Winslow bill, voted 5 to 3 to report a special rule setting the bill in the committee as a special order of business. The Byrd bill was reported favorably by the labor committee some weeks ago, after extensive hearings. The administration objected to some of its features. Floor Leader Mondell, of the Republicans, had announced that the Winslow bill would be called for special order before he was informed by Minority Leader Garrett of the action of the rules committee. Representative Bland, who had the amendment of the majority leader make the point of no quorum and while the roll of the House was being called another meeting of the rules committee was summoned and a larger attendance was drummed up. At this meeting the earlier action was rescinded and a special rule was ordered out, setting the Winslow bill for consideration. Meanwhile, however, other administration leaders had succeeded in getting the Winslow bill reported in regular order, so it was under consideration when the special rule was brought out.

Representative Bland, Republican, of Indiana, made three separate attempts to substitute his bill for the Winslow bill, without success. He objected to the new bill mainly, he declared, because it had no "teeth" while the labor committee had given careful consideration for weeks to his measure. In the final vote Representative Bland voted for the Winslow bill.

Representative Denison, Republican, of Illinois, declared that the Winslow bill was not wholly satisfactory and made efforts to reduce the number of commissioners from nine to five, but without success.

On the floor before the stamp of approval of President Harding, declared Representative Winslow, having been submitted to the President less than two hours before it was introduced. Minority Leader Garrett opposed the bill, declaring it to be "useless."

While the Winslow bill was being passed by the House the Senate Committee on Education and Labor was busily considering the Borah fact-finding bill, and reported it favorably to the Senate. With various modifying amendments. The rewritten Borah bill provided for a commission of five members, with salaries of $7,500 each; the commission to exist a year and to report first within five months. An appropriation of $100,000 was provided. The Borah bill followed the same line of instructions as to the duties of the commission as contained in the Winslow bill, but went further in instructing the commission to report recommendations relative to standardization of mines upon productive capacity; standardizing cost of living for mine workers; standardizing the amount of work a man shall do for a reasonable wage, this latter having been put into the bill by Senator duPont; standardizing a basis of arriving at overhead cost of production and distribution of coal to the consumer; advisability or wisdom of nationalizing the coal industry, and feasibility or necessity of governmental regulation and control.

When the Winslow bill came from the House to the Senate it was referred to the Committee on Education and Labor, of which Senator Borah is chairman, which promptly struck out all after the enacting clause and substituted the Borah bill, with a favorable report.

On the floor the Borah bill was amended on motion of Senator Reed, Democrat, of Missouri, to provide that not only members of Congress be excluded from membership on the commission but that all federal government officials be debarred. This would exclude any members of the Cabinet.

Lively debate on the bill took place in the Senate. No Senator declared himself directly in opposition to the fact-finding commission bill, but many argued that additional legislation, to meet the immediate needs of the situation, was necessary.

Senator Sutherland, of West Virginia, assailed that part of the Borah bill directing the proposed commission to report on the advisability of nationalization of the coal mines. Senator Edge, of New Jersey, also criticized this same provision, while Senator Stanley, of Kentucky, attacked it caustically. Senator Borah declared that information on this question should be in possession of Congress and that no one should object to having information on any subject.

Senator Reed, of Missouri; Shields, of Tennessee; and Fletcher, of Florida, declared the fact-finding commission would "get nowhere" with the problem and while they did not directly oppose passage of the bill they characterized it as useless legislation and not what should be brought forward in the emergency.

Guard Remains in Pennsylvania Fields

No change in the location of the Pennsylvania National Guard units now in the bituminous field are contemplated by Governor William C. Sprout. It is held that the resumption of work, urged as a reason by union men for the withdrawal of troops, is the best reason why the troops should be retained at their present stations.

A detail of state police was sent last week to Valley Camp Coal Co., where the captain of the Valley Camp Coal Co. started operation recently under the Cleveland agreement. In a poll of the employees, according to word received by the state police, 180 voted to accept the agreement and return to work and 160 voted against resuming work.
Illinois at One-Third Full Speed in Four Days; Surrender Not Complete, Some Feel

On Saturday, Aug. 26, four days after the signing of the Illinois mine peace—a peace based on the Lewis terms as laid down by President Lewis' commission—87,000 miners in the state had attained only about one-third their normal rate of production.

The first day or two of work in the mines was devoted to getting tools and machinery down into the ground and cleaning up and inspecting. Actual mining of coal did not get under way until Tuesday. On Saturday the best report from any mine in the state showed that on the previous day—the last full day of the week—a 60-car mine had loaded and shipped 42 cars. Other reports ranged down to two or three cars and some mines failed to make a turn-in. It was estimated by experts that the output of the state was close to 30 per cent of normal. Railroads were able to supply cars in plenty at most yards, but the inevitable shortage was said to be hampering a few mines near St. Louis.

A good deal of opinion is expressed as to the strength of the tactical position which the Illinois operators assumed when they framed up their peace with Farrington in Chicago, Aug. 22. It was authoritative stated that the omission of clauses binding Illinois to take part in the Lewis plan for making the new wages practically amounts to a blank in the Cleveland plan. It is said to put that state in a better position to assist in a possible federal investigation of the coal industry and that if enough union and non-union tonnage throughout the land is in a similar position, then an outside authority could more readily arrive at constructive conclusions that might be at variance with the autocratic ideas of John L. Lewis, president of the miners' union. It is calculated that about 320,000,000 tons of production might take the Illinois position, making the estimates thus: Illinois, 90,000,000; Pennsylvania, 50,000,000; West Virginia, 90,000,000; Kentucky, 31,000,000; Alabama, 19,000,000; Colorado, 12,000,000; Virginia, 10,000,000; Kansas, 7,500,000; Tennessee, 6,500,000; Missouri, 5,500,000; southern Ohio, 10,000,000. If this formidable total of $2,500,000,000 were to line up in full and free co-operation with such a coal commission as may be created under the Winslow bill, that commission might arrive at the facts about coal in such a way as seriously to hamper the Lewis program of wage making next winter and spring.

But there is a variety of opinion among Illinois operators as to the defensive value of their freedom from obligation to meet Lewis officers in Cleveland. Some say that they were glad to see an opportunity to make peace without having the entire Lewis program shoved down their throats and that the form of Illinois peace at least gives them a little time to spar with the union before the next clinch but that they suppose when Oct. 2 comes around they will see that nothing better remains for them to do than attend the Lewis meeting and write to the men in the new game as a matter of plain self-defense. Even W. K. Kavanagh, president of the 5th and 9th District Operators' Association, said after the Illinois agreement had been signed that he supposed Illinois would take part in the Lewis conferences.

The form which was signed at Chicago follows:

It is hereby agreed by and between the officers of District No. 12, United Mine Workers of America, and John Lewis, president, and the operators of the mines of Illinois, that the working agreement which terminated March 31, 1922, is hereby renewed and extended to March 31, 1923, in all of its provisions as to wages and working conditions, excepting that the 32d clause is to be stricken therefrom in accordance with the policy adopted by the policy committee of the United Mine Workers of America, Aug. 15, 1922.

The 32d section, referred to, is as follows: "The joint executive boards are authorized and instructed to arrange for negotiations for the formation of a new contract to begin at a date not later than the expiration of this contract."

Indian Signs Cleveland Fact, but Refuses To "Approve" It in Peace Document

Most of the 30,000 striking union coal miners in Indiana are back at work again under the old terms and conditions, just as the men of Illinois are. The Indiana operators signed with their miners in Terre Haute on the basis laid down at Cleveland by President Lewis of the international union but they did refuse one demand of their men. The peace document as first spread on the table by John Hessler, president of District 11, called for the operators not only to "accept" the plans of the Lewis and Cleveland plan. The operators shied away from the dotted line until the offensive word "approve" had been scratched.

In its final form, the Indiana peace was made thus:

"That the terms, provisions and conditions of the Terre Haute agreement, which was in effect in District No. 11, United Mine Workers of America, on March, 1922, be hereby extended to April 1, 1923, and that the miners of the supplementary agreement shall be opened immediately upon the execution of this supplementary agreement. The signers of this supplementary agreement and those whom they represent accept the policy adopted by the joint conference of miners and operators held in Cleveland, Ohio, Aug. 15, 1922."

This agreement was signed by the Indiana Bituminous Coal Operators' Association and the Indiana Coal Producers' Association, which is the strip-mine operators' group.

Probe of Herrin Massacre Under Way

A grand jury in "bloody" Williamson County, Illinois, convened Aug. 28 to begin action against those responsible for the Herrin massacre, June 22, in which nineteen non-union men were killed and thirty wounded after they had surrendered to an attacking mob at a strip mine. It is a special sitting called by Judge Dewitt T. Hartwell, of the Williamson County Circuit Court, at the instance of Attorney General Edward Brundage. The session is in Marion, 10 miles from the scene of the butchery.

The court made it plain that there are two sets of killings to be investigated. The first is the shooting of three union miners by the strike guards at the Southern Illinois Coal Co. plant on June 21. The Cononer's jury put the blame for this on the coal company officials.

Receipts of All Coal by Lake in the Northwest

<table>
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<tr>
<th>Locality</th>
<th>1917 to 1919</th>
<th>1920</th>
<th>1921</th>
<th>1922 to August</th>
<th>Per Cent of Amount Required</th>
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<td></td>
<td>Inclusive</td>
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<tr>
<td></td>
<td>Average</td>
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<td>26,130,249</td>
<td>22,804,519</td>
<td>21,677,515</td>
<td>2,866,742*</td>
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*Total passing the "Soo" (west bound) and therefore covers the Duluth district and shipments to Canadian ports.

1 Figures marked * not included in totals.
2 Including car ferries.
3 Including ore ferries.
4 Incomplete, port at City of Detroit not reported since 1920.
5 About 11 per cent of annual requirements for the Northwestern district.
Price-Control Bills Favorably Reported in Both Houses; Hoover Urges Enactment of Winslow Measure

Regulation of the sale price of coal through denial of car supply to those who charge unreasonable profits and control of distribution of fuel are provided in similar bills introduced in Congress last week by Senator Cummins and Representative Winslow, chairmen of the interstate commerce committees of the two houses. It is said that the bills in general have the approval of the administration and that they were drafted with the co-operation of the Department of Justice and the Department of Commerce.

During consideration of the Cummins bill by the Senate Interstate Commerce Committee the question was raised as to whether the bill would be effective in controlling the retail price, and suggestions were made for an additional section to cover this point more specifically. Demand also was made that before legislation of such drastic nature be enacted, or recommended, parties at interest be called to give their views.

Both bills would amend the Transportation Act to enlarge the powers of the Interstate Commerce Commission to include authority to issue orders for priority or embrargoes for or against any carrier or regroup or corporation or person, to assure equitable distribution of fuel and to prevent the purchase or sale of coal by any person, corporation, partnership or association at "prices unjustly or unreasonably high." There is to be created a Federal department of Fuel Distribution, with a Federal Fuel Distributor to be appointed by the President, who may appoint assistants and who shall determine whether and where shortages of fuel exist, fields of production and markets, nature and location of consumers, prices normally charged and whether current prices, with fair profits, are just and reasonable, and make recommendations to the Interstate Commerce Commission.

Under the Cummins bill the act would expire whenever the President declares by proclamation that the emergency has ceased. Under the Winslow bill, the act would become suspended by Presidential proclamation at the end of the present emergency but remain on the statute books so that it could be invoked again should a similar emergency arise in the future.

Both bills carry an appropriation of $250,000. The Winslow bill would make not to exceed $50,000 of this sum available for payment of expenses incurred by governmental agencies and federal or state agencies in connection with the act.

Without a record vote, the Senate Interstate Commerce Committee Monday ordered a favorable report on the Cummins bill, after it had been decided definitely not to hold public hearings on the measure. The bill was amended to provide that it shall expire at the end of a year and to make specific the fact that its provisions apply only to interstate commerce.

A favorable report on the Winslow bill was ordered by the House Interstate Commerce Committee Monday evening, with slight amendments in phraseology, and after four witnesses had been heard by the committee Republican Leader Mondell announced that he expected the bill to pass with two days' debate.

Appearing before the House committee, Secretary of Commerce Hoover urged enactment of the bill into law. He declared that the powers of the federal authorities are not sufficient to meet the situation despite the improvement by reopening of many bituminous mines. He declared that from 90 days to six months would be required to relieve the existing "coal famine." While the majority of the operators have held prices within reason by voluntary agreement, the Commerce Secretary declared that some operators are defying the government and force fair prices upon those who would profit from the situation.

J. D. A. Morrow, vice-president of the National Coal Association, informed the committee that he believed most of the operators would oppose the bill. He did not believe it would accomplish any good purpose, he said, but would hamper operations by governmental interference with legitimate channels of trade.

C. B. Aitchison, member of the Interstate Commerce Commission, urged adoption of the bill as he said the commission needs added authority to accomplish what is now expected of it.

Edgar Wallace, a representative of the American Federation of Labor, told the committee that generally the bill was satisfactory to labor, but that price-fixing in principle is regarded as dangerous.

A bill giving the President authority to take over and operate mines during any emergency was introduced in the Senate on Aug. 25 by Senator Edge, of New Jersey. Meanwhile, other bills, according to the ideas of individual members, are making their appearance. Representative Dickinson, of Iowa, has introduced a bill to create a coal commission of four members to fix wages and working conditions in the industry in the event of a disagreement and with broad powers to regulate prices on the basis of cost of production plus not more than 10 per cent profit. This bill was referred to the Senate Commerce Committee of the House, where it is expected to die.

Representative Brennan, of Michigan, has introduced a joint recommendation authorizing the Interstate Commerce Commission, Department of Commerce and other agencies to take steps to conserve coal by denying fuel to non-essential industries, by closing electric signs, and other means.

Ends Federal Control by Federal Agencies

"Because of the general resumption of bituminous mining, no more coal will be directed by the Federal Fuel Distributor to the different states—except the Upper Lakes—under emergency orders under class No. 1, and no more shippers holding priority No. 1 orders placed through the Federal fuel distribution agencies are expected to complete shipments on such orders unless by mutual agreement between shippers and the consignee. The issuance of emergency priority orders of class No. 1 for railroads will continue until such time as the Interstate Commerce Commission shall have provided other plans for caring for the railroad requirements. A new plan is being worked out under the Interstate Commerce Commission to secure an assurance of reasonable lake movement up to the capacity of lake transport. The agreement as to price restraint with the non-union operators expires today with the resumption of the union bituminous mines. The various states and the Federal Fuel Distributor now have the authority to fix prices of coal for their jurisdiction. Whether the same result is achieved is earnestly hoped by the operators and dealers will conform.

"The legislation before Congress can only control the price of coal moving over state lines—that is, in interstate commerce. The price of coal produced and consumed in a state, together with the charges which wholesalers and retailers within the state may make, the latter including even interstate coal, should be controlled by the state authorities. Therefore, there can be no real control of profiteering unless the state authorities act."
Drastic Fuel Bill Presented in New York Legislature and Quickly Passed

Under the urgent insistence of Governor Miller that there exist an emergency directly affecting the public health and welfare requiring governmental regulation and control of the supply of fuel during such emergency and its equitable distribution to consumers at reasonable prices, the New York State Legislature on Aug. 28 introduced a measure intended to solve the fuel problem in New York State. The measure, known as the Hewitt-Jesse bill, was passed without change on Aug. 29.

The measure creates the office of state fuel administrator "to continue until by proclamation of the Governor the emergency requiring its creation is declared no longer to exist." It provides for general supervision over the receipt, transportation, distribution and allotment of fuel to various sections of the state; price fixing of fuel by the administrator; seizure and sale of surplus stock of fuel held contracted for or arranged for in excess of the average requirements of any individual, manufacturer, wholesaler or dealer, with a provision for the immediate payment therefore after its sale to the person from whom such coal is taken; the creation of a revolving fund for the purchase and sale of fuel by the state administration, if "the Governor by a certificate filed in the office of the Secretary of State shall declare that the emergency be so acute that the exercise of such powers is required."

For the purpose of creating the revolving fund and paying the expenses of the administrator the sum of ten million dollars is appropriated.

Other features of the bill include the right of municipalities to curtail the use of gas and electric signs, the right of the administrator to prevent the waste of fuel, the right of the administrator to adopt rules and issue orders with the same force and effect as law, the temporary suspension of that provision of law which calls for the purchase by municipalities of fuel after advertising for bids, etc.

A measure was also introduced authorizing the city of New York to increase from two to five million dollars the amount of money the city may borrow in one year on certificates of indebtedness and allowing such city to engage in the business of buying and selling fuel.

Southwest Also Settles on Cleveland Basis

The mines of the Oklahoma and Arkansas fields are resuming work following a settlement reached at Kansas City, Aug. 16, based on the Cleveland agreements. The wage scale and working conditions of 1920-22 are extended to April, 1923. The operators insisted upon writing into the agreement a clause aimed to guarantee that all miners who have been working in certain of the mines shall not be discriminated against. It will be several days before production reaches full speed in the field.

F. S. Peabody, Chicago Operator, Dead

Francis S. Peabody, chairman of the board of the Peabody Coal Co., and long rated as one of the ablest men and most striking figures in the American coal industry, died suddenly of heart disease Sunday, Aug. 27, while on a fox hunt on his estate at Hinsdale, Ill. He was 63 years old.

Mr. Peabody, who was born in Chicago, educated at Phillips Academy and Yale ('81), first was a bank messenger boy in Chicago and then, in 1883, a partner in the small retail coal firm of Peabody, Daniels & Co. This concern later became the Peabody Coal Co., which developed swiftly into the largest retail coal business in Chicago, out of which the present Consumers' company evolved. Branching out into coal mining, the company spread its network of mines until today it owns or operates for others a string of forty-six soft-coal mines from the Sheridan field of Wyoming to the newly controlled Erie mines of Pennsylvania. The stronghold of the company is in the central and southern fields of Illinois. The remarkable success of the Peabody Coal Co. and its subsidiaries is directly to be credited to the genius and resourcefulness of Mr. Peabody and of the group of men with which he surrounded himself. His only son, Stuyvesant, is president of the company.

Mr. Peabody was long active in Democratic Party politics nationally, once having been boomed for U. S. Senator from Illinois, and was chosen by President Wilson to direct the financial end of the party's 1916 campaign in the Western states. In 1917 he served in Washington as chairman of the Coal Production Committee of the Council of National Defense. He was decorated by the King of Italy for his war work, which included strong support of the Salvation Army. Of recent years Mr. Peabody had been withdrawing by degrees from the more vigorous business activities and had been spending all the time he could on his model farm enjoying his hobbies, which were dogs, horses and the collection of original Robert Louis Stevenson manuscripts. The funeral was arranged for Tuesday, Aug. 29, with burial in Hinsdale.

U. S. Steel Corporation Advances Wages 20 Per Cent Beginning Sept. 1

An advance of 20 per cent in wages, to become effective Sept. 1, was announced Aug. 22 by the United States Steel Corporation. This is the announcement:

"The wage rates of day labor at the manufacturing plants of the Steel Corporation have been increased about 20 per cent, to become effective September 1. Other rates will be equitably adjusted."

Other wage announcements by the Steel Corporation have been as follows, according to the Iron Age:

<table>
<thead>
<tr>
<th>Date</th>
<th>Wage Rate Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug. 29, 1921</td>
<td>Decrease to 30c. per hr.</td>
</tr>
</tbody>
</table>

The following table shows the wages of common labor after each advance or decrease in wages by the United States Steel Corporation:

<table>
<thead>
<tr>
<th>Date</th>
<th>Wage Rate Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug. 1916</td>
<td>8-hr. day abolished</td>
</tr>
<tr>
<td>Aug. 29, 1921</td>
<td>8-hr. day abolished</td>
</tr>
</tbody>
</table>

Independents generally have announced that they will meet the advance made by the Steel Corporation.
As production increases with mines opening under the Cleveland wage agreement more coal is beginning to flow in its accustomed grooves. Much of the output is still going on priority orders but the heavier production has permitted contract shippers to again supply some of their regular trade.

Spot offerings also have increased, but the rank file of consumers are less anxious to buy. Railroads, utilities, steel plants, etc., are the heavier takers of spot tonnage but the high-priced demand has fallen off rapidly with the partial resumption of union mining.

Recession in Demand Only Temporary

Prices of spot coal reflect the weakened demand. Coal Age Index of spot bituminous prices dropped 93 points to 437 from 530 a week ago. The softening was most apparent in central Pennsylvania and in western Kentucky, while Pocahontas stood firm. The market range is gradually narrowing down to the Hoover basis, although a full dollar over the fair price is still a representative spot figure. The smaller consumer is badly in need of coal, but as he sees the market softening, is delaying entering his order from day to day. He has skated on thin ice for several weeks and is willing to take a chance for a while longer. As soon as improvement in production appears permanent he is bound to replenish his reserves and this buying rush will more than keep prices from dropping below fair-price levels.

Meantime no-bills are appearing in Illinois and Indiana, where union mines have resumed, and it is evident that a four-day week is the best that can be expected, even were transportation facilities more adequate. The St. Louis fuel committee has ceased to function and the situation has lost its serious aspect. Throughout the Middle West the general steam demand is light, domestic call is leading, and Kentucky coals, caught en route by the heavier union mining, have sold off. There is much Kentucky and Alabama tonnage rolling and this must be absorbed before a healthy demand can develop for Illinois or Indiana coals. Ohio No. 8 mines are rapidly getting into operation but are hampered by the lagging demand and a car shortage on the B. & O. and W. & L. E. roads.

North Atlantic markets are easy. Heavier receipts via water and rail have taken the top off the market. British coals are flowing in, but are going at lower figures to meet domestic competition. There is little likelihood of a runaway market in New England. Re-
COAL

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and already the shortage fears of Northwestern consumers have been somewhat allayed.

All hope of any August resumption of hard-coal mining was blotted out last week when the Philadelphia conference deadlocked. There is no surface indication of any early settlement and consumers are eagerly taking pea coal, the only size available, or are turning to substitutes such as coke.

BITUMINOUS

Additional production of mines opening up under the Cleveland agreement has caused a sharp upturn to the daily output as shown on the chart on the preceding page. According to the Geological Survey, an output of at least 6,000,000 tons for last week (Aug. 21-26) is assured by early reports, and additional tonnage from other mines that are known to have signed the agreement may raise the total to 0,250,000 tons.

On Monday mines in eastern Ohio and parts of central Pennsylvania were shipping coal, and the loadings for that day were 19,043 cars, an increase of 3,340 cars over the preceding Monday. Loadings on Tuesday declined somewhat but on Wednesday and Thursday increased again, and were somewhat on the corresponding days in any week during the strike. These increases were due to first shipments from Illinois and other Western districts, which carried the total up to 18,748 cars on Thursday.

DAILY LOADINGS DURING THE STRIKE

<table>
<thead>
<tr>
<th>Week</th>
<th>12th</th>
<th>17th</th>
<th>18th</th>
<th>19th</th>
<th>20th</th>
<th>21st</th>
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</thead>
<tbody>
<tr>
<td>Monday</td>
<td>11,445</td>
<td>13,311</td>
<td>13,267</td>
<td>15,102</td>
<td>16,229</td>
<td>11,703</td>
</tr>
<tr>
<td>Tuesday</td>
<td>11,019</td>
<td>16,622</td>
<td>11,570</td>
<td>11,446</td>
<td>13,730</td>
<td>13,032</td>
</tr>
<tr>
<td>Wednesday</td>
<td>10,419</td>
<td>12,367</td>
<td>10,643</td>
<td>12,521</td>
<td>11,524</td>
<td>11,524</td>
</tr>
<tr>
<td>Thursday</td>
<td>9,929</td>
<td>16,432</td>
<td>11,028</td>
<td>12,380</td>
<td>13,377</td>
<td>13,521</td>
</tr>
<tr>
<td>Friday</td>
<td>8,888</td>
<td>9,193</td>
<td>11,336</td>
<td>12,405</td>
<td>11,009</td>
<td>13,524</td>
</tr>
</tbody>
</table>

The increase came almost exclusively from mines formerly closed by the strike. In the middle and southern Appalachians transportation difficulties still limited output and shipments were but little larger than the week before.

It is not possible to estimate shipments from producing districts for the week ended Aug. 26, as published in preceding issues of the age. No measure of the coal output which has been produced from mines beginning production after Wednesday. The average shipments during the first half of last week exceeded the average for the preceding week by 33 per cent and that for June 19-24 by about 15 per cent.

The increase in production is chiefly in central Pennsylvania, western Pennsylvania, the Fairmount and Panhandle districts of West Virginia, and Ohio, in which districts, collectively, the daily rate of production exceeds by 156,000 tons, or 150 per cent, that of the week before. The increase in central Pennsylvania is about 90 per cent, in western Pennsylvania, 50 per cent; in northern West Virginia, about 170 per cent and in Ohio, 15 per cent.

The middle and southern Appalachian districts show slight change. The region as a whole is producing a little more than last week but has not again reached the level of production attained before the shopmen’s strike. The eastern Kentucky districts are still greatly handicapped by traffic congestion. While production there increased about 32 per cent it is still less than half of the quantity mined weekly during June.

Even with an output of 6,250,000 tons of bituminous coal a week, present production is still below normal. In the preceding week of 1921 the country raised 9,640,000 tons of coal, of which 1,890,000 tons was anthracite and 7,750,000 tons bituminous coal. The year before that the total raised was 13,250,000 tons. In comparison with these figures the present weekly output of all coal, anthracite and bituminous, is from four to six million short of normal.

Tidewater dumpings at Hampton Roads increased to 350,537 net tons during the week ended Aug. 24 from 307,182 tons in the preceding week. The tonnage at the

pier is heavier and railroads are functioning better. Coastwise prices are somewhat softer, as receipts from other sources are more adequate at Northern points.

Michigan non-essential industries have been unable to obtain priorities for an adequate fuel supply. It is understood that Detroit consumers may form a pool and send buyers into the field in an endeavor to augment their receipts.

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

<table>
<thead>
<tr>
<th>District</th>
<th>Market</th>
<th>Quoted</th>
<th>Aug. 31, 1921</th>
<th>Aug. 21, 1921</th>
<th>Aug. 14, 1921</th>
<th>Aug. 7, 1921</th>
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<tbody>
<tr>
<td>Midwest</td>
<td>Franklin Ill. lump</td>
<td>Chicago</td>
<td>4.50</td>
<td>4.50</td>
<td>4.50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Franklin Ill. run.</td>
<td>Chicago</td>
<td>4.50</td>
<td>4.50</td>
<td>4.50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Central Ill. lump</td>
<td>Chicago</td>
<td>4.50</td>
<td>4.50</td>
<td>4.50</td>
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</tr>
<tr>
<td></td>
<td>Central Ill. run.</td>
<td>Chicago</td>
<td>4.50</td>
<td>4.50</td>
<td>4.50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ind. 4th Vein lump</td>
<td>Chicago</td>
<td>4.50</td>
<td>4.50</td>
<td>4.50</td>
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</tr>
<tr>
<td></td>
<td>Ind. 4th Vein run.</td>
<td>Chicago</td>
<td>4.50</td>
<td>4.50</td>
<td>4.50</td>
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</tr>
<tr>
<td></td>
<td>Ind. 5th Vein run.</td>
<td>Chicago</td>
<td>4.50</td>
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<tr>
<td></td>
<td>Standard run.</td>
<td>St. Louis</td>
<td>3.75</td>
<td>3.75</td>
<td>3.75</td>
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<tr>
<td></td>
<td>Standard run.</td>
<td>St. Louis</td>
<td>3.75</td>
<td>3.75</td>
<td>3.75</td>
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<tr>
<td>South and Southwest</td>
<td>West Ky. lump.</td>
<td>Louisville</td>
<td>7.25</td>
<td>6.15</td>
<td>6.00</td>
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</tr>
<tr>
<td></td>
<td>West Ky. screenings.</td>
<td>Louisville</td>
<td>5.75</td>
<td>5.50</td>
<td>5.50</td>
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<tr>
<td></td>
<td>West Ky. screenings.</td>
<td>Louisville</td>
<td>5.75</td>
<td>5.50</td>
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<tr>
<td></td>
<td>West Ky. run.</td>
<td>Louisville</td>
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<td>6.15</td>
<td>6.00</td>
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<tr>
<td></td>
<td>West Ky. run.</td>
<td>Louisville</td>
<td>7.25</td>
<td>6.15</td>
<td>6.00</td>
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<tr>
<td></td>
<td>Kansas lump.</td>
<td>Kansas City</td>
<td>4.75</td>
<td>4.75</td>
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<tr>
<td></td>
<td>Kansas lump.</td>
<td>Kansas City</td>
<td>4.75</td>
<td>4.75</td>
<td>4.75</td>
<td></td>
</tr>
</tbody>
</table>

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

Additional advance prices over previous week are in heavy type, declines in italics.

NOTE—Smokeless prices now include New River and Pocahontas.
How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

<table>
<thead>
<tr>
<th>U. S. Total</th>
<th>Non-Union</th>
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</thead>
<tbody>
<tr>
<td>45.6</td>
<td>55.7</td>
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</table>

<table>
<thead>
<tr>
<th>State</th>
<th>Non-Union</th>
<th>700</th>
<th>550</th>
<th>460</th>
<th>400</th>
<th>350</th>
<th>300</th>
<th>250</th>
<th>200</th>
<th>150</th>
<th>100</th>
<th>50</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>63.5</td>
<td>59.7</td>
<td>45.7</td>
<td>48.5</td>
<td>85.8</td>
<td>86.9</td>
<td></td>
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<tr>
<td>Sonora</td>
<td>55.5</td>
<td>24.4</td>
<td>46.5</td>
<td>57.3</td>
<td>37.3</td>
<td>38.4</td>
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<tr>
<td>Panhandle,</td>
<td>55.3</td>
<td>24.4</td>
<td>46.5</td>
<td>57.3</td>
<td>37.3</td>
<td>38.4</td>
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<td>Westminister</td>
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<td>24.4</td>
<td>46.5</td>
<td>57.3</td>
<td>37.3</td>
<td>38.4</td>
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<tr>
<td>Virginia</td>
<td>54.9</td>
<td>24.4</td>
<td>46.5</td>
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<tr>
<td>Harlan</td>
<td>53.3</td>
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<td>46.5</td>
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<td>37.3</td>
<td>38.4</td>
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<tr>
<td>Hazard</td>
<td>51.7</td>
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<td>46.5</td>
<td>57.3</td>
<td>37.3</td>
<td>38.4</td>
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<td>Pocohantas</td>
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<tr>
<td>Tag River</td>
<td>48.1</td>
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<tr>
<td>Logan</td>
<td>47.6</td>
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<tr>
<td>Cumberland</td>
<td>46.6</td>
<td>24.4</td>
<td>46.5</td>
<td>57.3</td>
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<tr>
<td>Kenova-Thacker</td>
<td>38.2</td>
<td>24.4</td>
<td>46.5</td>
<td>57.3</td>
<td>37.3</td>
<td>38.4</td>
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<td>N. L. Kentucky</td>
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<tr>
<td>New River</td>
<td>32.9</td>
<td>24.4</td>
<td>46.5</td>
<td>57.3</td>
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</tbody>
</table>

Lake dumpings reflect the governmental activities in behalf of the Northwest. During the week ended Aug. 28 the lower ports handled 258,024 net tons—223,361 tons cargo and 29,663 tons vessel fuel—as compared with 176,640 tons in the previous week. The season's dumpings to date are 5,208,479 tons; in 1921 they were approximated 16,000,000 tons. The Northwestern docks are bare of coal and are eagerly awaiting the arrival of these cargoes. From Aug. 1 to 15 the reserve of bituminous coal dropped from 661,000 to 305,000 tons, and of anthracite, from 170,000 to 92,000 tons. A year ago, when stocks were above the average, the dock operators had on hand between 5,000,000 and 6,000,000 tons of bituminous coal and about 600,000 tons of anthracite.

ANTHRACITE

Production remains at a standstill. The Philadelphia conference of miners and operators, while deadlocked, is still the center of interest and hope persists that an early settlement may be effected, although there are no indications of it at this writing. River coals continued to be dredged at the rate of 30,000 net tons during the week ended Aug. 19.

Pee coal is about all that is moving, either from mine storage or retail yards. Consumers are eagerly accepting this, as they realize the seriousness of the situation. About two weeks more will see the exhaustion of the companies' reserves of this size. North Atlantic centers are urging the use of coke or bituminous coal as substitute for anthracite. New York City has taken steps to abolish temporarily the smoke ordinance prohibiting the use of bituminous coal.

COKE

Beehive coke production increases slowly. The output for the week ended Aug. 19 was 115,000 net tons, as compared with 112,000 tons in the week preceding. Demand wanes however, as coke buyers adopt the same waiting tactics as those in the coal market. Prices are softer but are by no means too high to worry the operators of blast furnaces.

In the Connellsville region the H. C. Frick Coke Co., subsidiary of the U. S. Steel Corporation, has posted notices of an increase in the scale, offering a return to 1920 wages—the highest on record. The notice provides for an open-shop basis of work and while organizers are attempting to hold the union ranks firm it is now expected that the strikes will wane rapidly.

Kentucky Governor Drafts County Judges to Help Enforce Fair-Price Regulations

In anticipation of an early termination of the railroad strike, Governor Edwin P. Morrow of Kentucky has perfected an organization to prevent profiteering in coal in that state. The Governor has appointed every County Judge in the state a member of his Fuel Distributing Committee and sent letters requesting each one to inform him promptly of any individual paying more than $4.50 a ton in carload lots and of any local dealer charging more than a fair price. He also will write to chambers of commerce and boards of trade requesting them to advise him of any manufacturing plant or public utility which is charged more than $4.50 a ton at the mines.

"I intend," Mr. Morrow said, "to enforce the regulations by the fullest publicity and also by refusal of priority orders by withholding cars from anyone who charges more than the Hoover price and by withholding priority orders from local dealers who profiteer. The cars will go to the dealers who charge fair prices."
British Hold European Orders to Fill Strike Gap; Exports Equal Pre-War Record

British exports are still equaling pre-war records. The pressure at the ports is acute as emergency tonnage increases. The North American orders are strong but tonnage is being diverted to fill the gap made by the strike in the United States. The exception of Best Admiration large, however, export prices are showing softening tendencies. Production during the week ended Aug. 12 was 3,023,000 gross tons, according to a cable. This shows a marked curtailment being due to holiday interruptions.

So far no agreement has been reached on the question of trimmers working three shifts instead of two so as to relieve congestion at the British coal shipping ports. The operators and shippers have asked the unions to work three shifts so as to be able to employ more trimmers and also to permit of greater coal output, thus giving more employment to more men.

Welsh coal fields are now operating at top pressure. Orders from the United States and Canada continue to arrive. A recent report states that Wales, at any rate, will continue at top speed well into October even if no further orders are forthcoming.

As a result of the American demand steam coal prices are strong but the best Admiration coal is not above 30s. with other varieties in proportion. As a rule the colliery operators in Wales are taking the long view of the present revival, in that they are endeavoring to prevent undue inflation of prices.

Practically the same position is found in northern England. American and Canadian inquiries continue to arrive and the pits are operating at top pressure. At present, however, the north of England pits are finding difficulties in getting their coal shipped owing to the congestion at Newcastle.

French Mine Costs Still Too High

The French market is moderately active, but, with the huge mine stocks still existing and an increasing output from the gradually restored devastated mines, no true improvement of the situation is to be hoped for before a reduction in costs permits French collieries of the Nord and Pas-de-Calais to meet British competition. The difficulty of this task will be fully grasped if it is considered that, while their wages are three times higher than before the war, French workers are now individually mining 20 per cent less coal.

The miners are now said to be in a rather conciliatory mood. It is therefore to be hoped that they will voluntarily agree to extend their effective underground working time from 61 hr. to 71 hr. and thus enable the collieries to effect a saving of at least 10 f, per ton of coal mined. Already now, collieries of the Nord and Pas-de-Calais are accepting forward contracts with a provision providing for an eventual revision of the selling price.

Germany, who was under an obligation of supplying to France, Luxemburg, Belgium and Italy a monthly quantity of 1,916,000 tons had asked the Commission of Reparations, under the fallacious pretext that she was importing coal from Great Britain, to reduce this quantity to 1,340,000 tons. The commission decided that from August to October Germany will have to deliver to these four countries a monthly quantity of 1,725,000 tons.

Coal Paragraphs from Foreign Lands

ITALY.—The price of Cardiff steam first is still quoted at 42s. 3d., according to a cable to Coal Age, unchanged from last week.

GERMANY.—Production in the Ruhr district for the week ended Aug. 12 was 1,778,000 metric tons, according to a cable to Coal Age. The preceding week's output was 1,731,000 tons. Miners are demanding an increase of wages amounting to 130 to 140 marks a shift.

SWITZERLAND.—British supplies of coal, which constituted 15 per cent in 1920 and 19 percent in 1921 of the total coal imports of the country, are falling off, owing to the keen competition of German, French and Belgian coal on the Swiss markets. Out of a total importation during the first quarter of 1922 of 266,000 tons with a value of 20,000,000 fr., Germany's share was 108,000 tons, France 56,000, Belgium's 55,000 and that of Great Britain only 31,000 tons.

Better Receipts at Hampton Roads

Business was more brisk at Hampton Roads last week, all piers increasing their dumpings. Supplies were slightly increased, due to a temporary increase in transportation on the Virginian and N. & W. Prices showed a downward tendency, due to reports that larger supplies were being received from overseas ports. Demand remained strong, however.

The outlook was somewhat more encouraging, although dealers did not have much relief from the stringency in the near future. Railroads were holding their own in coal movement, all reporting a slight improvement in condition of their equipment.

Hampton Roads Pier Situation

<table>
<thead>
<tr>
<th>Week Ended</th>
<th>Aug. 17</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. &amp; W. Piers, Lambert's Point:</td>
<td></td>
</tr>
<tr>
<td>Cars on hand</td>
<td>1,396</td>
</tr>
<tr>
<td>Tons dumped for week</td>
<td>138,871</td>
</tr>
<tr>
<td>Tonnage waiting</td>
<td>101,375</td>
</tr>
<tr>
<td>C. &amp; O. Piers, Sewalls Point:</td>
<td></td>
</tr>
<tr>
<td>Cars on hand</td>
<td>502</td>
</tr>
<tr>
<td>Tons on hand</td>
<td>30,150</td>
</tr>
<tr>
<td>Tonnage for week</td>
<td>53,965</td>
</tr>
<tr>
<td>Tonnage waiting</td>
<td>59,663</td>
</tr>
</tbody>
</table>

Pier and Bunker Prices, Gross Tons

<table>
<thead>
<tr>
<th>Pier</th>
<th>Aug. 19</th>
<th>Aug. 26</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pool 1, Philadelphia</td>
<td>$11.50</td>
<td>$11.50</td>
</tr>
<tr>
<td>Pool 2, Philadelphia</td>
<td>$11.50</td>
<td>$11.50</td>
</tr>
<tr>
<td>Pool 3, New York</td>
<td>$11.50</td>
<td>$11.50</td>
</tr>
<tr>
<td>Pool 4, New York</td>
<td>$11.50</td>
<td>$11.50</td>
</tr>
<tr>
<td>Pool 5, Hamp. Rds.</td>
<td>$11.50</td>
<td>$11.50</td>
</tr>
<tr>
<td>Pool 6-7, Hamp. Rds.</td>
<td>$11.50</td>
<td>$11.50</td>
</tr>
<tr>
<td>Pool 8, Hamp. Rds.</td>
<td>$11.50</td>
<td>$11.50</td>
</tr>
</tbody>
</table>

BUNKERS

<table>
<thead>
<tr>
<th>Pier</th>
<th>Aug. 19</th>
<th>Aug. 26</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pool 1, Philadelphia</td>
<td>$11.50</td>
<td>$11.50</td>
</tr>
<tr>
<td>Pool 2, Philadelphia</td>
<td>$11.50</td>
<td>$11.50</td>
</tr>
<tr>
<td>Pool 3, New York</td>
<td>$11.50</td>
<td>$11.50</td>
</tr>
<tr>
<td>Pool 4, New York</td>
<td>$11.50</td>
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</tr>
<tr>
<td>Pool 5, Hamp. Rds.</td>
<td>$11.50</td>
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</tr>
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</tr>
<tr>
<td>Pool 8, Hamp. Rds.</td>
<td>$11.50</td>
<td>$11.50</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Port</th>
<th>Aug. 19</th>
<th>Aug. 26</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiff</td>
<td>$10.50</td>
<td>$10.50</td>
</tr>
<tr>
<td>Admiration, large</td>
<td>$10.50</td>
<td>$10.50</td>
</tr>
<tr>
<td>Steamer stocks</td>
<td>$10.50</td>
<td>$10.50</td>
</tr>
<tr>
<td>Newcastle</td>
<td>$10.50</td>
<td>$10.50</td>
</tr>
</tbody>
</table>

Best steam | $10.50 | $10.50 |
Best gas | $10.50 | $10.50 |
Best bunkers | $10.50 | $10.50 |

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

Consumers Seek Bargains
As Coal Prices Recede

Offerings More Plentiful — Though
Users’ Stocks Are Low, Shipping Prices Temp B隅ors to Delay Further
— Resumption of Buying Not Far Distant.

Buyers are hunting coal bargains as spot prices slip. Offerings are increasing as production has improved in the fields resuming under the Cleveland agreement. Priorities have taken a goodly tonnage but the remaining spot coal is not being snapped up as eagerly as before. Consumers’ supplies are dangerously low but buyers have gone on a hand-to-mouth basis for so long that they are inclined to take a further chance and are delaying replenishing their stocks as prices slip gradually downward.

As soon as the buyer is satisfied that the improvement in production is permanent he is bound to enter the market and this buying rush is certain to stimulate staggering prices.

NEW YORK

The market was on an up and down basis last week. Quotations as well as demand changed frequently. Selling figures are gradually getting down to normal and buyers are bargain hunters. The failure to bring about a settlement of the railroad difficulty caused some uneasiness but it was not believed there would be any serious delay in shipments. Continued idleness in the anthracite mines has already created increased demand for bituminous and with the suspension of the Board of Health law prohibiting the use of bituminous in this city still greater will be the demand.

During the last seven days there were nearly 125,000 tons of British coal reported as having arrived in this port in 22 vessels. Demand for foreign coals receded somewhat during the latter part of the week. Quotations for British Admiralty coals were around 42s.

Southern coals came forward in good volume. There was considerable free coal here at the end of the week, quotations ranging $11@$12, New York harbor.

Local users are satisfied they will be able to get coal at much lower than current prices. There were 558 cars at the local piers on Aug. 25 an increase of 158 cars over Aug. 21. Most of this consisted of Pool 11 quality.

Quotations for mine shipments were lower than on the Tidewater basis. Industries included in Class 2 of the priority orders were given quotations from $5 up on Morgantown district B. & O., coal, B. R. & P. coals were quoted around $5.50, West Virginian and Latrobe coals holding about the same range. High-volatiles were quoted $5.50@$5.75 and Pittsburgh steam coals, Pool No. 34 quality, around $5.50.

FAIRMONT

A number of companies having signed the Cleveland agreement, northern West Virginia coal is now being handled, but the open-shop, mines in operation greatly exceed the union mines in number. Naturally production has increased, but the bulk of the output during the week ending Aug. 19 was coming from non-union mines, most of which are adhering to the policy of the open-shop contracts during recent months. Much of the coal is going to the railroad, the open market price ranging $4.50@$6.50 a ton.

PHILADELPHIA

There has been a little freer offering of spot coal recently, but it seems that the more coal available for the market the less anxious the consumer is to buy. There are more miners for low prices, and each successive drop recently only seems to have encouraged the consumer to hold off longer.

Frequent reports are heard of small operators signing up on the basis of the Cleveland scale and the number accepting grows each day. However, it is a foregone conclusion that the big concerns and most of the non-union, will continue to do so.

Prices have fallen close to an average of a dollar all around and even lower figures are looked for yet there is also a likelihood that there will be a considerable rebound. There is not the least doubt that the moment the consumer is convinced that mining has resumed at a greatly improved degree there will be a rush into the market, with only one result—increased prices.

Foreign coal is now arriving almost daily. Inasmuch as there have been some sharp price recessions in domestic fuels this has had the effect of slowing down orders for overseas fuel. In addition, this is also a fair tonnage of Southern coal coming in, and many of the barges formerly in the anthracite trade are now being used for Southern loadings.

CENTRAL PENNSYLVANIA

As far as the union mines in central Pennsylvania are concerned, the strike is at an end for the present. Influenced by the settlement, prices have sagged. Spot quotations are $5@$6, but it is expected that the price will soon reach the fair-price level of $4.50 established by the agreement, despite the competition, as mining progresses, should bring it to the figure prevailing prior to April 1.

Before leaving Altoona following the agreement with the union operators, President Brophy declared that the entire force of the union will be concentrated on the fields remaining out of the organization. Production in the non-union districts has steadily increased, the peak being reached last week when 1,020 cars were loaded in one day. It is apparent that the union has a task before it, as the non-union fields are mostly paying a higher rate than the agreement with the union calls for.

Baltimore

With the increased production of soft coal prices have fallen off so that at this writing gas and steam coals are in the market at prices ranging $5.75@$6 a net ton f.o.b. mines. These prices apply in the majority of cases to both Pennsylvania and other fields.

There is talk of the Hoover price of $4.50 but in most cases this is not an active binding figure even for priority. The demand from consumers, at least that kind of demand which was willing to pay up to $8 for quick deliveries, fell off rapidly with the reopening of the mines in the Cleveland agreement.

The question of profit-limiting is the principal one now agitating the Maryland Coal Commission and the solution is apparently not reached through the conference so far held with official Washington. In sales for domestic use, especially, there is great difficulty in arranging a price, as the cost of handling varies greatly.

UPPER POTOMIC

All but about 15 plants are now in operation and production is increasing daily. All the mines are running open-shop, the owners having refused to sign with the union though paying the 1920 wage scale. The tonnage now being handled by the Western Maryland is larger than at any time in recent months. There continues to be a strong demand from eastern markets, prices ranging $4.50@$7 a ton.

West

SALT LAKE CITY

Operators are still behind on their orders but prices have not increased. The car situation is satisfactory. A few more men have gone to work at the mines and production is holding up well. The strike situation is unchanged.

Prominent operators at Ogden, who have never been in Wyoming, have left for Rock Springs where they will be present at a meeting to consider the question of reopening the mines in that state.

KANSAS CITY

In spite of the settlement Aug. 23 of the strike in the Southwest field, the outlook for both operators and miners seems bright. Competition of the strongest kind from Illinois coal on the East and Colorado coal on the West, and with fuel oil from all directions will cut heavily into the mines and production will sag. Shortage, prior to set in about the middle of September, may interfere with the flow of Illinois and Western coal, but it will be largely handled by the companies already has established itself well both locally and throughout the South, which is counted on normally to absorb about all the black coal shipped from Kansas and Oklahoma fields.

A little new Kansas coal reached Kansas City by Saturday and was quoted as follows: Lump, $6.50; nut, $6.50; mine run, $5; slack $2.50@$3.

August 31, 1922

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North Atlantic
Substitutes Sought as Hard-Coal Famine Looms

Coke Being Used and British Coal May Be Pressed Into Domestic Service—Depletion of Pea Stocks in Sight—Stimulus to Output of River Barley.

Hope of any August resumption of anthracite mining has been blasted by the deadlocked Philadelphia conference. In the meantime the retail situation is being given much publicity by the daily press and all consumers now realize the gravity of the fuel outlook for this winter.

Coke is being substituted as an emergency fuel. There is some talk of using British coal for domestic purposes along the North Atlantic seaboard. Pea coal is still actively moving out, both at retail and from the mines, but at the present rate of distribution two weeks will see mine storage piles of this size fairly depleted. Production of river barley is stimulated by the steam shortage.

As it becomes certain that anthracite will be impossible to procure at the start of the winter, steps are being taken by New York City authorities to abolish the ordinance prohibiting the use of bituminous coal.

Philadelphia

Just as everyone had begun to be hopeful that there would be some anthracite production in August, the miners and operators came to a deadlock, with absolutely no sign of their resuming negotiations.

Receipts of pea coal by the retailers have been up to the tonnage of the last few weeks, and it is believed that the next two weeks will see the entire exhaustion of the companies' storage piles. Consumers of all classes are now eagerly seeking this size, as it is the only coal now left on the market. Dealers are fully convinced that they will have to handle bituminous coal this winter in order to serve the people, and in the meantime are seeking sized coke. They have found that the market is already sold up, as much of the product is going to iron furnaces. Their only hope in case of stress would be by the fuel commission ordering this fuel into domestic use.

One of the coal associations, in order to assist in the equitable distribution of such coal as comes to market, has suggested some rules to the fuel commission, as follows: The maximum gross profit on retail sales not to be in excess of that in March, 1922; delivery to consumers to be limited to 60 days' supply; operators shall not make sales to other than retail dealers; the commission shall do all possible to have coal kept up to the standard of preparation.

NEW YORK

The seriousness of the situation is being realized more each day. Hard coal is becoming scarcer and bituminous is being recommended for use as a substitute by a number of administrators. Since the breaking off of negotiations between the mine owners and the Board of Aldermen of this city has asked the Board of Health to suspend the ordinance prohibiting the use of bituminous coal in the city. Leave also has been asked of the State Legislature to issue bonds which will enable the city to go into the coal business.

There is little hard coal about the retail yards and none being offered for sale by producers and wholesale houses. What is left of certain sizes there are to be had are being doled out in small lots by retail dealers. Orders are filled and it is apparent that those houses owning large bins are empty are likely to have some sleepless nights soon.

About the only anthracite available is river barley which is being offered in small lots. Quotations range $2.50 @ $4 at the point of loading.

BOSTON

The retail price on pea has been lifted in Boston to $15 per net ton, sidewalk delivery. Prices on larger sizes are only nominal, no dealer having more than a very small quantity on hand.

Stray lots of pea are still coming forward from a few producers. The tonnage available, however, is very much less. The local operators will not be able to meet the demand for industrial and utility use but are taking what is coming. A few of the larger companies will have practically none in stock when mining is resumed.

Baltimore

Dealers are keeping one eye on the possibility of a settlement of the anthracite trouble, although they are not so much impressed with the thought that the government will actually operate anthracite mines, and the other on the class of distribution which they will undertake as an emergency pending the first receipts of hard coal. In this latter connection some will avail themselves of the domestic soft coal which is now offering, while others will take supplies of the English coal already in port.

In 1902 some English coal brought to this port in ballast was sold to local consumers at a price of $11, as a relief from the prevailing conditions at this time. A price of $13.50 at this time would certainly be considered conservative. Some tests of substitute by the coal just brought in, a Welsh product, show that it burns with a good flame and with very little smoke or residue. Hard coal dealers, however, predict that as soon as anthracite begins to run again the demand for even the best kinds of soft coal for household use will come to an end.

BUFFALO

With the failure of the operators and the union authorities to arrive at an understanding all hope of a coal supply right or of a sufficient output for the winter disappeared. The question now is what will answer as a substitute.

It is believed that natural gas will be in much larger supply than during the past few years. Still the problem is not an easy one. The city has about 110,000 families living in single houses to four family flats, of which it is estimated that 75,000 have no coal of account.

Meanwhile an enterprising Scranton coal man sends in an offer of coal "as soon as mined" at $17.50 for stove and chimney, $10 for pea and $12.50 for washing, to which add $3.25 for freight.

South

BIRMINGHAM

Though the market is not as active as a week ago, business being offered is more than sufficient to take the comparatively small amount of free coal that will be had. Inquiry from Western points has fallen off with the resumption of operations at mines in the union fields and other districts on the strike. Strikes have been declared and demand for industrial and utility use is good. The railroads and other contract consumers are taking the bulk of the output and the larger companies have little or no free coal to offer on the market.

Pressure has not been sufficiently relieved to restore differentials as to quality and preparation, and mine run and washed steam is selling at $4.85 per ton mines, while spot domestic is reported around $5 and hard to obtain at this figure.

Mines on the Southern Ry. especially have suffered serious delays this past week account of shortage of cars, operation being all the while off for a few hours to as much as two days in the week. Conditions in this respect are not as bad on other lines, but all lines are short on coal-carrying equipment. Production for the week of Aug. 12 was approximately 300,000 net tons. Withdrawal of a large amount of equipment from foreign lines which have been taking coal in this district for some weeks pending the settlement of the strike, has been seriously felt.

VIRGINIA

Mines have not been able to reach higher than 50 per cent of potential capacity owing to lack of adequate transportation facilities, production not being above 150,000 tons a week. That section of the field covered by the Norfolk & Western is producing about 75 per cent of capacity. C. & O. mines are producing at the rate of 64 per cent. Coke production remains at about same rate, viz, 400,000 tons a week, or approximately the same level, with much of the output moving under contract. One hundred out of the 115 mines in this territory are in operation.
Chicago and Midwest

No Joyous Welcome for Fresh Midwestern Coals

Many Spot Buyers Withdraw from Market Hoping Prices, Now Seeking a Firm Level, Will Drop—Illinois Mines Reach 30 Per Cent Production.

If anybody expected the Midwestern market to get out the band and the town "hack" to welcome the return of Illinois and Indiana coal, they were disillusioned before the mines of the states had been producing four days following the end of the strike. Efforts to feel out the market at $6 were coldly received after the first day and by the fourth the recession in price had driven quotations below $5. Steam demand was light except among railroads. In the markets the main interest was in prepared sizes. Steady customers in the retail trade got most of the first coal shipped. This situation is expected to reverse itself after a few days when it is definitely determined what the bottom price is to be.

A good deal of coal from Kentucky, en route for Midwest markets was caught by the end of the strike and is selling as low as $3.50. At certain Illinois mines, there were no bills on the track the second day of operation.

INDIANAPOLIS

With the resumption of operations in Indiana, the retailer has come into the market and he wants coal badly. Prices show no change at the mines outside of Indiana.

The coal executive board of the state administration is arguing for a $3.50 price at the mines. Most of the operators believe when quotations are finally made, the price will be more nearly $4, at least for the time being. The governor, however, has authorized the payment of $5 for coal provided on a guarantee to the state institutions.

It is generally believed by operators in Indianapolis that a four day a week program will be all that will be permitted because of the rail situation. The rail officials here say they can provide cars for every pound of coal the operators produce, but as one aptly put it, "they never have."

WESTERN KENTUCKY

Although demand has slumped a little as a result of production starting north of the Ohio and the Chicago market is weak and only bidding about $4.50@$4.75 for western Kentucky coal, it is claimed that the field will continue as busy as car supply will permit, as priority orders are taking production just now, and there is the great demand to be supplied through the retailers, and restocked at the ports, along with railroads, before any let-up is in prospect. Prices are working down to around the allowed figure of $4.50 a ton, but may remain firm at $4.50@$5, which will never cover brokerage in the latter instance.

Whether Chicago, Detroit and other Northern markets continue buying in large quantities or not will make a great deal of difference for the time being, as St. Louis, Louisville, Nashville, Memphis and many other towns are needing considerable tonnage, and retailers do not expect to accumulate much stock.

LOUISVILLE

During the week prices have worked lower until there is but little coal quoted at more than $5@5.25 for any size, from any Kentucky field. The allowed price of $4.50 a ton is being approximated at last. But it is reported that some producers are passing their coal through brokers, so that the latter may have an opportunity to collect their 8 per cent brokerage.

There are rumors to the effect that some producers are billing their output through newly organized brokerage offices, prices being at the $4.50 maximum, thus keeping their own records clear while these subsidiaries rake in big profits.

It is feared that an already poor car supply to Kentucky will become worse now that Northern fields are producing again.

SOUTHERN ILLINOIS

Nearly every mine in the Carterville district started to work on Aug. 25. Some of them did not get any coal, however. Those mines that did not open began cleaning up preparatory to starting.

When it became known that Illinois had signed up there were parades in the mining camps all over southern Illinois, especially at West Frankfort and all Franklin County fields. There was general rejoicing everywhere, for the miners, it now develops, were practically convinced they were going to have a job this winter.

Somewhat similar conditions prevailed in the Duquoin and Jackson County fields, with the exception that several of the smaller mines are not ready to open. In the Mt. Olive district coal was produced the first day, but no shipments made.

Railroad buying was easy in the Standard and Mt. Olive fields, practically no railroad coal being loaded except that on overlapping contracts. The Carterville prices seem to range around $6@$6.75 for domesti sizes, including No. 1, 2 and 3 washed. No. 4 washed is $4.75, No. 5. $3.90, 2-in. screenings, $4.50, 1-in. screenings, $4.35 and mine run, $4.65. Railroad coal seems to range $4.50@$4 for mine run on contracts.

Mt. Olive shipments to the country and Chicago range about $5 on domestic sizes down to $4.60 on steam. St. Louis prices on Mt. Olive domestic are $4.50 down to $4.25 on steam. Big Mt. Olive and Murphysboro ranged around $6 for everything at the standard, although opened up at $6 for lump and down to $5 for mine run, but this rapidly declined until the latter part of the week saw coal going as low as $2.75 for screenings, $3 for mine run and $4 for prepared sizes.

CHICAGO

No liveliness of markets here followed the resumption of coal mining in Illinois and Indiana. Spot coal appeared to withdraw with the expectation that if they stayed out for a few days coal could be down to $2.50. As it was, Illinois coal on the market brought the above $5 but did not move in any quantity at prices above $5 for lump, $4.50 for mine run and $4.25 for screenings, which was the bulk of the demand for domestic.

Indiana coals were offered at figures above the Illinois levels. In the price jugglery which is now going on and may continue for a week or more until a firm level is reached, it is natural to suppose that most Indiana coal will drop below what from well-known Illinois fields. A good deal of Kentucky coal on the way here was caught short by the end of the strike, so that quotations on it dropped suddenly from around $6 to $5 a ton a day of the settlement to less than $5. Very little smokeless coal reaches here.

ST. LOUIS

The end of the coal strike was not as haphazard an affair as might be expected in St. Louis. All buyers seem to figure that they have an unlimited quantity of Kentucky and Alabama coal in transit that is going to drag on for the next three weeks. As a result they are not in the market for Illinois coal. There seems to have been some sort of a well-formed plan not to buy Illinois coal when the mines started up, although the day before they started up these same buyers were paying $7@8$8 for Kentucky coal. The result is that the Illinois Standard market is pretty well broken up and quotations range from $4 down to $2.75 and shipments are being diverted to the north. The same is true of Mt. Olive. On such Carterville as is coming in the price is being paid, but the tonnage is light.

The St. Louis fuel committee has ceased to function, but the State fuel commission will continue to keep in touch with the situation. A meeting was held in St. Louis on Aug. 24 in regard to this and it was decided to keep the operators apprised of the care of the situation until it developed that they were unable to cope with it.

Canada

TORONTO

Fuel Controller Ellis strongly advises coal dealers to purchase Welsh coal, but so far there has been no move in that direction as rumour has it that plenty of anthracite will be available before winter, though the Controller is of the contrary opinion. J. Sanderson, representing the European and Asia Committee of Commerce, has come into the market with the object of opening up a market for British coal. He states that his company could supply the needs of a large city and has at present over 100,000 tons ready for shipment from Cardiff.
Output of Resuming Mines
Hampered by Car Shortage

Large Consumers Now Buying; Smaller Users Holding Back for Lower Quotations—Shrinkage in Demand Softens Prices—Closing of Ford Plants Important Market Factor.

No. 8 operations have cleaned up and are resuming work under the Cleveland agreement. Production is seriously hampered, however, by a car shortage on the B. & O. and W. & L. E. railroads. The major portion of the output is going to the railroads, steel plants and other large users. Smaller consumers are awaiting lower prices, and the recession in demand has caused a softening, temporarily at least. The announced intention of Henry Ford to close down his plants Sept. 16 will have a pronounced effect on the market.

Ohio operators have refused to enter a state conference on price regulation, fearing the federal law on the subject.

PITTSBURGH

Operators now offer the men the 1920 scale, without union recognition or the check-off, and the men show little disposition to accept the common belief is that the Pittsburgh Coal Co. will hold out indefinitely, but there is doubt as to some of the smaller operators. Published reports of Pittsburgh operators being disposed to sign the scale refer chiefly to operators in the Freeport vein.

Some observers are confident the Connellsville region will be fully at work in a few days and that this will shortly cause a break among the strikers in the Pittsburgh district.

The trading market in coal continues to be confined almost wholly to Connellsville steam, which has declined fully a dollar in the week, being now available at $5. Offerings have increased somewhat, but the decline was due chiefly to decrease in buying. The railroads seem to have been instructed to stay out of the market. Pittsburgh strip-mined coal has been offered down to $5 and experiences a limited demand. Westmoreland gas stands at about $5.

CLEVELAND

With the announcement of the acceptance of the Cleveland wage scale by additional important groups of operators, demand has eased off somewhat. Consumers apparently are convinced that supplies soon will be greatly increased. This view is not held by some operators, who depreciate stories that production will reach normal levels soon. Their experience is showing them that a shortage of cars at the mines is already seriously hampering the resumption of production. In the meantime prices have dropped. Threatened regulations may have had some influence in bringing this about.

At a meeting of the members of the Ore & Coal Exchange in Cleveland a few days ago, practically the same rules and regulations governing the period prior to 1920 were adopted. The price arrangement, as in 1920, probably will provide for a settlement of balance price fixed by the committee at the end of the season, applying to all balances outstanding.

For the season to Aug. 20, shipments of coal up the Lakes to the Northwest amounted to 4,057,524 tons of cargo coal against 14,962,793 tons in the same period of 1921, and 9,055,834 tons in 1920.

COLUMBUS

Most of the mines are now getting down to business with a fairly good force of miners and output is growing daily. Car supply has been quite good up to the present.

The state fuel administration is functioning and priorities are taking care of practically all that is produced in the state. Railroads and utilities are still getting the bulk of the tonnage, although some is going into other channels. Retailers have not been able to get much coal up to date and are looking orders for delivery later on. Lake trade is showing some life although the movement to the Northwest is still small in comparison with previous years. Lake shippers have closed a few small contracts at $8.50.

DETROIT

With bituminous receipts averaging about 200 carloads daily, while between 50 and 600 are necessary to meet requirements, Detroit is steadily running behind on coal supply.

Priority orders for about 150,000 tons of coal for Michigan, which were sent forward to the Federal fuel administrator by the Michigan fuel administrator, have been approved only to the extent of about 50,000 tons.

The apparently ineffectual outcome of the drive to recompense the Chicago coal administration has caused a revival of the previously discussed plan of organizing a local pool among Detroit coal men for the purpose of sending in coal to the producing districts in an attempt to get coal without assistance of the federal authorities.

Owing to diminishing coal supply, 85,000 employees of the Ford Motor Co. will be laid off Sept. 16. The company's Highland Park plant is reported to have installed oil-burning equipment in its furnaces. Whether the use of oil will be continued permanently is not announced.

BUFFALO

The trade has reason to feel that the worst is over. This market is not getting any new coal yet and some that was promised has been ordered to the Lakes, but there will soon be enough if things go right. There is little likely to keep prices up, but consumers are waiting for them to come down.

Supply has been pretty good. Jobbers were active and their advice was needed. Today there are plenty of consumers, large and small, with months of coal ahead of them. So there will be no statistics.

Bituminous prices now run from $7 for Youghihoghey gas, $6.75 for Pittsburgh lump and slack to $6.50 for the northwest. Allegheny Valley and $2.24 to other points have freight to Buffalo. So far mining reumption in the Allegheny Valley is more general than in the districts further south.

NORTHERN PANHANDLE

So many companies are operating on an independent basis that the contract made with the union has not practically increased output. At mines where there has never been an agreement with the union, production continued at about the same rate, the field is as a whole having an output of about 50,000 tons during the week ending Aug. 19. There is a heavy demand at the Lakes and in northern markets, with large tonnage from the region being utilized by the railroads.

EASTERN OHIO

Operations have been slow in reaching capacity output because of transportation disability and preliminary cleaning up in some of the mines.

During the three days ended Aug. 19, the number of users has increased somewhat, but there is little foreign trade. For these three days of 309,750 tons of the 140 mines comprising the field. While a greater number of mines have been sending coal ever since for greater production, car shortage has been a considerable factor in the situation.

The number of users is at a low ebb and buyers for the rank and file of industry are still in a position to withhold orders, anticipating that prices will react further when coal becomes more plentiful. Larger users such as railroads, steamship lines and steel plants are very much in need of coal and the major portion of current output is going to these. Many of the producers have succumbed to reactionary tendencies and quotations are now $1@$1.75 less than a week ago.

Bituminous coal at Cleveland during the week ended Aug. 19 agglomerated 636 cars and were approximately the same in quantity as receipts during the two weeks immediately preceding.

Arrangements have been made to pool Lake cargo coal effective Sept. 1, similar to the plan inaugurated during the season of 1920 when total movement up the Lakes exceeded 22,000,000 tons, of which 16,000,000 tons were floated after July 31. At a meeting of shippers, an executive committee was formed to formulate rules and regulations to expedite the handling of this important traffic to the Northwest.
Northwest

Upper Lakes Region Now
Frets About Anthracite

Most Coal Men Believe Adequate Soft
Coal Supplies Will Be Shipped Up
from Erie Ports but Lose Hope on
Hard Fuel—Prices Flighty.

The Northwest is now morally cer-
tain it will get enough bituminous coal to meet all its crying wants. While cargoes have not yet begun to arrive under the new distribution plan in any great number, they are expected to begin this week. In spite of a good deal of bleating for prior-
ities which may not be granted, it is generally felt that the North-
west's plight—even though partially brought down by Northwestern fail-
ure to conserve the dock coal it had early in the summer—will draw tre-
mendous shipments from now until the freeze-up. But as to hard coal the feeling is different. Coal men are confident that the strike settle-
ment in the anthracite fields will come so late that not a ton of output
from those fields will reach here.

The Northwest's propaganda sys-
tem is still working effectively. It
has been so successful in setting forth the region's desperate plight that it may have had something to do with recent hoists in price on
what little coal there is available.

DULUTH

The Northwest now feeling sure of plenty of bituminous coal for public utilities and industries is centering its interest upon the anthracite situation. Coal men here think the hard coal strike will not be settled until it is too late to ship much up the Lakes. This
will mean that the Northwest will burn smokeless in its house furnaces.

Bituminous is steady and there is little quotation of prices as docks are
busy filling past orders. It is said that 75,000 tons, outside of bituminous, still
remain on the docks but this has been taken already.

Five cargoes came into port within the last week. This is Kentucky coal and is selling for around $9 for lump, with 50c. off for run of pile. It is ex-
pected that one or two cargoes will
arrive daily from now until the first of the month, and that after that ship-
m ents will resume in force.

The order to pool coal at Lake Erie ports is causing dissatisfaction among
dock men and dealers. Much money has been spent in advertising certain
varieties of coal and the pooling will make this advertising ineffective. It is felt though that it is the only way to handle the situation, by the consumer
generally.

MILWAUKEE

Watchful waiting is the order of the day. The settlement of the strike in the soft coal fields has eased the tension to some extent, but until coal begins to move and there appears to be some organized system of distribution both dealers and consumers will continue to worry.

Nobody has any idea as to how the apportionment of coal is going to be
made, but everybody expects higher prices to American demand. Many have switched from coal to coke to make sure of getting some kind of fuel.

Eleven small cargoes of soft coal were received here thus far in August, making the season's receipts of soft coal to date 827,212 tons, against
1,799,943 tons during the same period last year. Car-ferries brought 1,564
tons of anthracite and 54,273 tons of soft coal from the East thus far in August. The bulk of this coal goes direct to the interior, only a small per-
centage remaining here. Last year up to this time 618,007 tons of anthracite
had been received here. Not a cargo
of anthracite has reached port thus far
this year.

MINNEAPOLIS

The problem of getting an adequate supply of some kind of coal into the Northwest before the close of naviga-
tion promises to be the hardest job yet encountered by the coal industry in this region. The fact that the Northwest had a good supply of coal on the docks last spring and did not take advantage of it, is working against all arguments as to its present and future needs. Minnesota state institutions are now low on fuel and authorities are wonder-
ing where they will get some within the next few weeks.

When Central Western railroads came to the Lake Superior docks during the summer and bought a big tonnage, shipping it down to Chicago and vicin-
ity, Northwestern roads were utterly indifferent. True they did buy some tonnage, but far less than their neigh-
bor to the South. Now these same Northwestern roads plead for the same priority that the North-
west will simply have to go into the market for coal in competition with other buyers,—pay whatever price they have to pay in order to get what fuel is available.

New England

Tension Is Lightened
As Inquiry Slackens

Panic Demand Disappears—Comfort-
able Position of Railroads Will Facilitate Movement All-Rail—
Large Output Expected in Next
Thirty Days.

This week shows very much less
tension. In contrast with a fort-
night ago there is apparently no panic demand whatever and current
inquiry is notably less than last week. The railroads are in very comfort-
able position as to supply and it is expected that coal on contracts will begin to flow all-rail as well as by
water.

Most buyers are building large
upon production the next thirty days, and while there might be danger in this if reserves were low, the fact is that stocks in this territory are adequate for some time to come. Con-
sumers who have deliveries due them
on contract are expecting that their
September quotas will be filled, and apparently there is small chance now
of any runaway market.

Several Pennsylvania operators are
diligently seeking spot orders, and to such extent is this true that already
quotations are lower than was the case a few days back. Grades roughly
described as “Pool 10” that were offered at as high as $7.50 have been quoted recently at $6.50, and with the smoke-
less coal also losing off in price the trade looks for still lower figures in
central Pennsylvania.

While Pocahontas and New River are
much involved with priorities, and coal intended for New England has been
diverted to railroad use elsewhere, the Hampton Roads agencies are ex-
pecting the situation to change mate-
rially by the early part of September. There are still spot sales reported at around $10.50 f.o.b. vessel, usually for
small tonnages to clear boats, but ship-
ners will have their own coal restored to them in increasing volume and will be expected to resume shipments on contract.

The trade generally is much relieved
over current news from Washington. Ordinaries have been so upset and many sales have been made, the situation having been created that everybody, the lay distributors included, are happy to see coal beginning to flow in accustomed
groups.

The New England railroads have
made such good progress in replacing striking shop craftsmen that there is less anxiety here over equipment than is doubtless the ease in other sections of the country.

Meanwhile, cargoes of British coal arrive from day to day and are likely
to continue arriving for the next 60
to 90 days. Heavy purchases were
made while the labor situation looked serious and doubtless there will be
some shrinkages to be absorbed.

Already, British coal is quoted lower than a week ago.
COAL

Vol. 22, No. 9

Cincinnati Gateway

"Stand from Under" Policy
Seen with Coming of Coal

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DELAWARE
The duPont Company announces that effective Sept. 1, 1922, the smokeless pow-
ders department will be placed in the hands of an independent department, known as the Explosives department, and will be operated as an independent industrial department, known as the Explosives, to be managed by the President of the whole company.

ILLINOIS
Havens A. Requa, sales manager of the Columbus Mining Co., Chicago, is spending the latter part of his vacation in Philadelphia, under the guidance of Vice-President A. Felix duPont, as general manager.

MISSOURI
The Big Four Mining Co., is opening mines near Carrollton. It is reported that three of these will be opened up at once, and the first one will be on a shaft east of town.

NEW YORK
The Island Creek Coal Co., for the first half of the year, has net earnings of $1,916,548, after charges and taxes, of $1,578,427, equal to $1.43 a share. Total earnings for the first half of the year were 119,739 shares of common stock.

OKLAHOMA
The Texas Pacific Coal & Oil Co., of Fort Worth, Texas, has been granted a permit to construct a pipeline from the Texas Pacific Oil Co., with an aggregate capacity of $5,000,000, with the understanding that the company is capitalized at $5,000,000 with R. D. Hunt, of St. Louis; E. I. Norton, and Horace K. Thurbur, of New York, as in-
corporators.

Pennsylvania
The North Western Mining & Exchange Co. is about ready to start the development of property at Clermont, near Dubois. There are a number of claims including the Jesse property, which, with its 1,000 tons daily, is to be analyzed as a coal mine, in the meantime being prospected for oil. The operation represents an outlay of $2,000,000.

The construction of the coal-loading docks in the Lehigh Canal, near Northampton, six miles north of Allentown, by the Lehigh Coal & Navigation Co., preparatory to abandon-
ing the railroad service, is progressing. The construction of the basin at Mauch Chunk, has been started. The company has spent $500,000 on the new undertak-
ing. The docks will be built on the boats from Coalport to Philadelphia has been placed on the market, officials say, by spring freshets.

The dock will compel the coal, said the building of immense yards at Northampton by the New Jersey Central, which will bring the coal on the place instead of at Coalport.

TENNESSEE
The West Virginia-Tennessee Coal Co. has been incorporated with capital of $15,000 by T. O. Busbee, Thomas Lockhart, W. H. Worthington and Julius Kernst, the company will develop properties near An-
napolis.

Kentucky
The Kentucky Coal Lands Co. is incorporated as a joint-stock company, with an authorized capital stock of $100,000, divided into 100 shares of $1,000 each. The purpose of the company is the purchase, lease, and development of coal lands, and the sale of coal. The company is capitalized at $60,000, with the following officers: A. D. Thompson, president; H. S. Marston, vice-president; J. W. Cooper, secretary, and C. A. B. throttle, treasurer.
Traffic News

Coal companies operating in the Me Roberts region of Kentucky have asked the Interstate Commerce Commission for a hearing on rates paid by mines in the Hazard group. It is contended that these mines are geographically and geologically a part of the coal region embraced in the Hazard group, and that the same rates should apply from the Roberts group to Cincinnati and Louisville and points in Central Fraternal Association territory and to points in certain of the Western States. The complaint is signed by the Commercial Coal Co., Blackey Coal Co., Marian Coal Co., Dudley Coal Co., and Consolidated Fuel Co. The traffic case of the West Kentucky Coal Operators’ Association versus the American & Rockfish R.R. will be the subject of a hearing at Louisville on Sept. 15 before Examiner Fleming.

The traffic case of the Virginia Coal Operators’ Association versus the Atlantic & Pacific R.R. will be considered as a hearing at Washington Sept. 21 before Examiner Gentry.

The case of the Gulf Coal Co. versus the Virginian Railroad Co. will be considered as a hearing at Washington Sept. 22 before Examiner Gentry.

Oral argument in the case of the Clay County Operators’ Association versus the C. & M. R.R. will be held at Washington Oct. 21 before Division 3 of the Interstate Commerce Commission.

In a complaint to the I. C. C. the Sewell Valley Railroad alleges unreasonable and unjustifiable divisions of rates on coal by the Chesapeake and Ohio.

WASHINGTO...

D. C. Botting, for many years connected with the coal-mining industry in this state, returns on Sept. 1 to become manager of the Pacific Coast Coal Co., Seattle. He has for three years past been general manager of the Vandalia Coal Co. Mr. Botting was born in California fifty-one years ago, and when a boy worked in the mines at Nortonville. In 1901 he was appointed state mine inspector for the county in which capacity he served until 1912, when he resigned to take charge of the mining end of the government party which went to the Alaskan coal fields to determine the suitability of those coals for naval purposes. His return he became commissioner of the Washington Coal Operators’ Association and manager of the Producers’ Association. During the latter end of the war party he was appointed acting manager for the state under the U. S. Fuel Administrator.

WEST VIRGINIA

Preparations are being made by the Ace Coal Co., of Shinnston, to develop coal lands in Harrison County, this concern having only recently been organized with a capital stock of $50,000. Offices of the company are at Shinnston. Leading figures in the new concern are: Basil H. Lucas, president; H. W. Simpson of Johnstown, Pa.; L. C. Cricle and A. M. Leonard, of Clarksburg. The strike cut down the enrollment for the miners’ short course of six weeks at the West Virginia School of Mines, in an attempt to strike, however, there were sixty-nine students enrolled. A committee of forty-six was organized in the Kanawha By-Product Coal Co. for the purpose of operating in the Kanawha region, the offices of the company to be at Charleston. This company has a capital stock of $45,000. Harry W. Jenkins, of Comb, W. Va., is organizer of this company. George K. Guthrie, T. C. Parrott, W. E. Orth, T. C. Patterson and R. R. Circle, all of Charleston, have organized the Rosehill Coal Co. by Philadelphia capitalists preposing the further development of the coal in Talcott County. This company has been chartered with a capital stock of $100,000, but quarters to be at Newroz. Principally interested in the new concern are J. H. Roberts, J. E. Johnson, J. F. McAlpin, James W. Birch, L. G. Ball and Stewart Frazer, Land Title Building, Philadelphia.

George S. Brackett has been named as the government’s agent for West Virginia. Mr. Brackett is the secretary of the Northern West Virginia Operators’ Association and manager of the Producers’ Association. During the latter end of the war party he was appointed Acting Manager for the state under the U. S. Fuel Administrator.

BRITISH COLUMBIA

The Chin Chinn Coal Co., a Seattle concern, has restarted the development of its property in the North Shore mining district. It closed down at the end of last year, after producing small quantities of coal. The company has done a considerable amount of tunneling, drifting and diamond drilling. The coal field is described by Professor U. L. Uglow in Part A of the summary report of the Canadian Geological Survey for 1921, which has just been issued.

ONTARIO

The Black Diamond and Coal Co., Ltd., has organized with headquarters at Toronto. The charter just issued authorizes the company to engage in the wholesale and retail coal business. The authorized capital is $10,000 and the directors are J. L. Ross, L. Y. Sutton and E. M. Carruthers, of Toronto. J. E. Ryan, vice-president of the F. A. Fish Coal Co., Ltd., Toronto and Pittsburgh, has resigned his position after seven years of service.

The government peat plant at Alfred, which was tried out last season, is in full operation. B. F. Haanel, of the Federal Mines Branch, the government’s peat expert, has been appointed general manager.

The Coal Operators’ Association of the U. S. Bureau of Mines, is visiting the experimental stations with the idea of improving their work and standardizing office clerical procedure.

C. E. Augustine, a fuel engineer of the Bureau of Mines and of the Veterans’ Bureau, will visit all hospitals in the United States and small town institutions to make reports and recommendations on the equipment that may be used in fuel-heating equipment and in the selection of fuel.

The Grand Trunk Pacific has for many years as an assistant to the Director of the U. S. Geological Survey, has resigned to undertake the practice of mining law.

George S. Bire, chief mining engineer of the U. S. Bureau of Mines, is making a tour of the large producing districts, and will visit British Columbia before his return to Washington.

The West Virginia-Kentucky Association of Mining Engineers and Electricians, of the United States, will hold its annual meeting in connection with the annual meeting of the National Mining Association at the City Hall, Huntington, W. Va., Sept. 19-22. Secretary, H. Smith, 312 Robinson Building, Huntington, W. Va.

National Exhibition of Chemical Industries will hold its eighth national exhibition at which 200 concerns will be represented. The meeting will be held Sept. 18-21 in the Hall of the International Exhibition Hall.

American Mining Congress, Twenty-fifth annual convention and exhibition of mines and mining equipment will be held at Pittsburgh Sept. 28-30. President, H. B. Porter, convention manager.

American National Exhibition of Power and Mechanical Engineers will hold its fall meeting the week of Sept. 25 at San Francisco, Cal. It is proposed to arrange for the meeting to be held Sept. 16, stopping at different cities en route. The meeting will be held at the Carnegie Institute of Technology, Pittsburgh, Pennsylvania.

American Chemical Society’s annual fall meeting will be held at Pittsburgh, Pa., divisional meetings will be held at Carnegie Institute of Technology, and in the Pennsylvania State Hall.

The Rocky Mountain Coal Mining Institute will hold its next meeting at Glendale, Calif., Sept. 7-9. Secretary, F. W. Whiteside, Denver, Cal.


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Wanted—A Policy

DAZED with the overwhelming defeat they have suffered, operators are asking each other: How in the world did it happen? How did Lewis do it? Look back over the past six months, check up this generalization. Lewis fused all the issues raised by the operators—the check-off, wage reductions, district vs. other forms of settlements, open shop, broken contracts—and made one issue to put before his men. He told them that all these things meant one thing and only one thing to them—disruption of their cherished UNION. He was on the defensive on every issue save one, that of the broken contract, yet by selling the idea to his members that the whole strike was precipitated by the operators for the purpose of tearing down the miners' defense, their organization, which alone stood between them and "poverty, suffering, degradation," he unified his ranks and won his fight.

The operators, on the other hand, scattered their fire. They divided at the start on the matter of whether to meet in a Central Competitive Field conference. Some posted notices of one wage reduction, some another, some none at all. Some stressed the issue of the check-off, others did not. A few groups of operators handled their own situations with finesse. They built up records that standing alone were unassailable. But no two built the same structure, and but the flimsiest liaison was maintained. There was no unity of action. There was not, and is not now, a leader among whom the operators could or would rally. No rallying cry was raised to hold them.

The story is not complete without mention of the very obvious fact that what has been said about the lack of unity among the operators can be said with equal truth with respect to the administration at Washington. Taken as a whole the administration offered no help. Of course it could not have been expected to take sides, but it might at least have been so led that it could have clarified the issues for the public whom the government represents. Instead there has been a policy of in and out and in again.

If the operators are dazed over the final outcome, the public is amazed. Slowly—only during the past few weeks—has the realization of what it means to the man on the street been dawning on that individual. The public is but now coming to appreciate what it portends to this country to have such arrogant power in the hands of one man. It is not that he is a labor leader—the reasoning and the attitude would and should be the same were that man on the other side. Therein lies the chief danger to Mr. Lewis. He has overstepped the bounds and it will be his undoing.

History has recorded more than one victory gained at the peace table by a contestant defeated on the battlefield. The peace table for the bituminous-coal industry is set for Cleveland and the date is Oct. 2, next. The program is that the United Mine Workers and operators from all organized soft-coal fields will there and then assemble to consider ways and means of negotiating their next working agreements and contracts. This much is specified in the arrangement to which Lewis fixed his signature at Cleveland on Aug. 15 and to which some of the coal operators have agreed.

Not all the operators have signed these terms. Illinois, central Pennsylvania and others have not so obligated themselves. Nevertheless they may attend, and to this end they have been careful not to go on record to the contrary. This much may be said for this prospective conference, the purpose of which is ostensibly to insure future peace in the industry—the operators may as well stay away as attend in their present disorganized state of mind. Unless the soft-coal producers at Cleveland next month present a solid front, unless they can match organization with organization, they go but to listen to terms.

Clearly enough if attendance among operators is confined to the few who actually signed a "Cleveland" agreement, Lewis will give it scant attention. To some among the operators this meeting offers high hope of constructive action, but to Lewis, an opportunist, it will be just what the developed circumstances may afford.

Should a substantial majority of soft-coal men elect to participate, and they doubtless will be encouraged to do, the result will be a fiasco for them unless they go there united on a program, sufficiently cowed by their present defeat to accept national leadership. There is small chance that the operators can dominate the situation, but there is a chance to divide the honors.

Less than a month remains before this opportunity is opened. In a struggle of force, Lewis won hands down. Can he repeat in a battle of wits?

The Last Stronghold

WHEN last week the Pittsburgh Coal Co., signed the Cleveland agreement with the United Mine Workers the last of the opposition to the union in this strike was crumpled. The contest between these two has been a contest of force from the beginning, with the odds all on the side of the union. Fighting force with force is all right when the opponents are of comparable strength, but when the United Mine Workers matches strength with one coal company, even though it be one of the very largest, the ultimate end is never in much doubt.

The world loves a fighter, and it respects a fighter who knows when he is beaten. The Pittsburgh Coal Co. could have held out to the limit of its financial resources and the country have had all the coal it required this winter, since coal supply and not mines and miners will set the total output. We will wager that the victorious union has a wholesome respect for the company that stood it off until there was no point in further fighting, even though the union deserves little credit for this particular victory.
Potentiality of the Anthracite Situation

NOTHING could be plainer, in the light of recent events, than the dynamite concealed in the anthracite situation. It required a sudden awakening on the part of the East to the hopelessness of the anthracite situation a few weeks ago to really arouse the public and Congress to the real facts of the coal strike. Hard coal goes to the homes and when their security is threatened the public wakes up and speaks.

Whatever form the wrath of the public may take and whatever legislation may be aimed at coal, the main-spring of motive may be traced back to hard coal. Immediately the majority of the bituminous-coal mines resumed operation and the hard-coal mines remained idle, the public grasped the significance of the situation. It was able for the first time to see behind the big talk of the union, which has pushed the anthracite controversy into the background for five months, and then to get a true perspective.

No single group of coal operators this year has kept its case so well in hand and the issues so clear as have the hard-coal men. The circumstances of the strike and the willful misrepresentation of the union have until recently prevented them from realizing the deserved benefits of their well-conceived efforts. When they narrowed the controversy down to an admission of defeat on the matter of wages and asked only that they and the public be protected from future disruptions to mining and be assured of continuity of household fuel supply, the public saw the point and rallied to their side. In a clear field, unencumbered by a nationwide soft-coal strike, the anthracite-coal operators could have won this year. But then had there been no soft-coal strike it is a fair assumption that the union would have refrained from a trial of strength in the hard-coal regions. They used anthracite as a sympathetic strike to help win the other.

What Will Happen in April

FORECASTS always are dangerous, and it would not be well to attempt to say just what will happen next April. Most persons are disposed to believe that by that time the market will be glutted with bituminous coal and that wages in the non-union regions being lowered will be impossible for the operator in union districts to offer the 1920 scale, for without contracts and with lower wages in competing districts which are fully able to supply at least a large part of what coal is needed there will be no possibility of running the mines in union regions more than a day or so in each week.

Increasing business may by that time have modified the situation so that the prospects will be brighter for greater activity than has been outlined. Car and locomotive shortage and severe winter may prevent the accumulation of stocks by consumers. Business activity may prevent the non-union fields from cutting wage scales as low as in 1921, and the increased cost of living may make less forcible the call for deflation in mine wage scales.

The operators who have been calling for arbitration doubtless are perfectly willing to have the issue based not on present conditions but on those prevailing about the time of the proposed award. Arbitration of the bituminous scale is now, however, unlikely. The best we may expect to have is a report on the subject at issue, but when it comes it will give utterance as to later conditions than those now confronting the industry, and they, as has been said already, may be more favorable than those now being faced. The operators' proposal has been entirely equitable even if it should be found in 1923—which is perhaps not likely—that we are on the crest of an inflation wave as high as that in 1920.

Some increase in the demand for bituminous coal undoubtedly will arise from the displacement of hard coal with soft during the coming winter. British coal will hardly come here in quantity, as the price is likely to rise to such a height as to prove a deterrent. Efforts to place the domestic coal of Great Britain in the American market as a substitute for anthracite should and is likely to fail. The coal used for house heating in England is a fuel that will burn in an open grate. It is not what we would term anthracite, for among other qualities it has that of giving a plenitude of smoke. It also cooks like the bituminous or semi-bituminous coal that it is.

Unless the bituminous coal supply fails it is useless to bring coal from Wales or Durham to make up for the anthracite deficiency, except perhaps coal from Pembrokeshire. Better coal than most of it for domestic heating can be found in the New River, Pocahontas and central Pennsylvania regions. It must be remembered that more than 12 per cent of the coal in the United States other than anthracite—that is, that which in a broad classification is known as bituminous—is used for domestic heating. In fact large areas of the country have never used any other coal for that or any other purpose.

Is Henry Ford Learning?

IN THE boom year of 1920 the greatest scandal in coal prices was raised by the indiscriminate, wild bidding for coal, particularly in the eastern Kentucky fields, by the agents of Henry Ford. As many as five or six buyers representing this manufacturer were in each field, unknown to each other, commissioned to get coal and get it at any price. They bid against each other, and because they were after almost unlimited tonnage they put the price to the sky for other buyers. Coal producers will long recall the orgy of buying that Ford staged in that memorable year. For the heights reached then the responsibility is generally placed on Ford's practice of buying before the coal was dug and over the head of every other user.

Now comes the same Mr. Ford with the announcement that he will close his plants before he will pay the robber prices the coal men are asking, that he will cease the production of flivvers rather than take coal away from the needy people of the Northwest. Such compassion touches the heart. For one who has never hesitated to bolster the labor market with wage increases and who has hitherto been the support of high coal prices this change of heart is noteworthy.

One cannot help wondering whether the sagacious Mr. Ford has not again sensed a slump in demand for his product and is not taking this method of letting down from peak production. He has never been known to permit a matter as small as $1.50 in the cost of a single car to interfere with his operations.

Too much of the energy of the business revival seems to be concentrated at the mourners' bench.—Canton Repository.
Haulage, Hoisting and Dumping Practices At Rosedale Mine

BY GEORGE A. RICHARDSON

Largest Mine Locomotives Made Haul 145 Cars, Each Holding 1½ Gross Tons — Hoisting Shaft Has Coal Well Carrying Coal to Skip-Loading Level — Shaft Capacity 10,000 Tons Daily — Steel Guides — Hilted Sprags

A previous article† has described how trips of coal in the Rolling Mill mine of the Cambria Steel Co. are discharged by rotary dumps into a well in the Elk Run shaft which carries the coal from the Cement seam to the Miller bed, where a hopper delivers it in measured quantities to a trip of mine cars for delivery to the Rosedale coke plant.

From Elk Run shaft the coal is hauled directly to Rosedale through a heading 7 ft. high and about two miles long. An interesting feature of this heading is its wonderful roof, which is self-sustaining throughout its entire length. Not a piece of timber of any kind is used from one end to the other including the section under the Conemaugh River. It is one of the longest headings in the country to be maintained without the use of timber.

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†Midvale Steel & Ordnance Co., Cambria Steel Co.
‡"Cambria Steel Co. Drops Coal Down Well, Loads It at Bottom and Hauls It to Oven," Coal Age, pp. 313-315.

Note—The illustration which forms part of the title of the article shows the "bottom," or hanking, of the runway-supply shaft at Rosedale No. 5, which is 159 ft. deep. The roof is so exceptionally good that it stands unsupported over two tracks as adamant as if arched with concrete.

The track is laid with 70-ft. rail, and, as the loads are heavy, it is supported by wood ties. In every other part of the mine including the working faces steel mine ties are used. It is interesting to note that the latter were developed originally largely to meet the needs of the company's own mining operations. They are used wherever rail sections not heavier than 60 lb. per yard are required.

The trips are hauled by electric locomotives, two of these being the largest of their type that have been built to date. They are of the following general specifications: Weight, 35 tons; gage, 45 in.; motors, three 250-volt, each of 125 hp.; height over all exclusive of trolley, 4 ft. 1½ in.; wheelbase, 10 ft.; length over all excluding bumpers, 22 ft.; width overall, 6 ft.; driving wheels, cast iron with steel tires, 36-in. diameter; wheel tread, 3½ in.; wheel flanges 1x1 in.; gear ratio, 15 to 74; control, pneumatic-electric and arranged for dynamic braking; brakes, hand and "straight air"; ventilation of motors, forced. Each of these two 35-ton locomotives will haul a trip of 145 cars, all of which have a capacity of 1½ gross tons.

At the Rosedale end of the heading are two shafts.

ROTARY DUMP IN MILLER SEAM NO. 6 SHAFT. Here the cars from the Elk Run shaft are dumped in a ttipple of the pneumatic rotary type at a speed of 8 cars per minute, in one hour 480 cars can be discharged. Each dump holds two cars. The dump is tilted to the dumping position and back in 6 seconds, the stroke being cushioned on air. Four pneumatic cylinders actuate this dump.
known as Nos. 5 and 6. No. 5 shaft is the man-and-supply shaft. No. 6 is used for hoisting coal. The dumping equipment at the latter shaft is of the pneumatic rotary type, the specifications being quite different from those at Elk Run. Before considering them, the first or upper one in the Cement seam dumps into a coal well which allows the coal to drop down into a storage bin below the level of the Miller seam as shown in a cross-section of the shaft. The dump in the Miller seam discharges directly into another storage bin on the opposite side of the hoisting shaft.

These dumps hold two cars and are designed to operate at such a speed that 8 cars per minute can be dumped continuously, or 480 cars per hour. The actual time necessary for dumping the loads and returning the empty cars to an upright position is 6 sec. Air is used to operate these dumpers, four pneumatic cylinders being provided which permit of the rapid and positive operation of the dump. They are so constructed that each stroke is cushioned on air.

The car hauls used for delivering cars to these dumps are designed each to handle trips of 120 loaded cars. They are able to start a trip from rest and bring it to a speed of 72 ft. per minute, maintaining that speed on a 1 per cent favorable grade. They are operated by a 20-hp. motor. Similar equipment is used for handling the empty cars when they leave the dumps.

The coal from the dumps goes into two weigh pans, one for each dump, each consisting of two units, and is weighed by automatic recording scales. Cut-off gates control the flow of coal into the measuring pockets. Each dump has two of these. They are

THIRTY-FIVE TON ELECTRIC MINE LOCOMOTIVE
This is the largest locomotive of its type ever built for mine service. It is used for hauling trips of 145 cars holding 3,360 lb. each from Elk Run shaft to the Rosedale shaft. It runs on 76-lb. rail, the weight being distributed over six wheels. The gauge of the locomotive is 45 in., the wheelbase 16 ft. and the over-all width 6 ft.

however, it is well to mention the conditions at the point of discharge.

Provisions have been made for receiving coal from both the Cement and the Miller seams in the Rosedale field. Hence two rotary dumps have been provided.
Skip-Filling Arrangements

Coal comes to the skips from two sources, the rotary dump on the left and the coal well on the right. The former is fed by cars filled for the most part at the Elk Run shaft (Rolling Mill mine) and also from the workings in the Miller seam at Rosedale (Rosedale No. 6). The latter takes care of coal from the Cement seam at Rosedale (Rosedale No. 5). Arrangements are made to weigh the contents of each car separately. For this purpose weigh hoppers or pans are placed under half of the rotary dump.

Operated by air, the controls being at the mine level. Each dump has also two loading gates to control the flow of the coal from the measuring pockets into the hoisting skips, which have a capacity of 8 tons. These gates are of the safety type and so designed that they stand open only when the skip is in the loading position at the bottom of the hoisting shaft. The weight of the skips and counterweights operate the gates automatically so that each skip loads itself when it lands at the bottom. If by any chance the counterweights should become loosened, the gates would drop to the lowest position, closing the openings.

No. 6 shaft is 232 ft. deep. Over it stands a steel headframe 175 ft. high. The coal is hoisted up this shaft and dumped into a large storage bin at the top of the building which houses the coal-washing apparatus. The handling of the coal from this point on will be treated in a separate article to appear at a later date.

The shaft has two compartments so that the hoisting is balanced, the empty hoist aiding in the raising of
The full skip. The hoist, itself, having a cylindro-conical drum is located in a building at one side of the shaft and is operated by a 1,000-hp. motor working on a 2,200-volt 3-phase 25-cycle current at 370 r.p.m.

The original specifications called for equipment to handle 17,000 lb. (8 long tons) of coal per trip at the rate of 36 sec. per trip, or 100 trips per hour, totalling 750 tons. The delay allowed for dumping and loading was 10 to 12 sec. This capacity has been greatly exceeded, and the skips are able to handle 20 tons per minute, or nearly 10,000 long tons per day of eight hours. The level of the skip dump is 125 ft. above the ground, making the total approximate travel a little more than 350 ft.

The man-and-supply cages operate in a double-compartment shaft, 170 ft. deep. The hoists each have cylindrical drums 7 ft. in diameter driven by 250-hp. motors operating on a 2,200-volt 3-phase 25-cycle current. The cages have been designed to handle a load of 11,000 lb. and can raise 600 cars of rock per day. The hoist will also lower approximately 11,000 mine props daily (25 in a car) in addition to rails, men and miscellaneous supplies.

One of the most interesting features at these shafts is the installation of 100-lb. standard-rail steel guides. This may be said to be a revolutionary development, for up to the present time it has been thought that it was not safe to use steel for this purpose.

In the past it was believed that safety catches could not take a tight grip on the guides if made of steel, and this objection was raised when the use of them was first broached by the Cambria Steel Co. It was only after exhaustive tests had been made which showed conclusively that a cage could be stopped on steel guides in a distance of 1½ to 2 in. that the installation finally was approved. These guides have given absolutely no trouble, and they have never failed. Any mining man knows the heavy costs of replacements where wooden guides are used, whereas steel guides will last as long as the mine opening itself. Another interesting feature in the construction of this shaft is the use of steel buntions.

At No. 5 shaft, rock cars are landed about 30 ft. above the level of the ground and are discharged by a hand-operated rotary car dump. The car runs into a spring-operated mechanism which clamps it against the bumpers or horns that are permanently attached to the ends of the rails. After a car is dumped and restored to the upright position, a trip releases the spring clamp, and the car is backed out to make room for the next one.

The rock which is brought up out of the shaft at this place is dumped into railroad dump cars and taken to the slag dump. The rotary dump just described is not
FEW IF ANY SHAFTS HAVE STEEL GUIDES BUT STEEL GIVES GOOD RESULTS AT ROSEDALE.

Many have declared that safety catches will not hold heavy cages effectively unless wood guides are provided into which the sharp edges of the clutch would effectively enter. Experiment has shown that catches can be installed that will grasp the 100-lb. railroad-iron guides at this shaft with such force that the cage detached from the rope would stop in 1½ to 2 in. without fail. The rails once placed will give unimpaired service as long as the shaft remains in use. The use of steel buntons also is shown.

much used as little rock is brought out of the mine, most of it being stored inside.

The mining methods at this colliery are much the same as those in general use, room-and-pillar methods being employed. Owing to the exceptionally good top, falls of roof give no trouble.

Drainage likewise presents no special problems. A pump house and sump are located near the bottom of No. 5 shaft. This sump will hold 360,000 gal. of water. Under present operating conditions a three-stage centrifugal pump of horizontal type with direct-connected motor is used, the pump being operated only about 2½ hours in every ten to eleven. Another pump is being installed to be used in case of necessity.

Steel sprags of ½ and ½-in. pipe are used almost exclusively. These are of two types, one plain with a ring on the end, the other with a hilt. Where the hilt is used it is shrunk and welded on the pipe.

Hoisting Engine

This is the main hoist by which all the coal produced in the Rosedale and Rolling Mill mine is lifted. Coal from the Cement bed at Rosedale is dropped down a coal well to a point at which the skips are filled. That from the Rolling Mill mine is dropped down a well at Elk Run shaft to the Miller seam and is hauled to the Rosedale shaft, where it, with the Miller seam coal removed at Rosedale, is also dumped down to the skip level.

HEADFRAME AT NO. 6 SHAFT, ROSEDALE MINES.

This tower is 175 ft. high and is located with the coal washery, a short distance from one end of the coke ovens. The shaft is 282 ft. deep. The coal is dumped into a large storage bin at the top of the building.

Steel sprags are a safety provision as they eliminate many thumb injuries. They are especially suitable for use in rooms but are not so necessary where the cars are spragged by men who are experienced in the work, for, owing to their experience and skill, regular spraggers seldom have accidents of this kind.

The motor barn is a large brick structure built in the
Rotary Car Dumper Used at Surface for Discharge of Slag into Railroad Cars.

Only coal is brought up by the main hoist and it is raised in skips. The rock is brought up in the car by the cage hoist in the manway-supply shaft and is elevated to a point only 30 ft. above the level of the ground. The car is run into a rotary dump which is actuated by springs. Bumpers, or horns, attached to the dump hold the car when it reaches the right place on the rails in the tippler, which then revolves enough of a revolution to discharge the rock. The dump is on an upgrade of 15 per cent so that the car when released will run out of the dump toward the shaft switch by gravity. A 15 per cent grade leads down from the shaft landing to the switch so that the loaded car reaches the dump at some speed, running thereto by gravity. Much of the rock is stored in the mine, and the dump therefore is not kept very busy. What is dumped is taken to the slag pile.

Miller seam, near No. 5 shaft. It is sufficiently large to house the 35-ton electric locomotives. It contains a drop pit and a chain fall and a trolley capable of lifting any motor up to and including the 35-ton size.

A separate room adjoining the barn is used as a supply room for motor parts. It is provided with steel bins, racks and other conveniences in accordance with the best modern practice.

Sand for locomotives is dried at the surface with the aid of steam. It is then passed down boreholes that have been drilled through the overburden to both seams.
The skids which on heavy grades are used under the cars are in many ways original, though the basic idea has been used before. The illustrations clearly show the way in which they are made and applied. They have been used with the greatest success, and they are especially needed where trips of the length of those in this mine have to be handled.

Where timbering is necessary steel mine timbers with wooden legs are used. These are made up of a pair of 4-in. 10-lb. I-beams riveted at the ends to short pieces of channel which serve as caps for 8x8 in. posts. The I-beams are separated by spacers and bolted together. These are known as double cross bars. The diagram shows further details. By this arrangement most of the advantages of all-steel timbering are obtained. Wood posts can be fitted more readily than steel legs as they can be trimmed to the required length by a saw.

The cars at the mine are of unusual construction. They were designed by the general superintendent of coal-mining operations of the Cambria Steel Co., who has patented the form of construction used. The main claim for these cars is that they are unusually strong particularly in a longitudinal direction which is that in which the greatest shocks are usually sustained. In case of accident the wood shock absorber and the method of its reinforcement make it practically impossible to telescope the cars.

An inverted channel section is pressed in the bottoms of these wagons so that it projects upward into the car. On the underside and in the channel section is placed the wooden shock absorber which is a piece of plank 3x9 in. and 9 ft. long. When bolted in place it is flush with the bottom of the car. The ends of this plank are capped by bumpers. The plank cushions any shock the car may receive, and the channel section by its stiffness provides the wood filler with the required strength. Tests have been made which show the greatly increased strength obtained by this method of construction. Two types of cars were tested with identically similar impacts. One of these, an ordinary car, was practically destroyed whereas the other, one of the type just mentioned, received practically no injury.

From the foregoing descriptions it will be seen that these mines are excellent examples of modern and advanced coal-mining practice. Every effort has been made to increase production and at the same time add to the safety and economy of the methods used. Even laymen who visit these mines are conscious of the fact that they are well equipped.

The Cambria Steel Co. operates its mines solely to take care of its own needs and most of the coal produced is converted into coke. The coal from the mine described does not, of itself, coke readily, and it is necessary to mix it with coal obtained from other of the company's mines. This will be taken up in greater detail in a future article dealing with the Rosedale coal washery and the byproduct coke oven equipment, which represent the last word in equipment of this kind.

In conclusion it may be said that one is at no time more struck by the tremendous strides that have been made in coal-mining methods than when one compares the present plant at this mine with those that preceded it. From the days when hand drills, mule-drawn equipment and manual labor sufficed to the present time with its improved methods and tremendous production is indeed a far cry.
Pulleys Having Cork Inserts Set in Face Are Used to Keep Belt from Slipping

A SLIPPING belt on a heavy drive makes trouble, which may be of several different kinds. In the first place the driven shaft or machine is not operated at its calculated speed; second, the belt is subjected to heavy wear and, third, the squeak or squawl developed is likely to be highly objectionable. Various palliatives may be applied. Many belt dressings have been placed on the market that are said to work wonders. Particularly if the drive be at high speed, drilling holes in the face of the smaller pulley (drilling out from 10 to 25 per cent of the area is usually sufficient) may accomplish the desired result and stop slippage.

Still another means of increasing the adhesion of a belt to a pulley is to cover the pulley face with a strip of belt, which should be neatly lapped and riveted or cemented in place. If the emergency is dire and requires immediate correction, even though this be only temporary, sifting powdered rosin between the belt and the wheel usually will stop slipping at least for a time.

All of these expedients, however, are open to many objections. The time to prevent a belt from slipping is when the machinery is first installed—before slippage has had a chance to start. On straight belt drives—that is, those where the belt is not crossed—other things being equal, slipping will take place at the smaller pulley, as this has the lesser arc of contact. The logical method of preventing slippage is to increase the adhesion of the belt to this pulley to such an extent that it will at least equal its adhesion to the larger pulley.

The accompanying illustrations show a 300-hp. belt drive installed in the Coaldale breaker of the Lehigh Coal & Navigation Co., where an attempt has been made to obtain the results just outlined. Here a 44½ in. diameter by 38 in. face split steel pulley provided with cork inserts is mounted on the shaft of the driving motor. This machine has a rated speed of 365 r.p.m. and drives a 12-ft. line-shaft pulley, also of 38 in. face. The motor shaft, as may be seen, is extended to an outboard pedestal bearing mounted on the same bedplate as the motor and moving on guide rails with it. This makes an extremely simple and "husky" drive and one that should give both extreme positiveness and a minimum of trouble. At first sight it would appear that the cork inserts would not be durable but it is said that they wear indefinitely and are practically unaffected by dust, oil or water.

The breaker in which this drive is installed, it may be said in passing, is one of the largest and most modern in the entire anthracite region. The former structure occupying this site burned, and to prevent a recurrence of such a loss the new building has been made as nearly fireproof as possible. Approximately 2,500 tons of structural steel has been used in its construction. It is seven stories high and has about 50,000 sq.ft. of concrete floor and 200 ribbed wire-glass windows in steel frames each 11x12 ft. in dimensions. Pipe coils spreading 30,000 sq.ft. of radiating surface will heat the building in cold weather. Ample toilets, lavatories and drinking fountains also have been installed. These are somewhat of an innovation in breaker construction. All jigs and other machinery are driven electrically, and a central control station has been provided.

A BUSINESS OPPORTUNITY of unusual promise has opened to the byproduct coke industry. Substitutes for anthracite coal must be found. Were production to start immediately, there would not be enough anthracite coal available this winter to go around. Large stocks of byproduct coke are available, thus offering that industry an opportunity to prove that coke is as satisfactory a fuel as is anthracite and can be had at less price. It remains to be seen whether the industry can resist the temptation to exact the highest possible price and sell its product at a small margin of profit with the idea of popularizing the fuel. Under present conditions the industry can get fancy prices for its product. The hope is expressed by federal officials that the industry will show enough collective sense to sell coke at the lowest possible price and will send out a large force of men to show how coke may be burned to the greatest advantage.
By Uniting Two Collieries and Building a New Breaker Operating Cost and Degradation Will Be Reduced

On an Output of 430,000 Tons per Annum Madeira-Hill Interests Expect to Reduce Their Operating Force by Between 150 and 255 Men Exclusive of Eight Pumpers

By Dever C. Ashmead*
Kingston, Pa.

In the early days of anthracite mining a breaker was built at almost every mine opening. Originally these structures were of small size and when their capacity reached 200 tons per day they were considered large installations. It was found, however, that much labor was required to operate these many small plants and when this became expensive and difficult to procure consideration was given to the consolidation of the many small breakers into a few of much larger capacity.

By building larger and more efficient breakers it was possible not only to make one new breaker take the place of two or more, simultaneously reducing the number of men employed in actual preparation, but also to cut down the outside force. A specific example will illustrate this general principle.

Two anthracite companies, known as the Greenough Red Ash Coal Co. and the Colonial Collieries Co., are each subsidiary to the Madeira-Hill Co. The breakers of these two firms are now about 5,600 ft. apart. The two properties under operation were separated by a tract of land 1,400 ft. wide, controlled by another company. The Madeira interests accordingly obtained possession of this piece of ground, and the two properties were thus consolidated.

Double Plants and Forces Necessary

The annual output from one of these collieries totals about 250,000 tons, and that of the other reaches approximately 180,000 tons. Under present arrangements two breakers are required to prepare this coal. Consequently two distinct forces of breaker and outside employees as well as two breaker and two outside forces are necessary. In addition to this, six pumping stations are required underground to handle the water produced each day.

All told, about 400 men are employed in and about these surface plants, 145 of whom are used in actual coal preparation. Furthermore, the breaker at the Greenough colliery is somewhat behind the best modern practice, and although the resulting product is of good quality, breakage and waste is excessive. At Natalie the breaker is more modern, but it is located well away from the center of the property as now constituted.

After careful investigation of existing conditions and the savings made possible through a consolidation of preparation operations, a point approximately midway between the present breakers was selected as the site.

Note—The frontispiece shows the surface plant of the Greenough Red Ash Coal Co. colliery at Marion Heights, Pa., which will be abandoned as soon as the new plant is completed that will combine the workings of this mine with those of Natalie.

*Anthracite Editor, Coal Age.
of the new shaft and preparator. This shaft will be sunk to the coal bed, a distance of 450 ft., and from its foot tunnels will be driven to connect with the present workings of both the Greenough and Natalie collieries.

This arrangement will present many advantages. All the surface haulage with which the present plants have to contend will be eliminated. By the time the new plant is completed the two or three small slopes now tributary to these breakers will be worked out and the roads leading to them will no longer be needed. Difficulties incident to transportation on the surface during the winter will be overcome, and the haulage, being entirely underground, will be conducted under more nearly uniform conditions. The six pumping stations now in operation will be consolidated into one. At present eleven men are required to take care of the pumps whereas under the new arrangement only three will be necessary.

In order to make the requisite underground connections it will be necessary to drive approximately 6,300 ft. of tunnel exclusive of the sixth lift in the Lykens bed. At present three slopes and one shaft are employed, requiring the services of eight hoisting engineers. Under the new scheme only one shaft and one slope will be used, for the operation of which only four hoistmen will be required.

At present the existence of two collieries signifies that two complete outside and two office forces must be maintained. Combining these plants will permit a similar combination of these organization units with a corresponding saving in expense. It is possible that the services of as many as 150 men will be dispensed with, as at present 260 employees are required for this work. Breaker, or preparation, forces might also be reduced as the result of such a consolidation. At present an aggregate of 145 men is required to prepare the coal. In the proposed new structure on account of improved equipment and processes now developed and available, forty to fifty men will be enabled to prepare the mine product effectively.

From the above estimates it will be seen that theoretically at least the services of 267 men may be dispensed with. It is hardly to be anticipated, however, that this saving will be realized fully. If, however, the consolidation of operations results in a saving of necessary labor amounting to the services of only 150 men and that their average wage is only $3.50 per day, the total saving in wages would be $525 daily. Assuming that these men normally would work for 265 days per year, an annual saving would be made in labor alone totaling approximately $140,000.

In addition to this labor saving, the cost of preparation could be lowered, for in a new breaker of this kind better design and improved methods of treatment will reduce the degradation of the coal. The figures presented above are not actual as will be promptly recognized by all those familiar with the conditions existing throughout the anthracite region. Thus the rate of $3.50 per day is too low but is here presented to show the obvious possibilities involved.

The new headframe and breaker will be of steel and as nearly fireproof as they can be made. The rest of the new buildings about the plant will be of hy-rib steel lath covered with stucco. This building group will consist of a combined machine, blacksmith and carpenter shop, a supply and office building, a house over the mine hoist, a motor-generator set and a compressor, a substation, a boiler plant (used for heating only), a locomotive barn, an oil house, a magazine, a local-sales scale house, and a modern timber yard. Of course a thoroughly modern wash house also will be provided. This building will be of sufficient size to accommodate 350 to 400 men.

Preparation within the breaker will be of the "wet type, and all sizes of two distinct kinds of coal will be prepared. That is, the Red and White Ash coals, both of which will be produced at this operation, will be prepared separately. All machines will have individual motor drives, but these will be controlled from a central switchboard.

The advantages to be derived from the proposed consolidation are manifold. They may be stated as follows: (1) Several miles of surface transportation now necessary will be entirely obviated; consequently no delays can be caused by inclement weather. (2) One breaker employing forty or fifty men will replace two requiring 145 men. (3) One outside

**COMBINED PLAN NATALIE AND GREENOUGH COLLIERIES SHOWING NEW DEVELOPMENTS AS PLANNED**

A shaft will be sunk and a breaker with all the structures essential for the operation of an anthracite mine will be erected. Gangways will be extended and two large turnouts provided. A long tunnel will take the water from a low point in the Natalie mine to the surface along the course of Coal Run Creek.
How to Find Economical Size for Airshaft

BY M. H. HALL*

When determining the size of an airshaft to serve a proposed mine it was customary until recently to make it conform exactly with the two hoisting compartments of the main shaft. These latter are usually designed to accommodate the mine car to be hoisted or are made similar to similar shafts operating satisfactorily under like conditions in the same region.

Such airshafts are not in accordance with good engineering. In many cases openings so proportioned have to be enlarged after a few years in order to decrease the pressure necessary on the air current, for a sufficient volume cannot be forced through the mine without an unreasonable expenditure for power.

The factors governing the economic size of an airshaft are as follows: The estimated life of the mine, the cost of sinking and lining, unit power cost, volume of air required and the interest rate on money invested.

The following table has been computed, assuming a depth of shaft of 100 ft., a coefficient of air friction \( k = 10\) and the following assumptions concerning costs, life of property, etc.: The estimated life of the mine is taken as 50 years, the cost of excavation at $15 per cubic yard, the cost of concrete lining as $30 per cubic yard in place, the volume of air required as ranging from 100,000 to 600,000 cu. ft. per minute, the unit power cost as 2c. per kilowatt-hour, and the interest rate on the investment as 6 per cent.

In the left-hand column the sizes of the assumed square shafts are shown, in the second column is placed the sinking or first cost. This includes the excavation and the concrete lining, both at the rates assumed. The third column contains the annual interest charge at 6

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*Chief engineer, Carter Coal Co., Inc.

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**TABLE FOR DETERMINATION OF ECONOMIC SIZE FOR AIRSHAFTS**

<table>
<thead>
<tr>
<th>Size of Shalt, Ft.</th>
<th>6% Int. and 30-90%</th>
<th>100,000 Cu. Ft. per Min.</th>
<th>200,000 Cu. Ft. per Min.</th>
<th>300,000 Cu. Ft. per Min.</th>
<th>400,000 Cu. Ft. per Min.</th>
<th>500,000 Cu. Ft. per Min.</th>
<th>600,000 Cu. Ft. per Min.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sinking Cost</td>
<td>Total Cost</td>
<td>Power Cost</td>
<td>Power Cost</td>
<td>Power Cost</td>
<td>Power Cost</td>
<td>Power Cost</td>
</tr>
<tr>
<td></td>
<td>1st Cost</td>
<td>Year</td>
<td>Per Min.</td>
<td>Year</td>
<td>Per Min.</td>
<td>Year</td>
<td>Per Min.</td>
</tr>
<tr>
<td>6 x 6</td>
<td>$6,600</td>
<td>$7,050</td>
<td>$3,525</td>
<td>$3,738</td>
<td>$3,950</td>
<td>$4,160</td>
<td>$4,375</td>
</tr>
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<td>8 x 8</td>
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<td>$12,375</td>
<td>$6,015</td>
<td>$6,465</td>
<td>$6,915</td>
<td>$7,375</td>
<td>$7,835</td>
</tr>
<tr>
<td>10 x 10</td>
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<td>$19,300</td>
<td>$9,160</td>
<td>$9,900</td>
<td>$10,650</td>
<td>$11,390</td>
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<tr>
<td>12 x 12</td>
<td>$24,600</td>
<td>$26,300</td>
<td>$12,400</td>
<td>$13,560</td>
<td>$14,720</td>
<td>$15,880</td>
<td>$17,040</td>
</tr>
<tr>
<td>14 x 14</td>
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<td>$34,700</td>
<td>$15,600</td>
<td>$17,380</td>
<td>$19,160</td>
<td>$20,940</td>
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</tr>
<tr>
<td>16 x 16</td>
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<td>$44,800</td>
<td>$18,800</td>
<td>$20,760</td>
<td>$23,640</td>
<td>$26,520</td>
<td>$29,400</td>
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<tr>
<td>18 x 18</td>
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<td>$56,900</td>
<td>$22,000</td>
<td>$24,600</td>
<td>$28,560</td>
<td>$32,480</td>
<td>$36,400</td>
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<tr>
<td>20 x 20</td>
<td>$64,800</td>
<td>$71,900</td>
<td>$25,200</td>
<td>$29,640</td>
<td>$34,800</td>
<td>$39,960</td>
<td>$45,000</td>
</tr>
<tr>
<td>22 x 22</td>
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<td>$92,400</td>
<td>$28,400</td>
<td>$34,560</td>
<td>$40,800</td>
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<td>$53,200</td>
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<tr>
<td>24 x 24</td>
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<td>$39,840</td>
<td>$47,160</td>
<td>$53,480</td>
<td>$60,800</td>
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<tr>
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<td>$45,560</td>
<td>$53,880</td>
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<td>$69,800</td>
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<tr>
<td>28 x 28</td>
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<td>$163,300</td>
<td>$38,000</td>
<td>$51,560</td>
<td>$60,880</td>
<td>$69,800</td>
<td>$79,700</td>
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<td>$41,200</td>
<td>$57,760</td>
<td>$67,960</td>
<td>$77,900</td>
<td>$89,200</td>
</tr>
</tbody>
</table>

Per cent on the first cost of the shaft, plus the sum that must be placed yearly at 6 per cent compound interest in order to amount to the first cost of the shaft at the expiration of 50 years or the life of the mine. This sinking fund or extinguishment charge is absolutely necessary in order that the original capital be not impaired.

The next and succeeding columns showing the assumed volumes of air to be circulated per minute are double. The left-hand half shows the power cost per year. This is the cost of maintaining the ventilating current continuously for one year at the assumed rate of 2c. per kilowatt-hour, based on an over-all mechanical efficiency for combined fan and drive of 66½ per cent. This is probably somewhat higher than is commonly attained even in first-class installations.

The total annual cost will obviously be the sum made up of the figure shown in column 3 plus the power cost for a given volume. This sum is tabulated in the second or right-hand half of the double column under the subhead "Total Cost, Year." Inspection of the total annual costs set forth in this column shows that a small shaft entails a high annual expense. This gradually decreases as the cross-section of the shaft increases until a size of maximum economy is reached, the increased fixed charge of which equals the decreased power cost.

In each total yearly cost column a horizontal line is drawn below the minimum cost for each assumed volume, making a broken or stepped line across the table. Following any horizontal portion or step of this line back to the first column the most advantageous size of square shaft to pass any assumed volume of air will be found.

The process involved may well be illustrated with an example. Suppose that it is desired to ascertain the economical dimensions for a shaft to pass 500,000 cu. ft. of air per minute. In the column subheaded "Total Cost, Year" under the volume heading of "500,000 cu. ft. per minute" the lowest cost is found to be $3,225 for a shaft 100 ft. deep. Following the line below this figure to the first or left-hand column the cross-section of the shaft is shown to be 20x20 ft.

Again suppose a comparison is desired between the relative economies of shafts of correct and incorrect cross-sectional areas. Assume that the proposed shaft will be 600 ft. deep and that 500,000 cu. ft. of air will pass as before. From the table, under the volume heading of "500,000 cu. ft. per minute" and the subheading "Total Cost, Year" a minimum of $3,225 for each 100 ft. of shaft depth is found. As the shaft is to be 600 ft. deep the total expense obviously will be six times this amount or $19,350. Now suppose that an attempt is made to ventilate the mine with a shaft that is 10x10 ft. in section, involving, of course, a greatly decreased
first cost. Under "500,000 cu. ft. per minute" and opposite a 10x10 ft. shaft a total yearly cost of $30,416 is found for each 100 ft. of depth, or a total cost for the shaft in question of six times this amount or $182,496. Subtracting the total yearly cost for the 20x20 ft. shaft from that of the 10x10 ft. shaft we have $182,496 — $19,350 = $163,146. This sum represents the annual loss chargeable to lack of knowledge or to failure to apply the principles of engineering economics.

This sum if placed at interest at 6 per cent and compounded annually will amount at the expiration of 50 years to approximately $47,367,800. On the other hand the saving effected by sinking a 10x10-ft. shaft in preference to one 20x20 ft. in dimensions, or $140,160 if also placed at interest at 6 per cent and compounded annually will amount to approximately $2,581,800 at the end of the 50-year period.

Evidently the ultimate economy obtainable from the larger shaft will amount to $47,367,800 — $2,581,800 = $44,786,000 at the expiration of 50 years or the estimated life of the mine.

All figures here set forth are the results of slide-rule calculations. They probably are sufficiently accurate, however, for all practical purposes.

Speed-Reducing Gear Lowers Headroom
Needed for Loading-Boom Hoist

NECESSITY, in a low-roofed machine shop exercising her well-known maternal instinct toward invention, has produced a new type of electric hoist which conserves room, is rapid in operation and readily spots a loading boom or other load. The machine is expected to reduce the degradation of coal during loading for those who supplant hand power with mechanical for the raising and lowering of loading booms. For two years this machine has been in everyday use, several sizes having been employed for various purposes in shops and foundries. Some months past three units were installed by the Sincerity Coal Co. at Marion, Ill. This hoist, known as the McCollum, is now being formally introduced to the coal industry by Roberts & Schaefer, engineers and contractors, of Chicago.

The Sincerity Coal Co. has three double-chain hoists of this type, attached to an equal number of shaking loading booms. The capacity of each of these hoists is 2 tons but machines are made in 2-, 3-, and 5-ton sizes. They are applicable to either the shaking or the apron type of loading boom; the double-chain hoist (Fig. 1) is especially adapted to the shaking type, and the single-chain machine (Fig. 2) to the bottom of apron type.

The new hoist is simple, compact and rugged. All these desirable qualities are made possible by the use of a special annular gear reduction interposed between the motor and the chain sheave. By the use of this gearing a high ratio of speed transformation is obtained efficiently and in a small space. This makes it possible to employ a high-speed motor, one of 1,800 r.p.m. being generally used. Such a motor is lighter, less cumbersome and cheaper than one delivering the same power at a slower speed.

This speed-reducing mechanism can be driven only from the motor end. As a result the torque produced by a suspended load has no tendency to cause the mechanism to rotate and allow the load to descend. This feature makes it possible to do away with the strong electrical and mechanical brakes heretofore essential in hoisting apparatus. A small friction brake is employed to check the momentum of the motor rotor when current is shut off. This permits accurate placing of the load.

FIG. 1. DOUBLE-CHAIN BOOM HOIST OF SIMPLE DESIGN

One chain is attached to each side of the boom or chute and passes over a suitable sheave on the main shaft. Thus as this shaft is revolved both sides of the car-loading device are raised or lowered evenly. Motor control is obtained by means of a rope hanging within easy reach of the car trimmer.
Safety-First Instructions Much Needed In Mining

Disregard for Safety-First Rules Causes Accidents—Miners Not Wholly to Blame—Safety Instructions Needed to Reduce Accident List

Reading the interesting letters that have appeared in Coal Age, discussing the accident that occurred when a miner was burned by going over or around a fall of roof, in his working place, in attempting to see if the fireboss had marked the face of the coal, I have been impressed with the thought that there must have been a lack of suitable safety instructions in that mine, either that or the miner wholly disregarded the instructions given him.

In the first place, let me say that I do not approve of a fireboss marking only the face of the coal to indicate that he has examined the place and found it safe for work. That is not to say, however, that a fireboss should not mark the coal face; but I contend he should also leave a mark at the last breakthrough, unless it is understood that the miner, not finding any mark back from the face, can assume that the place is safe for him to proceed to his work.

Lack of Safety-First Teaching Responsible for Accidents

In my opinion, the lack of safety-first teaching in that mine, had more bearing on this accident than anything else. I feel that if men are properly taught, along the right lines, they will not attempt to go over a fall to hunt a supposed mark made by the fireboss.

Finding a mark on the face of the coal, beyond the fall, would only show that, either the fireboss had made a very hasty and careless examination of the place, or that a condition had developed since and the fall had taken place after the fireboss had gone.

Taking all into consideration, I cannot say, as many have already claimed, that this miner was wholly to blame for the injury he received when he went beyond the fall. My thought is that some blame attaches to all concerned. It seems to me that there could not have been sufficient interest taken by those in charge and whose duty it was to give the men the necessary safety-first instructions.

After an accident has happened, it is always easy to tell how it might have been avoided. I wonder how many mine officials, who have read these letters, have similar conditions now existing in their own mines and, yet, give the matter little further thought, passing this warning by as of little importance.

That, to my mind, is our worst trouble. We read an account of what happened in the other fellow’s mine; but it does not occur to us that the same thing is liable to happen in our own place. If the same thing should occur with us, however, we would at once get busy and do what was necessary to avoid its recurrence.

There are roof conditions that make it impossible for any man to examine and say with assurance that it will not fall within two or three hours, though there may be no signs of weakness apparent at the time the examination is made.

For this reason, I do not feel that a fireboss can be held responsible for such an occurrence as the one mentioned. However, to make myself clear on the situation, I believe that should such a thing happen—it ought to make a fireboss more cautious and thorough in his future examination of places. In other words, the lesson should not be without its moral effect.

My observation proves to me that many accidents in mines result from the lack of interest on the part of both the men in charge and the workers; and this applies to other industries as well as to coal mining. The men in charge too often pose as leaders while their acts belie their claims to leadership.

Certified Men Mistaken Who Think They Know It All

Speaking of certification, I cannot but think that many of our certified men feel as if they knew it all, and have done and are doing all that is required of them as officials. Here, let me say, is where they are all wrong. When a man receives his certificate he has only just started; stopping there, it will certainly prove a failure.

When a man is placed in charge of a mine is the time he should start to study and train others in regard to the meaning of safety-first. He should organize safety-first meetings, with the aim of giving instruction along lines that will make work safer for the men and more effective.

Any mine superintendent or foreman who regards such efforts as a waste of time is unworthy of his calling and unfit for the position he holds. A good rule for any man to follow is to try to teach other men what he has been taught and what has helped him. It is no waste of time for a man to be a booster of safety-first. It pays.

It has always been a surprise to me that mine officials, whose companies are spending large sums of money for safety, rarely talk safety to their men, or give them needed instruction along that line. Let us hope that a deeper interest will be taken by mine officials everywhere in starting and maintaining safety-first and institute meetings, for the benefit of their men.


Teach Rudiments of Mining in the Common Schools

Decrease of American Miners—Cause found in lack of early education—Effect shown in accident list.

One of the outstanding features in the mining of coal that is apparent to even the casual observer is the rapid decrease of American miners employed in our mines. Other writers have drawn attention to this matter and numerous remedies have been suggested, such as courses of training for miners and other incentives to the study of mining.

It is generally conceded that the employment of so large a class of foreign labor, ignorant of the principles of mining and unable to speak the English language, is responsible for the high accident list. Closer supervision of the work has been advocated as a means of eliminating many preventable accidents. It appears to me, however, that we have not as yet gotten at the root of the matter.

In seeking to ascertain the cause why young men, born and bred in mining communities, drift into other occupations, I am led to conclude that the underlying cause for their choice is the lack of early education in mining and its allied subjects.

In our school system, even in mining communities, it would seem that little, if any, attention is given to the teaching of the rudiments of mining in the common schools. Children are taught almost everything bearing on other callings and industries. But those subjects that deal with underground conditions, the study of the coal for...
Firebossing

Time and distance important factors in firebossing—Full may occur in a place examined shortly before—Fireboss foolhardly to attempt to pass beyond a fall.

Speaking of firebossing and the possibility of a fall taking place after the examination is made and before the men enter for work, I am of the opinion that such a thing is liable to happen at any time and when the fireboss is a conscientious and careful in his work. It must be remembered that time and distance are two important factors in the work of a fireboss. In many of our large mines, it is not uncommon for a fireboss to have to travel a mile or more underground, before he can reach his section of the mine where his work begins.

Firebosses Ordinarily Given Too Large a Territory

Perhaps, the section in his charge may include two series of headings 450 ft. apart. We will say there are twenty places, ten pillars and ten rooms driven to an average depth of 200 ft. on 50-ft. centers, in the first pair of headings and the entries are advanced, say 400 ft. beyond the last room. It is easy to see that by the time this fireboss has reached the main entry again, he will have traveled at least one mile. He must then go 450 ft. to the mouth of the second pair of headings where, we will say, he has ten more places to examine. The rooms, here, may be driven to an average depth of 150 ft. It is clear that by the time the man has returned to the shaft bottom, he will have traveled between four and five miles.

Fireboss Must Enter Report in Book After Examination

Even walking at the rate of 6 ft. a second, or four miles an hour, more than half his time will be consumed in walking. In the meantime, he has examined for gas and other dangers between thirty places in his section and is fortunate indeed if he gets back in time to enter his report in the book kept for that purpose, before the men enter the mine for work.

In many instances, a fireboss' work is harder and his route longer than what I have mentioned, and he is often obliged to save time by passing through the breakthroughts, at the faces of the rooms, which is a common practice.

Let me say, in closing, that it would be foolhardy for a miner, on entering his place and finding a fall had occurred, to attempt to pass beyond the fall. A miner would deliberately do this and be burned by the gas ignited by his lamp, would deserve all he suffered by reason of his foolhardiness.

Gans, Pa.
R. W. LIGHTBURN.

Explosibility of Gaseous Mixtures

Experiments of Bureau of Mines show explosive range of methane and air in presence of carbon dioxide—Influence of other gases not determined.

Kindly allow me to express my opinion in reference to the explosibility or non-explosibility of the mixture of gases, described in a question given in a recent firebosses' examination, in Indiana, and which was answered in Coal Age, Feb. 9, p. 252.

The question stated that a chemical analysis of mine air showed the following composition: Nitrogen, 80 parts; oxygen, 12 parts; marsh gas, 8 parts; carbon dioxide, 3 parts; carbon monoxide, 1 part; hydrogen sulphide, 1 part. The answer given to the question states that this mixture is highly explosive.

In the issue of March 16, p. 455, in reply to a correspondent who expressed doubt as to the mixture being explosive, the editor says that eight volumes of oxygen are required to consume the three volumes of methane and one volume, each, of carbon monoxide and hydrogen sulphide; while there are twelve volumes of oxygen present in the mixture, or half again as much as is needed.

Explosion Determined by Trial

My belief is that the question as to a mixture of gases being explosive can only be fully determined by experiment. Not having the necessary equipment for doing this, I have examined results of similar experiments performed by the Bureau of Mines, as published in Technical Paper No. 43 entitled "The Influence of Inert Gases on Inflammable Gaseous Mixtures," by J. K. Clement.

The paper describes a series of experiments performed to determine the explosive range of methane when mixed with varying proportions of oxygen, carbon dioxide and nitrogen. For that purpose, mixtures of these gases were introduced into a Hempel explosion pipette and its ignition tested by an electric spark.

A similar series of experiments were performed, on a larger scale, in a steel explosion cylinder, with the result that a wider explosive range of the gas was determined in this manner. With pure methane and air, no carbon dioxide being present, explosions ceased when the oxygen content fell to 14 per cent, the methane ranging from 6.5 to 6.9 per cent. Under the same conditions in the steel cylinder, explosions ceased when the oxygen content fell to 13 per cent, the gas then ranging from 6.3 to 7.1 per cent; while a 14 per cent oxygen content gave an explosive range of the gas from 6.2 to 8.2 per cent.

Influence of Carbon Monoxide on Explosion of Firedamp

My conclusion is that with an oxygen content of 12 per cent, as stated in the question to which I have referred, there would be no explosion of the mixture. As to the influence of the other two explosive gases, carbon monoxide and hydrogen sulphide, in this mixture, I may refer to Technical Paper 134, published by the Bureau of Mines and entitled "Explosibility of Gases from Mine Fires."

In that paper, page 13, speaking of the influence of carbon monoxide on the inflammation of methane, after showing that, as the percentage of methane decreases, an increased percentage of carbon monoxide is required to produce inflammation in the mixture, the authors state: "When about 3 per cent of methane is present, there is needed about 6.5 per cent of carbon monoxide to produce an explosion."

Calculation shows that such a mixture contains (100 - 9.5) 90.5 = say 19 per cent of oxygen. No experiments are shown with a lower oxygen content; but I am sure that with only 12 per cent oxygen, as in the question to which I have referred, no explosion could occur.

No Reports on Influence of Hydrogen Sulphide

No experiments are available showing the influence of hydrogen sulphide, in mixtures with reduced oxygen content. Although I realize, as stated in the question to which I have referred (page 455), that both carbon monoxide and hydrogen sulphide are more readily ignitable than methane, and both of these gases are present in this mixture; I fully believe that, while the mixture may be inflammable, it will not explode.

Many factors will modify the ignition and explosion of a gaseous mixture, which depends on the chemical heat of the reaction, the pressure, the source of ignition and its duration, as well as the velocity at which the mixture is moving and other items. Our
technical literature is extremely poor on mine matters. Max Suter.

Herrin, Ill.

[Experiments under the conditions that prevail in the mine must always throw much light on the question of the inflammation and explosibility of gaseous mixtures. The laboratory experiments referred to by this correspondent have value, but they fail to even approach the conditions that prevail in practice in the mine. As the correspondent has stated, many factors modify the results obtained.

Referring to Technical Paper No. 43, it should be remembered that the experiments there described relate to mixtures of methane, air and carbon dioxide. The author states (p. 21) as follows: "The results apply to mixtures of these four gases only and not to mixtures containing appreciable quantities of carbon monoxide." It must be remembered, also, that besides carbon monoxide, there is also present hydrogen sulphide, both of which gases materially widen the explosive range of methane, which makes this reference not applicable to the present mixture. The fact that there is 50 per cent more oxygen in the mixture than is required for the complete combustion of the explosive gases present, inclines one to the belief that the mixture is explosive.—Editor.]

Analyzing the Foremen

Need of disinterested inspection of mines—characteristics of good and bad foremen—Protection of company interests.

Among the many interesting points brought out in the discussions that have appeared in Coal Age is a remark of George Edwards, in the issue, May 18, p. 845, to the effect that a competent and disinterested person should be employed to inspect the mine and report direct to the management regarding its condition.

I am in sympathy with this writer's suggestion that such an inspection and report is important in order to maintain a uniform production at a mine. The smaller mines, in particular, have only the report of the mine foreman, and if that is biased the mine owner may be in total ignorance of the true condition existing underground.

Characteristics of Different Types of Foremen

As is well known, there are foremen and foremen; and the problem of the operator is to know that he has the right man—one on whom he can depend. My impression is that there are three classes of mine foremen, namely: good, medium and bad.

Each of these types or classes have their characteristics. A good foreman is a man who knows how to develop a good mine for the company. Naturally, he meets with difficulties that increase the cost of production. He does not pretend to hide or misrepresent the facts.

This foreman is not noted for his ability to make things appear better than they are. He is on the job to work and not to spend time and effort in an attempt to deceive or mislead his employers. His thoughts are given to the improvement of the mine and for this he works hard.

In contrast with this type of official, there is the foreman whose chief characteristic is the regard he has for his own interest even to the neglect of the welfare of the company who employs him. His only thought is how to make things appear well to the company as long as he is with them. He gives less attention to maintaining roads and air-courses in good condition, because these items increase the showing on his cost-sheets. His chief efforts are expended in putting out the coal, which he thinks will please the management best.

The report of conditions in the mine, by this type of foreman, is flowery indeed. He always dwells on how much lower he can make the cost-sheet the next month. He continues in this course of deception as long as he feels it is safe and then begins to look for another place where he can play the same game and get away with it, which he always hopes to accomplish.

Midway between these two types of foremen, there is a third class, best described as plodders. They are not particularly dishonest and, perhaps, do not intend to deceive. But, they are wholly unsuccessful in their management of the mine. In a few words a man of this type is not fitted for the position he holds.

Know Your Mine Foreman

In the foregoing, I have attempted to analyze typical mine foremen as we find them in charge of mines. With larger coal companies, the problem of knowing the exact condition of the mine is not as acute as with smaller operations. Many large companies employ private inspectors, besides having other means of knowing the progress and condition of the work underground through their engineers.

Employment of private inspectors is, of course, out of the question with the small operator, which makes it one of the more important that he should select and hold the right man in the position of foreman. It goes without saying that such operators should be more than ever cautious in the selection of the foreman; or be, themselves, thoroughly familiar with the conditions inside of the mine. On that, more than on anything else, depends the ultimate success of the operation.


Inquiries

Of General Interest

Increasing Ventilation in a Drift Mine

Drift Mine Opened on Hillside—Main Entries Driven Nearly a Mile—Ventilation Becomes Poor—Shaft Sunk One Thousand Feet from Head of Entry

Some time ago we opened a drift mine on a hillside. The main intake entry and haulage road is driven 12 ft. wide and 6 ft. high. The air-course is 9 ft. wide and 6 ft. high. These entries have now been driven a distance of 4,200 ft. The mine is ventilated by a fan, which produces 40,000 cu.ft. of air per min., at an expenditure of 8 hp.

In order to improve the circulation of air in the mine, it has been proposed to sink an air shaft at a distance of 1,000 ft. from the face, on the 6x9-ft. air-course. This shaft will be 8x8 ft. in section and 120 ft. deep, measured from the surface to the coal. The question I want to ask is the following: Estimating on an outside temperature of 54 deg. F., and a mine temperature of 60 deg. F., what horsepower will be required to produce a circulation of 60,000 cu.ft. of air per minute in this mine after the change is made?


In replying to this question, we will assume that the two main entries 6x12 ft. and 6x9 ft., in section, respectively, are driven into the hill a distance of 4,200 ft. and practically level. Though not so stated, it is assumed that the fan is located at or near the mouth of the main return air-course and operated on the exhaust system.

We understand that it is proposed to sink an 8x8-ft. shaft, 120 ft. deep, at a point 1,000 ft. from the head of the air-course, as indicated in the accompanying diagram. When this change has been made, it is assumed that the fan will be moved to the top of the air shaft and operated, as before, as an exhaust fan.

The new arrangement will cut out 3,200 ft. of the 6x9-ft. airway and the resistance of the shaft will be added, which is very slight. It is not clear, however, how a circulation of 40,000 cu.ft. per min., can be produced in this.
mine by an expenditure of 8 hp. Calculating the power on the air in the usual manner, using the modified Atkinson co-efficient (0.00000002), the horsepower on the air is

\[ H = \frac{4,200 \times 40,000}{0.00000002 \times 33,000} = 46.7 \text{ hp.} \]

Then, assuming the combined efficiency of the fan and engine as 60 per cent, the indicated horsepower of the engine driving the fan is 46.7 - 0.68 = 80 hp., which the correspondent may have intended to state, instead of 8 hp.

In order to ascertain the power required to increase the circulation from 40,000 to 60,000 cu.ft. per min., by sinking the shaft and cutting out 3,200 ft. of the old air-course, as stated, it is necessary to calculate the potential factors of the main intake, 4,200 ft. long; the return air-course, 1,000 ft. long and the shaft 120 ft. deep, as explained under "Tandem Circulations," Mine Gases and Ventilation, Second Edition, p. 214. The summation of these potential factors gives for the corresponding relative mine potentials, before and after the change, \( X_i = 0.9397 \) and \( X_f = 1.179 \).

Then, since the power on the air varies as the cube of the quantity and inversely as the cube of the potential factor; and taking the original power as 80 hp., the power required after the change is made will be

\[ H_f = 80 \left(1.179 \times \frac{0.9397}{1.179}\right)^{3/2} = 136.7 \text{ hp.} \]

In other words, in order to increase the circulation from 40,000 to 60,000 cu.ft. per min., in the manner proposed, will require, say 140 hp.

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**Examination Questions Answered**

**Alabama Mine Foremen's Examination, Birmingham, July 24-27, 1922**

*(Selected First-Class Questions)*

**QUESTION**—Give your ideas fully as to how and in what parts of a mine sprinkling and spraying should be done and state what are the comparative advantages of each plan.

**ANSWER**—Much will depend on the character of the mine, method of working and means employed for mining the coal. In a large mine, particularly when mining a soft, friable coal and using machines for that purpose, an effective spraying system should be installed throughout the mine. This is more important where the coal is highly inflammable and blasting is performed. All roads, travellingways and working places should be thoroughly sprinkled, or sprayed by installing a pipe system extending throughout the mine. Under less dangerous conditions, water cars or lines of hose can be used in place of installing a pipe line. The use of water cars and hose has the advantage of requiring but a small outlay, while a pipe system for spraying is more efficient and water is then always available where it is needed.

**QUESTION**—What gases are found in bituminous coal mines? Give the symbol, specific gravity, composition and properties of each gas, its effect on combustion and state where you would expect to find it.

**ANSWER**—The principal mine gases are methane (CH₄), specific gravity 0.559; carbon dioxide (CO₂), specific gravity 1.529; carbon monoxide (CO), specific gravity 0.967; hydrogen sulphide (H₂S), specific gravity 1.1912. Besides these, there are the heavy hydrocarbons, olefinic gas (C₄H₈), specific gravity 0.978; ethane (C₂H₆), specific gravity 1.0366. The composition of each gas is made known by its symbol.

Methane, carbon monoxide, hydrogen sulphide and the heavy hydrocarbon gases, associated with methane are all combustible and form explosive mixtures with air. Carbon dioxide is an extinctive gas, half again as heavy as air, at the same temperature and pressure. Both carbon monoxide and hydrogen sulphide are extremely poisonous when breathed. Carbon dioxide, though not a poisonous gas produces a strong toxic effect on the system, causing headache, nausea and finally death.

In mining practice, these gases are found mostly where they are generated, the hydrocarbon gases issuing from the pores of the coal and in damp places in the strata adjoining; carbon monoxide being generated wherever slow combustion is taking place in abandoned workings, or produced by mine fires or the explosion of powder or gas; and hydrogen sulphide resulting from the disintegration of pyrites in damp places in the mine. The gases lighter than air tend to accumulate at the roof and in other places, while those heavier than air, chiefly carbon dioxide, are to be found accumulated in dip workings and on the floor or other low places in the mine.

**QUESTION**—What dangers may arise from the use of electricity in mines? Give your recommendations for avoiding each.

**ANSWER**—Mines equipped electrically present the danger of possible contact of men and animals with live wires; possible ignition of gas by the sparking of wires, blowing out of fuses and breaking of incandescent lamps. The first danger mentioned should be avoided by employees being carefully warned by the instructions given them and the notices posted where danger exists; also by properly safeguarding all live wires at points where men and animals must pass under them or near them. The danger of fire, by reason of electrical installation, could be avoided by all such installations being made by a competent engineer and electrician who understands mining conditions and has every regard for the safety of the men employed in the mine and the security of the property.

**QUESTION**—What general conditions would determine the size of pillars and what points should be considered in the removal of pillars?

**ANSWER**—In general, the size of pillars in mines is determined by the depth of cover, character of the roof, floor and coal, thickness and inclination of the seam, method of working employed, presence of gas or water in the strata and the other factors which may result in damage on the surface due to the extraction of the coal.

Before the robbing of pillars is commenced, its effect on the future development of the mine must be considered; also, what effect the drawing of pillars will have on adjoining workings and the inflow of water or gas from the overlying strata or from the surface, and what damage, if any, will result on the surface.

**QUESTION**—How should the ventilation of a mine be arranged to reduce friction and gas explosion to a minimum?

**ANSWER**—A large mine should be divided into separate ventilation districts. Each district should have its own separate circulation, taken from the main intake airway and discharged into the main return. In each district the air current should be made to sweep the working faces in such a manner as to keep them free from any accumulation of gas. Splitting of the air current in this manner will reduce the friction in the mine to a minimum and afford the least danger of an explosion of gas or dust.

**QUESTION**—What method would you recommend for timbering working places, keeping in mind the safety of the workmen and the recovery of the greatest amount of coal?

**ANSWER**—A method of timbering should be employed that is best suited to the conditions at the working face. Where these conditions are more or less uniform, it is well to adopt a systematic method of timbering, the posts being stood in rows parallel to the face and at specified distances apart, the posts in each successive row being staggered. All timbering must be promptly done in the manner described and violations of this rule should be suitably punished.
Million-Ton Duluth Dock Tells Northwest's Coal Story

A "before and after" view of the Pittsburgh Coal Co.'s dock at Duluth, showing the amount of coal carried at the dock in normal times and the long, bare expanse of dock at present. The few piles of coal are for bunker purposes. Some idea of the desperate condition of the Northwest at the end of the coal strike may be gathered from the pictures.

Empty Barges at a Big Fuel Terminal in New York Harbor

Fleet of coal barges lying empty at the Susquehanna R.R. coal pier at Undercliff, N.J., opposite New York City.
Pittsburgh Coal Co. Signs Cleveland Pact; Bringing Peace to Pittsburgh Field

With the signing of the Cleveland conference agreement, Aug. 30, by officials of the Pittsburgh Coal Co. peace again reigns in the Pittsburgh district. The reconciliation was effected suddenly, not as in other sections of the bituminous fields, where indications of the willingness of the operators to meet with the miners made apparent a lost fight.

Late on Tuesday, Aug. 29, the Pittsburgh Coal Producers' Association, acting for operators other than the Pittsburgh Coal Co., signed an agreement with the union to resume operations practically under the Cleveland plan. It was the following day that Pittsburgh Coal Co. signed up independently.

The Cleveland agreement as accepted was slightly modified, omitting "approves and" from that section of the agreement, which reads: "the signer of this supplemental agreement approves and accepts the policy adopted by the joint conference of miners and operators held in Cleveland Aug. 15, 1922."

One of the members of the operators' committee had this to say regarding the modification: "We signed because we were forced to, and those who know us would question our veracity if we appended our names to an agreement approving the articles of this one."

The supplemental agreement was signed in the offices of the Pittsburgh Coal Co. by John A. Donaldson, president, and J. H. Armstrong, general manager of the Pittsburgh Coal Co., and P. T. Fagan, acting president, and William Hargest, secretary-treasurer, of District 5, United Mine Workers.

Governor Sproul announced Aug. 29 that approximately 350 of the 1,050 National Guardsmen, on duty in the bituminous coal region in the southwestern part of Pennsylvania since July 21, would be called back to their homes Friday, Sept. 1. The units are those of the 104th Cavalry and the troops are B, stationed at Woodvale; D, Burgettstown; E, Heilwood; F, Clarksdale, and a machine gun company at Jenners. It was planned to reduce the headquarters outfit of the field and also the service troops of the medical detachment.

Livingstone New President of District 26; Osborne Conclialion Board Reports

Robert Baxter, for the past three years president of District 26 of the United Mine Workers, comprising the provinces of New Brunswick, Nova Scotia and Prince Edward Island, has been buried under an avalanche of votes in his fight for re-election. Dan Livingstone, of Westville, whose home, by the way, is not in the Cape Breton district, defeated Baxter easily, the majority being very large. The elections were held by mail, Baxter losing at every poll. Silby Barrett, international board member, also was defeated, and this means the end of the opposition among U. M. W. officials of the district to the tactics of J. B. McLachlan, district secretary. McLachlan was victorious by a wide margin over W. P. Delaney, who has been vice president of the district U. M. U., and in sympathy with the policies of President Baxter and Barrett. The new president, Livingstone, was formerly an international board member, being defeated last year for that office by Mr. Barrett.

The Osborne conciliation board, appointed to adjust the differences between the miners employed by the Inversness Railway & Coal Co. and that company, has made a report recommending that wages for section foremen be $3.70 per day; all other section employees to be admitted as union men and paid as such; bank headsman 5.5c. per ton for coal and 4.5c. per ton for stone; weighman, a minimum of $100 per month; hoist engineers of category 1, $3.90 per day, and category 2, $3.70 per day.

Late on Aug. 25 the British Empire Steel Corporation and the union came to an understanding, after four days' discussion. The matter was then submitted to the men in a referendum and the outcome was votes of nearly three to one for acceptance. In fact, Phalen local of Glace Bay, which was the most active in the strike, accepted the agreement by a large majority. But the Springhill local defeated the agreement by a large majority, and asked for the recall of the recently elected district officers.

The men will return to the mines in the course of ten days. No date has been set but the men will surely not return until the troops are withdrawn from the mining districts. This will take several days and perhaps a week, as the troops came prepared for a lengthy stay in the mine fields.

Minimum datal rates are to be increased to $3.25 per day with a minimum increase of 40c. daily and adjustments of higher rates according to a schedule attached to the agreement. Contract rates will be increased $0.07. More than one-half cent will be added to machine rates except at Sidney mines, where the increase will be 2c. The contract will terminate not sooner than Jan. 15, 1924.

Independent Connellsville Operators Vote to Stick to Open Shop

Independent coal operators of the Connellsville coke region will never recognize the union but will stand firm on the open-shop policy, declared W. W. Parshall, vice-president of the Fayette County Coal Operators' Association, in a statement issued at Uniontown, Pa., Aug. 31. He denied reports that certain of the independent owners would sign union agreements.

Representatives of fifty companies, at a meeting held Aug. 29, voted unanimously against recognizing the union. One of the features of the meeting was a definite and emphatic announcement that none of the Hillman mines in the Connellsville region would sign the union scale. This was the attitude, also, of the other large operations in the region.

The increase in output from non-union mines in the Connellsville region continues at about the same rate as in recent weeks. During the past week three additional large operations, the Republic plant of the Republic Iron & Steel Co., the Revere plant of W. J. Rainey, Inc., and the Brier Hill Steel Co., resumed work with small forces of strikers who have returned to work with men they have brought in. Throughout the various working plants in the region over 100 strikers have returned to work since the posting of the advanced wage scale.

Will Not Fix Coal Prices in Ohio

The Ohio Fuel Commission, of which George M. Poor is chairman, after a long session Aug. 31, announced that it would submit its report to Governor Harry L. Davis, who appointed it several weeks ago. The commission has been hearing a series of meetings on the subject of possible fixing a fair price for coal in the various Ohio fields, but has not arrived at any decision. It is unofficially announced, however, that the commission will permit the law of supply and demand to prevail, following the example of the Federal Fuel Commission. A number of operators were heard on the subject and it was believed best to permit the ordinary trade developments in the belief that prices will soon decline to what might be considered a reasonable level.

In a recent statement Governor Davis announced that a fair coal price for Ohio will be established even if it was necessary to call a special session of the Ohio General Assembly to enact the necessary legislation. Attorney General John C. Price has been called upon for an official opinion of the power to enact laws for that purpose and he is now looking into the Constitution. Governor Davis wanted to know what, if any, powers the state has under the Constitution to establish or regulate prices of necessities of life under what constitutes a public emergency; what existing legislation there is dealing with such a situation; what new legislation would be possible under the Constitution to make effective such inherent authority as the state has.

Some operators have urged the following provision in the Constitution: "Laws may be passed to provide for the regulation of methods of mining, weighing, measuring and marketing coal, oil, gas and all other minerals."
Coolness of the Industry Toward Coal Legislation Seen As Shortsighted Policy on Capitol Hill

By Paul Wooton
Washington Correspondent of Coal Age

While the coal operators have maneuvered themselves into a position where they must support, outwardly at least, the fact-finding legislation which has passed the House and is now before the Senate, it is quite evident that their support is not wholehearted. Their opposition to the price-control and distribution bill is particularly active. In this they are joined by the American Wholesale Coal Association.

There is a feeling on Capitol Hill and among some of the executive officers of the administration that the course of the coal operators shows a lack of vision. They are moving toward a greater struggle in 1923 than they had in 1922. If prices are high this winter, they will enter the 1923 strike bereft of support from the public and in fact will have to contend with an embittered public opinion. For that reason some argue that they should recognize that this is an emergency and tender their honest advice as to the plan which distribution should follow to get the best results.

In some quarters the attitude of the operators and the wholesalers is referred to as typical of their inability to unite on anything other than a policy of opposition. This policy in the past has alienated many of their friends. Senator O'Byrne, of Missouri, is cited as an example. If any member of the Senate is sympathetic to business it is he, yet his opinion of the coal operators, when expressed privately, would infringe on the postal regulations if it were printed.

In the same way this policy has antagonized other members of the Senate and of the House of Representatives, which, combined with a hostile public opinion certain to be engendered by high prices, means that the operators will enter 1923 struggle as an handicap.

The position of the operators is that the administration is making the same blunders as did the Wilson administration in 1917 when attention is centered on prices rather than on transportation. The drastic Lever law, it is pointed out, resulted in only a few score of indictments for profiteering. The experience with that legislation, the operators contend, has shown that wholesale prices cannot be regulated satisfactorily by law. It matters little if the price of coal be $1 a ton if coal cannot be obtained. The situation was even worse in 1921, the operators point out, because there is much less coal above ground now than was the case then. It can be said that the direct opposition to the control bill is not limited to operators and wholesalers of coal. A large number of consumers, particularly the ones on long contracts, are also in opposition to the measure from Senators who do not believe it good policy to vest such power in the federal government.

Evidently the tactics of the opposition to the pending coal legislation will be to secure delay. Every day that final action can be deferred will diminish the pressure behind the legislation. The rate at which coal will be distributed until the surplus of cars is exhausted will do much to allay public apprehension. The public will not realize that the spurt of production made possible by the surplus of cars cannot be maintained. As the legislation progresses there probably will be a demand on the part of the Pennsylvania Senators for separate machinery to handle anthracite. This will tend to complicate the situation and make it easier to sidetrack the legislation.

The American Wholesale Coal Association also voices determined objection to Senator Reed's (Missouri) amendment to the coal commission bill wherein the wholesale cost of coal would be required on the 1st and 15th of each month to report to the Secretary of the amount of coal purchased and the prices paid for the various grades; the amount of coal sold to retailers and the prices received for the various grades, and the amount of coal sold directly to consumers and the price received for each grade. They also are required to show whether the coal was spot or contract and must cite the date of the contract.

The transportation situation is much more encouraging, although there is doubt, as this is written, as to the effect of the Attorney General's injunction proceeding. Evidently the railroad brothers are much displeased with the shopmen because they did not settle when they had such a favorable opportunity. As a result the bond of sympathy between the shopmen and the brotherhoods has been weakened materially. It also is known that the brotherhoods are entirely out of sympathy with the resort to sabotage.

Official reports by the Interstate Commerce Commission covering the five serious wrecks which have taken place on the railroads during the strike show four were due to the carelessness of train crews and one was caused by wreckers. In no one of the cases did defective equipment constitute a contributing cause.

Western Kentucky Signs Up with Union on Cleveland Basis Until April 1923

After meeting for three days an agreement was signed up by the Western Kentucky Coal Operators' Association and District 23, United Mine Workers of America, in which the Cleveland agreement contract was agreed upon. The operators objected to the Cleveland conference in October, feeling that as they had never been included before it was an effort to bring the field in to strengthen weakness caused by defection elsewhere. They finally capitulated, however. The new agreement runs until April, 1923.

There was no strike in western Kentucky, as the old agreement carried a no-strike clause, under which the workers continued on the job. It is reported that the new agreement calls for $6.79 for inside workers for an eight-hour day. Under the original priority order open-top cars with sides less than 36 in. in height were exempted. That order left 62,000 open-top cars for loading with building and road materials. In a letter to General R. C. Marshall, director of the Associated General Contractors, Commissioner Atchison stated that this action should not be taken as the final word on the subject. Due to the present demand for coal, it is believed that more cars could be released just at this time, but it was stated that the decision will be relaxed still further just as soon as the situation warrants.

New Order Releases 34,000 Open-Top Cars

Thirty-four thousand additional open-top railroad cars have been released from preferential loading. This was accomplished by amending the existing priority order so as to exclude open-top cars with sides 42 in. or less in height. Under the original priority order open-top cars with sides less than 36 in. in height were exempted. That order left 62,000 open-top cars for loading with building and road materials. In a letter to General R. C. Marshall, director of the Associated General Contractors, Commissioner Atchison stated that this action should not be taken as the final word on the subject. Due to the present demand for coal, it is believed that more cars could be released just at this time, but it was stated that the decision will be relaxed still further just as soon as the situation warrants.

Fifteen Killed in British Columbia Mine

An explosion in No. 4 mine of the Canadian Collieries (D) Co., at Cumberland, B. C., Aug. 30, caused the deaths of fifteen miners, three white men and the remainder orientals. All the bodies have been recovered. There were sixteen injured. The cause of ignition is unknown.
Pocahontas Operators Revive 1920 Scale; Wage Increase Was Unsolicited

An announcement has been made by the Pocahontas Operators Association that effective Aug. 15 wages have been advanced to the level of the 1920 scale, such action having been taken at the conference held in Pocahontas. The conference was attended by representatives of the coal operators in the Pocahontas region, the advance amounting to more than any ever before granted at any one time.

The increase made by Pocahontas operators came without the knowledge of miners and was a voluntary act upon the part of the operators, employees not having solicited the increase. It was deemed necessary by the Pocahontas association, however, to restore the 1920 wage scale because of the fact that such a scale was being paid in the Winding Gulf and New River districts, and there was a possibility that such a wage might be adopted by the labor forces elsewhere by virtue of higher wages paid elsewhere unless the rate was increased. Mines in the Bluefield, and similar territory, are paid the same wages as those in the Pocahontas region.

The operators' committee pointed out at the conference that the adequacy of transportation facilities was the big factor in the price of coal at the present time. Mr. Moor- man said he believed the majority of the operators would give the public a square deal and that they would co-operate with the state coal committee in preventing any possible small minority from attempting exorbitant prices.

Mr. McCord said that inasmuch as the state coal commit- tee had no authority to enforce a price on coal it would leave the determination of prices to the judgment of the public and to the operators. It was pointed out that the committee would have the authority to distribute cars only to operators who gave evidence of trying to do the right thing. Mr. Moorman reported the operators were not receiving many orders for coal. Mr. McCord recommended that all consumers who were expecting to receive coal from Washington cancel their orders and place their orders with Indiana coal men.

Amend Service Order 23 to Limit Class 1
Priorities to Extraordinary Cases

Official action of far-reaching importance to the country's public utilities was taken on Aug. 29, when the Interstate Commerce Commission issued amendment No. 4 to Service Order No. 23, which restricts Class 1 priorities on coal to such extraordinary cases as may be designated from time to time by the Commission. Coal intended for emergency uses generally is included in Class 2 priority. Owing to the limited time during which lake transportation will be available, shipments of coal from the Northwest to the lower lake points will be made under Class 1 priorities.

The issuance of this amendment brings the situation back to that which existed when J. W. Lieb issued his first circular to the public utilities. It is expected to correct the evils arising under federal fuel distribution, which was cut off a large number of public utilities from their regular fuel supply, leaving them in an emergency class and compelling them to buy coal at prices greatly in excess of their contracts.

Reports reaching Washington indicate that the public utilities are getting their share of the increased volume of coal being produced, but owing to the fact that reserves have been so generally used up, the situation of a large number of public utilities will continue to be serious for some weeks to come, particularly since they are not allowed to build up stocks and because of the uncertainty of transportation.

Priorities Extended to Cover West, but in Modified and Limited Form

The Interstate Commerce Commission on Aug. 31 issued its Service Order 24, which directs all common carriers by railroad west of the Mississippi River to give priority and preference to the movement of food for human consumption, feed for live stock, live stock, perishable products and fuel, and to the return of empty cars intended to be used for the transportation of such commodities.

Utah Troubles About Over; to Recall Troops

Governor Charles R. Mabey of Utah has under consideration the advisability of recalling the National Guard from the Carbon County coal fields, where they have been on duty for the past few months, following clashes between strikers and the civil authorities. The situation has been quiet for some weeks and the public is getting a little impatient on account of the money needed to maintain the Guard on duty. It is expected that the soldiers will have been sent back to their several communities before these lines appear in print.

Indiana Trusts Coal Men but Commission Will Deny Cars to Profiters

Failing to obtain an agreement with Indiana coal operators to fix a price on coal, the state coal committee has turned over to the operators the responsibility for the establishment of prices that will be accepted by the public as fair. The decision was reached at a conference in the offices of the Indiana Public Service Commission between the state coal committee and the operators' committee. John W. McCord, chairman of the utilities commission; Edward S. Bessin and David Matthews, of the commission represented the state, and William M. Zeller, Jr., and J. T. Moor- man the operators.

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Winslow Price-Control Bill Passes House; Senate Debates Cummins Substitute

With Democratic Senators voicing disapproval on the grounds that it is unconstitutional and useless, joined at times by Republican Senators in criticism of the measure, the Cummins administration bill designed to bring about equitable distribution of coal and to prevent exorbitant prices was the subject of free debate last week in the Senate which ranged broadly over the subject of coal, the railroad strike and strikes generally.

The general impression is that the Cummins bill, which has been substituted in the Senate for the Winslow bill on the same subject, which was passed by the House, will pass the Senate after extended debate and possibly with clarifying amendments to meet the objections of some senators that it is too broad in some clauses and too weak in others.

Senator Cummins himself declared that in his opinion the measure passed by the House is unconstitutional in that certain of its phrases may be interpreted as an effort to regulate intrastate commerce, and he therefore effected substitution of his bill for the House bill in the upper chamber.

Meanwhile the Borah bill to create a fact-finding commission to probe into conditions in the coal industry was laid aside at the request of its author when called up Friday by Senator Cummins. Senator Borah explaining that the anthracite strike appeared on the eve of settlement in such manner that amendments to his bill might be necessary.

In explaining his bill Senator Cummins said that the greatest question is one of distribution, that the Interstate Commerce Commission needs additional authority to meet the situation, and secondarily that the bill would operate to check runaway prices. He admitted that retailers could not be controlled entirely by the measure, but asserted that future deliveries could be denied retail coal dealers who might sell at exorbitant prices. He urged speedy action.

Senator Sutherland, of West Virginia, declared that while possibly some legislation should be enacted, in his opinion there was more danger in too hasty action than in too deliberate action.

Senator Frankfurter, of New Jersey, called attention to the bills he introduced two years ago and declared that Congress paid little heed, while coal operators and dealers vigorously opposed the measures. Although opposed to nationalization of the mines and government ownership, the New Jersey Senator said he would support the administration coal bills because of the emergency.

Senator Dial, of South Carolina, declared himself in opposition to the distribution bill. He declared that under the voluntary Hoover agreement prices had been increased to those who had contracts for coal. The bill would do harm, rather than good, he asserted.

Senator Underwood of Alabama, the democratic leader, declared the Cummins bill does not give any authority regarding priority of shipments in an emergency to the Interstate Commerce Commission that that body does not already possess under the Transportation Act, to which statement Senator Cummins agreed. The bill merely attempts to regulate prices and will fail in that purpose, declared the Alabama Senator.

Senator Reed, of Missouri, attacked the bill as unconstitutional and inquired at length as it was expected to get more cars to transport coal through mere legislation, greater transportation being the essential need.

Under the stimulus of a letter of approval from President Harding urging action in administration, the bill to regulate distribution of coal and, indirectly, control prices at mines in interstate shipments was passed by the House, Thursday, Aug. 31, 214 to 61.

Only one important amendment was made, that offered by Representative Sanders, of Indiana, providing that the measure shall expire Jan. 1, 1924, which was adopted, 122 to 77. As favorably reported by the Committee on Interstate Commerce, the bill would have had a permanent statute, its operation being suspended by President proclamation at the end of the present emergency but subject to revival by similar proclamation in the event of a future emergency.

Other wise, only perfecting amendments sponsored by committee members were written into the bill, many individual amendments being voted down during the three days of debate.

Attacks against the measure were made by both republicans and democrats of the House, on the grounds that it is unconstitutional, bad policy, will have the effect of retarding coal production, and that while it may regulate the price at the mines it cannot affect the price of coal. Opponents of the bill predicted that the precedent thus established will lead to demands to control the price and distribution of wheat, cotton and other commodities when shortages in these arise in the future.

Advocates of the bill defended its constitutionality and declared the necessity exists because of the shortage of coal and impaired transportation facilities.

Chairman Winslow of the Interstate Commerce Committee, read to the House, Wednesday Aug. 20, a letter from President Harding, under date of Aug. 23, transmitting copies of two bills drafted to meet the coal emergency. One of these was a measure to create a federal agency to buy, sell and distribute coal. The other was the so-called Winslow bill.

The President said that the problem is "a confessedly difficult issue. The limitation of constitutional authority on the one hand and the very great demand for government activity on the other combine to make it a problem well worthy of the earnest and early attention of the Congress. It has been a long and tedious route to the resumption of coal production, and the shortage of stocks and the general anxiety has opened a field for profiteering activities which ought to be discouraged in every way possible within the limits of constitutional law.

With the President's letter was one directed to him by Secretary of Commerce Hoover, inclosing the drafts of the two bills, which the Secretary said had been drawn under the direction of the presidential fuel committee, comprising representatives of the departments of Commerce, Interior and Justice and the Interstate Commerce Commission. The committee favored, the Secretary's letter said, the priority order measure as "being less cumbersome, requiring less expending in the federal organization and being more expedient in application than the alternate plan through actual government possession of coal."

"The committee is in agreement," continued Secretary Hoover's letter, "that the exertion of such powers in times of peace is highly distasteful, and can only be justified as a measure necessary to provide against the effect of a famine in so necessary a commodity."

"We are deeply impressed with the fact that, due to the almost total exhaustion of coal stocks and the inevitable and growing shortage in transportation, the difficulties of the country will be very great even with the resumption of coal production, and unless there is legislation enacted that will curb profiteering and will give control to distribution, there will be great suffering and difficulties during the period of readjustment."

Readings of these letters quieted the criticisms that the President's desires were not known to Congress and it was considered probable that the bill would be driven through the House within an hour, but the fact developed that a quorum was not present and a recess until Thursday was taken.

As passed by the House, the bill extends the authority of the Interstate Commerce Commission to issue orders of priority or embargo in the distribution of coal in interstate commerce, and creates a Federal Fuel Distribution with a Distributor to be named by the President, who may appoint assistants and whose duty is shall be to investigate supplies.
and demands, normal prices and current prices of coal and other fuel, and to make recommendations to the Interstate Commerce Commission. It is proposed to deny a car supply to those who charge prices above a "just and reasonable price." Penalties are provided for diverting coal from or by the consignee. An appropriation of $250,000 is carried, or $50,000 of this-to be available to pay the expenses of the presidential fuel committee in handling the situation through voluntary agreements.

The principal fight against the bill was directed at its price-control features and against the proposal to make it a permanent law. Repeated efforts to amend the former sections were defeated. In the latter attack, the entire section was stricken out in committee of the whole, 95 to 65, on motion of Representative Rayburn, of Texas, supported by Chairman Madden, of the appropriations committee; Representative Graham, of Pennsylvania, and other leaders on both sides, but Chairman Winslow, of the Interstate Commerce Committee, demanded a roll call on this section when the bill was in the House proper and it was restored by a vote of 148 to 134. The amendment of Representative Sanders limiting life of the bill to Jan. 1, 1924, subsequently was adopted over the protests of Chairman Winslow.

Efforts of Representatives Sanders, of Indiana, and Denison, of Illinois, to amend the bill to restrict the appointment and authority of the proposed fuel distributor failed.

### Grand Jury in Herrin Case Proves It Means Business; Union Calls It Labor War; State Strike Threat

A miners' union official has been jailed. That is the first and most important development in the grand jury investigation now going on at Marion, Ill., of the Herrin massacre of June 22. The second most important development is a concentrated propaganda campaign launched by President Frank Farrington, of the Illinois miners, intended to show that union labor as such is being warred upon in the prosecution of the case and that that labor is still open to self-exile under its own law against persecution by capital. Developing out of this above-board propaganda, a threat of a general mine strike in Illinois was surreptitiously made throughout southern Illinois.

The one man whom the law seized Wednesday, Aug. 30, the third day of the grand jury sitting, was Otis Clark, head of a union local and employed as a check weighman in a shaft mine. His arrest was sudden and the effect of it was instant upon the forces of organized labor assembled at Marion frankly to defend whatever union men might be involved. The refusal of Attorney General Edward J. Brundage and State's Attorney Delos Duty to permit the release of Clark under bond and the declaration of Brundage that every man in southern Illinois under suspicion was watched so closely that it was too late for flight brought down an angry storm of protest which vented itself in a flood of letters and warnings of other sorts to the officers of the law pushing the investigation.

At the end of the first week of the grand jury's sessions public sentiment in the solid-union region around Marion had grown so heated that almost any sort of outbreak could be expected. The campaign to make the case appear in the light of the individual laborer's struggle for existence was expected to have such effect that even the "Greater Marion Association" of business men in Williamson County's capital broke loose and notified the Illinois Chamber of Commerce not to stop in Marion this month when the association makes its automobile "good will" tour. The chamber has been active in raising funds to defray part of the expense of the investigation in lieu of state funds for the purpose.

The miners gave vent to their feelings in a second way, including interference, on Friday and Saturday, with the movement of coal trains out of the southern Illinois fields.

The federal government has agents carefully watching the progress of the case. They may even have taken a much more active part in the collection of evidence than has generally been supposed. The general feeling that "nothing will come of it" has about passed away among the people of the southern end of the state. Even the cloak of careful secrecy with which the jury has surrounded its proceedings thus far has failed to cover up the fact that a mass of incriminating evidence has been accumulated in spite of reluctance of witnesses afraid for their lives.

Grand jury action began on Monday morning Aug. 28 with the impaneling of a jury of 23. The miners except one lumber and furniture dealer, one part-time farmer and miner and a foreman who is a farmer now but formerly was a school principal. In his address to the jurors, every one of whom he knows personally, the district judge, DeWitt Talmadge Hartwell, got down from the bench, put his foot on the rail of the jury box and leaned across for a friendly but intense talk on the case that was to follow. The judge told the 23 that they had before them a job for real men, but that he was confident every one of them belonged in that category and that they would reach their findings absolutely without fear or favor. He said it was regrettable that Williamson County stood condemned already in the mind of the nation for lawlessness and a lack of will to enforce the law against criminals. He said he differed from many good friends of his in official position who seemed to hold that idea and that "no considerable percentage of the people of this county can be found who will endorse crime."

Late in the afternoon of Aug. 30, after a long procession of witnesses had gone in and come out of the jury room, the first definite action took place. The quick and quiet indictment and arrest of Otis Clark took place after 4 p.m., when it was noised abroad that Clark had sold a plow for $1.50 and it was feared he was unloading his possessions with a view to disappearing. "They have their first prisoner" was the only comment Frank Farrington would make.

### Northern West Virginia Mines Ratify Union Pact; Raise on Merit System in Logan

Many operators in northern West Virginia have entered into an agreement with the United Mine Workers and others are falling into line in both northern West Virginia and the Kanawha field. There still remains the half of West Virginia, which has about 26 approximately 150 company-operating subdistrict 4 of District 17 and some in subdistrict 3 had signed the union agreement. This was not true as to the Bethlehem Mining Corporation or any of the companies on the Charleston Division of the Baltimore & Ohio. In the Kanawha field there has been no change in the alignment, coal companies south of the Kanawha as a rule adhering to the policy of not signing a union contract. In all it is estimated that approximately 300 companies in northern and southern West Virginia have acquiesced in the Cleveland agreement and signed union contracts.

The increase in wages granted by coal companies in West Virginia, whether operating on the open- or closed-shop plan, has disturbed conditions to a marked extent inasmuch as it is causing wholesale desertions from other industries. Road building is being affected to a marked extent, as many contractors were unable to get men at $6.60 to $7.26 a day paid in the mines. A return to war wages in all industries is foreshadowed owing to the increase granted the miners.

Decision was reached by the Logan Coal Operators' Association late in August to increase wages. The operators made no announcement as to the rate of increase but did make a statement saying that the increase would be granted on the "merit" system. It was pointed out that the increase was granted voluntarily by the operators and that it had become possible to make the increase owing to the higher price prevailing on coal. It is stated by Logan operators that the increase applying in Logan territory is equal to if not greater than that granted in other fields where the 1920 wage scale is now in force.
Lewis Compromises on Contract to Sept. 1, 1923

Anthractite Production Expected Next Week

Long deferred, the solution of this year's strike in the hard-coal regions has been found in a compromise, in which the union gets about everything it demanded and the operators are called on to sign up to the miners' terms until Sept. 1, next—that is for about one year—instead of until April 1, 1924. The miners hail this as a victory, and the operators say nothing, save that they will be glad to get the mines going again.

Negotiations between the miners and operators were broken off in Philadelphia on Tuesday, Aug. 22, to be resumed in Washington on the 29th, following efforts of Secretary Davis and Senators Pepper and Reed, of Pennsylvania, to find some ground for a new conference. On the last day of the month the operators announced that they were ready and willing to start the mines on the miners' terms if the public would give them a "mandate" to that effect, for it is the public that would have to pay the high prices that such a course would entail.

They got the mandate from the public, both in the form of telegram from over the country and a message from President Harding. Accordingly on Saturday night, Sept. 2, they announced that a tentative agreement had been reached, tentative only in that it must be ratified by the miners' convention, called for this week in the region. The agreement provides for continuation of the contract that expired last March until Sept. 1, 1923. It is planned to have the mines in operation by Monday, Sept. 11.

The statement of the operators, given to the press on Aug. 31, asking the public to pass on the question of whether the operators should grant the demands of the miners, follows:

"We are faced with a demand for continuation of war wages beyond April 1, 1923. In order to bring about an immediate resumption of mining we have reluctantly agreed to continue the old wages until next April, but we have not felt that we were justified in going further than that.

"The bituminous miners have gone back to work under the old scale until next April. The anthracite producers know of no reason why their men should not do the same thing, and want to be entirely satisfied that conditions warrant a longer period of the old wages for anthracite miners.

"To continue the war wages beyond next April inevitably carries with it a continuation of present prices. The public has protested against buying at these prices longer than is absolutely necessary. The adjournment taken today was to enable the operators to canvass the situation and to obtain, if possible, the views of others as to conditions which would be fair to all parties concerned, not forgetting those who buy the products.

"If the public necessities for coal and the urgent request of public authorities are such as to induce us to continue the old wages beyond April 1, 1923, this demand must come to us in the form of a public mandate. We will conform our action to such a mandate, but no other reason would impel us to enter into an agreement which will continue for longer than the present emergency prices, to which emphatic objection has already been made."

Illinois Operators Tell Congressmen What Industry's Ills Are and Their Cure

Taking a position opposed to the Cummins bill or anything like it, the Illinois Coal Operators' Association has sent a letter to all Illinois United States Senators and Representatives and some other national legislators stating the operators' stand on the general points now at issue in the industry. The operators contend for arbitration and not for making labor unions legally responsible for their acts. They believe some fact-finding body of able, disinterested men should be appointed by the President to study coal. Admitting many ill in the industry, they declare that most of them would be automatically righted if law and order were maintained, adequate transportation of coal guaranteed and wages reduced. The letter follows:

"With respect to pending legislation before the Congress, you will doubtless desire to know the sentiment of Illinois operators.

"(1) They continue to feel and are positive that there can be no correction of the actual or alleged evils of the industry that does not contemplate equal and adequate control of the organized labor in the industry. Legal responsibility for their acts and a clearly defined form of arbitration for every disputed point on which employer and employee may not agree, either in bargaining a new wage scale and working agreement or in settling disputes afterward arising thereunder, is imperative; otherwise, as the past few months have clearly indicated, the most threatening kind of monopoly will become permanently established and to an extent that will be beyond the control of the government itself, there having been very manifest evidence of the possibility of such ultimate outcome during the past ten weeks.

"(2) Nor is it believed, based upon the experience of the Fuel Administration in 1917 and 1918, as well as the arbitrary action of the Railroad Administration in 1919, that any arbitrary action of the government through bureaucratic organization can handle any situation of emergency for a major industry, as well it can be handled under private ownership. For this reason the Cummins bill is believed to be decidedly inimical to the entire public and to every branch of industry.

"(3) Operators quite universally have publicly and repeatedly stated their belief that through some fact-finding agency appointed by the President, composed of first-class, high-grade, public spirited citizens, on whom both the operators and miners might depend and in whom the public would have entire confidence, gave promise of the most satisfactory results, through the establishment of the exact facts regarding the production and distribution of coal. The public has never known the facts and never through any effort of the parties at interest—i.e. the miners and operators—or through any commission or committee the motives of which may be subject to suspicion, because of fear that political expediency might enter into the final determinations.

"(4) Nor do the operators believe any more at this time than they have throughout the past five years that either the disease with respect to sporadic, unfortunate fuel conditions, or the remedy for correction, should be assailed through the coal industry, but should rather be approached through,

"(a) The guarantee of adequate transportation, and,

"(b) The maintenance of law and order.

"Prior to the abandonment of these two basic conditions ample and adequate volumes of coal were always available to the American public for any use and at the lowest prices know anywhere in the world, nor throughout all this period were wage earners in the coal-mining industry paid as little as was paid in other lines."

"An average of $1.074 an hour paid today to Illinois miners for a class of work, as to severity and skill required, for which the steel companies are paying 30c. an hour, is a reflection of approximately the same conditions that have for the past score of years prevailed in the coal industry with respect to wages."

"With the removal of the unwarrantedly indulgent wage rate made available to coal miners during the last five years, through the compelling power of their union, the question of too many mines and too many miners will very promptly correct itself after the same fashion that it has always done so heretofore."
Rapidly mounting production from the bituminous coal mines, as district after district has returned to work, has eased the market and put a soft pedal on high prices. Coal Age Index of spot prices of soft coal at the mines dropped 17 points this week, to 420 from 437 a week ago. The high point so far this year was reached last week of July and since then the decline has been consistent, though unsteady. The average price on Tuesday of this week was $5.08, compared with $6.73 on July 31, the peak. In the West, prices now average under $5 and in the East from that figure up.

The market is still in the process of finding itself. A week ago buyers who could wait were holding off. The market was dropping and the tone of the news was that production soon would be sufficient to take care of everyone. The past week, however, has found many small as well as large users in the market, both because they have reached the bottom of their stockpile and because they feel that prices have little more to slump before touching the base for the immediate future. Prices are irregular and doubtless will continue so until the extent of the expected car shortage is fully developed. The big questions are: To what extent will the soft-coal mines be called on to replace normal anthracite requirements, and at what figure will bituminous coal output be halted by car shortage and transportation disability?

**Expect Price Upturn When Weather Gets Cold**

It is the present expectation that prices will decline even more for several weeks and then with cold weather and the full pressure of winter demand plus the necessity for winter storage, to start up, slowly at first and then rapidly. What will happen then, it is predicted, will depend on the legislation passed by Congress. If that proves to be effective, provided it is passed, prices may be held in check; otherwise another ascension.

Production last week is estimated at a little short of 10,000,000 net tons, all soft coal. The gains each week are now from the union fields that were on strike, and of course nearest to markets that were shortest of coal. Alabama, for instance, that has been exporting coal north, is cast back on its home markets. West Kentucky finds its bonanza in Chicago smothered by local output and its fancy prices a thing of the past. Only the Northwest seems in any serious danger and that is because it is so far from the mines and the weeks are few in which to move coal over the Lakes.

Hovering over the eastern part of the United States and likewise the area around the head of the Great Lakes, and also eastern Canada, is the fear of a serious shortage of anthracite for households. Production has been lost for five and a half months, an amount that everyone conceives cannot be made up. The most optimistic predict nothing worse than generous substitution of coke, gas and bituminous coal coupled with parceling out of the available new supply of hard coal. The other side of the picture is carried by those who say that the hard coal that will be available will not suffice to cover the actual needs of those whose habits and necessities require that fuel and that there will be suffering from its lack. The big problem for the fast-forming state fuel-control organizations is going to be domestic distribution during the winter months rather than price control.

Production of beehive coke is too light for

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**Production and the Market**

**Weekly Review**

**Estimates of Production**

<table>
<thead>
<tr>
<th></th>
<th>(Net Tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BITUMINOUS</td>
</tr>
<tr>
<td>Week ended:</td>
<td>1921</td>
</tr>
<tr>
<td>Aug. 19 (d)</td>
<td>1,772,000</td>
</tr>
<tr>
<td>Aug. 26 (e)</td>
<td>1,800,000</td>
</tr>
<tr>
<td>Daily average</td>
<td>1,772,000</td>
</tr>
<tr>
<td>Calendar year</td>
<td>255,147,000</td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>ANTHRACITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug. 19</td>
<td>50,000</td>
</tr>
<tr>
<td>Aug. 26 (a)</td>
<td>57,000</td>
</tr>
<tr>
<td>Calendar year</td>
<td>3,781,000</td>
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</table>

(a) Subject to revision. (b) Revised from last report.
furnace men to attempt to build up a supply. This, rather than the high prices asked, is the main deterrent to buyers.

**BITUMINOUS**

"Soft coal production shot upward almost as suddenly as five months ago it had plunged downward, when district after district, accepted the Cleveland wage agreement and resumed work," says the Geological Survey. "Late returns for the week ended Aug. 26, indicate an output of 6,700,000 tons of bituminous coal and last week (Aug. 28-Sept. 2) will show 9,700,000 tons."

"The rapid gain in output is indicated by the statement below of cars loaded daily. Following a sharp increase on Friday and Saturday, as coal began to flow in volume from the mines of Illinois and Indiana, last week opened with loadings of 30,054 cars on Monday. A decline to approximately 28,000 cars on Tuesday and Wednesday marked the first tightening of car supply. On Thursday additional shipments began from western Pennsylvania, and loadings reached 29,027 cars."

**DAILY LOADINGS DURING THE STRIKE**

<table>
<thead>
<tr>
<th>Week</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>11,445</td>
<td>15,311</td>
<td>15,102</td>
<td>16,229</td>
<td>15,703</td>
<td>18,601</td>
</tr>
<tr>
<td>2nd</td>
<td>16,229</td>
<td>15,703</td>
<td>16,229</td>
<td>15,703</td>
<td>18,601</td>
<td>30,054</td>
</tr>
</tbody>
</table>

"This increase has come almost exclusively from mines opening under the Cleveland agreement. The non-union districts of the middle and southern Appalachians are still limited by low viability and in spite of a slight increase in car supply are producing only 65 per cent of the rate attained before the strike began."

"In fact complaints of lack of cars have already been received from the union districts of eastern Ohio and northern West Virginia. The limiting factor in production of bituminous coal has thus changed over night. A week ago it was the supply of men; now it is transportation. The first response of the railroads to the demand for more service has been favorable, partly because they had a surplus of 112,000 empty coal cars when the union mines resumed work. Whether the roads can maintain the present rate of coal movement when the surplus of cars is exhausted remains to be seen."

"Even in the bituminous mines the strike is not yet entirely over. Some thousands of men are still out in the non-union fields of Pennsylvania, particularly the Connellsville coke region, in the Georges Creek field, and in the union districts of West Virginia."

"Shipments during the first half of the week were at a rate 2 per cent in excess of the daily average for the preceding week and 81 per cent over that for the week of June 19-24."

"The districts showing notably increased shipments were central Pennsylvania, where the daily rate is now about double that of the week before; western Pennsylvania, where the increase is about 40 per cent; Ohio, about 33 per cent; Indiana-Illinois about 300 per cent; and the Iowa-Missouri-Kansas-Oklahoma-Arkansas-Texas region, about 120 per cent. Increases at these rates cannot be expected to continue."

"Shipments in the middle and southern Appalachian region averaged during the first half of the week about 10 per cent higher. This was due to the large increases on Monday, after which on Tuesday and Wednesday shipments dropped off to less than the average for the preceding week and in some districts to less than shipments on corresponding days of that week. Shipments have declined most in the southernmost districts of West Virginia, in eastern Kentucky and Alabama. Mining in this region is suffering severely from transportation difficulties, and shipments are now at best 700,000 tons less per week than during June."

"The all-rail movement to New England over the Hudson River increased to 917 cars of bituminous coal and 226 cars of anthracite during the fourth week of August. The total all-rail hearings this year to Aug. 26 amounted to 116,622 cars divided as follows: 50,560 cars of anthracite and 55,552 of bituminous coal through the principal gateways;"
How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

<table>
<thead>
<tr>
<th>Year</th>
<th>Coal Age</th>
<th>Vol. 22, No. 10</th>
<th>1922</th>
<th>1921</th>
<th>30.7</th>
<th>41.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>1922</td>
<td>Aug.</td>
<td></td>
<td>47.1</td>
<td>25.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1921</td>
<td>Aug.</td>
<td></td>
<td>47.1</td>
<td>25.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

223 cars of anthracite and 1,296 of bituminous coal through Rouses' Point."

CARS OF COAL FORWARDED OVER THE HUDSON TO EASTERN NEW YORK AND NEW ENGLAND a

<table>
<thead>
<tr>
<th>Week ended</th>
<th>Anthracite</th>
<th>Bituminous</th>
<th>Anthracite</th>
<th>Bituminous</th>
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<tr>
<td>Aug. 12</td>
<td>124</td>
<td>68.8</td>
<td>2,347</td>
<td>76.8</td>
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<tr>
<td>Aug. 19</td>
<td>189</td>
<td>82.6</td>
<td>2,498</td>
<td>76.8</td>
</tr>
<tr>
<td>Aug. 26</td>
<td>226</td>
<td>91.7</td>
<td>2,475</td>
<td>76.8</td>
</tr>
</tbody>
</table>

a Figures furnished through courtesy of American Railway Association.

Following the recent order of the Federal Fuel Distributor of the flow of coal to the Lakes has greatly increased. During the week ended Sept. 4 total dumpings were 359,961 net tons—305,654 tons cargo and 34,907 tons vessel fuel—as compared with 258,598 tons in the preceding week. The season's total to date is 5,554,014 tons; in the corresponding period of last year 16,739,653 had been dumped. Some Indiana and Illinois all-rail coal is beginning to trickle through to the Northwest, but this tonnage is insignificant as yet.

Hampton Roads dumpings for all accounts were 329,895 net tons during the last week in August, as compared with 350,537 tons in the preceding week. More and more this coal is now flowing in its accustomed trade channels as the maktens tension has been lessened by the union re-union.

ANTHRACITE

Production during the week ended Aug. 26 was about 35,000 net tons, principally steam sizes dredged from the rivers. A rush of orders has followed the announcement that mining will soon be resumed and it is hoped that coal will be moving by Sept. 11.

Coal No. 1 bituminous coal had been sold as a substitute for anthracite as the consumer has felt that soft coal would be available at the last moment, if wanted. Some British coal has been sold for this purpose along the Atlantic seaboard, however, and it is certain that substitute fuel must eke out the current supplies of hard coal for some time, as the output will have to be spread very thinly over a large territory to begin with.

Experiencing Difficulty With Welsh Coal

Several plants that are meeting the present fuel emergency through the use of Welsh coal are finding that certain modifications will have to be made in their stokers if they are to carry the same loads as with American coal.

At the plants of the Interborough Rapid Transit Co., New York, approximately a third of the boilers are being supplied with coal from Wales. It is a high-grade coal, running about 14,500 B.t.u., 15 per cent being volatile and 6 per cent, ash. Up to 200 or 225 per cent rating of the boilers the coal gives excellent results but above this it cakes and does not permit the proper quantity of air to pass through the fuel bed. The cake is readily broken, however, and does not seem to be of the nature of a cinder. At these plants the boilers are forced as high as 320 per cent rating and it is, therefore, impossible to run the boiler at more than 70 to 75 per cent of the capacity hitherto attained. It was found that the older type of over feeds which break up the fuel bed handle this coal better than the underfed stokers.

Therefore the engineering force of the Interborough have endeavored to meet the difficulty by increasing the air passages through the stokers, cutting down the velocity and the pressure from 5 to 3 in. and increasing the volume of air. Tests under these conditions are now being made for the Transit Commission.
Foreign Market
And Export News

British Market Feels Effects of American Resumption; French Coals Stronger

The British market has eased off considerably in the past week. Heavier production of bituminous coal in the United States has affected the demand from that section and from Canada. Shippers have heavy orders in hand, however, which will tax export facilities for the next few weeks. European buyers, quick to sense softened demand, are reported to be holding back and prices are showing a downward tendency. Production during the week ended Aug. 19 was 5,158,000 gross tons, according to a cable to Coal Age, indicating a sharp recovery from the holiday slump of the preceding week and comparing with an output of 5,125,000 tons for the week of Aug. 5.

It is reported in Glasgow that the Scotch railway rates for coal have been reduced. The new rate will be the present rate plus 75 per cent, plus a flat rate of 3d., with a maximum increase of 3s. 6d. Formerly rates were the present rate plus 100 per cent, plus a flat rate of 6d.

Hampton Roads Pier Situation

Week Ended—Aug. 24-31

X. & W. Piers, Lambert's Point: Cars on hand 2,419 1,443
Tons on hand 76,031 82,043
Tons dumped 189,992 137,744
Tonnage waiting 80,175 53,250
Virginia Ry. Piers, Sewalls Point: Cars on hand 724 626
Tons on hand 41,890 34,750
Tons dumped 79,155 8,081
Tonnage waiting 58,400 45,193
C. & O. Piers, Newport News: Cars on hand 240 526
Tons on hand 14,000 26,000
Tons dumped 186,900 56,820
Tonnage waiting 35,295 19,300

U. S. Strike Aids French Coal Market

The situation of the French coal market is now comparatively satisfactory, and some coal is being taken from stocks. This improvement is, of course, partly due to the United States strike. Not much, if any, French coal has moved across the Atlantic so far.

Of the 1,725,000 tons of German reparations fuel to be monthly supplied from Aug. 1 to Oct. 31 to France, Luxembourg, Belgium and Italy (1,600,000 tons from the Ruhr and 125,000 tons from Upper Silesia) France (with Luxembourg) obtains 1,120,500 tons of the tonnage to be supplied from the Ruhr.

FRENCH PRODUCTION IN JUNE

<table>
<thead>
<tr>
<th>Metric tons</th>
<th>Value</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nord and non-devastated mines</td>
<td>605,365</td>
<td>7.50</td>
</tr>
<tr>
<td>Pas-de-Calais devastated mines</td>
<td>635,170</td>
<td>7.50</td>
</tr>
<tr>
<td>Center fields</td>
<td>605,761</td>
<td>7.50</td>
</tr>
<tr>
<td>Southern fields</td>
<td>345,744</td>
<td>7.50</td>
</tr>
<tr>
<td>Western fields</td>
<td>9,254</td>
<td>7.50</td>
</tr>
<tr>
<td>Ronchamp mine</td>
<td>8,013</td>
<td>7.50</td>
</tr>
<tr>
<td>Lorraine field</td>
<td>335,990</td>
<td>7.50</td>
</tr>
<tr>
<td>Total</td>
<td>2,550,668</td>
<td>7.50</td>
</tr>
</tbody>
</table>

France also produced in June 78,929 metric tons of coke and 219,817 tons of briquets. Sarre collieries produced 864,096 metric tons of coal and 19,832 tons of coke. The pit head stocks were 619,285 tons on June 30.

Coal Paragraphs From Foreign Lands

GERMANY—Production in the Ruhr district for the week ended Aug. 19 was 1,813,000 metric tons, according to a cable to Coal Age.

ITALY—The price of Cardiff steam first is quoted at 42s. 5d., according to a cable to Coal Age, unchanged for the last two weeks.

CZECHO-SLOVAKIA—The tax on the export of coke has been abolished by a decree of the Minister of Commerce, with retroactive effect as from March 15, 1922.

Rail Situation Improves at Roads

Dumpings during the week ended Aug. 31 showed a slight decline, while for the month the decrease was approximately 1,000,000 tons. During August the piers dumped 1,297,981 tons, against 1,350,364 tons in July.

The tendency of prices was downward, having shown a steady reduction for three weeks. Dealers were expecting still lower prices within ten days. Dealers were moving about 50 per cent of normal, with a slight increase in prospect. The N. & W. was steadily increasing the movement from the mines, while the other coal carriers were holding their own.

British Exports, July, 1920, 1921, 1922

<table>
<thead>
<tr>
<th>Country</th>
<th>1920</th>
<th>1921</th>
<th>1922</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russia</td>
<td>79,538</td>
<td>68,338</td>
<td>58,138</td>
</tr>
<tr>
<td>Sweden</td>
<td>132,274</td>
<td>213,533</td>
<td>229,132</td>
</tr>
<tr>
<td>Norway</td>
<td>70,856</td>
<td>71,259</td>
<td>75,495</td>
</tr>
<tr>
<td>Denmark</td>
<td>64,266</td>
<td>71,717</td>
<td>72,653</td>
</tr>
<tr>
<td>Germany</td>
<td>9,769</td>
<td>1,135,402</td>
<td>1,135,402</td>
</tr>
<tr>
<td>Netherlands</td>
<td>82,974</td>
<td>151,999</td>
<td>151,999</td>
</tr>
<tr>
<td>Belgium</td>
<td>38,900</td>
<td>70,075</td>
<td>98,381</td>
</tr>
<tr>
<td>France</td>
<td>96,361</td>
<td>193,474</td>
<td>994,575</td>
</tr>
<tr>
<td>Portugal</td>
<td>66,877</td>
<td>22,721</td>
<td>70,663</td>
</tr>
<tr>
<td>Argentine Republic</td>
<td>13,912</td>
<td>13,912</td>
<td>14,912</td>
</tr>
<tr>
<td>Spain</td>
<td>35,256</td>
<td>35,958</td>
<td>57,433</td>
</tr>
<tr>
<td>Tunisian Islands</td>
<td>40,732</td>
<td>12,722</td>
<td>49,995</td>
</tr>
<tr>
<td>Italy</td>
<td>246,466</td>
<td>57,225</td>
<td>57,225</td>
</tr>
<tr>
<td>Austria-Hungary</td>
<td>10,385</td>
<td>20,606</td>
<td>20,606</td>
</tr>
<tr>
<td>Algeria</td>
<td>35,490</td>
<td>29,690</td>
<td>57,223</td>
</tr>
<tr>
<td>French West Africa</td>
<td>30,849</td>
<td>5,916</td>
<td>7,354</td>
</tr>
<tr>
<td>Port. Africa</td>
<td>100</td>
<td>122</td>
<td>14,865</td>
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<tr>
<td>Brazil</td>
<td>11,383</td>
<td>55,767</td>
<td>55,767</td>
</tr>
<tr>
<td>Argentina Republic</td>
<td>100</td>
<td>3,949</td>
<td>22,740</td>
</tr>
<tr>
<td>Channel Islands</td>
<td>6,575</td>
<td>26,865</td>
<td>123,036</td>
</tr>
<tr>
<td>Gibraltar</td>
<td>17,471</td>
<td>5,764</td>
<td>8,630</td>
</tr>
<tr>
<td>Malaya</td>
<td>60,150</td>
<td>19,220</td>
<td>5,814</td>
</tr>
<tr>
<td>Anglo-Egyptian Sudan</td>
<td>141,545</td>
<td>45,256</td>
<td>70,258</td>
</tr>
<tr>
<td>British India</td>
<td>10,172</td>
<td>82,523</td>
<td>82,523</td>
</tr>
<tr>
<td>other countries</td>
<td>44,169</td>
<td>36,879</td>
<td>270,534</td>
</tr>
<tr>
<td>Total, July</td>
<td>2,096,996</td>
<td>616,320</td>
<td>5,063,765</td>
</tr>
<tr>
<td>Total, June</td>
<td>1,950,608</td>
<td>7,502</td>
<td>4,793,648</td>
</tr>
</tbody>
</table>

QUANTITY AND VALUE OF EXPORTS.
JULY AND FIRST SEVEN MONTHS.

<table>
<thead>
<tr>
<th>Month</th>
<th>Total</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1920</td>
<td>2,096,996</td>
<td>616,320</td>
</tr>
<tr>
<td>1921</td>
<td>616,320</td>
<td>5,063,765</td>
</tr>
<tr>
<td>1922</td>
<td>5,063,765</td>
<td>2,472,723</td>
</tr>
</tbody>
</table>

Pier and Bunker Prices, Gross Tons

<table>
<thead>
<tr>
<th>Piers</th>
<th>Aug. 19, 1922</th>
<th>Aug. 26, 1922</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pool 10, Philadelphia</td>
<td>$10.65</td>
<td>$9.50</td>
</tr>
<tr>
<td>Pool 11, Philadelp hia</td>
<td>$9.75</td>
<td>$8.75</td>
</tr>
<tr>
<td>Pool 12, New York</td>
<td>$10.00</td>
<td>$9.00</td>
</tr>
<tr>
<td>Pool 2, Hamp. Rds.,</td>
<td>$10.75</td>
<td>$8.00</td>
</tr>
<tr>
<td>Pool 3, Hamp. Rds.,</td>
<td>$10.50</td>
<td>$8.00</td>
</tr>
<tr>
<td>Pool 2, Hamp. Rds.,</td>
<td>$10.50</td>
<td>$8.00</td>
</tr>
</tbody>
</table>

BUNKERS

| Pool 10, Philadelphia | $10.75 | $8.50 |
| Pool 11, Philadelp hia | $9.75 | $8.75 |
| Pool 11, New York | $10.00 | $9.50 |
| Pool 2, Hamp. Rds., | $10.75 | $8.00 |
| Pool 3, Hamp. Rds., | $10.50 | $8.00 |

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

<table>
<thead>
<tr>
<th>Foreign Quotations by Cable to Coal Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiff: Aug. 26</td>
</tr>
<tr>
<td>Admiration, large</td>
</tr>
<tr>
<td>Champion, small</td>
</tr>
<tr>
<td>Newcastle:</td>
</tr>
<tr>
<td>Best steams</td>
</tr>
<tr>
<td>Best coks</td>
</tr>
</tbody>
</table>
Market Weakens With

Heavy Influx of Receipts

Absorption of Output Effected by Cut in Spot Prices—Growing Car Shortage Slows Production—British and Southern Water-Borne Coal Plentiful

Heaver receipts have weakened the market. Central Pennsylvania is very active and while the demand is absorbing current production, it has been done by reducing spot prices. That quotations may go very little lower, however, is indicated by a growing car shortage, which is beginning to slow up production at a time when there is need for every pound of coal that can be mined.

Southern coal, via water, continues to arrive in good volume, as does British fuel. The foreign coal is in much less demand since the resumption of union mining and prices are being cut to move the unobligated tonnage now arriving.

NEW YORK

Increased production and continued lack of demand has resulted in a further softening of quotations. More coal is coming forward but a serious car shortage is imminent. Complaint has already been made of conditions along the B. & O. road and it is said the trouble is spreading to other roads.

Southern coals are coming forward freely. The transit companies are well provided it is said and are practically out of the woods so far as soft coal is concerned." Quotations range $1.25@1.35 c.i.f. on coal in stock at this harbor.

Receipts of British coal during the first five days of last week were not as heavy as the previous week. Ten vessels brought over 5,000 tons but many others were believed to be near port. Inquiry has been quieter since the strike settlement, and as production gradually increases it will fall off. On another factor in the falling off in inquiries is the advancing freight rates. Quotations for British Admiralty were around $9 c.i.f. New York harbor and for Durham gas coals, No. 2 quality, $8.50@8.75.

There were 784 cars reported at the local docks on Sept. 1, little of it being free coal. High-volatile steam coals were quoted $4.75@$5.25, low sulphur gas coals, $6.50@6.50 and Broad Top around $6.25.

BALTIMORE

The fact that many production points have begun a steady flow of supplies and that there was every indication of still further increase lead to a brief cut in prices during the past week, but the market is now once more ascending. The demand is such that there is more than ready assimilation of production on a mine basis of $6@$6.50 for the better grade steam coals.

There are offerings of less desirable fuels down to $5.25. Lump gas is demanding. The car shortage and the steadily increasing demand for coal has turned the scale of prices upward once more. While the Maryland Distribution Committee is to be kept in expanded life as long as coal circles that their powers will be so circumscribed without federal support that their duties will be largely negligible. Of the various points of the news from Cumberland, Md., that six of the smaller coal companies operating in the Georges Creek territory have signed an agreement recognizing the union and paying the 1920 scale. The total output of these is small, however.

PHILADELPHIA

All mines are fast getting under way, as the rush to sign up to the union scale has gathered great momentum in the last few days. Almost without exception the operators are bitter in their denunciation of the reasons which have compelled them to bow to the miners, but accept the scale as the only way out for the time being.

The amount of coal offered has increased considerably, and the consumer has shown a greater disposition to buy. There is, however, that prices will not drop much lower, and some shippers express the opinion that another upward trend may soon set in. Already there is much complaint of car shortage, especially on the Pennsylvania. This road has claimed all along to be in the best of shape and doubtless the sudden resumption of mining has thrown a load on it for empties that will soon straighten itself out.

So far every one is distributing coal in the best manner possible, as the provisions of the new Fuel Control Act are being applied and at the expiration of the same is awaited with much interest.

Foreign coal is still being offered, with some shippers of tare contracts closed recently. However, the recent drop in domestic prices has been such as to discourage this in some measure. Cargoes on orders placed some time ago are arriving almost daily.

CENTRAL PENNSYLVANIA

Production has advanced to more than 60 per cent of normal. During the first week following the settlement of the strike, daily loadings averaged 2,555 cars, while the low mark reached during the strike was 2,050 cars.

Practically all the union mines are now producing coal. The non-union operators absolutely ignored the request of the U. M. W. for a conference in Somerset on Aug. 29. The non-union operators declare that there is absolutely no chance for them ever recognizing the union. They are paying the same wages as the union operators and they say that is as far as they will go. An increase of more than 100 per cent is shown in the non-union

field in Somerset County within the last month. Some of the mines are operating full time.

At the convention, the Somerset union miners passed a resolution to remain on strike until the operators agree to meet them and their district officers in conference or sign individual wage scale agreements according to the policies of the district and national agreements.

FAIRMONT

Although more mines are in operation as a result of the strike settlement, an acute car shortage is greatly curtailting the output. Many of the larger companies have signed a contract with the union but on the Charleston Division of the B. & O. and in the section reached by the Morgantown & King.

The most of the mines are running on the open-shop plan and no agreement is in prospect.

UPPER POTOMAC

Neither the Upper Potomac nor the Georges Creek operators have signed any agreement with the union, nor is there any prospect that they will take such action and that is responsible for continued idleness in Georges Creek territory. Car loadings in the Maryland field of the Western Maryland in the Upper Potomac field where most of the mines are running and where production is being increased.

KANSAS CITY

So far as the coal situation is concerned it is all that could reasonably be expected in the way of supply but there is some grumbling over the price of domestic grades, which is $6 for Kansas lump and nut coal. The price for steam grades started very ragged, but has settled to around $2.75 for soft and $3.25 for hard and some contracts are being closed at that figure.

The mines are now producing about 50 per cent of their normal capacity and should be able to meet the demand for it. A great many steam plants have gone to oil and they are not likely to change back to coal just to revert the change to oil again next April.

The retailer is taking very little coal as he made no money the past two years and is largely to buying too early and running into a much lower market later in the season.

SALT LAKE CITY

Dealers are finding it difficult to meet the demand of their customers, who now realize that delay in putting in their winter supply of coal may prove dangerous. Car troubles is being experienced here already, especially on the D. & R. G. W. R.R. It is thought the situation will be serious before long.

Local yards are carrying little coal with the exception of that of the Western Fuel Co., which has about 20,000 tons. Most of the others are empty, however, and nothing further has been said regarding an increase in prices. Production is not far short of capacity now.
News of Settlement Brings
Flood of Retail Inquiries

Prospect of Early Production Hailed with Relief—Some Time Must Elapse
Before Coal Reaches Householder—
Substitutes Will Be Needed for a While.

The news that an agreement has been reached and that production will soon be resumed has been hailed with relief by all concerned. The announcement has brought forth a flood of inquiries at retail, but is evident that it will be some time before the householder receives any coal on orders recently placed.

Not much bituminous coal has been distributed as a substitute for anthracite. Some British coal has been sold for this purpose and it is probable that a considerable tonnage of substitute fuel will be used before hard coal is available this fall.

NEW YORK

Dealers and consumers are carefully watching for word that the so-called suspension has been ended and that the miners are returning to the mines. At the same time consumers realize there will be no reduction in prices and that they will be fortunate if they will be able to get their winter coal at the March figures. Some retail dealers are delivering small tonnages of pea coal to those customers who want it but there is little if any of the larger sizes to be had in New York.

Considerable pressure through newspaper statements and advertisements is being exerted in an effort to induce the use of bituminous coal and dealers look for increased tonnage as a result. Coke is also being urged as a substitute.

Several of the smaller independent operators have been reported as visiting local wholesale offices during the week inquiring as to the future prospects.

No steam coal except a small quantity of buckwheat and river barley is coming forward. Some pea was quoted around $15, alongside, this harbor, Buckwheat No. 1 was quoted $12.50 @ $13, alongside, and river barley, $5.90 @ $6.25. Quotations for river barley for loading point was around $3.50.

BALTIMORE

The regular hard coal dealers are fast becoming scarce but, there are at least a few "semi-bituminous" dealers. Every few days another joins the list of suppliers contracting for the English coals which are now running to this port. Ten vessels are now on their way to this port with Welsh coal, some of it in foreign bottoms and some in Shipping Board vessels.

The dealers here as a whole are asking around $13.50 a ton for this British coal, delivered in the cellars of house-
Trade Begins to Liven
In Central West Region

Country Demand Rolls In as Customers See Real Shortage and High Prices Ahead—Steam Picks Up Too—Market Remains Fairly Firm.

The much-talked-of softening of the coal market in this territory has not materialized. Car shortage has made itself so distinctly felt in all fields and labor disturbances of one sort and another are popping up so constantly that almost everybody is ready to believe at last that the coal men were right when they prophesied a dry market and costly production this fall and winter. Country and retail demand is heavy and even the steam consumers, who have held out for several days, using up the last of their high-priced strike coal and hoping for a drop in local fuel, have started back into the market.

Railroads cannot extend much comfort to operators. For the time being they are distracted with demands for cars in which to move crops and freight traffic generally has become so heavy and motive power so debilitated that coal is getting a bad deal. Illinois has not yet reached 70 per cent production and Indiana is somewhat short of that, with very little likelihood of either doing any better in the near future. In Illinois a score of tie-ups are due to soreness on the part of miners against company men. Miners' bitterness over the Herrin prosecution apparently is going to lead to further shut-downs if not to the general state mine strike that is threatened.

WESTERN KENTUCKY

Resumption of production in Indiana, Illinois and north of the Ohio River has resulted in an almost complete elimination of western Kentucky coal in the Chicago and some other Northern markets, with the result that operators are endeavoring to locate business, and are reported to be handicapped in finding enough priority business on which they can secure cars for loading.

According to some reports received coal from western Kentucky is being offered as low as $2.25 for screenings, and up to $6 for lump, at Chicago. However, it is said that anything at under $4 represents either unclaimed bank screenings, or else demurrage coal that brokers have to unload.

Some of the railroads are trying to sidestep their priority contracts for coal, it is said, due to the fact that they are now able to secure coal on shorter haul in other fields, and at a slightly lower price, as it is reported that some coal north of the river has sold under $4. As a result Chicago is refusing to bid more for western Kentucky coal than prices at Northern mines, less the difference in freight from Western Kentucky.

SOUTHERN ILLINOIS

The mines of the southern countries are getting at the present time from three to four days per week on account of no cars and barding labor troubles and prices range $4.90@$5.15 for domestic sizes, $5.50 for mine run and $4.50 for screenings, although some screenings and mine run is sold for considerably less. Railroad tonnage is light, everything considered. Some what similar conditions prevail in Duquoin and East Jackson County, with the same prices and the same danger of dissatisfaction and trouble. Carphy bont reduced the price for mine run and screenings $0.50 for domestic sizes.

In the Standard district practically all mines are working from three to four days per week. Car shortage is unusually severe on the L. & N. Southern, Mobile & Ohio and B. & O. Railroad companies are not able to get enough cars out of this field in a pretty fair volume on old contracts. There is a wide variation in the price from $3.50@$4 for 2-in. lump and other steam sizes, including screenings and mine run. Six inch lump is quoted $4.25@$5, and the same for 3x6 egg and 3x2 nut, it all depending upon where the coal must go and who needs it.

INDIANAPOLIS

Indiana prepared sizes may cost Hoosier consumers $8@$9 a ton in bins this winter, according to calculations of operators and retailers. Consumers will pay even higher prices for coals from outside. At Carterville the mine quotations were $4.35 for 11-in. lump, $4.50 for 2-in. sizes and $5 for other prepared sizes. Following failure of the Indiana emergency coal committee and a committee representing the operators to reach an agreement to fix a price of not more than $3.50 a ton at the mines, which was proposed by the state committee, the responsibility for the establishment of prices has been turned over to the Indiana operators.

CHICAGO

At last the public lethargy appears to be cracking. The coal market is bricking up a bit. And this comes at a time when coal shortage is shutting down many mines in Illinois and Indiana and making it nearly run fractional days.

Very little fuel other than that mined in the two states is trading on this market. Illinois coals from the northern and central fields have softened a shade in price but most of the southern field output has held the market firm at $4.25@$5.15. Even screenings are now selling about as fast as they can be delivered for the double reason that strike coal is now about used up and that the steam trade is practically finished that prices are not going to slump.
Lake Situation Paramount, Local Markets Being Easier

Receipts Gaining at Lower Ports, Though Retarded by Transit Conditions—Removal of Restrictions and Absence of Price Control Aid Movement—Prices Decline Gradually.

The Lake situation holds the center of the stage. While receipts at the lower ports are growing rapidly they are still much retarded by transportation difficulties. A heavy tonnage must be moved up the Lakes in the remaining twelve weeks of navigable weather if a serious shortage in the Northwest is to be averted during the winter.

Eastern Inland markets are in an easier position. Production is increasing and local fuel shortages are being quickly overcome. Removal of many priority restrictions and the breakdown of Ohio’s price regulatory measures have caused a freer movement of coal. Prices are gradually being lowered by the heavier spot offerings and the bargain-hunting tactics of buyers.

Cleveland

Chief interest centers upon activities to rush coal to the Northwest in an effort to head off a fuel famine. The slow movement to the lower docks has retarded the operation of pooling arrangements, under which permits for moving coal to the Northwest will be issued by D. H. Robertson, representative of the I. C. C., who will have headquarters at the Ore & Coal Exchange. Pooling of coal for Northwest started last Friday. Except for special consignments Lake coal is placed first in priority. Receipts at Lake were about 400,000 tons last week. Expect 800,000 this week and 1,000,000 weekly thereafter.

An interesting development since the strike settlement has been the heavy inflow of orders for household coal. Retail dealers literally have been swamped. As yet these orders are being accepted with the understanding that deliveries will be made on them in the order they are received. Some dealers are urging their customers to buy Ohio coal, fearing that the government may find it necessary to shut off West Virginia coal coming into this district for all but Lake shipments. Coke is also being offered as this is in better supply. Orders for Pocahontas are being accepted on the basis of $10.75 a ton for shoveled lump and $12.25 for forked lump.

Industrial demand continues strong. With the breakdown of the present system of local committees on fuel distribution in many parts of Ohio and the abandonment of efforts to establish fair prices, the trend is toward free conditions in the open market with everything depending on the roads' ability to meet demands upon them.

Pittsburgh

At a meeting of the Pittsburgh Coal Producers’ Association on Aug. 29, the Pittsburgh Coal Co. having previously withdrawn, it was decided to hold a Cleveland agreement. The following day the Pittsburgh Coal Co. signed the scale. Operators in the Freeport vein and previously signed, as had most of the steel companies operating in the Pittsburgh district.

The Connellsville strikers did not return to work in numbers after the posting of notices restoring the scale of Sept. 1, 1920, although some straggled back to work. Many meetings were held at which resolutions were passed to hold out for union wages. Day by day the trade watched the situation to see when the strike, as a strike, would end. Sept. 1 brought the almost certain realization of a car shortage developing of such magnitude as to make it of no interest whether or not additional strikers were disposed to return. Of the new men that have been brought into the region.

There has thus far been no regular trading in Pittsburgh district coal, except that recently Youghiheny gas coal appeared, developing a price of $6.50. Connellsville steam coal, quoted a week ago at $5, weakened to a range of $4.50-$5, while on the appearance of Lake demand and the development of car shortage the market stiffened to a range of $4.75-$5.25. The trading has been light except in Lake coal.

Northern Panhandle

Resumption of operations at the few union mines has been extended to increased production but the bulk of the output is coming from open-shop mines since most of the mines in the Panhandle are operated on such a basis. A part of the increased output is going to the Lakes but the railroads also are securing a large tonnage. There is comparatively little free coal available.

Eastern Ohio

Car shortage and transportation disability were the only deterrent elements of significance prevented, the movements of eastern Ohio mines from attaining maximum production during the week ended Aug. 26. Production aggregated 220,000 tons against a potential capacity of 620,000 tons.

The bulk of mine output during the past two weeks has gone to railroads and public utilities. Arizona dealers have much anxiety existing over these larger consumers has been somewhat relieved. Buyers in general continue to show a procurating disposition toward entering the market at this time. Their anticipa- tion is that coal may be purchased a few weeks later at prices below those now prevailing in the open market.

Spot prices remain firm at the new low levels of a week ago and it is not expected by those well informed in the trade that they will recede any further for some little time, as a considerable portion of Ohio coal will be directed to the Northwest. Slacks for the Lake market, black and mine run are quoted $5@5.50, and lump sizes range $3.25@$3.75.

Receipts of bituminous coal at Cleveland during the past week show a substantial increase over the preceding week, total arrivals aggregating 814 cars, 742 cars to industries and 71 cars to retail yards.

Detroit

Though the railroads report a freer movement of bituminous coal and continue to fall short of daily requirements and the city is “not yet out of the woods.” Jolters and wholesalers find very little inquiry. The chief impediment to an increased present supply is the inability of the roads on which the coal originates to supply cars and their lack of success in making connections to connecting roads serving Detroit.

To facilitate distribution of domestic coal, Detroit dealers at a meeting held under the auspices of the Detroit Coal Exchange voted to appoint a committee of five representative retail dealers, which will have supervision over prices and distribution for household use.

Columbus

With all fields working and a large tonnage being produced the market is settling down. The most insist demand now coming from dealers who are anxious to secure stocks as early as possible.

Householders are asking for delivery on orders placed with retailers sometime ago. Since only a small amount of smokeless is coming into the market the trade is demanding largely upon Hocking and other southern Ohio grades. Hocking lump is in small supply and Ohio midwest mines. Dealers prices are $9.50@$10. Pomeroy Bend is retarding at about the same prices while Pocahontas lump is $10.50@$11.

The Lake tonnage shipped over the H. V. Docks at Toledo during the week ended Aug. 30 was only 50,276 tons as compared with 29,686 tons in the preceding week. So far this season the H. V. Docks have shipped 1,774,163 tons as compared with 2,968,000 up to Aug. 27 of last year.

Buffalo

The trade proceeds slowly toward normal. More is sold is met by an increased demand. How far this movement is to continue is hard to say. The demand for midwest coal to the Lake and the scant car supply will both have an effect. The mines have been accumulating cars as much as possible, so that deliveries as yet are good, but they are not likely to continue.

Miners in the Allegheny Valley in general went to work sooner than those farther south and the coal is already on the market. Prices are very unsettled and will remain so awhile yet, for the ideas of buyer and seller are much at variance. Allegheny Valley mine run is quoted $3.75@$4 and the run now is $5 or so higher, with a little Youghiheny gas at $7. The Lake allotments are likely to cut out most of the No. 8 from this market.
Upper Lakes Region Is
Still in Coal Ferment

Doubt in Many Quarters over Size Of Fuel Supply to Reach North—Prices Make General Advance Sept. 1, Amid Groans.

The Northwest is almost as badly worried today over coal as it was before the government promised plenty of fuel. Only one or two ports have received any considerable amount during the past week and every one of them has been hit by a general price increase of 75c. or $1, which moves the public to emit loud groans. However, it remains that there is no suffering yet for fuel and essential industries seem to have enough for the time being.

A strong effort has lately been made to get more Illinois and Indiana coal by rail to make up for the fuel that is not coming by vessel. Some coal has arrived by this device but not enough to count for much. Many wise coal men are cautioning the region to restrain its panic tendencies because the next two weeks will see a Lake Movement that will bring joy to the whole territory.

MINNEAPOLIS

From all present indications, the supply of hard coal reaching the Northwest will be very much reduced—possibly a third of the normal tonnage, if that.

This is causing unhatched chickens on the assumption that early incubation may be expected, and that hard coal production will be resumed soon. There were several hundred thousand tons of hard coal carried over—principally of unpopular sizes—but not enough to count heavily.

Increased demand for coke has resulted in the price going up another $1.50. Soft coal of various grades is also being ordered for use in domestic heating plants.

So far, the Northwest has been favored with promises of 400,000 tons of coal a week. But this has not been delivered. Just why cannot be quite determined. New plans follow old ones which prove unworkable. But none of them seems to produce coal. The harvest is over and past, the summer is ended and salvation is still a long way off. There is a great feeling of irritation over the situation.

A little all-rail Illinois coal was rushed up to the Twin Cities the past week, as an encouragement of future hopes in that direction. There is— with some exceptions—no crying need for fuel, though many supplies are close to the vanishing point.

New England

Withhold Orders as Stocks Are Good and Output Gains

Distress Unlikely Unless Buyers Hold Back Too Long—Early Resumption of Anthracite Mining Would Ease Steam Coal Situation.

A recent survey in this territory shows comfortable stocks for the next sixty days. Reports of much increased production also influence consumers in withholding purchases at present quotations. It may be that some will overstay, but in view of receipts this year so nearly matching those of 1921, it is hard to see how there can be any real distress in this market.

Should anthracite mining be resumed within a fortnight, as now seems probable, a very slight increase in current receipts would make the situation here relatively easy so far as steam coal is concerned.

With the volume of British coal continuing to arrive there is certain to be ample fuel during September and October. Certain foreign cargoes that have reached here unsold have been absorbed only with difficulty, and there are still small barges and lighter being offered on the current market for prices much lower than was quoted c.i.f. in large cargoes. Under these conditions there will be no broad market for bituminous unless car-supply or some other controlling factor intervenes.

The Hampton Roads agencies have made a distinct gain in tonnage. Less coal is being sent to railroads like the Pennsylvania and the Erie, such requirements being met from central Pennsylvania, but it is amazing that coal be as late as Sept. 2. N. & W. cars were being sent all-rail to help supply the New Haven Road. When Washington undertakes cross-haul movement of this kind it is not surprising that car shortage is predicted.

Consumers who made their contracts on smokeless coals are beginning to hear of the recent wage increase in Pennsylvania, but this has not been translated into increased shipments as coal is subject to many factors. The market has not recovered from the drop that followed the reduction in demand.
Normalcy Awaits End of Railway Shopmen's Strike

Report Return of Groups of Workers to Duty—Scarcity of Cars and Condensation of Locomotives Cripple Production—Prices Soften as Consumers Lay Low.

The shopmen's strike is the nub of the fuel situation. Other rough spots occasioned by the long strike are beginning to show signs of softening and it seems generally agreed that normalcy is not so far off if the railroad workers would get back in the traces. Considerable interest is shown in the report that little groups of workmen of the C. & O. are coming back to work and that the violence is growing more intense. On the L. & N. cars are getting scarce and the action of the I. C. C. in turning down a number of engines doing duty in the fields was a further crippling.

Production is now largely a matter of obtaining cars. Prices are softer, as consumers play a waiting game.

**HIGH-VOLATILE FIELDS**

**KANAWHA**

Much of the coal originating in the Kanawha region is still coming from open-shop mines although approximately 50 per cent of the mines in the district have signed an agreement with the union. Production is being slightly increased but cars are still short of requirements that the output of most mines is necessarily limited.

**LOGAN AND THACKER**

Production was hardly on as large a scale in the Logan region during the latter part of August, owing to an acute car shortage. This diversion of coal to the Lakes made for a shortage of supplies at automobile factories and among other industrial concerns and also cut the supply of free coal.

Mines in the Williamson field are just about managing to maintain production at 165,000 tons a week, owing to the fact that the car supply is not fully equal to the requirements of the mines. There is an unusually heavy movement westward through Williamson, particularly since the district has been called upon to furnish a large part of its quota to the Lakes. Although many strikers are drawing benefits in this county, yet as a matter of fact all the men needed are available.

**NORTHEASTERN KENTUCKY**

Transportation disabilities are still material handicapping mines so that the output is still under 50 per cent of potential capacity. With a heavy tonnage being shipped to the Lakes under government orders, there is little coal available for general market purposes. Most of the coal is moving at $4.50 or less.

**LOW-VOLATILE FIELDS**

**NEW RIVER AND THE GULF**

Production is being gradually increased in the New River field. Upon the signing of a union agreement in other fields miners at a few of the plants in this region declined to go to work. This work was not general and did not affect production. The only factor which is hampering the mines is the difficulty of securing cars and of moving coal after it is loaded. Production is resultless, however, in a somewhat larger movement of coal to Tidewater.

Winding Gulf mines are still being handicapped to some extent by a shortage of cars and by the difficulties attendant upon the movement of coal on the western end of the Virginian. Labor is plentiful.

**POCAHONTAS AND TUG RIVER**

By the end of August production in the Pocahontas region was back on about the same level as observed during the early part of the month. A shortage of cars is still handicapping mines to some extent. The Eastern movement is large, there being approximately twice as much coal going to Tidewater and Eastern markets as to Western points. There is also a good deal of fuel moving under priority orders so that there is comparatively little spot coal to be had.

Tug River production is once again above normal, being not far short of 100,000 tons per week. This improvement is due to more improved transportation facilities on the part of the N. & W. which supplies this territory.

All the free coal available, however, is moving under priority regulations.

**CINCINNATI**

Lake coal is still the uppermost question here. It has been found that the permit system has been merely one of the shipper who contracted low-priced coal and that priorities are easier to obtain than is healthy for the good of the trade. Word comes that there will be an agreement to put in the port facilities at the port of Cincinnati which will get coal to the Lakes. The movement in this direction, in spite of all of the impediments that the movement has to be handled with care on prices on a $8 range.

The Kentucky coal distributing committee has gone by the boards and the Ohio dictators have shown up their hands and decided to let fair prices take care of itself. Illinois and Illinois coal is beginning to show that the coal being sold is being filled, all of which has slowed down the local business that was taking care of this. The coal and there a robust wholesaler bidding 25c. on top of the spot market and can get all that he is looking for at that price.

The price of the usual coal of the Hoover prices than the others. Recent wage advances, however, are forcing the 8 per cent commission to be taken when sold.

The retail market has taken another spurt upward. The new prices follow: Smokeless lump, $10.50@$11; mine run, $9@$9.50; screenings, $8.75. Bituminous: Lump, $9@$9.50; mine run, $8.50 @$8.75; slack, $8.25.

**Coke**

**CONNELLSVILLE**

Coke production has continued increasing and, at a moderate rate, until Sept. 1 a car shortage of impression proportions developed, and operations will be controlled by that factor in future. There remains a fairly prevalent attitude that they are holding out for union recognition.

Increased production has been chiefly on the part of the large ovens and market offerings are but slightly increased. There is no opportunity now for any number of furnaces to resume by reason of increased supplies of merchant coke, whether on old contracts or by fresh buying. Furnace coke was quoted a week ago at $11.50, but the market has since stiffened to a range of $11.50@$12.

Furnacemen generally claim prices are altogether too high to justify their considering the market, and talk of $7, but the practical fact is that offerings are too light to encourage a furnace to attempt to build up a supply, irrespective of price.

Foundry coke has been in lighter demand and the market is off $1.50 for the week, being at a range of $13@$13.50.

The Courier reports production during the week ended Aug. 28 at 69,900 tons by the furnace ovens and 16,250 tons by the merchant ovens, a total of 86,150 tons, an increase of 3,590 tons.

**UNIONTOWN**

Just as Connellsville coal operators believed they had the strike situation well in hand the long expected car shortage made its appearance, due principally by demands for equipment from union regions resuming operations. The Connellsville region may now be considered as operating at 50 per cent of capacity despite the continued strike of the recently organized miners. The mines and ovens are being mined by men who have left the union and other men, all labor attracted by the present high wage and by imported labor.

Coal closed the week with a quotation of $9.50@$10. Percolating coke, which used to be sold on the B. & O. but the market appeared open on the Pennsylvania. The present effort to coal the Northwest before the Lakes is said to be furthered by the poor condition on the Connellsville trade, this vein of coal being considered too fine for the Lakes trade.

**BUFFALO**

Demand is fair, especially for domestic sizes, but the supply has not increased much yet. Reports are sent out that the prices are off, but that seems to mean merely that some very extravagant asking prices have been dropped.
News From the Coal Fields

CONNECTICUT

Thomas W. Russell, of Hartford, has been appointed state geologist by the State of Connecticut by Governor E. J. LaFave.

Mayor Fred Atwater of Bridgeport is planning to establish a municipal coal yard at Bridgeport to purchase their winter supply of coal. Coal will be $1 per ton, alongside, the purchasers to do their own haulage.

ILLINOIS

The Ellisville Coal Mining Co., of Galesburg, has been incorporated with a capital of $30,000 by A. B. McDonald and W. R. Hawkins.

The Mutual Fuel Corporation, Chicago, has been incorporated with a capital of $100,000 by John M. Munshower, in South Chicago. The company is to acquire and operate coal mines and real estate property.

KENTUCKY

The West Kentucky Coal Co. has opened a new mine between Fairmont and Wheatfield, on the Providence branch of the Illinois Central.

The Kentucky Retail Coal Dealers' Association has called a meeting to be held in Louisville, September 14, to see what can be done to make things better in the coal trade. The letter is signed by R. A. Watson, president, and J. C. Taylor, secretary.

The Gordon Hill Development Co., Central City, has filed $150,000, has been chartered by W. O. Field, Louisville; J. G. Hodges, of Asheville, N. C.; J. H. Frost, Coal Co., and the Louisville Coal Co.

MISSOURI

The Hawk Point Coal & Mining Co. is planning a new mine at Raven Spring, a strip mine has been opened east of Armstrong, and coal is being marketed there. The coal was mined years ago and hauled to Glasgow, where it was sold to owners of steamboats for firing engines.

The St. Joseph Coal Mining Co. has been incorporated with a capital of $50,000 by J. H. Licit, H. T. Lavrette, M. A. Simms, G. A. Koontz and H. B. Blake.

NEW YORK

David Taylor, vice-president, Coal & Iron National Bank, New York, recently returned from his vacation in the Pocahontas district.

Jack DeQuin, assistant cashier, Coal & Iron National Bank, New York, recently returned from his vacation at Raquette Lake, N. Y.

Effective Sept. 1, the Jefferson Coal & Coke Co., Pittsburgh, will sell the coal produced by the Jefferson Coal, Keyser & Hohendorf Coal Co., and the Wet Branch Mining Co.

Central Pennsylvania will be represented on the committee appointed by W. D. B. Armstrong, board of trade, who will look after the backing up of the coal and the issue of certificates for bituminous fields, by Charles O'Neill, Altoona; H. J. Mecham, Johnstown; G. W. Martin, Huntingdon; and J. L. Peale, Clearfield; William Lamont, Elizabethtown; John Kiniry, Clearfield; J. R. Caseley, DuBois, and J. C. Forshay, Clearfield.

The Erie Railroad Co.'s ten small mines in the vicinity of Bloomsburg and DuBois, will be opened by the Boddy Coal Co., of Chicago, beginning Sept. 1. The railroad takes practically the entire output of the mines, and raises the total number of mines operated by the railroad to 10. A tonnage said to total 20,000,000. The coal mined originally sold from the three-vein coal of Wyoming, eastward through Oklahoma to eastern Kentucky, is now being sold for the production of the new mines to be shipped to the Bethlehem Steel Co., at Bethlehem.

The Pennsylvania State Fuel Commission has recently announced the appointment of state fuel commission agents to carry out the orders of the Public Service Commission. The commission appoints the State Fuel Commission for bituminous coal loading and distribution in the six coal fields in Pennsylvania. The agents were made representative of the six coal fields and一点 true of which had consisted of operators. The two agents for the central Pennsylvania district are: J. Patterson, Greensburg; west Pennsylvania district: J. F. Gilbert, Westmoreland County; J. T. Davis, Uniontown, southwestern Pennsylvania district; W. K. Perry, Somerset; southeastern Pennsylvania district: Charles F. Milner, Greensburg; northeastern Pennsylvania district; J. B. Butler, northeastern Pennsylvania district; T. D. Davis, Uniontown; southwestern Pennsylvania district: A. J. Davis, Butler; southwestern Pennsylvania district; T. D. Davis, Uniontown; southwestern Pennsylvania district: A. J. Davis, Butler; northeastern Pennsylvania district: Charles F. Milner, Greensburg; the six regional committees are: Thomas A. Burmeister, competition district; S. John Morro, Uniontown, southwestern Pennsylvania district; J. T. Davis, Uniontown, southwestern Pennsylvania district; W. K. Perry, Somerset, southwestern Pennsylvania district; J. F. Gilbert, Westmoreland County, southwestern Pennsylvania district; J. B. Butler, northeastern Pennsylvania district; T. F. Milner, Greensburg.

The Ayrdale Coal Co., Philadelphia, has notified the state Department at Harrisburg that it has changed its corporate title to the Arch Coal Co.

IOWA

A group of business men of Independence are interested in the sinking of a new coal mine in the back of J. C. Word, Kirkville, Mo., is in charge of the work. The syndicate backing the new mine has taken option on about 400 acres of land. Only local men are interested in the project.

The enginemen and boiler house of the Smoky Hollow Coal Co.'s mine No. 11, south of Hiteman, have been destroyed by fire which swept the plant. The hoisting engine was wrecked, and the coal is ruined and the coal car in the bottom of the shaft. The blaze started in the boiler room.
In the Dauphin County Court the anthracite tax act was recently declared to lack a sufficient basis to sustain the value of coal when prepared for the market. J. Claude Bedford, Philadelphia, counsel for the Dauphin County Coal Corporation, Philadelphia, which operates more coal, lost his last appeal in the Commonwealth Court involving upward of $2,000,000 in taxes. The other cases are still pending and according to questions raised will be argued later.

The Graceton Coal & Coke Co. has notified the Pennsylvania Railroad Company of an increase in its indebtedness of $450,000 to the D. M. Shriver, New York City, president.

The Schuylkill County Commissioners have purchased a total of 242,544.87 acres of land properties, which total $72,397,456 under the old valuations. The new total includes only the coal, and not the surface valuations, which are approximately $72,397,456. Breaker property will also be bought by the corporation and the company, with one of similar suits filed and has no direct bearing on the appeals from the State Court, will now be at the United States Supreme Court.

TENNESSEE

A new coal mine has been opened at Cartwright by the Palmetto Coal Co. The mine is located near Chattanooga and St. Louis R.R. It is the first one to be opened in what is known as the Tracy City field. It will have a capacity of 400 tons a day.

TEXAS

The Dollins Coal & Lumber Co., of Gonzales, has been incorporated with a capital stock of $3,000, to do a retail coal business in connection with the operation of a lumber yard in Gonzales. The incorporators are M. Davis, Ruby Davis and J. B. Gober.

The Empire Fuel Co., recently organized with a capital stock of $500,000, is incorporated under the laws of Delaware, will begin operations within the limits of the county of Rockelle. The company owns 5,000 acres of lignite lands in Milam, Limestone and Polk counties. It has also developed, Adam H. Davidson, of Dallas, is president of the company. E. A. Neisanger, formerly efficiency expert of the Dallas Power & Light Co., of Dallas, is vice-president and general superintendent of the mine. R. M. Summers is local manager on the properties of A. D. Pierson, for the SEC. The company has purchased a briquetting plant at Rockelle which will represent a production of 1,000 tons a day, and has been sold the Rockelle mine for 500,000 acres of land on the Guadalupe-Colorado & Santa Fe Ry., eight miles from Rockelle. The company also owns 3,000 acres of undeveloped lignite lands in Limestone County.

UTAH

A. D. Pierson, for the past ten years general sales manager of the Utah Fuel Co., at Salt Lake City, has resigned. He has not decided his plans for the future, but may go into business for himself.

The Carbon County R.R. Company, an auxiliary of the U. S. Lumber Co., has received a permit from the Public Utilities Commision to build a line from a point on the D. & R. G. Co. to its company's coalfields which are under development in Carbon County, the company possesses.

Mr. Pierson is well known in Utah coal circles, having been in the coal brokerage business in San Francisco.

A new mine superintendent of the Utah Fuel Co. is Thomas Farmery, who enjoys the ecclesiastical title of "Bishop."

VIRGINIA

Men yukus Lankford has been appointed chairman of the Norfolk Fuel Distributing Company of that city. This appointment was made by this committee to get Norfolk's supply of coal, estimated to be 12,000 tons to meet the needs of September.

The Chesapeake & Ohio Ry. will erect at Newport News a new powerhouse. The cost estimated to be in the neighborhood of $2,000,000 for the erection of the new powerhouse will not be paid until the board of directors of the road meets later in September. The cost of the new powerhouse will be on a rate, according to the specifications preferred by Richmond officials. The C. & O., has announced the projected expenditure of $18,500,000 in improvements in the electrical equipment of which will be the new powerhouse. This will give Newport News facilities likely to place it abreast of the foremost coal handling ports in the world.

WEST VIRGINIA

The coal holdings, equipment and assets of the LeMar Coal Co., have been purchased by the Smith & Chiea Coal Co., which is capitalized at $600,000. The property of the LeMar company was purchased for $32,000. The holdings consisted of about 80 acres. In addition to a developed mine, a modern tipple and sidetracks. The new company is making a specialty of the production of Sewickley coal.

The Goodrich Coal Co., has been organized by Clarksburg capitalists for the purpose of engaging in the coal business in Harrison County. This company has a capital stock of $50,000. The general office will be at Charleston and the new enterprise are: H. G. Smith, P. W. Bailey, M. Gibson, D. K. Smith and T. M. Pennington.

The Argonne Coal Co. has been organized in the Clarksburg field, having a capital stock of $25,000. Dan is to be the point of development and with this new enterprise are: F. N. Evans, F. D. Evans, J. N. Evans, Victoria Evans and M. P. Pennington.

Operations on a large scale are pressed by the organization of the Houch, Reidel Brothers, Coal Mining Co., just organized for the purpose of developing coal property in Preston County. This company has capitalized at $400,000. Active in the organization are: O. G. Houch, W. O. Houch N. P. Reidel and C. E. Reidel, all of Austen; R. D. Houch, Daniel Houch, of Charleston, Md.; G. W. Reidler, of Tunstall, Va. W. A.

Fatalities incident to the production of coal at the Argonne mine during the last week were somewhat less than during earlier months of the season. Ten miners were killed in a mine car accident, two by electrical shock and one in a local gas explosion. Two other miners were killed outside the mines. Two miners were killed in West Virginia, and in another single county, there being six deaths in that county.

Coal property in Clarion County of the Northern Minnesota Railroad is capitalized at $150,000. The offices of this company will be at Wheeling for the time being. Ohio County company is looking particularly interested in the new venture.

The Consolidation Coal Co. has just completed the training of five miners in the New River-Pocahontas division at Coalwood in two weeks, who were hired on the line under the direction of George M. Grer, of the Coalwood Mining and Safety company. The Consolidation devotes a good deal of time to training its mine force, and has many well-trained crews.

The Herald and Railroad Coal Co. has been organized by well-known citizens of Charleston, the short-line road to be constructed being the line of crossing several mining fields. This company was organized by J. B. Hart, Edward Hart, Fred B. H. and H. S. Horn.

Organization of the Barton-Weaver Fuel Co., presages further development of coal mining in the Carpenter Mountain Co, which has a capital stock of $15,000. The company will be capitalized at that amount. Having an active part in effecting a preliminary agreement were J. H. Barton, E. B. Weaver, Mary E. Barton, J. M. Downes and L. Hyre.

The newly formed company of Fairmont, is giving consideration to the question of purchasing 15,000 acres of coal lands in West Virginia, and is thinking of being in the Kanawha series.

BRITISH COLUMBIA

COAL OUTPUT FOR JULY, 1922

Vancouver Island District

Mine

Western Fuel Corp., Ltd... 18,441

Canadian Collieries (D), Ltd., Comox... 3,100

Kanowna Collieries, Ltd, Victoria... 3,375

South Wellington... 5,595

Granton Collieries, Ltd. & Co., Cassidy... 29,399

NanOOSE-Westhington Collieries, Ltd... 7,018

Old Wellington, Nanaimo... 277

Total... 162,323

Nanaimo-Prince Edward District

Coalmines, State of B.C., Limited... 15,051

Middlebrooke Collieries, Ltd., Middlebrooke... 5,058

Fleming Coal Co., Merritt, Ross... 5,613

Princeton & Land Co., Princeton... 929

Total... 23,929

Crow's Nest Pass District

No output on account of strike.

ONTARIO

The Reliance Coal & coke Co., Ltd., has been incorporated under the laws of Ontario and is a general purpose company. It has been granted an Ontario charter authorizing the company to engage in a general coal handling business. The authorized capital is $35,000, and among the incorporators are E. B. Kendere, E. C. B. Connors and G. O. O'Brien.

A group of Toronto business men have formed a company known as the Toronto Coal Briquetting Co., and have taken over the assets of the Naukeasau Coal Co. The purpose is to manufacture anthracite coal briquets. Manufacturing will be commenced and deliveries are being made.

The Toronto Coal Briquetting Co., Ltd., will deal in the trade of coal briquets and carbonaceous materials. The authorized capital is $250,000 and the provision for dividends is $1.00 per share. The directors are C. B. Hender, E. E. Hender, R. E. Clark, R. A. James and H. Rowe, of Toronto, where the head office will be located.

WASHINGTON, D. C.

The United States Civil Service Commission announces an open competitive examination to determine the eligibility of candidates for positions in the Technical Staff of the Income Tax Unit of the Board of Internal Revenue, Department of the Treasury, Washington, D.C., at $3,600 to $4,800 a year, and in positions paying $2,400 or higher or lower salaries, will be filled by this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion. No person shall be considered for this examination, unless he has served for (1) General Mining; (2) Oil, Gas and Coal; or (3) Forest Industry.

Approval No. 1600 was issued on May 25, 1922, sanctioning the employment of the equipment approved under Schedule No. 18,208, for the purpose of providing machinery and equipment for hand lamp and trip line service, when equipped with a white glass dome, for trip line service, when equipped with a red or yellow glass dome and when used on either special holder which was tested with the lamp, plate and is furnished by the manufacturer.
Oblituary

L. B. Weisenburger, president of the Val- ley Coal Co., Gulfport, Miss., Oct. 27. An ex- ample of coal yards in that city and Middletown, died Oct. 16. The coal is delivered by Mr. Weisenburger at 11 a.m. on Oct. 1. The coal is delivered by the U.S. Steel Co. of Middletown.

Traffic News

A meeting of the executive committee and advisory council of the Indiana State Chamber of Commerce was held in Indianapolis on Oct. 16. The meeting was attended by representatives of the Chamber of Commerce and the State Chamber of Commerce of the city, and a group of local coal representatives.

Association Activities

The Statistical Committee of the National Coal Association is composed of the follow- ing members: J. F. Clemens, secretary and treasurer; F. C. F. chairman, chairman, coal (chairman), chairmen, and chairman of the next meeting. The committee is composed of Mr. Clemens, Mr. F. C., and Mr. J. F. Clemens. The committee is composed of Mr. F. C. and Mr. J. F. Clemens.

Trade Literature


Recent Patents


Butler Feed-Water Purifier. Charles E. Sargent, Indianapolis, Ind., filed Aug. 3, 1919; issued July 26, 1921; serial No. 135,720.

Miner’s Carbide-Lamp. E. J. Billings, Pittsburgh, Pa., filed Oct. 7, 1919; issued Nov. 21, 1921; serial No. 141,896.


Coming Meetings


Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. The meeting will be held at the Chamber of Commerce Bldg., Pittsburgh, Pa.

American Institute of Mining and Metallurgical Engineers will hold its next meeting Oct. 3 at Birmingham, Ala. Secretary, J. J. Davidson, Birmingham, Ala.

National Coal Association in Philadelphia will hold its annual meeting Oct. 23 and 24 at the Hotel Roosevelt. Secretary, Charles F. Roth, Grand Central Palace, New York City.

American Mining Congress. Twenty-fifth annual convention and exhibition of mining and metallurgical engineers will be held in the same hall, Cleveland, Ohio, Oct. 9-14. Executive secretary, J. M. Harriman Hotel; C. E. Porter convention manager.

National Exhibition of Power and Machin- ery at the same hall, Cleveland, Ohio, Dec. 7-10. The exhibition will be held at the same hall, Grand Central Palace, New York City.

American Institute of Mining and Metallurgical Engineers will hold its fall meet- ing during the week of Sept. 25 at San Francisco, Calif., and will hold its annual meeting Sept. 4-7 at Pittsburgh, Pa. The meeting will be held at the Carnegie Institute of Technology and general meetings at Carnegie Music Hall.

The Rocky Mountain Coal Mining Insti- tute will hold its next meeting at Glenwood Springs, Colo., Sept. 7-8. Secretary, W. F. Whiteside, Denver, Col.

American Gas Association will hold its annual meeting Oct. 15-17 at the W. N. J. Secretary-Manager, 126 East 15th Street, New York City.
Who is Assaulting Unionism at Marion?

The law's investigation into the Herrin horror is on. A grand jury of twenty-three Williamson County men—all farmers except a lumber dealer and a part-time miner—has been listening to testimony wrung from scores of witnesses fearful that their revelations will bring about their death by some stroke from the dark. It is a serious and conscientious effort to get at the facts in the case of the slaughter of non-union men who surrendered to a mob which had attacked the strip mine they were trying to work. It is an investigation by officers of constituted authority. It is an action by a court of the American people. Yet already this due process of law is being obstructed by devious tactics. Already the action has been labelled "persecution of labor" in a well-developed campaign of propaganda. Dominated by the moneyed interests, the courts, we are told, are trying in this case to crush organized labor. Such was the labor defense in the Mooney case. It has become well worn by usage.

But if an assault is now being made on unionism at Marion, who is making it? Who is it that stirs up public sentiment against the prosecution of the case to such a point that the prosecutors are threatened horribly—not once but hundreds of times and by many devices? Who is it that frightens witnesses to the point of silence? Who is it that openly condemns the jury action as tainted by money? Who is it that agitates for a general strike of Illinois miners as a protest against further action in the case? Who is it that suddenly begins a vicious campaign of stopping shipment of coal from the mines of Williamson County as a form of protest against the investigation? Whoever performs these acts is taking a definite stand against law and government. If it is proved that the United Mine Workers of America sanctioned and condoned such acts then the "assault upon unionism" is an assault by the United Mine Workers of America and by nobody else.

Huntington Greets Electrical Engineers

Coal mining, as we now view it, is the art of extracting coal from the ground by electrical apparatus. The engineers of West Virginia and Kentucky some few years ago felt the need of an association that would deal in the main with the mechanical and electrical problems that new methods of operation were making of vital importance to the coal industry. They felt that the old institutions—the coal-mining institutes—laid most of their stress on management, social questions, legislation, geology, air circulation, drainage, roof support and like subjects with which mechanical engineers had little or nothing to do. They wanted an institute that would limit its study to the mechanical problems of mining and would give those attending its meetings that mental pabulum which would be of value to them in their daily careers.

Electrical and mechanical engineering at the mines has a distinct industrial flavor. In some ways the mine electrician has problems in common with those of the electric-railway engineer. He has the same interest in wheels and axles, brakes and brake shoes, trolley-wire suspensions, draw-bar pull, starting problems and portable resistances. Still his problems are different. His shop facilities, to begin with, are less. His locomotives are subjected to greater violence, his tracks are lighter, his wheel gages are narrower, he must suspend his wires from the roof of the mine, from timbers or from supports drilled in the coal. He could not feel at home for this and many other reasons in societies like the American Electric Railway Association, and indeed that organization might not be pleased if he intruded his peculiar needs into the discussion of problems so widely different, though analogous.

The electrical engineer at the mines has his central stations, but his troubles are with plants far smaller than those which are maintained by most public utilities. His loads are different; his coal is obtained at a different price and is or should be in many cases inferior, for he is often striving to consume the unsalable; he is not selling power; he may be buying it. An endless line of items would be needed to show the differentiation between the public-utility electrician and his brother at the mine.

For these and similar reasons he would not be welcomed at meetings of the National Electric Light Association, for again he would introduce conditions alien to those under which public-utility engineers are operating, and the papers he would present and the discussion he would offer would be likely to lead the meeting from its special subject, which is how to generate electrical energy for the public and how to sell it when generated.

There is no industry perhaps with the meetings of which mine electrical engineers could associate themselves with advantage. They want every paper to be helpful to themselves, and the other industries have similar desires. Some use storage-battery trucks but not trolley locomotives and some use the latter and not the former. Most have a more even load and few problems in common.

The superintendent of the power and mechanical department of a mine has a machine shop to manage. He has the duties, therefore, of a machinist: but here also his problems are special. He has few repetitive jobs. His work is mainly that of repair. He cannot attempt to arrange his work after the model of a Ford, a Lincoln or a Willys. But though his jobs are smaller they can be as much bettered by judgment as can those of an automobile factory. The right tools to buy, the way to do the best with what is on hand, what extensions should be made, can best be learned from those who have the same problems to confront.

Furthermore, the American Institute of Electrical Engineers, which would seem an appropriate place for electrical mining men, gives more time to questions of
Price Control—by Indirection

AFTER some hesitation and considerable debate the Senate passed the Cummins coal-control bill last week. In principle this is the same as the Winslow bill passed in the House. When these bills are harmonized in conference the country will have legislation giving price control of coal—by indirection. It does not appear that there was more than a modicum of hesitation on the part of Congress to give the administration price control; hesitation was entirely on the point of how to do it without overreaching the Constitution. Many there are who hold that Congress has not yet, in either the Winslow or the Cummins bill, found a way to fix maximum prices on coal that is not in violation of the Constitution, but the bills have been passed notwithstanding.

The attitude of the administration on the subject of price regulation and control of distribution was voiced by Secretary Hoover on Aug. 28 in a statement to the House Committee on Interstate and Foreign Commerce. He said: "It does seem to me that there is a public necessity for action; that there should be some restraint on the exorbitant prices. It is obvious that regardless of the resumption of mining there will be an alteration of the situation from that of a short production to that of a short transportation—that we have a continuous condition of effective famine in coal. In the face of shortage in supply the coal will go to the highest bidder, and price alone is not from a social point of view a proper basis of distribution. That means the poorer classes must bear the burden of deprivation. If distribution is to be based solely upon the highest bidder, it means suffering for a large portion of our population, and it does not in this situation mean an addition to production. The usual defense of unlimited price during shortage is that it stimulates production. Our limit of coal at fair prices is a limitation on transportation, not of mining."

Mr. Hoover said that two ways of accomplishing price control had been considered. One was "to use various federal authorities as a foundation for the government taking possession of coal at a fair price." This, he explained, would put the government in the coal business, and therein lay its chief difficulty. The organization to handle it would take too long to bring together. The trouble would be over before the machine would be working.

The plan adopted by Mr. Hoover and his conference on the Presidential Coal Committee contemplates an extension of the powers of the Interstate Commerce Commission to enable that body, on the advice of the Federal Fuel Distributor (whose duties, we are told, "practically amount to the determination of facts and the establishment of co-operation"), to permit the use of coal cars only by those shippers in interstate commerce complying with established orders as to distribution and price.

It is far from clear on what constitutional grounds this power is to be granted. Washington, official and unofficial, has been debating the question for weeks. The chief counsel for the Interstate Commerce Commission, Mr. Farrell, appears to base his belief as to its legality on the theory that "if by reason of that exorbitant charge, interstate commerce is made impossible, then they go to the root of the evil and apply it to the thing over which Congress has control." That is to say, he looks to the commerce clause of the Constitution to sustain this legislation. Further on he says: "It depends upon whether it is a burden upon interstate commerce. Congress, in the first instance, has the right to exercise its judgment in determining the facts."

Whether it can be done legally or not, beyond doubt it is to be done, or tried at least. There are abundant reasons why it should be tried, reasons that lie mainly in the domain of distribution, however.

The supply of anthracite will be woefully inadequate and can be made to serve only by careful distribution all the way down the line. The government at Washington can direct the flow of this coal only between states; beyond that, at the actual point of retail distribution the good sense of the retail dealer, supported by local opinion and in some instances by state legislation, is our only hope. We feel that the trade will respond manfully.

As for bituminous coal, the immediate prospect is for a current output this winter averaging little above actual requirements, leaving such large budgets as normal storage for the Northwest and for railroads and industrial plants over the country in precarious state. Just now prices on soft coal are declining. They will continue on the downgrade only so long as buyers are willing to hold off. The recession is temporary, and prices, unless arbitrarily checked, will soon start another ascent. The pending legislation is designed to perform this checking.

Thus the coal industry faces in times of peace the kind of regulation it has been fearing and opposing since 1919. External causes have brought it about and it appears that external agencies must be depended upon to remove, at some later date, its incubus on the trade.

There is little comfort in the Herrin case for those violent anti-aliens who froth lavishly at the mouth when any crime is committed by a man named Pellini, or Malakoff, or Papafangs or Pahmkinzcheick or anything like that. The names of a large number of coal miners in Williamson County indicate that they sprang from the racial stocks of the four corners of the world, but there also are a large number in that county whose forbears trailed long rifles through the Blue Ridge Mountains and other purely American "God's countries." It would appear, from a casual glance at the long list of Hancocks, Coopers, Baxters, Kirbys and Craigs indicted by the grand jury that aliens are socially ineligible for some of "bloody" Williamson County's gristy enterprises.

A Man Is Known by the company he keeps, but a company is known by the men it keeps.—Indianapolis News.

Railroad Labor Is Finding Out that its goal is not within striking distance.—Washington Post.
Economical Ways of Transmitting Power Underground*

Importance of Keeping Trolley System Separate from Power Circuit—Alternating-Current Power Cheaper Than Direct—Protection Against Electric Fires—Outside Stationary Motors Should All Be Built for Alternating Current

Seeing that the problem of distributing electric power in mines is so closely connected with the source of power and the outside feeders of that power, a brief description of these will be given before dealing with the subject of underground transmission and distribution.

The main points to be considered are the voltage of the circuit used, the kind of current used, and the method of bonding the mine tracks.

The U. S. Bureau of Mines divides the voltage of circuits and equipment into three classes, as follows: Class 1—"Low." Not over 300 volts direct current or 240 volts alternating current. Class 2—"Medium." Between 300 volts and 600 volts direct current, or 240, and not over 480 volts, alternating current. Class 3—"High." Six-hundred volts direct current or 480 volts alternating current and higher.

It might well be to summarize a few of the rules that two of the states have adopted regarding electrically operated mines. The State of Alabama has the following rules: No apparatus or conductors carrying a voltage within Class 3 shall be allowed in or about working places. Portable apparatus using voltage of Class 3 is prohibited. Electrical equipment installed after this date (date not available) shall not use any voltage higher than that in Class 1 in or about working places. This does not prohibit the use of voltage defined in Classes 2 and 3 (except in or about working places) provided such apparatus is installed and maintained according to these regulations.

Three-wire double voltage systems having a maximum voltage within Class 2 may be used if the neutral is effectively grounded and if the maximum voltage between any conductor and the earth complies with these requirements.

We might also mention the following rules adopted by the State of Pennsylvania: All electrical apparatus or conductors shall be of sufficient size and power for the work they may be called upon to do, shall be efficiently covered or safeguarded as the law thereafter prescribes, shall be so installed, worked, and maintained as to reduce to a minimum all danger from accidental shock or fire and shall be of such construction, and so worked, that the rise in temperature caused by ordinary working will not injure the insulating material.

The Pennsylvania (bituminous) law also has the following provision: At every mine where electricity is used below ground for power, a competent mine electrician shall be employed who shall have full charge of the electrical apparatus in the mine, but shall be subject to the authority of the mine foreman.

We will now consider what the electrical installation of an electrically operated mine should be. A success-
ful mine haulage requires direct current for the motors of locomotives. Hence, as there must be a trolley wire and possibly some feeder wire, it is only natural that the cutting machines and pumps also should be driven by direct-current motors fed from the trolley system. Recently, however, mine owners have come to realize the importance of keeping the trolley system separate from other power circuits, so that accident on the haulage roads which may tear down the trolley wire will not interfere with the supply of power to the cutting machines, pumps, booster fans and other apparatus.

The potential supplied to trolley and feeder wires should not exceed 250 volts direct current. If the mine is of any size and the direct current is generated outside, excessively large feeder wires must be installed if a sufficient voltage is to be maintained at the working places.

With a 250-volt system electric current can be transmitted without excessive loss in voltage only for limited distances. As the current is inversely proportional to the voltage of a given connected load and the losses are proportional to the square of the current it is easy to show marked savings by the use of higher transmission voltage. These savings show up in the amount of copper required in the circuit, the output of the machines and the cost for the maintenance of the motors. Reduced voltage causes motors to operate at low efficiency and at underload and underspeed, the current used also is increased, and as the heating is proportional to the square of the current, motors soon overheat and burn out, causing delays and high repair charges. With reduced voltage at a cutting machine the lineal feet of coal cut per shift falls off. With reduced voltage the haulage locomotive hauls fewer cars per trip and makes fewer trips per shift, and eventually its motors burn out.

No set rule can be given for determining the economical limit of distance for a 250-volt system, because it will vary with the nature of the connected load. Some mines cut and haul coal on the same shift, and in this case the transmission problem is quite different from that in a mine that cuts on one shift and hauls on another. Then again the nature and development of a mine also has to be considered, so that the economic value of any given electrical system must be figured out for each separate mine.

For a large mine the use of high-tension alternating current probably will be most economical, in that a substation equipped with a rotary converter can be installed near the load center, the alternating current being dropped through a borehole into the mine at 2,100 to 6,600 volts. For this purpose a three-conductor lead-covered and armored cable is used, insulated for twice its working voltage. It is for such an installation that a rotary converter has been recommended because with most mine loads the peak determines the capacity of the machine. A synchronous converter will carry about twice as much momentary overload as a synchronous motor generator. Consequently with such a converter it is possible to use a smaller unit, which even with the necessary transformers will not cost more than the equivalent motor-generator set. Where no regular attendant is at hand to adjust the rotary converter for load variation it can be set so as to give a higher average power factor than a motor-generator set.

The room in which an underground substation is housed should be of fireproof construction, well ventilated with fresh air and wired in accordance with the requirements of the National Board of Underwriters. Transformers should be so arranged that if one should explode the oil would not flow outside the room.

The high-tension supply lines should be equipped with lightning arresters of approved type, with proper ground connections. Arresters should be located on the surface at a point near where the cable enters the borehole. A fused horn-gap disconnecting switch should be provided for each phase.

As the substation usually is located at a point near the load center, the 250-volt direct current is sent from
this station to the different parts of the mine through feeder and trolley wires, either in one or several different circuits, according to the layout of the mine. In planning the installation of these wires care should be taken to install wires of the proper size to carry the maximum amount of current which may be needed. In doing this consideration should be given to the future load to be transmitted. In any event no smaller trolley wire than 1/0 B. & S. gage should be used, but, regardless of the size, it should be securely supported on approved hangers placed at such intervals that the sag between the points of support will not exceed 5 in., unless, indeed, the height of the trolley wires is 5 ft. or more above the rail and the wire is so supported that it will not touch the roof when the trolley runs on it.

The height of the wire above the top of the rail should be made as uniform as practicable and the wire should be placed at least 6 in. outside the rail and on the opposite side from the traveling way and shelter holes. On straight runs langers should be spaced between 20 and 30 ft. apart, according to the height of the roof. On curved runs enough hangers should be placed to keep wire from swinging unduly in either direction should any one of them fall out. At about every 2,000 ft. a quick-break single-pole switch or a section-insulator cutout of the correct carrying capacity should be installed, so that, when desired, the wire can be entirely disconnected from the power supply.

All joints in trolley wire should be made electrically and mechanically efficient. This usually is done with the aid of what is called trolley-wire splicers. Means should be provided for cutting off the current in circuits branching off the main trolley wire. At some of the mines of the Consolidation Coal Co. a scheme to prevent mine fires has been put in successful use. Throughout the mines where this scheme has been adopted many pumps are located which it is necessary sometimes to keep going day and night.

In this case besides the Ohio Brass type M section insulator switch, which is installed on all branch circuits, a bypass is provided through a quick-break single-pole switch and also a fuse of the proper capacity to take care of the night load on this circuit. When the motormen make their last trip at the end of the shift they throw the regular branch cutout. This takes the power off the circuit. When the night pumper comes in, in order to get power for his pumps he throws in the bypass switch, making all the power delivered to the pumps go through the fuse. If a fall occurs during the night and the trolley wire comes in contact with the rail or any other material that will cause a ground, the fuse is blown out and before a fire can start the power is cut off.

In most mines both the feeder and the trolley wires must be placed along the roadways. These passages are necessarily low and in many places poorly lighted, if at all. Consequently these circuits must be protected at all points where men must pass under them while at their work or when traveling to or from it. It seems that the best method of safeguarding these places is to have boards on each side of the trolley wire, these boards being supported by iron hooks wedged in the roof. For feeder wires only one board may be needed.

The method of hanging feeder wires along haulageways demands careful consideration. Feeders should be so located that they will be as free as possible from mechanical injury, such as a fall of rock or coal or a derailed mine car might occasion. All trolley or feeder wires coming in or leaving the mine should be provided with lightning arresters, located near the mine opening.

The trolley and feeder wires installed in a mine should be large enough to carry the maximum current not only without danger of overheating but also without a drop in voltage exceeding 15 per cent at any point under load on the system. For this reason not only should plenty of copper be hung overhead but a good return should be provided. The rails usually are employed as a return.

This part of the circuit is just as important and has just as much bearing on the proper operation of the equipment as has the positive wire. For this reason the track rails should be fishplated and be provided with bolts drawn up tight enough to reduce the vibration of the rail as much as possible. Every joint should be bonded and the two rails cross-bonded every 200 ft. Provision also must be made for bonding around all
switches, frogs or openings in the track, so as to insure a continuous return, no bond of less than a 2.0 wire being used, and where necessary 4.0 should be provided.

On main-haulage roads it is good practice to bond both rails. After the bonding is installed it should be carefully maintained and given care equal to that afforded positive wires. If not properly maintained the voltage drop may become excessive. There is danger also that shocks may be received from a poor return.

In the last few years the electrically welded bond has been used extensively in mine work, and no doubt it will be adopted eventually at every mine where greater efficiency at low cost is sought. At one mine two men did all the bonding, using compressed terminal bonds. The placing of ten bonds was considered a good day's work, the men being required to drill the necessary holes in the rails.

After a little teaching these men learned to install electric-welded bonds, and after a short time they did not feel satisfied unless they had installed on old track:

![Image of a switchboard]

**BACK OF THE SWITCHBOARD AT MAIN SUBSTATION**

Showing also part of one of the alternating-current motors on the left and the resistance grid above the switchboard.

At least forty such bonds in a shift and as many as sixty where the track was new. Two years ago about 400 such bonds were installed in a certain mine, and up to the present day not over six of these bonds have been reported as loose. Every one of the defective bonds happened to be among the first installed. At the time they were made the men had not had the required experience to do good electric welding. The men in charge of this work are convinced that the electric welded bond is far superior to any mechanical bond so far used: first, because a better electrical and mechanical joint is obtained, and, second, because the cost of installation is lower.

In recent years many engineers have advocated running all machinery, except the haulage locomotives, with alternating current. As a result fans, pumps, coal loaders and mining machines are now available driven by alternating-current motors, but before adopting this current for mining machines particular attention should be paid to the type of machine selected and the conditions under which it is to operate.

The squirrel-cage induction motor generally used for mining machines has practically constant-speed characteristics, and the speed cannot be satisfactorily varied by the use of resistance, but the three-phase squirrel-cage induction motor is more rugged and freer from trouble than the direct-current motor. As it has no commutator or brushes, repairs to windings are made much more easily. This type of motor when over-loaded or subjected to a reduced voltage will practically quit, so it is not likely to burn out like a direct-current motor.

The starting torque or ability to accelerate a load from a standstill is more definitely fixed or limited in the squirrel-cage induction motor than in the compound-wound direct-current motor, and as a result the mine wire must be well installed and normal voltage maintained under full load if an alternating-current installation is to be operated satisfactorily. This feature of the induction motor of not operating when the voltage has dropped is really more of an advantage than a fault as it demands better voltage regulation, which in turn means efficiency and increased production at lower cost.

Should direct-current motors refuse to work when proper voltage is not maintained many mines in the long run would make a much better showing. They would produce coal more cheaply and keep the cost per ton more uniform year in and year out.

**SHOULD ALTERNATING-CURRENT CUTTERS BE USED?**

Everything considered it is a question whether in the larger mines the alternating-current motor-driven mining machine should be used where the mine has not been developed to a point making electric haulage necessary. Provided alternating-current power can be purchased, it might be good policy to use it, installing transformers above ground and supplying power to three-phase induction motors on the mining machines through a three-phase cable properly installed in the airway or lowered through a borehole. Such an arrangement might give good results at a minimum cost of equipment.

Whether alternating-current motors should be used to drive pumps inside a mine depends on many conditions, but where they are favorable and alternating-current power is obtainable there should be no hesitation about the matter. It is sometimes an easy matter to lower a 2,200-volt three-phase cable through a borehole located centrally over a number of the larger pumps.

In this case the transformers could be located at the bottom of the borehole, in a room of fireproof construction, the 2,200-volt current before entering the transformers being passed through fuses of the proper capacity, and from the fuses into a three-phase oil-break switch equipped with an automatic overload trip having a trip coil in at least two phases. From this oil switch the wires could then be brought to the three transformers.

The circuit leaving the transformers need not be provided with either switch or fuses if these are installed at the places where power is used. It is hardly necessary to mention that the transformer room, besides being of fireproof construction, should also be well ventilated and well lighted and that all wiring should be done according to the requirements of the National Board of Underwriters. The secondary of the transformers should be either of 220 or 440 volts. The motors driving pumps should be of the squirrel-cage type and motors above 5-hp. should be equipped with either a manual or an automatic starting compen-
sator, either type to have no-voltage and overload release coils.

The cost of power also is an item to be considered when figuring on such an installation. The following figures give the costs of alternating-current and direct-current power per kilowatt-hour. They are taken from four large mining properties operating their own central power plant and are for the year 1921, when coal prices and wages were at their highest. We will call the different plants Nos. 1, 2, 3 and 4.

No. 1 plant generated alternating current at a cost per kilowatt-hour of 0.66c., the direct current at the mine cost 1.13c. for the same unit. At No. 2 plant alternating current cost 0.75c. and direct current 1.57c. per kilowatt-hour. At No. 3 plant alternating current cost 1.10c. and direct current 2.54c. per kilowatt-hour. At No. 4 plant alternating current cost 1.44c. and direct current 2.86c. per kilowatt-hour.

From these figures it will be seen that the difference in cost of power alone is an item on the side of economy large enough to favor the installation of alternating-current motors on pumps wherever possible, but, as mentioned before, the final saving in the power bill depends on many other conditions besides the cost of the current used. The lower maintenance cost will justify the extra investment involved in providing an alternating-current installation. In gaseous mines, of course, preference should be given to alternating-current equipment regardless of first cost, for an alternating-current motor has no commutator and brushes to form arcs and so explode any gas that may be present. For these reasons whether to use alternating- or direct-current motors to drive pumps is a problem to be solved individually at each mine.

DETAILS OF TOMS CREEK ELECTRIC INSTALLATION

The following is a description of the underground transmission system installed in the Toms Creek, Va., Mines of the Virginia Iron, Coal & Coke Co. H. E. Carlton is electrical engineer for this corporation and credit must be given him for this information. Should the potential be 250 volts direct current in place of 600 volts, and other conditions remain the same, the installation would be a model in every way, but this committee could not recommend the installation of any direct current having a potential exceeding 250 volts.

The Virginia company has ten openings at the plant mentioned. These are scattered over a distance of approximately four miles and are disposed almost in the shape of the letter “S” with the curves flattened out. A substation is located at each end of the long line of openings and a third has been built three miles from one end and one mile from the other. The machines are 200-kw. 600-volt direct-current generators driven by 2,300-volt 60-cycle synchronous motors. They are all hand-started with full-automatic feeder panels. Two machines connected for parallel operation are installed in each station and each station is connected with the other two for parallel operation. The center station, although the last installed, is the key or main station and operates 24 hours per day.

The other two are operated for 8 hours only, one machine being normally used in each station. This leaves two machines in reserve at all times, so that any one station may be out at any time and not interfere with the operation of the mines.

The outside feeder capacity is so distributed that at full loads no more than 10-per cent line drop is allowed. The result is that the voltage is practically constant at every point of delivery.

No. 1 mine is on the retreat so that the problem of filling future requirements is past. The mine is fed by 2/0 figure-eight trolley wire suspended on pipe driven into boreholes in the side of the coal so as to give the wire a uniform height of 6½ ft. above the rail and 18 in. to the right of the track. All crossings where the standard height cannot be maintained are guarded with 3x6-in. boards fastened to the roof.

BOND JUST LONG ENOUGH TO CLEAR SPICE BARS

The return is secured by bonding one side of the 40-lb. steel with 2/0 pin-driven all-wire bonds 26 in. long, which is just long enough to clear the splice bars. When installed in this manner a wrecked car rarely will cut out a bond. These bonds are installed on the inside of the rail.

The load consists of one 20-ton bar-frame locomotive, one 20-hp. pump motor, and one 25-hp. fan motor. The coal in this mine is gathered by mules, and the loaded cars have to be drawn up heavy gradients.

Number 2 mine is fed by approximately 6,000 ft. of 4/0 figure-eight trolley wire with 2,000 ft. of 300,000-circ.mil cable feeder in addition. The current returns by 40-lb. steel with 4/0 pin-driven all-wire bonds up to 4,000 ft. where the return feeder from No. 2 station comes in, the rest of the road being bonded with 2/0 bonds of the same type. The trolley wire is supported by pipe hangers in the side of the coal rib and by roof hangers fastened in the roof with the aid of expansion bolts.

When the roof is of sandstone a timber hanger is used. This is installed by drilling two 1-in. holes 4 in. deep, a poplar wood plug being driven into the holes thus formed. Two 20-lb. track spikes driven into the wood complete the job. This method gives a secure support of low cost, and it stays in place longer than any other type of roof construction I have ever used.

The load in this mine consists of two 15-ton trams, four 4-ton gathering motors and mine-pump motors aggregating approximately 100 hp. Two storage-battery locomotives also are used in this mine.

No. 3 is the largest of the mines and has the most coal for future development. It is being worked on the three-way system with the left and center main both tracked to the heading. The east and west headings are driven on the face with cross entries to the right and left. The main feeders are two 4/0 figure-eight trolley wires for approximately 11,000 ft. with a 300,000-circ.mil cable extending about 8,000 ft. into the mine. The current returns by a single track bonded on both sides with pin-driven 4/0 all-wire bonds installed on the inside of the rails.

This track is of 56-lb. steel. The other main is laid with 68-lb. steel and is bonded with the same size of bond. Both tracks are cross-bonded every third rail and the two tracks are connected every 300 ft. with a 300,000-circ.mil cable.

The trolley wire is supported by mine-timber hangers installed with expansion screws part of the way and spikes and plugs the rest of the way. To date the spikes have given the best service, but as the Merkel of them have been in place only six years, the lasting qualities of this method of construction have not yet been completely tested. As the hangers put up with spikes and plugs have been up six years and so far have not given any trouble the chairman of this committee
toward charges for slate yardage which are not matters of opinion than for dead work (which is not so clearly specified in the understanding between employer and employed and which is not as easily assessed) the mine boss will turn in dead work as yardage. Nothing will be said here of actions not having even this degree of justification except that they have been known to occur. I may say also that a method closely resembling this has been used by the Pennsylvania Coal & Coke Co. with offices at Cresson, Pa., using a cross surrounded by a circle as a station and an acute-angled L to designate a corner.

More Details as to Jerry Dunn's Output

Desire having been expressed to obtain more information regarding the output of Jerry Dunn described in Coal Age, Aug. 10, p. 216, the following further details will doubtless be of interest: The rate paid was 60c. per car, making a straight earning of $255.47. In addition he received a bonus of 8c. per car, or $37.52, a prize as leading coal loader at No. 3 mine of $10, and a further prize as crack leader in the contest between Loma No. 3 and Corna No. 2 of $20—a grand total of $362.99 for thirteen days' work, or $25.61 per day for straight earning and bonus, and $27.92 per day figuring in the prize awards.

The coal, which was of the Island Creek seam, was free from impurities; a No. 3 shovel and a breast auger were used by Jerry Dunn for loading and drilling shotholes respectively except that about 25 per cent of the drilling was done by electric coal augers; the working place was dry; the coal was shot by Monobel; two tracks were laid in the 36-ft. room and a gathering locomotive supplied the cars.
Cost and Track Data and Other Facts Relating to Upkeep of Mine-Locomotive Wheels and Tires

Worn Wheels Make Locomotive Parts Drag Roadway, Causing Wrecks —Tables Showing Commercial Sizes of Wheels—Replacing, Resurfacing, Rebuilding and Grinding Tires—Frog and Switch Formulas

GREAT is the need for a detailed investigation of mine-locomotive wheels and tires, their care and maintenance. Mechanical engineers should thoroughly analyze the conditions to which such equipment is subjected and determine those which are favorable and find methods of remedying shortcomings.

Too much of the so-called "experience" related and "advice" given is not based upon investigation but is handed down time after time and used as a remedy for all conditions, little thought being given to the original circumstances to which it had reference. Personal favoritism and prejudices enter into such experiences or advice, and as such are without much weight. If you can back your practices by facts developed from research, time will be saved and waste prevented.

The time required for a thorough research or investigation into this subject is not a matter of a few weeks or months. It can come only as the result of records which have been well and industriously kept for years, in which is shown the service received, maintenance required and the conditions encountered for each of the various classes of wheels and tires. Until you keep a record of these things you will be at a loss to know what service to expect under conditions obtaining and will be unable to compare the relative merits of the different types of wheels and tires.

The standardization of these parts is of mutual interest to manufacturers and coal companies. The chairman of the committee on "Mine Locomotive Wheels and Tires" of the Electric Power Club, which is investigating the subject, informs us that they will soon recommend such standards.

It is to be hoped that these specifications will be such as can readily be adopted by manufacturers and local companies, and that the committee will be found to have based its investigations as to these standards upon actual conditions met in the mines rather than on a too liberal use of theory or on tests made on factory tracks.

Some of these proposed standards could be announced but until the Power Club Committee has completed its recommendations these details will not help you to resurface the worn tires and wheels that lie waiting at the mine for your return.

To appreciate more fully how important it is to take proper care of wheels and tires let us consider for a moment the interrelation between tracks and locomotives. Badly worn wheels and tires invariably cause poor track, and poor track generally causes excessive wear on wheels and tires. Some coal companies permit their locomotives to operate through pools of water, over muck-covered rails and through sands that literally grind out the bearings. Where the responsible parties are ignorant of such conditions or believe it is an economy to ignore them they continue to add heavily to the cost of mine operation.

When we look back to the day of mules, from our present electrified mines, it recalls to us the manner in which we figured their values. It was obvious to anyone that a mule's value continually became smaller with passing years. Given two mules with a difference in age of five years but equal in all other respects, the younger one was worth more money, for, barring extraordinary circumstances, it was practically certain that he would outlive the older. The mule had a limited life and consequently as year by year elapsed he possessed less potentiality for usefulness and his value accordingly decreased.

The mine locomotive has a period of life just as defi-
FIG. 1—DESMOUNTABLE TIRE FOR LOCOMOTIVE WHEELS

A, the demountable tire; B, the axle; C, the solid gear; D, the wheel center; E, the inclined retaining ring; F, the tackle retaining ring and G, the key for the ring.

mine as a mule and consequently is just as sure to depreciate in value. With a mine locomotive running day after day for months, doing its assigned work without any apparent loss of efficiency, it seldom strikes some people that it is in any other than the best of condition. Every machinist knows well that a silent lessening of its value is going on and that eventually it must be abandoned.

Harming obsolescence, the life and depreciation of any mine locomotive will vary according to the conditions under which it operates and more particularly upon whether timely or untimely repairs are made. Its parts subjected to the hardest wear should naturally receive first consideration in maintenance; if they do not, the life of the locomotive will be greatly shortened by this neglect.

You will notice instances where wheels and tires are worn so badly or resurfaced so often that parts of the locomotive will drag on the bottom or catch on switches or cross-rails. Many wrecks can be attributed wholly to this cause, and the loss due to the delays they occasion and in the damage done will far exceed the expense which would have been incurred had the wheels been duly re-tired.

The damaging effect of badly grooved wheels on mine track is seemingly slow, but track subjected to such conditions will depreciate 10 per cent faster than other track carrying an equal volume of traffic but traversed by locomotives having well-surfaced wheels. Without good haulage roads the mine cannot be operated successfully, and care always must be taken to keep transportation facilities favorable to good track and by prompt attention to the needs of the haulage equipment.

If you are at all interested in the condition of your locomotive, you cannot afford not to be just as interested in the mine tracks. If you boost for good locomotives, boost first for good track on which to run them. You may not be responsible for the maintenance of the tracks, but report their inequalities to those who are. Keep on reporting them until to keep you quiet they are put in proper order.

Keep the maintenance of the locomotive wheels and tires one step ahead of that of the track and there can be no retaliation. About 20 per cent of all accidents in the mining industry are due to haulage. In all probability 50 per cent of these are due to poor track, wheels and tires. Investigate as many wrecks as possible and remedy the conditions that cause them wherever you can. Some general track formulas are listed in this article for this specific purpose.

In many cases it is impossible without first removing the trucks from the locomotive to determine the exact diameter of the wheel centers for which tires are to be purchased. Some tires have a shoulder which extends over the outer rim of the wheel center, and owing to the design of the locomotive it is impossible to measure on the inner side of the wheel. Locomotives are left to

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**TABLE 1. EXACT DIAMETERS OF WHEEL CENTERS IN GENERAL USE FOR TIRES OF THE OUTSIDE DIAMETER SHOWN**

<table>
<thead>
<tr>
<th>Diameter of tire</th>
<th>14</th>
<th>16</th>
<th>18</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Practise</td>
<td>24</td>
<td>26</td>
<td>28</td>
<td>30</td>
</tr>
<tr>
<td>Locomotives</td>
<td>22</td>
<td>24</td>
<td>26</td>
<td>28</td>
</tr>
<tr>
<td>Irons</td>
<td>20</td>
<td>22</td>
<td>24</td>
<td>26</td>
</tr>
<tr>
<td>Irons (Superior)</td>
<td>18</td>
<td>20</td>
<td>22</td>
<td>24</td>
</tr>
<tr>
<td>Irons (Best)</td>
<td>12</td>
<td>14</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>Mining Catalog</td>
<td>24 (26)</td>
<td>26 (28)</td>
<td>30 (32)</td>
<td>34 (36)</td>
</tr>
</tbody>
</table>

* Under Morgan-Gardner are expressed thus: 14G (16G). 14G is the inside diameter of tire and 14 the diameter of wheel center, both in inches.
run on worn wheels because the management believes it cannot afford to stop them long enough to remove the trucks for the taking of these measurements.

If the record of the sizes and performance of tires to which we have previously referred were kept this trouble would be eliminated. Rarely is information to be found on hand around the mine giving general data on the sizes of tires and wheel centers, and for this reason information of this kind has been sought from several manufacturers, and it is listed herewith. All mine-locomotive wheel and tire manufacturers should indicate on all wheels and tires in some permanent manner their exact diameters, widths and thicknesses.

ON CURVES, FLANGES AND TIRES WEARUNEQUALLY

Where curves in the mine tracks are in one general direction, the flanges and tires on the outside-rail side usually will wear faster than those on the opposite side. Under general haulage conditions in the mines it is also often found that the wheels or tires on the gear end of the locomotive wear much faster than those on the opposite end, but that the flanges on the gear side do not wear thin as fast as those on the opposite side.

The wear on wheels, tires and brake shoes is materially reduced by the use of a dynamic-braking controller on the locomotive, for a heavy downgrade can be negotiated under heavy load without putting on the brakes and sliding the wheels, and because in stopping a trip the brake shoes have to be applied only after the controller has reduced the speed of the locomotive to practically zero. With this controller the motors are connected in series. This reduces the possibility of spinning the wheels when starting a trip.

The dynamic method of braking is accomplished by connecting the motors as generators. By proper manipulation of the controller when the motors are so acting the controller will regulate the resistance sufficiently to produce the desired braking effect.

In removing tires from wheel centers it is customary to heat them with a gasoline or kerosene torch, upending the axle so that the wheels can be imbedded in a fire, air under pressure being supplied through a circular pipe fitting around the wheel. They also are frequently

FIG. 5
Preparating
to Turn Badly
Grooved Tread

Too often a tire that has become badly grooved is allowed to run on long after prejudice would favor its re-surfacing or removal. It is probable that if the turning when turning is all that is needed, could be done without the locomotive being hauled off during operating hours it would be far more frequently done with less risk of derailment and less hazard to life and property. A mine is fortunate indeed if it has motive power enough so that one of its locomotives can always be in storage or can be readily spared so that at any time it can be put in the best of condition for safe and efficient operation. This illustration shows a fatigue in the workshops of the Arrow Coal Co., Rockingham, Pa.
removed by the use of a special type of forge over which the tires can be revolved.

The new type of demountable tire developed by the General Electric Co. for mine locomotives is worthy of consideration, for such tires can be removed in much less time than those which are not so designed. Furthermore, with this type of tire the axle or wheel center is not subjected to excessive heat such as is sometimes developed when tires are removed by other methods.

When tires are worn to a point where they must be discarded, it is better to break them by the methods shown in Figs. 1 and 2 than to remove them by heating.

Only in a few cases are the machine shops at the coal mines equipped with a tire lathe—that is, one that will turn two tires at one time and do it without the prior annealing of the metal. A lathe of this type will turn two tires in two hours. The small lathe usually found at the mines cannot turn tires unless they have been annealed, for the lathe cannot cut the hard crystallized surface which has developed on them. Before placing the tires on such a lathe they must be annealed to a dull red and allowed to cool naturally in air.

They are generally shrunk on the wheel center while cooling and they are then resurfaced. If the tire is turned by the use of chucks it must be reheated after turning and shrunk on the wheel center. Three tires a day is a fair average for this method of turning. In either case when the tire is being turned a drip composed of two parts petroleum and one part turpentine should be used for lubrication.

The use of abrasive brake shoes has done much to retain the proper contour of the wheel or tires. The grades on the haulage roads have much bearing upon the manner in which they should be used. To eliminate undue wear upon the wheels and tires they must be interchanged in many cases with common brake shoes.

A grinding machine has been placed on the market for the resurfacing of tires. It is so designed and operated that the tires can be ground without removing the trucks from the locomotive. The grinding wheels are on the same elevation as the track, and the motor
is run into position as if it were being spotted over a pit in the machine shop. A limited inquiry into the merits of this machine discloses quite a difference of opinion as to its performance and results. It cannot be condemned or recommended until a thorough investigation has been made and until several questions have been answered by practical experience:

(1) When grinding the locomotive wheels are turned by the friction of the grinding wheels. This may prove satisfactory on a special type of locomotive but will it work well on all types?

(2) If there is 1 in. or more play in the journal boxes caused by worn bearings or wheel hubs, how can the flanges be prevented from playing on the grinding wheel?

(3) If two tires are worn unequally or to different diameters how will the two be brought to the same diameter in one operation?

(4) How many tires per day can be resurfaced?

As far as the lathe or the electric welder can be placed in constant service for general repair work as well as to resurface the tires the investment in the electric welder and maintenance costs for a grinding machine, which has only one definite use, be justified by considering its use affords. If not its installation will be unwarranted.

Building up worn tires and wheels successfully and economically with the use of the electric welder requires an operator who has by experience acquired the technique of manipulating the electrodes and their application to the various classes of welding.

For building up tires a 1/2-in. metallic electrode does the best work but more speed can be made with one of 3/4-in. diameter. The 1/2-in. electrode requires 200 to 250 amperes whereas the 3/4-in. requires from 250 to 300.

The worn space to be filled up, using a 26-in. tire as a fair example, will require on an average about 10 lb. of metal. A competent operator should fill this in at the rate of 2 lb. per hour. At this rate two tires could be rebuilt in ten hours.

In general practice around the coal mines the tires are placed flat upon a turntable at a convenient working height. The welding is then done in 2- to 3-in. sections at a time, starting at the flange and welding across the tread and in four equidistant points around the tire. If instead of removing the tire and placing it on a turntable the locomotive truck is set up on a pedestal the operator will make two welds, one on each tire, while in the one position, then roll the axle 180 deg. and repeat the welding, and so on until the original weld is reached.

Such a procedure holds the localized heat to an absolute minimum, and this becomes more essential as the carbon content of the metallic electrode is increased. An electrode having 0.10 per cent carbon or less will give complete satisfaction. However, if it is desired to use a rod having approximately the same carbon content as the tire itself, there are no difficulties, except that the price is slightly higher per pound.

For tire work no metallic electrodes in which the carbon is in excess of 0.75 per cent should be used, for with the harder metal it seems difficult to prevent local strains. Tires will break by using this high-carbon metal because the local strains cannot be compensated.

How to handle the resulting tire after it is built up doubtless will puzzle operators who are not equipped with lathes large enough to swing an axle complete, much less the larger size tire. A portable grinding wheel satisfactorily overcomes this condition. It is possible to use these tires without turning if the operator has put on the finishing layer expertly.

It is claimed for the electric welder that a tire can be built up three times after each surfacing. Upon this assertion, using prices as indicated above, the life and maintenance cost per tire would be as in Table VII.

As it is not considered profitable in general practice to rebuild flanges on tires, the flanges in all probability will be worn beyond repair before the tires could remain in service for a life such as indicated above. Many mine locomotives are designed so that the wheels cannot be resurfaced, and must be maintained as near their original diameter as possible, because of the under-hangings of the locomotive, which if lowered by worn wheels will catch on switches, etc.

The electric welder has its advantages in cases like this, and it means a considerable saving. When one wheel is worn deeper than the other, it is necessary to resurface both wheels to the diameter of the one worn the deepest, thereby unnecessarily shortening the life of the other tire, but by rebuilding the tires electrically this waste is eliminated.

A locomotive having the minimum height above the rail has many advantages, but it is always well to investigate the conditions, prepared if possible to sacrifice a few inches of height in order to allow space for the complete utilization of tires and if possible to use tires as much as one inch oversize.

### TABLE VIII. FROG AND SWITCH FORMULAS

<table>
<thead>
<tr>
<th>Formula</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>$l = \text{lead rail in feet}$</td>
<td>Number of frogs of track in feet</td>
</tr>
<tr>
<td>$g = \text{gage of track in feet}$</td>
<td>Number of frog rails in feet</td>
</tr>
<tr>
<td>$r = \text{radius to center line of track in feet}$</td>
<td>$x = \text{length of switch in feet}$</td>
</tr>
<tr>
<td>$d = \text{clearance between hinge}$</td>
<td>$r = \text{radius}$</td>
</tr>
</tbody>
</table>

To estimate required distance of switch:

$$h = \frac{l}{2}r$$

$$x = \frac{g}{l}r$$

To find the minimum radius of curve for various wheel bases:

$$B = \text{wheel base in inches}$$

When $R$ is minimum radius of curve in feet:

$$B = \text{wheel base in inches}$$

And $c$ is a constant and the wheel base is

$$B = \text{wheel base in inches}$$

### TABLE VII. TIRE COSTS WHEN TIRES ARE SURFACED, WELDED AND REPAIRED

<table>
<thead>
<tr>
<th>Types of Tires</th>
<th>Cost for Three Resurfings by Electric Welder, Life in Years and Cost in Dollars per Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>8 10 11 12 14 15 16</td>
</tr>
<tr>
<td>One</td>
<td>8 10 11 12 13 15 16</td>
</tr>
<tr>
<td>Two</td>
<td>8 10 11 12 13 15 16</td>
</tr>
<tr>
<td>Three</td>
<td>8 10 11 12 13 15 16</td>
</tr>
</tbody>
</table>

Life of one tire indicated by heavy line.
Relative Merits of Storage-Battery, Combination and Conductor-Cable-Reel Gathering Locomotives

Believed That Larger Capacity Straight Battery Type Might Show Rate Two Cents per Ton Lower Than Combination—Reel Type Fits Heavy Grades; Combination, Medium Grades and Straight Battery, Low Grades

The authors of this paper hope that the relative merits of the various types of locomotives now in use have been laid down in this article without bias, the sole purpose of preparing it being to bring to light the advantages of one class of gathering locomotive over another under certain specified conditions. This is done for the benefit of those who have invested or who may be contemplating investing their money in motor equipment.

Miners and electrical men of recent years have much discussed the merits of the different kinds of gathering locomotives practically all of which will come under the three classifications named in the title. Widely differing experiences have been reported. There is reason to believe that much prejudice has crept into the argument because of the misapplication of the equipment and the slowness of all human beings to admit their mistakes and accept new developments. Therefore this article will be confined to facts so far as the members of this committee have been able to obtain them, associated, we hope, with logical reasoning.

All Three Machines Have Their Proper Place

In this way, with no selfish end in view, we hope to show the relative merits of straight-storage battery, combination and conductor-cable-reel gathering locomotives from an operating point of view. This will be done primarily under what we consider average mining conditions, but we will state before going further that we expect to find an economical place or condition for each of the above classifications.

Before presenting any data it is in order to discuss briefly how and under what conditions these data have been obtained and compiled, and the kind and size of the equipment considered.

Records of Nineteen Locomotives Collected

Records of nineteen gathering locomotives have entered into this comparison. They are owned and operated by the Logan Mining Co. in the Logan field.

These engines are classified as follows: Nine combination storage-battery machines, all equipped with 88-cell lead batteries, all 13-plate except one, which is a 15-plate cell; seven straight storage-battery machines all 48-cell; and, two 17-plate, three 19-plate, two 21-plate, making the average 19 plates; three locomotives of the conductor-cable-reel type.

These locomotives are not all at one mine but are divided as follows among four operations: One mine has one straight battery and one cable-reel machine; another has four combination machines that gather and rip their coal to the slope bottom; another has four straight battery, two combination and two cable-reel machines; the remaining mine has two straight battery and two combination locomotives.

The coal beds at the four mines range from 5 to 6.5 ft. in thickness and are generally considered level, but have numerous local dips ranging up to 4 per cent. These of course will average about "fifty-fifty" in favor of and against the loads. In general these mines have what would be considered good average mining conditions. Forty-pound steel is laid on all main haulways and 20-lb. in all butt entries and rooms.

Locomotive Maintenance Costs Closely KEPT

This company has kept an extremely accurate maintenance-cost system on the practical operation of its locomotives from March 1, 1920, to date. It is through the courtesy of this firm, the chairman of this committee being an employee in the capacity of chief electrician, that we have been given access to a large part of the facts that will be presented in this paper with the assurance of their reliability.

A monthly cost record is kept of each locomotive on standard forms printed for this purpose. The electrician at each mine makes an itemized record of each repair part used, the date of its installation, and the number of hours consumed in making the repairs. Also on this same sheet the daily tonnage of each locomotive is accurately kept. When a new battery is installed and after a deduction is made for credit on the old battery returned to the manufacturer the rest is charged monthly with depreciation calculated on a two-year life, stopping the charge at the end of two years where the battery exceeds the estimated life or doubling up during the last months should the battery perishance fall short of that period of usefulness.

Maintenance of the batteries, including the replacement of water, is recorded on these sheets, and at the end of the month the results are totaled up, showing the tonnage, total cost and cost per ton for the month. One or two good months will not be picked from these records and a comparison made from these, but the records back to March 1, 1920, covering a continuous operating period of twenty-seven months, terminating June 1, 1922 will be taken. A point that we wish to emphasize here is the length of the time interval that these records cover. The experience over a number of months is essential if figures of this nature are to furnish reliable indications.

The many conflicting stories and reports on the subject under consideration doubtless arise from the fact that the most of us do not dig deep enough when making comparisons or drawing conclusions. Offhand it might seem that compiling and comparing the records mentioned above would be all that would be necessary to settle this question, but it is not, because this compilation does not represent more than 30 per cent of the cost that should be entered against these locomotives.
and introduced when making such comparisons. We must not be satisfied till we have reduced every possible alleged advantage or disadvantage to facts or figures. It matters not what claims may be put forth; if they fail to show a reduced cost per ton they are not worth considering, for this is the vital point of interest and is the only characteristic that can really be counted of advantage. In other words this is not a question of individual likes or dislikes, it is a question of dollars and cents. After our data are exhausted, however, we will consider some of the points of advantage for which we have no substantiating figures.

The largest item of cost entered is for the wages of motormen and brakemen. The average wage these operatives received during the period under consideration was $5.59 per 8-hour day, the mines working 404.5 eight-hour shifts during this time. The next important item is the power-demand charge, which in this locality is based on the highest integrated 5-minute peak that occurs during a month. This charge is $1.80 per kilowatt per month, and to it the regular charge for energy must be added. By the use of straight storage-battery locomotives this demand charge is at a minimum, as the day load is reduced and the power consumption spread out more evenly throughout the 24 hours of the day. The straight battery machine being the most economical from this point of view we make it as a base.

Accordingly we must charge the cable-reel locomotives with a demand equal to the capacity of their motors, which is 30 kw., as they all draw their power from the trolley and do it during the day shift, when the maximum load is on. The motor capacity of the combination locomotives is 20 kw. Apparently they should be charged with 20 kw. of demand, but as they operate from the trolley only 20 per cent of the time they rarely ever all draw their maximum capacity from the system at the same time. Consequently they are charged with 75 per cent of their capacity, which is 15 kw. per locomotive per month.

CHARGES AGAINST MACHINES THAT USE TROLLEY

Reel and combination locomotives are charged with increased copper, trolley hangers, bonds and labor for bonding butt entries, but these charges are spread out over the total tonnage of a 1,000 x 300-ft. panel in a 5-ft. seam with 80 per cent recovery. The maintenance cost of the wire and bonding is not considered, as it will just about offset the value of this material when the entry or panel is worked out. But there is another charge of like nature. It is well known that if cable-reel or combination gathering locomotives are being used more substation capacity and more copper in the whole transmission system are required because a greater percentage of the total power consumption is being used in a shorter period than would be the case where straight storage-battery machines were being employed. Hence these two charges must be made against these two types of locomotives. They are divided between them in about the same proportion as the demand charge, but they are based on the total tonnage of an average-size lease or mine.

We have investigated and reduced to conservative figures another claim or charge that must be made against the cable-reel gathering locomotive. This is power failure or interruption. It is certain that if this type of locomotive is being used when there is such failure or interruption the whole mine comes to a dead stop almost instantly, so far as the moving or transport of coal to the tipple is concerned.

When failures of 10, 20 or 40 minutes duration occur does the cost stop? Most assuredly not. Can we prevent these interruptions? No; they are not within our reach. Are they the fault of the locomotive? They certainly are. They should continue working, power or no power, for that is just what a battery locomotive does. Consequently we must admit that when it comes to the question of considering merits and demerits the reel type of locomotive should be charged with at least a portion of the additional cost arising from this weakness and inflexibility.

The power company's record in this locality from a time standpoint shows 98 per cent supply. This means that during 2 per cent of the time no power is available at the mines, and we accept this as a pretty fair degree of service. But it also means that on an average during 28.8 minutes out of every 24 hours no power is available. It is reasonable furthermore to believe that 75 per cent of this failure will come during the 8-hour working shift, because this is the period of heaviest load. This being the case, the period when power is lacking averages 21.6 minutes during each working shift, or is equivalent to 4.5 per cent of the working time.

Assuming the average cost of production throughout the period of time under consideration as being about $1.75 per ton, 4.5 per cent of this is 7.78c. of cost per ton arising from power failure. The coal company's records show that the mines operated only about half time and as power failure would not be particularly injurious on the days when coal was not actually being produced we cut the above figure in half, which still leaves 3.94c. per ton. Because this figure still looks too high and because we might have overlooked something this charge is further cut and entered against the reel-type gatherer at 1.75c. per ton.

We realize that a battery locomotive could not continue its work over any protracted period of time should
The power not be restored, because the mine cars would all be filled and because the mine could not continue to operate without ventilation, but the records show that the average duration of these failures is 15 to 20 minutes. It is obvious that with storage-battery locomotives these short interruptions are scarcely felt, as the main-haulage locomotives and tippers almost always have a surplus of capacity sufficient to overcome these short delays, provided the leaders at the working face are kept going.

So far we have considered only the total power failures. There are not all, however, as in all probability the local or partial failures from the substation to the mine are as frequent and as long in duration as the total failures. We have no definite data on this detail, however, so we merely drop it here as a demerit against the cable-reel gatherer.

Another consideration in connection with power failures that we have not been able to convert to figures but one which is nevertheless pronounced in its effect on cost is the fact that miners are difficult to hold in a mine when they fail to get cars promptly, especially when the delay comes in the afternoon; consequently a power failure of 30 minutes in the afternoon often leaves a mine badly crippled for the remainder of the shift. To those who closely watch the daily cost statements of a mine the effects of such happenings are often noticeable to the extent of 25 or 30¢ per ton.

We conclude here the description of how the data to be presented have been assembled. We have been highly conservative in the few estimated figures entering into this comparison, and without question the locomotives against which charges have been made have been given the benefit of all doubt. Therefore, Table I is presented to show the relative merits of combination, straight battery and conductor-cable-reel locomotives.

**TABLE I—RELATIVE MERITS OF COMBINATION, STRAIGHT BATTERY AND CONDUCTOR-CABLE-REEL LOCOMOTIVES**

<table>
<thead>
<tr>
<th>Combination</th>
<th>Straight Battery</th>
<th>Conductor-Cable-Reel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power per ton, kw.</td>
<td>1.13</td>
<td>0.82</td>
</tr>
<tr>
<td>Cost per ton, kw.</td>
<td>25.21</td>
<td>21.90</td>
</tr>
</tbody>
</table>

The foregoing tabulated data show that the straight storage-battery locomotives have an advantage of 0.07¢ per ton over the combination machines. Although this is correct, if we stop here we will not do justice to the straight battery locomotive; therefore we present Table II, showing the comparative capacity of the two.

**TABLE II—CAPACITY OF COMBINATION AND STORAGE-BATTERY LOCOMOTIVES**

<table>
<thead>
<tr>
<th>Combination</th>
<th>Straight Battery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cells</td>
<td>88</td>
</tr>
<tr>
<td>Plates</td>
<td>13</td>
</tr>
<tr>
<td>Positive Plates</td>
<td>528</td>
</tr>
<tr>
<td>Capcity (Kw.)</td>
<td>35 38</td>
</tr>
</tbody>
</table>

From this it may be seen that the combination machine drawing 20 per cent of its power from the trolley has a battery equivalent of 4.23 kw.-hr., which gives it an advantage of 35 per cent in capacity over the straight battery locomotive. The table of percentage shows that the combination has led the straight battery machine by only 23 per cent in tonnage notwithstanding its 35 per cent advantage in capacity.

**INCREASING SIZE OF STORAGE-BATTERY MACHINE**

This difference in tonnage cannot be traced to anything but a difference in capacity resulting from the fact that the mileage rating of both types of locomotives under consideration is the same when operating from the batteries, but the combination has 42 per cent advantage in speed over the straight battery machine while operating from the trolley, providing 250-volt pressure is maintained on the section from which cars are being gathered. This latter condition is possible but not practical, consequently we drop this apparent advantage and assume that the straight battery machine equipped with the same capacity as the combination locomotive will gather the same tonnage under the conditions being considered. This would require about a 27- instead of a 19-plate battery, which is approximately a 50-per cent increase.

If we go back to the data in Table I referring to the seven straight battery locomotives and increase the battery depreciation 50 per cent and the repair cost and tonnage 25 per cent based on the combination tonnage, while the operating cost remains the same, it will give the results set forth in Table III, showing what the cost and tonnage figures would have been on these locomotives had they been equipped with this additional capacity.

**TABLE III—TOTAL TONS INCREASED BY 38.9 PER CENT, OR FROM 355,852 TO 494,278**

Had the data already given in this paper been procurable at the time the above equipment was purchased Table IV could have been prepared.

**TABLE IV—RELATIVE MERITS OF STORAGE-BATTERY, COMBINATION AND CONDUCTOR-CABLE-REEL GATHERING LOCOMOTIVES, LOGAN MINING CO.**

<table>
<thead>
<tr>
<th>Advantage Cost (Kw. per ton)</th>
<th>13.47¢</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advantage Cost (Kw. per kw.)</td>
<td>25.81¢</td>
</tr>
</tbody>
</table>

By comparing the repair cost alone of the three types of locomotives the combination will seem a little high, as it has no cable cost or reel maintenance. This is due to a rather delicate equipment originally installed in eight of these locomotives. This equipment was taken out about eight months ago and replaced with a later
and more rugged type, which has already lowered the maintenance from 2.51c. per ton to 2.11c. over the whole time period of 27 months.

Figured on the last eight months alone it is down to 1.42c. per ton. This is one pronounced advantage that the cable-reel locomotive has had over the combination machine in this comparison. Had the combination had this latter equipment in the beginning the difference would have been 0.69c. per ton more in its favor. Having been in service for many years, the design of cable-reel locomotives has reached a comparatively high state of perfection. This has been greatly in their favor wherever they have been called on to compete with storage-battery locomotives.

The cost of motor cable is used as a common argument by battery-locomotive "boosters" as an item sufficient to just about offset battery depreciation. This we do not believe can be verified except possibly in a few extreme cases. The average life of a cable on the locomotives for which results have just been given is eight months. Worked out in cost per ton it stands at about 0.3c. compared to battery depreciation of 2.92c. and 3.11c. per ton.

**Battery Locomotive Has Low Repair Cost**

The straight storage-battery locomotive has a clear advantage over both the other types in maintenance cost, and it is not likely that either of them will ever be able to compete with it in this particular. Its entire electrical circuit is insulated from the ground. There is thus no difference in potential between the motor windings and frame, and for this reason the tendency to ground is eliminated, for the insulation must break down on both sides of the circuit before a short-circuit can exist.

Moreover, as the straight storage-battery locomotive has its whole source of power on its back and is not subject to transmission troubles or losses, the electrical equipment is designed for a much lower voltage than the combination or reel type. This, in addition to the double insulating feature, almost entirely eliminates electrical trouble. Records show that the number of such troubles with this kind of locomotive compared with that of the other types is about in the ratio of 1 to 12.

This brings in another important point of merit for which, for want of more definite data this locomotive receives no credit in the tabulation. Had we had a record of the actual working time that these other locomotives lost by reason of their various electrical troubles we could have worked out fairly closely the additional cost incurred by them. The magnitude of these seemingly little disadvantages surprises us when we dig into them.

What does it mean to have a locomotive in the middle of the shift come hauling in another that is incapacitated from a burnout? It means that one locomotive is taken from its work for at least 15 or 20 minutes while the cost on that section goes right on. The other machine is out probably for the rest of the day; the miners on its section go home; the day is finished with 50 or 100 tons of coal short, yet with no curtailment of the day's expense. Do we notice these things? They certainly take place around all coal mines utilizing electrical haulage. These are the things that really count when it comes to considering the relative merits of various types of equipment.

The lower voltage of the straight storage-battery machine gives it another advantage over the combination type from the battery point of view. The first cost of the battery is less per kilowatt-hour of capacity, because of the smaller number and the larger size of the cells. This reduced number of cells and lower voltage reduce the battery maintenance cost, there being fewer cells to keep up and less tendency for grounds and leakage due to lower voltage and a completely insulated battery circuit. From this company's records this consideration seems to have netted 12 per cent longer life on this battery. Of course this is all worked into the data given and it also is noticeable to the extent of 0.19c. per ton on the battery depreciation, notwithstanding the fact that the combination locomotives did 20 per cent of their work from the trolley.

Another misfortune that to some extent has held down the tonnage of the straight battery machine is that it did not have sufficient battery capacity to even get a chance in competing with the combination locomotive for the larger producing territories. Consequently it has been forced to take the odds and ends of territories, in some of which enough miners could not be placed for the battery locomotive to make use of what capacity it had.

**Delays Kill Chances of Reel Locomotive**

It seems that the greatest disadvantage of the reel type of locomotive lies in its inability to compete with the battery machine in tonnage under average gathering conditions. This is due to a number of considerations, the majority of which probably have already been pointed out in this report and entered as dollars and cents in the comparison. They may be summed up, however, in three primary causes, some of which are made up of many details. They comprise power interruptions or failures from various causes, cable and reel troubles, inconveniences of changing from trolley to cable, and vice versa. These all represent delays, and the more concentrated the work and ideal the conditions for battery operation the more these delays are multiplied and the greater is the difference in favor of the storage battery.

In considering efficiency from a power standpoint it is generally thought that the cable-reel locomotive is more efficient than the battery. We do not believe there is much difference in the controllers of the two types of machine as the loss in a battery usually just about equals the line drop sustained in the other type. But from the controller to the rails sufficient reason exists to believe that the battery considerably leads the other type. In the first place the reel type almost always has a higher mileage rating, which tends to give quicker acceleration but which also results in considerably more slippage, thereby consuming energy uselessly.

From an investigation covering several days spent
It is true that the real type with a higher mileage rating must necessarily under the same conditions operate with more resistance in the circuit than the battery machine. Another argument in the same direction is that in almost every case where the operator is changed from a real type to a battery locomotive, he "kills" the battery on much less tonnage than the old operator who has learned to save through a realization that his supply of energy is limited. There is no question but what a battery teaches economy in this respect. We believe that if an accurate test were made regarding this saving it would show that the storage-battery locomotive is about 40 per cent more efficient from a power standpoint than the cable-reel type.

So far in this discussion we have found no economical place for the cable-reel or combination locomotive; the straight battery machine has had the best of them on every hand. We have considered, however, only one condition, or what we have called normal or average, with a grade range of not over 4 per cent and that only locally. This leaves, however, quite a field to be covered by the other two types, with which the straight battery machine is almost sure never to interfere, for its usefulness is certainly limited to moderate grades and concentrated work. Even if the question of weight did not enter and it was practical to get a battery with sufficient capacity on a locomotive for such work the heavy battery depreciation would prohibit its use.

**Cable-Reel Locomotive for Steep Grades**

The combination locomotive is a cross, or compromise, between the straight battery and the cable-reel machine, embodying some of the advantages of both. The place for the cable-reel type is down over the hill, the combination just over the brink a little and the straight battery on top of the hill. If they will stay in their respective places there should be no trouble or argument, but if the battery goes down over the mountain it can be expected to run out by the cable-reel locomotive, or if the cable-reel persists in coming up or staying on the level it will be put out of business by the battery machine. In like manner the combination must not go too far over the hill or try to cover too much of the top. This designates an economical place for each of the above types of gathering locomotives, and it is doubtful whether there is a single large mine in the country that should not have just such a mixture of equipment if economy is its slogan.

The Logan Mining Co. was among the first in the country to install storage-battery locomotives. It started to use their use in coal mines was an experiment and made the mistake that nearly everyone else made in its first installation. It accepted batteries too small for the work. This led to troubles and held back the use of storage-battery locomotives more than any other one consideration. The locomotive manufacturers, it seemed, were slow to design their machines so as to accommodate batteries of sufficient capacity.

The Logan Mining Co. is still confronted with some of this trouble, as it is now trying to install 25-plate batteries on locomotives originally designed for accumulators of 17 and 19 plates. The last five locomotives purchased are 48-cell 25-plate machines, and it is desired to replace all of the 48-cell batteries with 25-plate accumulators, and those with 88 cells with 15-plate batteries as fast as renewals are made. This is about what experience has taught is necessary under existing conditions.

From the above paragraph as well as in view of considerations mentioned elsewhere in this report it will be noted that practically all the batteries that have entered into this comparison have been at a disadvantage because of undercapacity. There probably is nothing so detrimental to the life of a lead battery as excessive overdischarge, yet this has been unavoidable with the above batteries. The only reliable safeguard against this contingency is plenty of capacity. Because of this difficulty and improper charging facilities this company realizes that it has not been able to exercise the proper care in the handling and operation of its batteries, but despite the short life that this lack of capacity has caused it knows that it has saved money. It is now making arrangements to install the modified constant-potential charging system, and as it is also installing larger batteries it expects much better results in the future than have been shown here.

In conclusion it should be reiterated that there is an economical place or condition in almost every coal mine for each type of locomotive, the relative merits of which have been here considered. The field is large and the conditions many; therefore, only a question of the right application remains.

An urgent request is made that electrical and mechanical men connected with coal mining adopt some system of cost accounting and record keeping as to the performance of the locomotives under their charge, to the end that their companies may be profited, they themselves may become better posted and the inquirer be able to obtain more reliable information whereon to base conclusions.

An example of the effect on the cost of production of such record keeping over a period of 27 months divided into three periods of 12, 8 and 7 months is presented in Table V. The figures include total maintenance and battery depreciation on all the locomotives that the Logan Mining Co. possesses. Some of these results were not considered in making the comparisons here set forth because of the comparatively short time during which they had been in service.

**TABLE V—SHOWING HOW MAINTENANCE AND BATTERY DEPRECIATION COSTS CHANGED**

<table>
<thead>
<tr>
<th>Months</th>
<th>Tons Moved</th>
<th>Cost</th>
<th>Cost per Ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st 12 months</td>
<td>503,300</td>
<td>$29,435.33</td>
<td>$0.06</td>
</tr>
<tr>
<td>2nd 8 months</td>
<td>476,810</td>
<td>17,610.06</td>
<td>0.06</td>
</tr>
<tr>
<td>3rd 7 months</td>
<td>417,963</td>
<td>8,745.88</td>
<td>0.02</td>
</tr>
<tr>
<td>27 months</td>
<td>1,400,073</td>
<td>$55,791.27</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Note the uniform reduction after the first twelve months. It may be correctly assumed that had it not been for the record keeping the cost would have continued somewhere near that of the first year, and if so the total outlay on the above tonnage would have been $81,624.26 instead of $55,791.27. This shows a net saving of $25,832.99, or approximately $1,000 per month. If the cost is held down to 2.09c. per ton the
Until recently the standard four-speed windings of alternating-current motors afforded speeds of 600, 900, 1,200 and 1,800 r.p.m., the latter two speeds being twice the two former. Introduction of the new speed of 720 r.p.m. constitutes an important improvement in design and gives this motor a marked advantage over its predecessors. The speed increments of 20, 25 and 33% per cent as contrasted with those of 50, 33% and 50 per cent, the former range in such machines, makes it possible to obtain almost as accurate an adjustment of motor speed to required machine speed as has in the past been obtainable only with direct-current motors.

These new units are known as Watson multi-speed motors and are manufactured by the Mechanical Appliance Co., of Milwaukee, Wis. They are all rated on the 40-deg. basis, that is, they will carry full rated load indefinitely without exceeding a 40-deg. rise in temperature. A 25-per cent overload may be carried for two hours with a temperature rise not exceeding 55 deg. C.

Motors can be supplied to furnish either constant horsepower or constant torque or any combination of horsepower and torque in two, three or four speeds on 60-cycle current. The same ratings can be furnished for other frequencies and in either two- or three-phase.

Suitable control apparatus for these motors has been developed and tried out so that these machines may be operated on either automatic or remote control. Adequate protective apparatus has also been developed for use with this equipment.

It will be evident that effective individual alternating-current drive is now available for many types of machines that heretofore have been actuated by direct-current motors only. Machine tools, conveyors, fans and the like can be operated at a variety of speeds without loss of efficiency, while such machines as air and ammonia compressors may be run at only a slight deviation from the exact speed required.

"In addition to the technical information to be given in connection with each course each individual is given some instruction in first-aid treatment, and all persons who work underground are given a certain amount of instruction in methods of preventing explosions, in general principles of mine ventilation, in mine rescue, and such other information as will make mining a safer and thus a happier occupation. More than this, each individual is given certain elementary instruction about the formation of coal and the classification and characteristics of coal, in order that they may more fully appreciate the industry with which they are closely associated. Workers in industry must have something more than skill if they are to live more completely and give to the world their best efforts. They must be contented, they must be happy, and they must have a pride in their work if industry is to get the best results from the energy that goes into it."

"The Department of Public Instruction and with industry and with local school districts in the establishment of industrial courses as well increase the intelligence, broaden the horizons and add to the happiness of the men and women who work. Public education is doubly interested in the education and welfare of the skilled workman and his family, of the skilled workers and their family and of the professionally trained person and his family. And this interest is not peculiar to the public school."

One of the most wholesome rays of progress today is the intensive study of the education and welfare of its workers. It has not been many years since employers of industry paid little or no attention to the education and training of the workers in unskilled occupations, and little enough attention to the training of skilled workers. The attitude today is wholly different."
OFFICIALS OF WEST VIRGINIA-KENTUCKY ASSOCIATION OF MINE, MECHANICAL AND ELECTRICAL ENGINEERS

In the upper left corner and lower right corner are two authors of papers which are to be presented at the coming sessions. Marshall College, which decorates the lower edge of the page, is one of the older institutions of the convention city, a state college with 600 students and 42 teachers. This shows only the parent building. To it has recently been added a science hall and a gymnasium.
R. R. WEBSTER
Weeksby, Ky.

F. M. REIGHER
Bluefield, W. Va.

C. J. FUETTER
Van Lear, Ky.

J. J. FLUCK
Huntington, W. Va.

C. E. ROGERS
Logan, W. Va.

M. A. MAXWELL
Huntington, W. Va.

ROSCOE WOLFE
Big Stone Gap, Va.

COUNTY COURT HOUSE

CARNEGIE LIBRARY

Chairmen of Committees Who Will Report at the Huntington Session of the Association: Sept. 14-17

R. R. Webster is chairman of committee on insulating oil; F. M. Reigher, of committee on cable insulation; C. J. Fuetter, of committee on underground transmission and distribution; C. E. Rogers, of committee on relative merits of gathering locomotives; J. J. Fluck, of committee on mine hoisting wheels and track; Roscoe Wolfe, of committee on resistance grids; M. A. Maxwell, of committee on power costs.
Relative Value of Cast Grids and Grids of Steel Plate
For Use as Resistors in Mine Locomotives

Cast Grids Do Not Warp as Much as Plate Grids—They
Rust Less and Are More Rigid and Require Fewer Tie
Rods—Punched Sheet-Metal Grids Resist Shocks Well

Resistor grids are used on mine locomotives
mainly for the purpose of protecting motors and
controlling their speed when they are connected
to the source of supply, whether that source be a
battery or a trolley system. Much effort has been made
to eliminate resistor grids, but alternative devices are
either excessive in first cost or too bulky and too much
attention may be needed to keep them in order. In fact
practically all the devices designed for this purpose have
all three of these objectives, particularly for equipment
like the mine locomotive. Needless to say, resistor
grids have been the subject of much study, the object
being to provide units having the following character-
istics:

1. Small change in resistance for any given change
in temperature.
2. Greater thermal capacity.
5. Non-rusting qualities.
6. Fewer tie rods.
7. Fewer contacts between grids when assembled.
8. Lower first cost and
9. Lower expenditures for maintenance.

Cast Grids Fill Specifications Closest

As a whole, cast grids fill the above requirements
much more satisfactorily than any other type of grid
as far developed, particularly in mine service. Grids
of smaller cross-section which have lower capacity and
a higher resistance per unit do not, as a rule, give the
satisfaction that is obtained with grids of larger cross-
section and lower resistance per unit. The electrical
characteristics are the same regardless of the difference
in cross-section, but grids of small cross-section usually
are mechanically weaker than those with large cross-
section.

This, of course, might be expected. It is, however,
possible to overcome this difficulty to a great extent
by the proper design of the grid convolutions and by
the location and number of grid supports.

The resistor grids used on stationary apparatus are
less likely to be subjected to severe shocks and vibrations
than those in haulage or gathering locomotives or in
portable equipment such as is used for battery charging
or for welding.

In both stationary and portable apparatus, particular-
ly in mines, resistor grids are often subjected to the
effects of moisture and often come in direct contact with
sprayed or flowing water. The latter, being more or
less contaminated with impurities of an acid nature,
readily attack metal and also destroy the insulating
qualities of various dielectric materials.

Theoretically cast resistor grids have a hard surface,
which, as is well known, has much higher rust-resisting
qualities than the surface of steel plates or punched
grids. As a result cast grids corrode less than those of
punched sheet steel. Much research, however, has been
made into the possibility of combining this rust-resisting
with the qualities that are required of a resistor
grid.

Resistor units traversed by high currents are sub-
jected to widely varying temperatures. The electrical
resistance of any of the metals will be altered with a
change in temperature, each material having its own
temperature coefficient of resistance. Metal of the
nature used in grids of the cast-iron or cast-alloy type,
as well as sheet metal used for punched metal grids,
has an increasing resistance with increasing tempera-
tures—that is, a positive temperature coefficient of
resistance. Different metals, whether cast or in sheets,
have different values for this coefficient.

The resistor grids for mine locomotives should be
made of metal having a low temperature coefficient of
resistance. Much effort has been expended to develop
such a metal, consideration being given, of course, to
the possibility of manufacturing the material so that
the results always will be consistent. Cast-iron grids
and cast-alloy grids when manufactured in large quanti-
ties and by men experienced in the casting and running
of the heat can be produced with consistent results as
to weight per unit, resistance per unit, thermal capacity
and temperature coefficient of resistance. Reliable manu-
facturers make it a practice to have each grid unit
tested, and they require that it shall come within fixed
limits as to the above characteristics.

Owing to their lower cost cast-grid products have
been more generally used than grids of any other type
so far developed. To give a product with electrical
characteristics equal to those of the cast grids it is
necessary to use a special alloy steel. Grids punched
from sheet metal have mechanical characteristics of
some merit, the principal one being their ability to

*Report made to the committee on "The Use of Mine Locomotives,
Resistor Grids Made of Rolled Steel Plates as Compared with Cast Grates." This report was presented by the Huntington
Mechanical and Electrical Engineers, May 18, 1903. The committee consisted of Howard Wilcox, (chairman), Martin J. Warlis, A. Paul
withstand more severe shocks than cast grids, particularly those of the smaller cross-section, but cast-iron grids of the larger section are seldom affected by the most severe shock found in locomotive service. Cast-alloy grids are tougher than cast-iron grids and, therefore, small grids of cast alloy can be used in more severe service than similar cast-iron grids.

When overloaded both cast- and punched-steel grids are susceptible to overheating. When, however, the overloading is of but short duration the grids are in no way injured, but if the overload lasts for a long time it will burn out the resistor. In locomotive service the frequency and duration of overloads depend on the care of the motormen; especially is the overload unduly prolonged when the locomotive is allowed to run for a long time with the controller in the resistor notches.

Grids Warp When Severely Overheated

The units of punched-metal grids are less rigid than those of cast grids and more supports for the grids are, therefore, necessary. It has been found that when these grids are heated to high temperatures such as are common in resistors used in locomotive service, the grids warp excessively. Cast grids also will warp, but not as much as those that are made of punched metal. When the grids warp, adjacent elements come in contact and are short-circuited. This imposes on the other grids a heavier load, and once the warping starts and causes contact with other grids, it is likely that this will continue to a further destruction of the grid units if attention be not given to remove the faulty grids first found to be warping.

In the assembly of grids, particularly of the type from punched metal, care must be taken to have sufficient spacing between the grid units. The reason for this is two-fold:

First, on account of the rapid corrosion, for rust particles soon make a contact between the grids if the spacing is small. This usually causes pitting and ultimately has the same effect as a warping of the grids. It causes short-circuiting of a part of the resistance until finally all the resistors become short-circuited. These difficulties are largely the outcome of faulty design and to a great extent may be prevented by a wider spacing of the grids and by the proper arrangement of the insulation between them.

Second, adequate spacing is necessary because of the heat from the assembled units, which must be effectively dissipated or it will become too intense. If sufficient spacing is not used between the grids hot spots are likely to be found in the grid assembly; these usually will be at the center of the grids and at the center of the grid assembly.

In connection with my attempt to get some tangible comparison between the two types of grids I have had a number of reports that the steel-plate grid gave better service than the cast grid which it replaced, but these reports do not mean much unless we know the characteristics of the cast grid that was removed and also know that the cast grid, of whatever type it may have been, was in good condition, the points properly proportioned, etc.

For instance, in my experience, trouble with the resistance on several occasions has been reported, especially on gathering locomotives where it is necessary to run on points a considerable length of time. In a number of instances I found the resistors were not properly assembled and the terminals not properly spaced, and in other cases I have found that an inefficient type of grid had been installed.

I have had occasion recently to inspect two main-line haulage locomotives at one operation and a gathering locomotive at another. These have been equipped with steel-grid resistors for a number of years, and I found them to be in unusually good condition, and yet the maintenance cost had been negligible. The gathering locomotive, however, accelerated somewhat too quickly. This probably was due to a lack of space for mounting a sufficient number of the steel grids.

Experience with Two Types of Grids

Below is a report from an engineer of one of the larger coal companies, giving the experience of that corporation with the steel-grid resistor:

"To date we have used the steel grids only on 10-ton haulage locomotives. A trial of the steel grids was prompted by excessive trouble due to breaking of the standard cast grid which was supplied with this locomotive. On long, heavy hauls it sometimes happened that the locomotive would get a severe jolt when the grids were red hot and almost a whole set would go to pieces at once.

"In 1919 we allowed the Post-Glover Electric Co. to send us a set for one locomotive, this set consisting of three stacks of a specification which they recommended for the purpose. The cost of the set was approximately $290. After using it for one year without trouble we decided to replace cast-iron with steel-grid resistors on nine of these 10-ton locomotives at our various properties. As the first set was still giving apparent satisfaction we again allowed the Post-Glover Co. to furnish the type which they recommended for the service. At this time the steel sets cost $300 against $150 for the cast-iron sets.

"Soon after the installation of this second order we had many complaints to the effect that the locomotives did not accelerate uniformly on the controller indices. We then made tests to find the actual resistance between controller points. Attached is a copy of a few of these tests. You will note that the steel resistance was not properly proportioned; for instance, R1 in R2 contained 57 per cent and R5 to R6 only about 1 per cent of the

<table>
<thead>
<tr>
<th>COMPARISON OF RESISTANCES USED ON 10-TON, 250-VOLT MINE LOCOMOTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-Glover &quot;Everlasting&quot; Steel Resistance</td>
</tr>
<tr>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>Set in Use at No. 1 Division</td>
</tr>
<tr>
<td>Set</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>R1-R2</td>
</tr>
<tr>
<td>R2-R3</td>
</tr>
<tr>
<td>R3-R4</td>
</tr>
<tr>
<td>R4-R5</td>
</tr>
<tr>
<td>R5-R6</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>
Low-Roof Trolley Ear Carries Any Kind of Wire That at Any Time May Be Desired

A NEW highly compact trolley ear for mine service is so constructed that not only grooved or figure 8 trolley wire, but also round feeder wire in sizes up to 0000 can be strung from it. When desired, this latter may be replaced with trolley wire, using the same ears.

Chief among its advantages are its simplicity, holding power and the high headroom that it affords. It consists of two parts: the stud and the wings, or jaws, that grip the wire. The stud is threaded both inside and out: inside for screwing into the suspension, and outside for the clamping nut that forces the jaws together. The lower end of the stud terminates in a button around which the jaws are clamped. In installing all that is necessary is to screw the stud on the suspension, insert the trolley or feeder wire between the jaws, and screw down the holding nut.

Tests have been made on the holding power of this ear. These show that in all cases where grooved or figure 8 wire was under test for pull-down strength a section of the wire sheared off before the ear was damaged or let go. The average downward pull for four such tests, using different sizes of wire, was about 2,600 lb. With round wire (00) the pull needed to remove it from the ear was 2,100 lb. When tests were made for side-pull strength an average pull of about 1,950 lb. had to be exerted with grooved or figure 8 wire before the ear let go. In side pull with round wire the ear relinquished its hold only when a tension of 2,350 lb. was reached.

In addition to those just mentioned this ear possesses other advantages, both mechanical and electrical. Being only 2½ in. in height over all, it allows plenty of headroom, which is an important consideration in low roadways. The jaws are so shaped that they offer no obstruction to the passage of the trolley wheel, thus eliminating arcing, which always is dangerous. As this support can be used equally well with both grooved and figure 8 wire, a double stock of ears need not be carried in mines where both sections of wire are used.

This ear, known as the form W, has been developed by the General Electric Co. As it will hold round or cable wire up to 0000 it can be used to support the temporary feeder wire by which current is supplied, in developing entries, and for the operation of pumps, drills and cutting machines. Later, if it is decided to operate locomotives in these headings, the temporary feeder may be replaced with trolley wire, and the same ears will be found equally suitable.

TROLLEY EAR HOLDS ANY KIND OF CONDUCTOR

The trolley ear that at the beginning of development carried a light feeder cable later may be found supporting a trolley wire of grooved or figure 8 section.
Safety Council Debates Hazards to Health and Limb—I

Sanitation in Mines—Septic Tanks—Water Supply—Carbon Dioxide
Added to Oxygen in Resuscitation—Better Accident Records—Pressure of Water and Diameter of Hose in Fire Fighting—Standard Couplings

BY R. DAWSON HALL*

Despite the present uncertainty in industry the National Safety Council held a most successful convention in the Cass Technical High School, Detroit, Mich., Aug. 28 to Sept. 1. Even in the mining section little if any falling off was to be noted in the attendance and certainly none in the number and quality of the papers presented. About 2,500 persons registered. As usual the registration represented inadequately the number of persons present, for Detroit being a big manufacturing center many people attended who were not members or delegates of the organization.

In the opening session on Monday in the auditorium of the magnificent but only partly completed wing of the technical school, a large number were present to hear the extremely hopeful and satisfactory reports of the president, A. H. Young, and the secretary-treasurer, W. E. Worth. No one can overlook the fact that the treasury was in grievous condition at the close of last year and during the early part of this. Stringent economy, clever financing and the recovery of business have, however, changed a heavy deficit to a small surplus. The decline in membership has been stopped, and since the date of the report—July 1—the memberships have been slowly but steadily increasing in number.

COUNCIL HAS QUARTER-MILLION DOLLAR INCOME

The loss in membership in the fiscal year ending July 1 was 566, making the membership 3,066. The gross revenue was $205,996.32. At the beginning of the fiscal year the notes payable were $21,968.80 and at the closing of the books these were entirely wiped out. The accounts payable had also been reduced from $6,222.48 to nothing, and $4,662.78 was added to the surplus, making that reserve $34,819.78.

The National Safety News brought in $20,386.24 and cost $24,220.40. It should be said that the former figure did not include any of the allocated dues from members of the Council, though it did cover a number of extra copies which are sold to members on their order. The 120,000 calendars distributed cost $16,190.10 and brought in $23,358.81, a profit of nearly $7,000.

On Monday evening a dance was held at the Statler Hotel, on Tuesday evening a smile party, on Wednesday evening a boat ride and on Thursday a banquet. At the function last mentioned the speakers were A. H. Young, the president of the Council; Marcus A. Dow, general safety agent of the New York Central Lines, and Edgar A. Guest, of the Detroit Free Press. The new officials of the National Safety Council were announced. These were M. A. Dow, president; Charles B. Anel, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., vice-president in charge of industrial safety matters; David Van Schauk, Accident Life Insurance Co., New York City, vice-president in charge of public safety matters; George T. Fonda, Fonda & Todd, Washington, D. C., vice-president in charge of sectional activities; L. A. DeBlois, Delaware Safety Council, Wilmington, Del., in charge of local councils; Homer Niez, Commonwealth Edison Co., treasurer and chairman of finance committee, and William H. Cameron, managing director and secretary.

During Thursday morning's session of the mining section the nominating committee, consisting of Dr. R. R. Sayers, J. W. Reed and J. T. Ryan, brought in a report advocating the retention of the present official roster: B. F. Tillson (chairman), G. M. Gillette, J. L. Boardman, William Conibear, vice presidents, and R. H. Seip, secretary. The report was unanimously adopted. These then will be the officials for the coming year. The chairman will appoint his own committee men.

The mining section had its first session on Tuesday, Aug. 29, the first paper being that of Dr. R. R. Sayers on "Mine Sanitation." In the discussion B. F. Tillson inquired whether any mine had established underground a regular toilet installation with a flushing system and septic tank. Apparently no one was able to report that any company had to date such an installation.

M. S. Murray, of Curtisville, Pa., reported that his concern, the Ford Collieries Co., had installed a septic tank with three stools on the top of it. The tank was fed with some form of deodorizer and disinfectant which converted the fecal matter into a clear fluid which in turn passed to the sump and was of such a character that it did not foul the pumps as does the discharge of ordinary fecal matter not so treated. B. F. Tillson stated that at the New Jersey Zinc Co.'s mines cans were used and to prevent splashing sawdust was provided in place of water. These cans when brought to the surface were cleaned and disinfected by steam. Difficulty was experienced in incinerating the sawdust as it was so thoroughly saturated with water as to be dripping wet.

CAUSTIC SODA TURNS ALL TO A FLUID MASS

Dr. Sayers declared that a 3-per cent solution of commercial caustic soda would thoroughly disinfect and deodorize sewage and liquify paper of a suitable character. Unfortunately galvanizing will not resist the action of the solvent, but when the tank is properly covered with an asphalt paint and handled with a proper degree of care the caustic soda will not destroy or seriously injure it.

Dr. Black, of Connecticut, requested Dr. Sayers to state what showing of bacillus coli was considered evidence of contamination of drinking water and took exception to the moderation of advice that the watershed should be inspected before water from it was used. He said that the inspection should be repeated at frequent intervals to make sure that the watershed did not become polluted. Dr. Sayers said that he did not regard the presence of a single bacillus in any one sample out of ten, each of I c.c. capacity, as evidence of a

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*Engineering editor, Coal Age.
A dangerous contamination became known and was found in all animal foods, and dogs, rabbits and like animals might well be the source of such impurity, which was not in any way objectionable in itself. The objection by its presence was that where the liquid salt was used the water must contain animal fats and at any time such from might become harmful by the introduction of the germ of some communicable disease.

J. S. Boardman stated that the Anaconda Copper Mining Co. piped cold water to every level, the pressure being regulated by the use of tanks. The water was passed through pipes in each tank, ice being placed around the pipes. Miners obtained their water through a faucet. Most of the men brought the liquid containers of their dinner plates to the tank, but the use of the common drinking cup had not been entirely eliminated.

Leaving the main subject, someone asked Dr. Sayers whether the Bureau of Mines favored the use of 5 per cent of carbon dioxide in the oxygen used for resuscitation, and he replied that the Bureau had so far not given its approval. He added that oxygen, if taken pure, is a long time removing carbon monoxide from the system. With 5 per cent carbon dioxide present the work is performed in a fourth and with 8 to 10 per cent one-fifth or one-sixth of the time.

HURTS CLEAN THE BLOOD BUT MAY HARM THE HEART.

Dr. Yandell Henderson strongly favors the use of 5 per cent of the dioxide. Most of Dr. Sayers' experiments with animals had been made with 8 per cent and in some cases death resulted. The use of dioxide was injurious to the action of the heart, and if the heart was weak the effects might be undesirable—even fatal.

Dr. Henderson, however, believed that 5 per cent of dioxide would in no case kill the patient. Dr. Sayers was not yet sure and would feel better satisfied had he made experiments on animals with that percentage.

With such an authority as Dr. Henderson in favor of the use of such a proportion of dioxide Dr. Sayers felt that it was in all probability safe, but only a medical man should use such an admixture, for the administrator should be able to judge of the effect which the dioxide was having on the heart.

Discussing his statement that in several Southern states hookworm had been found in the mines, he declared that the Public Health Service stood sponsor for that declaration and felt confident that the mines were the source of the particular infection that they discovered and not the surface. He also believed that stigmatmae to be a disease resulting from the effect of working in bad light or light falling at an improper angle, or both, for men had been afflicted by stigmatmamus who had never worked in the mines. He hardly credited the notion that it was a germ disease, though the theory had advocates. It may be said in passing that some believe that changes in the blood pressure due to death may be the cause of the disease, which is of quite frequent occurrence abroad. This is about to be investigated by the U. S. Bureau of Mines.

W. W. Adams, statistician of the Bureau, introduced several forms of accident reports and occupational censuses for each member of the National Safety Council as desired to use them in making returns to the Bureau. These were prepared with the aid of C. L. Calburn. Their purpose is to discover not only the number and kind of accidents, fatal and non-fatal, and their minute causes but also the occupational hazard for each type of work in the mine. The definition of an accident is a casualty that causes a disability extending beyond the shift in which the accident occurred.

This goes far beyond the general practice today, which is to pay attention in most cases only to fatal accidents or to such as are of compensable severity. Several members of the National Safety Council want for their own use figures which will give this information relative to their own mines. They want similar aggregate figures from the mines which already are preparing such data and they want to formulate a practice in reporting accidents in all such mines as will make the figures from them comparable. No one, of course, need give such information, and when the bureau gets it it will use it solely for tabulations which will not reveal the figures of any one company or the name of that company. The data of any one corporation or any one mine will, however, be furnished to the company headquarters of the mine reporting.

Many changes were made in the original draft, the whole matter being discussed at length at the first session and at a special meeting in the afternoon of Wednesday. That meeting lasted three or four hours, and the blanks will be corrected by Mr. Adams to accord with the outline then agreed upon. Simplification, uniformity between coal-mine and metal-mine reports, elimination of questions which it was thought could not be answered from facts already being collected and the deletion of questions that could only bring forth matters of opinion were the directions in which most of the changes were made.

The second meeting, that of Wednesday, Aug. 30, was addressed by R. H. Seip, safety engineer of the New Jersey Zinc Co., of Franklin, N. J., the subject being "Fire-Prevention and Fighting."

In discussing this subject B. F. Tillson desired to know what size of stream should be used in fighting fires underground. He himself believed in high pressures and small nozzles. The pressure available usually was high—too high if anything. Consequently no great harm would result from the loss of pressure consequent upon the friction encountered when passing water through a small hose. It was important to use a high pressure, for the nozzle could rarely be advanced near the fire and the water would have to be allowed to travel in a nearly horizontal stream. In outdoor fires the nozzle could be directed several degrees above the horizontal and could often be held at no great distance from the fire which was being fought.

UNCERTAINTY AS TO "STANDARD COUPLINGS."

William Conibear said that the Bureau of Mines had investigated this matter and favored 50-lb. pressure and a 21-in. hose. To Mr. Tillson that seemed too low a pressure and too large a diameter. The smaller hose would give greater portability. J. L. Boardman said that he had been told that he should use "standard pipe couplings," so that he could connect up with the Butte fire department's equipment. He took the advice, ordered "standard couplings," only to find that the standards varied and that the Butte fire department couplings have one half thread, more or less, to the inch than the "standard" couplings of the hose furnished to the Anaconda Copper Mining Co. However, as one member pointed out, the use of one coupling of the standard of the local fire department would make it possible to connect the company's line of hose with that of the city.

(To Be Continued in the Next Issue)
CAUSES OF BURNED-OUT MINE-MOTOR ARMATURES

Poor Bonding of Rails — Bad Joints in Feedwire
Conductors Cause Large Loss of Voltage — Insufficient Copper or Too Small Area of Feedwire

In my experience, there are just two main causes that lead to the burning out of armatures on mine locomotives and other motors. As mentioned in the excellent article of F. C. Sinback, Coal Age, Mar. 23, p. 492, these causes are the poor bonding of rails and bad joints in the feedwire conductors; also, the use of undersized feedwires.

In this connection, I recall reading a well written article by B. F. Grimm, which appeared in Coal Age some time ago (Vol. 20, p. 291). If I remember rightly, Mr. Grimm emphasized the same points in speaking of the burning out of armatures.

It is surprising to know that 75 per cent of our mines are operating, today, under these conditions. Owing to the desire to economize, or, in other words, to save copper, in making an electrical installation, it is a common occurrence to use a feedwire that is too small.

WHERE TO SAVE MONEY IN MAKING ELECTRICAL INSTALLATIONS

Comparatively few operators realize that by using more copper in making the installation, they will save money in the rewinding of armatures and cutting down of power bills, to say nothing of avoiding the consequent delay and loss in production that results from insufficient power.

Of somewhat less importance, because it can be easily remedied by going over the line, is the bad jointing of feedwire conductors. Many do not appreciate the loss of voltage due to bad joints in the feedwires. This trouble is at once shown by the joint becoming hot when the feeder is carrying a load and the insulation is burned and fire may result.

When making a joint, the wires should first be wrapped tightly around each other and soldered. If this is done properly, a joint will have twice the current capacity of the wire, as it has twice the sectional area of the conductor.

GOOD RAIL BONDS NEEDED

The bonding of the rails is not so easy and requires constant watch on the part of the electrician to keep the bonds in good condition. It is not generally known that a loose or broken bond will cause a loss of from one ten to ten volts; and a few such defective bonds will greatly increase the line drop and impair the service.

A little circulation will show that most mines have not sufficient copper in the feedwire installed. For example, in order to operate a 10-ton locomotive, at a distance of a mile from the powerhouse, assuming the perfect bonding of the rails and allowing a 10 per cent line drop, with a pressure at the generator of 250 volts, there will be required a 0000-trolley wire and a feedwire of, say, 500 mil. wire.

The average mine locomotive is rated at 10 hp. per ton, which will require 100 hp., for a 10-ton locomotive, and a current of $100 
\times 746 = 250 = 300$ amperes. The line drop is 0.10 \times 250 = 25 volts.

The amount of copper for this transmission is, therefore, $(100 \times 5,280 \times 300) / 25 = 684,300$ circ. mil. Then, using a 0000-trolley wire (211,600 circ. mil.), there will be required a feedwire of 684,300 — 211,600 = 472,700 circ. mil. This assumes that the trolley wire and the feedwire are in parallel and the locomotive operating full load.

Now, if less copper is used, more current must travel through the armature and fields than what they are designed to carry to develop the required horsepower. This will cause heating of the coils, commutator and field coils. In time, the armature coils will burn out and the solder run from the commutator, making it necessary to rewind the armature in a short time.

TROUBLE OFTEN WRONGLY ASCRIBED TO "TOO MUCH CURRENT"

It is commonly thought that the cause of a field or armature lead burning off is "too much current." This is ascribed to two causes: first, insufficient copper; second, overload on the motor. Half the time, however, it can be traced to the cause first named.

Bear in mind these three facts in mind, what can one expect when several locomotives and a number of mining machines are operated on a 0000-trolley wire? Is it at all strange that burned out armatures are the frequent result? It is usually the case that what is saved in installing these feedwires is later in maintenance and repairs.

Johnstown, Pa.

[Attention should be drawn to the fact that this correspondent has omitted to allow for the loss of voltage in the rail return. For example, using 40-lb. 30-ft. rails, cross-bonded, and 24-in. 6000-rail bonds, the rail resistance for 1 mile will be 0.0748 ohm, making the loss in voltage for a current of 300 amp. $300 \times 0.0748 = 22.4$ volts.]

SLOWING DOWN FAN AT FIRING TIME

Explosion is heading, fan running at normal speed—Better results follow slowing down of fans.

An account is given by a Kentucky engineer, in Coal Age, July 20, p. 95, of a mine explosion that he ascribes due wholly to the lack of sufficient ventilation. It is not my purpose to controvert that conclusion, but I always draw the instance in my own experience that was the direct reverse of the one he has given.

The circumstances were about as follows: Some four years ago I had a pair of entries driven in the solid coal and shot with black powder. Rooms were turned off both entries by the entrymen, who always drove the roomers. There was an air current of 10,000 cuf. of air sweeping the faces of these headings.

When three rooms had been turned on each entry, I would put six leaders at work in the rooms, who with the leaders made eight leaders in all those headings. An old line shofitier was employed to fire the shots and this was done at night, after the men had left the mine.

A SERIES OF EXPLOSIONS

One night the shofitier had an explosion that blew out all the brattice and trapdoors for a distance of 2,000 ft. back on these entries. The following week another explosion occurred with the same result and, again, still another a few nights after that.

Naturally, the shofitier became alarmed and quit.

At this point, another shofitier was secured and he decided to slow down the fan when firing shots in the mine. The result was that we had no more explosions, until the rooms had been driven to a depth of 70 or 80 ft. The fan was then turned on running at normal speed when, one night, an explosion occurred and the shofitier was burned; although he was able to come out of the mine and report it to me before I had left for home.

When performing his work, the shofitier stated he was making his report that he had found a small amount of gas in a corner of the mine, at the time of the entry.
When to Seal

Ventilation insufficient—Sealing off to extinguish fire—Draining gas through boreholes.

PERMIT me to offer a word giving my view in regard to sealing off abandoned areas in mines, which has been under discussion in Coal Age and which I am greatly interested. What I have to say will bear more particularly on mines that are generating gas.

There are, no doubt, instances where the only thing to do, in order to make the mine safe is to seal off abandoned places. This is particularly true where the ventilation is normally insufficient to dilute and render harmless the gases generated in the old workings. Under such conditions, we realize that any drop in atmospheric pressure (fall of barometer) will be compensated by a considerable outflow of gas, from the sealed places, into the live workings. Then, if the volume of air in circulation is not adequate to counteract this condition, there is danger arising from the unsealed areas where the gas has accumulated.

Sealing to Extinguish Fire or to Close Worked-Out Panel.

Mention has been made, in this discussion, of the need of sealing off places for the purpose of extinguishing a fire that has started from one cause or another and defies other means of treatment. It is unnecessary to dwell on this point of the subject, which we all agree is the thing that must be done.

Again, when it is necessary to adopt the method of panel working, sections will often require the complete sealing off of a panel. That will generally present the only plan to follow when such panels have been worked out and abandoned. The sealing off of a panel will regulate, or control the flow of styre or other gases from such areas.

We have, doubtless, many mines in such a condition, in respect to ventilation, that it is impracticable to deal with certain abandoned areas by any other method than sealing. In this Dugger coal field, there is No. 10 mine—a large mine in one case. In that mine, it would not be safe to handle the large abandoned areas in any other manner.

Gas Drained Through Boreholes. Avoids Danger in Mine.

The management of No. 10 mine has adopted the plan of drilling boreholes from the surface, into each abandoned and sealed area. This plan gives a vent for the gas generated in the sealed portions and avoids the danger of those gases being forced out through the seals into the live workings.

In my opinion, this is a safe and practical practice to allow these pent-up gases to be released and flow into the mine through a pipe built into the seal. According to all accounts, this is the procedure in some districts. It may seem a radical statement to make; but, to my mind, such a practice is prohibited by state laws that would close down the mine where it is done.

I firmly believe that the continuance of such practice will eventually pay a high price in life and property. Certainly, men employed in mines where the gas is led through boreholes extending to the surface will feel safer than where this gas is released into the mine. W. H. LUXTON.

Linton, Ind.

Timbering Hard Roof and Bottom

Experience of a timberman—Setting posts on pieces of slate and mounds of slack unsatisfactory—Tapered posts give best results.

MY EXPERIENCE in timbering mines where both the roof and floor are hard may be of interest to "Timberman," who writes from Iowa, Coal Age, July 27, p. 136, saying that he has had trouble by reason of the roof pressure, breaking the timbers where the roof and bottom are hard.

In reply to that inquiry, the editor has described the main principles of post timbering, and mentions several methods that have been employed to avoid the destruction of posts, under the condition named.

In a practice of several years, I have used all of these methods and still another not mentioned; namely, setting a post on a piece of slate, after the custom of some miners. However, my conclusion is that there is but one reliable method on which dependence can be placed with certainty. That is to employ tapered posts and use good cap-pieces at the roof. When set in this manner will take the weight slowly and seldom be broken.

When a post is set on a piece of slate, the latter is almost sure to be broken when the weight comes on the timber, or the post will fall out. The same result follows when a post is set on a mound of dirt or slack, unless the work is done properly and just the right amount of soft material used to take up the settlement of the strata.

Experience Must Determine

Experience in a given district may enable this method to be used successfully. But, my observation is that when too much slack is used, the timber will either be shot out, or will fall out of itself. Again, if too little slack is used, the oncoming weight will break the post, the same as if it was set on the hard floor.

The one method that I have found seldom, if ever, fails is to taper the foot of the post, as described and illustrated in the reply given to the inquiry, on page 136. A good cap-piece must also be used above the post, which will help to distribute the pressure on the roof and bind the top of the post together.

Footboards and Cap-Pieces Used

Some prefer to use footboards on the floor and cap-pieces at the roof, in preference to tapering the posts. With any amount of roof pressure, however, the timber will generally be forced through both the footboard and the cap-piece and, in some cases, the pressure will break the timber.

At times, I have known tapered props to yield as much as four or five inches, under the pressure of the overburden. Indeed, I have observed tapered posts still standing, after two or three years. Seldom have I known a post that is carefully tapered to be broken or fall out.

Herrick, Ill. A

ANOTHER LETTER

AFTER reading, with deep interest, the reply to an inquiry in reference to avoiding the trouble often experienced in setting posts between hard roof and floor; and after giving the matter careful consideration, I am inclined to believe that the chief cause of trouble, in this case, is the lack of a suitable system of timbering.

Notwithstanding the hard roof and floor, it should be possible to timber this shaft, a seam of coal, under 250 or 300 ft. of cover, without serious difficulty if the system adopted is suited to the conditions in the mine.

ONE GOOD RULE TO REMEMBER

While it is possible to make numerous suggestions regarding troubles experienced in timbering, there is one general rule to remember. It is always practical to keep the working places well timbered, as the coal is mined, and to maintain a good supply of posts in every place.

My advice to this correspondent is to keep his timber within 4 ft. of the face, setting the posts in rows and at a distance of 3 ft. 6 in. apart. Use only oak timbers, 8 in. in diameter at the small end, using a soft cap-piece over
Self-Acting Gravity Plane

**Difficulty with rope on a single-track plane—Three-rail system above passing track avoids trouble—Clearance at upper end of siding marks center of tram.**

**Referring** to the inquiry on the question of installing a self-acting gravity plane, *Coal Age*, Aug. 10, p. 211, kindly permit me to offer a suggestion that, if adopted, will greatly simplify the operation of such a plane.

With a single-track tram, there is always considerable trouble experienced in keeping the rope clear, above the siding. It is evident that when the empty trip reaches the switch at the upper end of the siding, that branch of the rope attached to the loaded trip must be carried on the outside of the track, or it will interfere with the ascending empties.

In order to avoid this difficulty much skill will be required in placing the sheaves and rollers; and, even then, there is bound to result considerable annoyance and expense in the operation of the plane. It is far better to adopt some method that will keep the rope clear and avoid a possible accident by reason of the rope jumping the sheave at the side of the track.

Experience has shown that the proper procedure is to carry a single track from the tipple up to the siding or passing track. Then adopt a three-rail system above the siding and reaching to the top of the plane.

This arrangement will cost a little more to install, but it will give far better satisfaction than to use a single-track system throughout. Moreover, there will be required but one switch at the lower end of the siding, which means less labor to keep it clear and in working order.

The accompanying figure makes clear the arrangement of the system. Care must be taken, however, to have the point of clearance a little above the center of the tram, so that the ends of both ropes will sit a little below the point where the trip is clear of each other. It hardly seems necessary to state that the clear length of siding should be sufficient to hold the number of cars that are to be hauled in a trip.

D. S. ALLISON,
Sullivan Machinery Co.
Salt Lake City, Utah.

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**Somewhere** I have seen it stated that a mine ventilating fan, running at the same speed, will not give the same volume of air, at different mines. While this has always seemed strange to me, I have never had the opportunity of testing the truth of the statement until recently.

The matter was forcibly impressed on my mind, however, when I undertook to transfer a 14-ft. Jeffrey fan, from No. 1 to No. 2 mine. In the old location, this fan had been giving 280,000 cu.ft. of air per minute, under a 2-in. water gage, when running at a speed of 100 r.p.m.

Much to my surprise, at the new location, while the same speed of fan developed about the same gage, it produced a very much smaller air volume; and it was necessary to increase the power of the engine and drive the fan faster, in order to obtain the volume of air at which it was rated, at a 2-in. gage. I would very much appreciate information that will throw more light on this matter.

**Manager**, Colo.

Only a few years ago, when a mine operator ordered a fan, he thought it was sufficient to specify the volume of air be desired, and the mine. It is now generally understood that the order for a fan must also specify the water gage against which the fan is to operate when delivering the required volume of air. In other words, the present circulation (air volume and gage) must be given as a basis of calculation for determining the size of fan needed.

Every mine has a certain resisting power in respect to the passage of air through the shaft and the underground entries. This resisting power has been called the mine potential. It is the ratio of the sectional area of the airway (or area of passage in the mine, depending on the number of splits) to the cube root of the product of the coefficient of friction and the rubbing surface (a/f ft.), as expressed in terms of the airway.

This is the power potential. It evaluates the mine in respect to the volume of air that can be circulated therein by a given power. Expressed in terms of the circulation, its value is the ratio of the quantity of air in circulation (cu.ft. per minute) to the cube root of the pressure on the air (ft. lb. per min.) (Q/Af ft.).

On the other hand, the pressure potential is the ratio of the quantity of air in circulation (cu.ft. per min.) to the square root of the unit pressure (lb. per sq.ft.). But, since the quantity of air circulated in a given airway or mine, varies as the square of the pressure, or the cube of the power, producing the circulation, it is easy to see that the cube of the power potential is equal to the square of the pressure potential. Therefore, calling these potentials \( X_p \) and \( X_p \), respectively, we have the following equal values:

\[ X_p = X_p = \frac{Q}{\sqrt{P}} = \frac{Q}{\sqrt{P}} \]

Now, applying these values to the solution of the question in hand, the mine-pressure potential, at No. 1 mine where the fan passed 280,000 cu.ft. per minute, under a 2-in. water gage, required a unit pressure \( P = 2 \times 5.2 = 10.4 \) lb. per sq.ft., is

\[ X_p = \frac{Q}{\sqrt{P}} = \frac{280,000}{\sqrt{10.4}} \]

The correspondents has not given the circulation in No. 2 mine previous to the change; but we will assume the mine was passing 125,000 cu.ft. of air per minute, under a 2-in. water gage. In that case, the pressure potential of No. 2 mine is

\[ X_p = \frac{Q}{\sqrt{P}} = \frac{125,000}{\sqrt{10.4}} \]

In fan design, the best results are obtained when the pressure potential of the fan is from two to two and one-half times that of the mine. A fan so de-
exceeds will give its highest efficiency. Now, it is clear that if a fan designed for No. 1 mine is operated at No. 2 mine, where the potential is practically 4l of No. 1; the potential will not produce the same results. While the efficiency of the fan will be increased, the quantity of air supplied will be utterly incapable of producing the same results. The practical value of the mine potential is shown in estimating the circulation produced by a given pressure or power, in a mine where the air is conducted through a main airway and then divided into a number of smaller ones, before passing into the main return airway and out of the mine. In that case, the general mine potential is obtained by the summation of the several split potentials. In other words, the potential for the entire mine is found by adding together the reciprocals of the cubes of the several power potentials and extracting the cube root of the sum. The reciprocal of this root is the mine potential for power. In like manner, the reciprocal of the square root of the sum of the reciprocals of the squares of the several pressure potentials will give the pressure potential for the entire mine. This will be found a useful application of the potential, in problems that admit of no other method of solution.

**Examination Questions Answered**

**Alabama Mine Foremen's Examination, Birmingham, July 24-27, 1922**

(Selected First-Class Questions)

**Question:** In what conditions and in what sorts of mines is coal dust most dangerous and why?

**Answer:** Where the air is most dangerous, when it is in a finely divided state and carried in suspension in the air. In this condition, it lodges on the timber, the roof and sides of all roads and air-ways. In mines where blasting is performed, the accumulations of fine dust at the working faces is a source of grave danger, because of the dust being blown into the air by the forms of the shots and the fans produced in blasting.

**Question:** How to dust, without being removed from a mine, confined to a mine in any particular place?

**Answer:** The usual method of dealing with dust is to mine it in mines, to its effect is regular and complete removal, as far as that is practicable. Permit no accumulations of fine dust in the workings. In mines where the dust danger is less, the road highly instrumented, or efficient in dusting, the ventilation system should be installed for the roads and air-ways and every means adapted to prevent the accumulations of dust. Strict regulations should be enforced in respect to blasting. The coal and only permissible powder should be used in such a manner that a mixture of air with the powder from the blasting, is an essential means of distributing the rain to the working places and in the faces. The trial of this means of overcoming the dust danger has proved effective in numerous instances and is now employed in many dry and dusty mines. The salt acts to reduce the amount of the fine dust and slack to fire in the waste.

**Question:** What measures, if adopted and properly executed, would reduce the production of dust or the accumulation of dust?

**Answer:** No means is more effective for reducing the production of dust, in mines, where blasting is performed, than the enforcement of strict regulations limiting the amount of powder to be charged in the holes; and determining the location, direction and depth of drilling the holes, the exclusive use of permissible powder and the careful inspection of all holes by safety inspectors before shots are fired. In machine mines, the cuttings should be removed in dustproof cars. Greater safety is insured and a less production of dust occurs in mines where all holes are drilled, charged and fired by competent shot-fiers.

**Question:** Give, in detail, the plans you would recommend for keeping a dusty mine in a constantly safe condition.

**Answer:** First, employ the method of mining the coal that is best adapted to the particular conditions existing in the mine. This will require a careful and close study of the character of the coal and the method by which it can be extracted with least danger. Second, employ safety inspectors charged with the duty of inspecting the mine during working hours and preventing all unsafe practices. Third, provide an ample circulation of air and an efficient method of ventilating all working places in the mine. When this is performed, use only permissible powder and employ shot-fiers to examine, charge and fire all shots, and having authority to forbid the firing of any holes that, in their judgment, are unsafe. Lastly, install an efficient spraying system in the airways and working places.

**Question:** What precautions would you take in the management of a dry and dusty mine generating explosive gas, with reference to the protection of life and property?

**Answer:** Equip the mine with duplicate ventilating fans of ample capacity. Adopt a method of working that will insure the production of a minimum amount of dust in the mining of the coal. Use only permissible powder in blasting and employ dust-proof cars for hauling the coal in the mine. Employ shot-fiers to examine, charge and fire all holes drilled by the miners. Install an efficient spraying system throughout the mine. Make and enforce strict regulations in regard to the examination of the mine by fire-bosses and safety inspectors. Permit no open lights, but furnish the miners with the cup lamp. Keep the accumulations of dust in the working places and have all roads and traveling-ways cleaned at regular short intervals.

**Question:** What precautions should be taken in blasting to safeguard the employees in mines that are dry and dusty and generating explosive gas?

**Answer:** Use permissible powders only. Employ competent shot-fiers to examine, charge and fire all holes drilled by the miners. This work must be done after the men have left the mine. The firing should commence on the end of the air and proceed in order against the air current. Each place of charge to be carefully examined for gas before a shot is fired therein.

**Question:** What, in your opinion, are the principal causes of the greatest number of fatalities in our mines? Give a list of six causes in the order in which you have seen them occur.

**Answer:** The principal cause of fatal accidents in mines is falls of roof and coal at the working faces. The following six causes of accidents in mines may be given: 1. Falls of roof and coal. 2. Premature blasts or unsafe practices in blasting. 3. Movement of cars and motors in mines. 4. Overcome by gas. 5. Contact with live wires. 6. Hoisting accidents or falling down of shafts or slopes.

**Question:** If a water gage placed in a door 4 ft. 6 in high and 5 ft. wide showed a reading of 2.7 in, what is the total pressure on the door?

**Answer:** A water gage reading of 2.7 in. corresponds to a pressure of $2.7 \times 5.2 = 14.04$ lb. per sq. ft. The sectional area of the door is $5 \times 4.5 = 22.5$ sq. ft. The total pressure on the door is then $14.04 \times 22.5 = 315.9$ lb.
Texas Unaffected by Strike Developments; Large Mines Operate Open-Shop

RECENT DEVELOPMENTS in the national coal strike have not affected Texas mines. Most of the larger mines in Texas are operated on an open-shop basis, while those involved in the strike at this time are involved because of local labor disturbances and not because of the national strike, according to W. N. Willis, secretary of the Southwestern Electrical, Coal & Gas Association, with headquarters in Dallas, Texas.

The larger coal sections of Texas are in the vicinity of Eagle Pass, Thurber and Laredo. The mines at Eagle Pass and Laredo are not affected by the strike, being worked by non-union labor. In the vicinity of Thurber, the Texas Pacific Coal & Oil Co. is the largest operator. One mine of this company has been in operation since a few weeks after the strike was called, an agreement having been reached. Another, being operated on the open-shop basis. The two mines in operation are working about 200 men against a normal working force of about 800 men. Output of the mines, which in normal times ranges from 1,000 to 1,400 tons of coal daily, is now about 300 tons.

While the coal shortage has not been felt in Texas during the summer, it is likely to become acute, especially if cold weather comes early, according to wholesale and retail coal dealers, many of whom maintain distributing plants at Dallas. If the railroad strike continues and the railroads are unable to handle the coal cars promptly when the mines are reopened, the shortage will become much worse.

"The shortage of coal is being felt now in Texas," R. H. Young, vice-president of the Southern Fuel Co., of Dallas, declared. "The Southwestern mines are to be reopened under the recent agreement reached between operators and miners. Although the mines may be reopened at once and operated on full time, the supply of coal will not be adequate to the demand for months, and not then if a coal shortage results on the railroads as is now indicated."

"If the Southwestern mines were reopened immediately, the coal shortage could not be relieved until late in the winter," Charles C. Taylor, manager of the Southern Coal Co., declared.

Harry Penniman, Jr., of the Penniman Coal Co., declared that although the situation is bad, coal consumers of Dallas will be able to obtain sufficient supply for all emergencies unless provided the railroad strike does not interfere with the movement of coal to a great extent.

"Coal is wanted everywhere at present," according to W. H. Pulliam, vice-president of the Pulliam-Trewitt Coal Co. "We are receiving orders for coal from many of the smaller towns in Texas, and it is almost a certainty that the smaller towns will suffer most from a fuel shortage when cold weather comes. It will require several months, at least, for production to meet needs. Virtually all coal yards are empty, but our company has been fortunate in obtaining a supply from Colorado and New Mexico mines."

The supply of anthracite coal has been exhausted at Galveston, which draws its supply of domestic coal mainly from non-union soft coal fields, and this source has been ample for all needs. Bunker coal for Galveston ships is also drawn from such non-union fields as have been little affected by the strike.

Utilities Consume More Coal During June And July Than in Earlier Strike Months

Coal consumed by electric public utility power plants during June was 2,489,321 net tons, according to the recent report of the Geological Survey. June consumption by these plants was the heaviest of any month since the beginning of the strike—April, 2,456,592 tons and May, 2,471,123 tons. During March, the latest pre-strike month, 2,722,146 tons were consumed.

The average daily output for June was 127,700.000 kw.-hr., that is, the unit rate of production of electric energy was not as great as in 1922 and exceeded the daily production in May by 1-3 per cent. The proportion of the total output of electricity produced by water-power declined from 43 per cent in May to 41.4 per cent in June.

During July 2,566,658 net tons of coal was consumed by these plants. Although this is slightly greater than the tonnage consumed during June, the increase is due largely to not being a 31-day month. Average daily consumption in July was 82,580 tons, compared with $5,000 in June.

The average daily production of power during July was 124,000,000 kw.-hr., a decrease of 3 per cent from the record rate for June. The decline in the production of power was in plants operated by water power, due to the decrease in water available during the summer for power purposes.

Railways Consume Less Coal in June Than In May; Six-Month Total Below Last Year

Class 1 railroads consumed 6,787,000 net tons of coal in June, 1922, as charged to account 394, compared with 6,774,000 tons during the corresponding month last year and 6,533,000 tons during May, according to a report made by the Bureau of Statistics of the Interstate Commerce Commission, covering 182 steam roads. For the six months ended June 30, 1922, these roads consumed 45,074,000 net tons; during the same period last year they used 45,619,000 tons.

The delivered cost per ton of the coal used during June was $3.83; last year it was $4.09. For the first five months of 1922 the per-ton cost was $3.58 as compared with $4.12 in 1921.

Consumption of fuel oil by these roads is steadily growing. During June 119,359,000 gallons was used, as compared with 108,860,000 gallons in June, 1921, and 118,263,000 gallons in May. For the first six months of the year 714,296,000 gallons was consumed, as compared with 696,598,000 gallons in 1921.

Lake Coal Loaded During Season to End of July*

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* Compiled by Ore & Coal Exchange, Cleveland, Ohio, H. M. Charles, Mgr.
Plaintiffs Urge Rehearing of Coronado Case

Petition for rehearing of the so-called Coronado coal case, now before the U. S. Supreme Court on June 8 handheld down a noteworthy decision holding that labor unions, although not incorporated, are liable and liable for damages resulting from acts of their members on an authorized strike in matters affecting interstate commerce, was filed with the court Thursday by John W. Davis in behalf of the Coronado Coal Co. and others, plaintiffs in the original suit against the United Mine Workers of America.

The Supreme Court, while rendering a broad opinion in the case and establishing a new principle of legal procedure between labor unions, held that it would not sustain the claim of damages to the original plaintiffs because it had not been established to the satisfaction of the court that the acts complained of were in restraint of interstate commerce during an authorized strike, and expressed regret that Davis was on.

In the petition for rehearing the petitioners set forth that "Encouraged by the statement with which the court closes its opinion, and believing that the court will recognize the real possibility of error in drawing inferences of fact from a record so voluminous and complicated, petitioners center to assert that the decision of the court declared recovery in the present action is founded upon essential mistakes and misconceptions of the facts presented by the record."

The petitioners declare that when the principles of law associated by the court are applied to the facts the judgment against District No. 21, U. M. W. of A., must be affirmed, if not also against the International union. The judges in the lower court declared that the destruction of the mine property be with intent to restrain commerce, the trial judge on declared and the three judges of the Circuit Court of Appeals reached the same conclusion, the petition declares.

The mines were not flooded and burned until they were ready to ship coal, the petition emphasizing, calling attention to the insistence of the United Mine Workers for interstate agreements and the point that while the Arkansas strike was local in application it was national in policy, because of the national principle of the open shop involved. The motive of destroying the mine property was to protect union operators in Arkansas and other states against the competition of the cheaper mined open-shop coal, the petition recites, which was the motive declared by the jury, the trial judge on Circuit Court of Appeals were driven off July 17 and the Hartford and Coronado mines were not burned until July 18 and 20, the petition states.

An award of judgment against the union is again urged because "the mere lapse of time since the injury was incurred will inevitably embarrass the further prosecution of the case."

The Supreme Court will act upon the petition for rehearing after it reconvenes Oct. 2.

L. & N. July Car Supply in Kentucky Was 57 Per Cent of June's, Tabulation Shows

As a result of the continued argument relative to car shortage on the L. & N. lines in Kentucky, figures are here set forth from a report of the general coal and coke agent of the L. & N. to D. M. Goodwin, freight traffic manager. They show that car supply was better than many coal men claimed since July loadings were 57 per cent of June's. The report in part reads:

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<tr>
<th>Month</th>
<th>Illinois</th>
<th>Kentucky</th>
<th>Alabama</th>
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<tr>
<td>1921</td>
<td>18,480</td>
<td>14,163</td>
<td>1,066</td>
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<tr>
<td>1922</td>
<td>19,434</td>
<td>13,807</td>
<td>1,077</td>
</tr>
<tr>
<td>Total</td>
<td>37,914</td>
<td>27,970</td>
<td>2,143</td>
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In June, 1922, the road established a great record in coal handled, and comparing the 64,558 cars handled in June, 1922, with 37,535 cars handled in July, 1922, it is shown that movement dropped to 57 per cent of the June movement, this being due to the shopmen's strike on July 1, which has held back movement of empty cars to the mines and loaded cars from mines. June movement was almost at capacity, but was held back somewhat by the fact that many large consumers did not believe the coal strike would run into July, and as a result waited for reduced freight rates to become effective as of July 1, not figuring that prices would jump.

The L. & N. R. R. was perhaps crippled worse than other coal handling roads in the state. The Illinois Central in western Kentucky has been able to handle from 75 to 100 per cent of cars needed at practically all times, the road reporting 700 to 800 cars handled daily.

Eastern Kentucky Coal Plants Improving

Activity in mining operations throughout the Elk horn-Hazard coal field of eastern Kentucky has caused a building boom to be in evidence on every hand. At Glemlan, below Whitesburg, Ky., the Reliance Coal & Coke Co. has completed a modern new tipple with conveyors, towers, bustles, and new homes for miners. The Imperial Elk horn Coal Co. at Sargent, has a modern new tipple almost completed. The company also will do much other building. The Lotts Creek Coal Co. and the Ajax Coal Co. are each building modern new storerooms at Lotts Creek. The latter company also is erecting a large number of new houses for miners. The Petry Coal Co. and the New Duane Coal Co., at Duane, are each doing considerable building as is also the Blue Diamond Coal Co., at Blue Diamond, in the First Creek section.

Other companies making various improvements are the Liberty Coal Co. and the Mitchell-Willis Coal Co., in the same section. Several hundred men have been added to the plants of the Consolidation Coal Co. at McRoberts and the Elk horn Coal Corporation at Flem ing and Raymond.

Central Pennsylvania Fuel Committee Names Officers and Prepares to Function

Members of the central Pennsylvania regional committee of the Pennsylvania Fuel Commission met in the office of the Central Pennsylvania Coal Producers' Association on Aug. 29, and effected an organization and formulated plans for functioning. The responsibilities of the committee have been reduced by reason of the strike's ending but the members will prepare for any emergency that may arise during the coming months.

That attended were W. Brooke Moore, of Harrisburg, service agent of the Interstate Commerce Commission, and Attorney Thomas C. Hare of Altoona, recently appointed by Chairman W. D. B. Ainey to head the state fuel commission as the representative of the public in the central Pennsylvania district. Others present were Charles O'Neil, representing the operators on the state commission; Rembrandt Peale, H. J. Mitchell, G. M. Clark, William Lamont, operators; W. A. Jones, statistician of the Coal Producers' Association; J. T. Carbine, of the Pennsylvania Fuel Commission; W. K. Nichol, of the Buffalo, Rochester & Pittsburgh Ry.; J. D. Beaver, of the Pittsburgh, Shawmut & Northern R.R., and W. H. Macquown, divisional freight agent of the Pennsylvania Railroad Co. at Altoona.

Charles O'Neil was elected district chairman, and W. A. Jones, secretary. It was decided to allow the business of the district to operate through natural channels as far as possible and the use of priorities will not be made at present.
Price Boosting Ford Rails Against Was Practiced by Him Two Years Ago

Cincinnati, Ohio, Sept. 12.—(Special Correspondence).—In the strong box of the U. S. Attorney in Covington, Ky., there are some interesting data relating to the Banner Fork Coal Mining Co. It would seem to put a different effect upon the complaint that Henry Ford, automobile manufacturer, of Detroit, Mich., is making against the coal trade and the jobbers and brokers in particular. It would appear that Mr. Ford in bawling the high price of coal is coming before the great court of the general public with a smudge on his fingers, for not long ago Mr. Ford, the owner of a coal mine in southeastern Kentucky, was himself the cause of the high cost of coal.

It will be remembered that the Ford interests purchased the coal properties of the Banner Fork company in 1920. That was the year that coal prices soared. In some places they rose as high as $10-$12 a ton. It was said at the time that Mr. Ford desired the property so that he could get coal at its original cost.

In taking over the Kentucky property with its equipment Mr. Ford did not turn in to the making of steam coal entirely. There was plenty of lump left over that could be sold on the open market. Most of this went to the Blue Diamond Coal Sales Co., which has its general offices in Cincinnati. Some of it also went to the Riddle Coal Co. of Chattanooga and some to the Bewley-Darst Co., of Knoxville. This was given to them to handle as jobbers, or on a brokerage basis. The ruling, however, was strict that this coal should be handled on a 26c-a-ton basis, and this at a time when the operating corporations were allowing brokerage greatly in excess of this.

The stipulation also was strict that the price at which this coal was to be sold would be as high as possible, and this is the returns that were made to the Ford company.

Then the complaints started to come in. Some of them went whooping to Washington at a time when complaints were no rarity—but the volume of them against the Banner Fork company was sufficient to attract the attention of the Department of Justice and in due time the selling agents for the Banner Fork mines were asked to account for the extreme high prices that were being charged for the lump coal that was being shipped from its tipples.

These reports were forwarded to Thomas D. Slattery, then the District Attorney for that section of Kentucky and Louisiana.

While most of this coal was disposed of in the South, Mr. Ford's mining interests were not asking at trying to sell it north of the Ohio river. A former president of the Cincinnati Coal Exchange who directed the sales department of a large wholesale coal firm at the time remembered this coal very well and the conditions under which it was offered.

"I should say I do," he said when asked about it, "but to the best of my knowledge our firm never was able to sell a ton of—it was too high in price."

Other firms here recollect the period and the offer of the Banner Fork coal and say that they refrained from handling it because of the small brokerage allowed in view of the high prices that were asked.

Nor does the Ford trail of high prices end there. Others who were selling coal to the Detroit plant at the time say that there was not hesitancy on the part of the Ford company to pay "the highest in the market" for steam coal and that when it landed in Detroit it was put to the test and that which would not come up to the requirements was sold through Detroit brokers of coal to users in the surrounding territory. It would appear at this particular time that the brokers against whom Mr. Ford now rails were a medium that he found worthy of use.

Salesmen who handled the Banner Fork coal to the south looked up their sales sheets and found that the sales ran from $0.25 to $10 a ton.

Standing upon the published statements of Mr. Ford to the effect that he thought the government price for coal was fair, Michael T. Roach, president of the Logan-Pocahontas Fuel Co., in a telegram to Mr. Ford on Sept. 5, renewed his offer to supply the Ford company with coal at the government prices and urged immediate action in the matter. In his telegram Mr. Roach said that it was particularly arranged that the entire output of one of his mines to the company although having expressed a desire to retain 25 per cent of the output for other uses.

Following the published announcement last week that the Ford factories were to close for lack of fuel, mainly through Mr. Ford's allegation that profiteers and coal bootleggers were boosting the price, Mr. Roach on Aug. 31 offered to turn over the output of the Walls Creek Cottiers in Harlan County, Kentucky, of about 85 carloads a day and the output of some West Virginia mines. Approximately 15,000 tons a month is produced on the Norfolk & Western line and the other coal is produced on the Chesapeake & Ohio.

In response to the first telegram Mr. Ford made arrangements to have his mine representatives, Amherst Thompson, confe with G. H. Martin, representing the Logan-Pocahantos Fuel Co., to determine upon the quality of the coal and arrangements also were made to have the Detroit representative of the Logan-Pocahontas Fuel Co. confer with Mr. Ford. Coal was offered to the Ford company on the basis of a two-year contract at the government prices, it being understood that when the government price changed, the price to the Ford company also would automatically change.

In an effort to get direct action on the matter of supplying Mr. Ford with fuel sufficient to run his factories, Mr. Roach on Sept. 5 sent a telegram to Mr. Ford in part as follows:

"Refer to your telegram of yesterday afternoon regarding the prices. As such we are in existence, we are not buying coal on two-year contracts at government prices and you cannot force us to guarantee regular routing. How many cars are you loading daily? We are not of the opinion that you have increased your bid from $5.45 to $8 a ton when you can load coal at our own mine in your district for $12 a ton."

"The second line of your telegram we can get as many cars to load at cost as you desire, allowing us to supply you with regular switching and car supply that you or any other shipper on the L. & N. could make. Our railroad allowance has been obtained from the government and cannot be cut from ninety carons on allotment which will be effective the tenth of the month. Answering the fifth line of your telegram, upon which you base your opinion that we cannot make delivery.

"Answering the sixth and last line, none of our contracts to you have been broken as this impression has been created, a proposition for two years based upon government prices and which would warrant $8 a ton for us to operate. You are wrong in the statement that we lowered our price would accordingly change."

"You are mining coal from your mine described, which is costing only $1 and you are charging the same method of charging mining costs as in effect by other operators, including yourself. Of the small brokerage allowed and charges, the net price of the coal we can supply at is $3.50 a ton, as such with a scale of wages as we are paying and put coal on the cars at $2. Now, Mr. Ford, my proposition was made you in good faith and based entirely upon prices at which you are contemplating closing down your plant or at least day of this month and giving as the clear reason in profiteering in the coal business.

"If the prices reports have correctly quoted you as stating that the coal prices are set at $8 a ton which system was put into effect by the government, then indeed you are very fortunate and the balance of us are unfortunate. In addition to the coal to be handled by us we are ready to negotiate on the basis of my proposal of $3.50.

Fix Maximum Prices for Alabama Coal

Governor Kirby and Fuel Administrator Roy T. Cox announce the following maximum prices for coal from Alabama mines: Steam, Seam coal—$2.85; Granulated, Brunsvig, $6.00; domestic lump $4.45; Cullman and Black Creek gromes, $3.60; domestic lump $2.50. Montgomery and Bessemer, the high price of coal. The retail prices are lower than at this time last year and the current prices are regarded as reasonable, where they range from 20 per cent in miners' wages affecting dept. I consider
Miners' Union Has 25,000 Fewer Members
In West Virginia Than Before Strike

As far as it is possible to estimate, it is believed that there are now 25,000 less miners in West Virginia in the United Mine Workers entirely, so that as a matter of fact District 29 no longer exists except on paper. That means a loss in membership of from 8,000 to 10,000 miners. New River operators have declined to enter into negotiations with the miners' union and have insisted themselves with simply posting the 1920 wage scales and of continuing to operate on an open-shop basis.

Operators in the Georges Creek region have advanced wages to the 1920 level. Just how many miners will return to work in view of the increase in wages remain to be seen. In the Upper Potomac region most of the miners are at work and have been for some time. Officials of the union assert that miners will not return to work until the Cleveland agreement is signed.

Operators of the Georges Creek field assign as their reason for declining to enter into a further contract with the United Mine Workers "the absolute violation of Article 11, Section 1, of the Maryland basic agreement, dated Dec. 11, 1920, which provides for no suspension of work for a period of at least 60 days subsequent to March 31, 1922."

Even under the "Maryland basic agreement," in force until March 31 and which the operators assert that the miners violated, there was no recognition of the union, nor do operators propose to amend the union such recognition now although always having been willing to engage in collective bargaining with the miners.

The operators in the Georges Creek calls for a wage of $1.304 a ton for pick mining and of $7.25 per day for general inside labor.

The possibility of taking testimony by groups in some of the anthracite tax cases listed for hearing in the Dauphin County Court, Harrisburg, Sept. 12, may cause changes in the plans to hear all of the appeals at that time. It is probable that the eighty or more cases pending will be so grouped and heard. Appeals are now being perfected by some of the large producers, and these will be added to the list.

Mine Fatalities in July Exceed Those of June in Ratio to Output

Coal-mine fatalities during July, 1922, numbered 74 as compared with 162 in July last year, according to reports received by the U. S. Bureau of Mines from state mine inspectors. The reduction was due primarily to the fact that most of the mines throughout the country were closed on account of the miners' strike, which caused the output of coal to decline from 37,693,000 tons in July last year to 17,151,000 tons in July, 1922, a reduction of about 54 per cent. The fatality rate was 4.31 per million tons of coal produced, almost identical with the rate for July last year, 4.30. For bituminous mines alone the July rate this year was 4.05 as against 3.78 for July a year ago. Fatalities in June last numbered 92, or 4.11 per million tons.

During the past nine years (1913-1921) the month of July has averaged 203 fatalities, with an average production of 48,446,000 tons, representing a fatality rate of 4.19.

During the first seven months of the present year 917 men have been killed by accidents at coal mines, as compared with 1,163 during the corresponding period last year, a decrease of 246 fatalities, or 21 per cent. The production of coal has declined about 19 per cent (from 279,859,000 tons to 220,202,000 tons). The fatality rates for the two seven-month periods were 4.16 last year and 4.05 for 1922 per million tons.

With two exceptions, all of the main causes of accidents during 1922 compare favorably with the seven-month record last year and with the entire year 1921. The largest reduction is in accidents from explosives. The rate from haulage accidents is about the same as for the first seven months of 1921 but it is about 14 per cent higher than the average for the whole year 1921. Gas and dust explosions have resulted in a fatality rate more than double that for the year 1921 or for the first seven months last year.
Administration Coal Bills Now in Conference; Passage Expected Next Week

Washington, D. C., Sept. 12, 1922.—Conferences on the bills to create a federal fuel distribution and to control distribution and the price of coal through priority orders of the Interstate Commerce Commission continued their efforts to harmonize the House and Senate measures today with prospects of an early agreement.

The Cummins bill was taken up Sept. 11 by the conference, who remained in session until late in the evening without reaching any conclusion. Most of the time was devoted to testimony by officials of the Interstate Commerce Commission, who explained how the proposed measure would operate.

The principal difference between the conferences developed over the inclusion in the House bill of references to intrastate coal, which the Senate conference believed rendered the measure unconstitutional, in view of the Supreme Court's recent decision in the Child Labor case. House conferees insisted the cases were not parallel and that the broader clause was legal because of the commerce clause of the Constitution.

Senate conferees on this bill are Senators Cummins, Kellogg and Smith, and House conferees are Representatives Winslow, Newton (of Minnesota) and Rayburn.

As soon as agreement is reached on this bill, conferences on the fact-finding commission bills will begin. The House has the same conferees on this bill as while the Senate conferees are Senators Borah, Sterling and Walsh (of Massachusetts).

As H. B. Spencer is understood to be unwilling to take over the duties of distributing coal under the Cummins bill, a new federal distributor must be found. No less than fifty names already have been suggested to Secretary Hoover. While it is believed that the position can be filled best by a traffic man, it is possible that some man known to be a good administrator will be chosen if a transportation man of the required caliber cannot be induced to accept the appointment. Among the names being put forward is that of Henry Ford. The suggestion is made seriously on the ground that he has distinguished himself as an organizer and recognizes keenly the desirability of an equitable distribution of coal and the need to suppress profiteering.

Donald D. Conn, of Minneapolis, who is in Washington representing the governors of the states of the Northwest that receive their coal supply largely from the upper lake docks, probably will be named an assistant to the federal fuel distributor to advise on the lake situation.

Varying dates for the expiration of the measure form the greatest difference between the House and Senate bills to control the distribution and the price of coal, the House bill providing a life until Jan. 1, 1921, and the Senate bill providing that it shall expire six months after enactment.

The Senate bill to create a fact-finding commission provides for a commission of five members and includes instructions to report recommendations on the standardization of mines on the basis of production and efficiency, standardization of wages and working conditions and the advisability and wisdom of nationalization of mines and government control of the industry, while the House bill lacks the latter features and provides for a commission not to exceed nine members. The provision written into the Senate bill directing a separate investigation of the anthracite field with a report to be submitted not later than July 1, next, which was included after the settlement in the hard-coal field, probably will be accepted by the House conferees.

Both the distribution and price-control bill and the fact-finding commission bill were passed by the Senate without difficulty once the time for final vote arrived, although both encountered vigorous opposition from individual Senators. The Cummins bill, to create the office of Federal Fuel Distributor and to broaden the powers of the Interstate Commerce Commission so as to control distribution and prices of coal, was passed Thursday, 40 to 7. It was amended in only two important respects, an amendment by Senator Sutherland reducing its life from one year to six months being adopted and one by Senator Dial, providing that its terms should not apply to contracts for coal at not more than $2 per ton that were made prior to July 25, 1922, being included.

The Borah fact-finding bill was passed Friday, Sept. 8, without any amendments other than those offered or advocated by its author. The vote on this measure was without a roll call, but sentiment had been tested a few minutes before the bill was put on final passage by the rejection, 19 to 30, of an amendment offered by Senator Dial which would have stricken from the measure the instruction to the proposed commission to report on the question of nationalization of coal mines.

Senator King, of Utah, offered an amendment to the distribution and price-control bill designed to prevent speculation in coal by providing that for six years it should be unlawful to purchase coal with intent to influence the market price. After objection, he withdrew this as an amendment and offered it as a separate bill, which was referred to the judiciary committee.

Repeated efforts, through amendments in various forms, were made by Senator Dial, of South Carolina, to amend the fact-finding bill by Senator Sutherland. Senator Sutherland also offered an amendment along the same line. Conferees were made that some contracts at an unreasonable price might be included and thus defeat the purposes of the bill. Finally, Senator Dial brought his amendment in so as to include coal at not more than $2 a ton on contracts closed prior to July 25, and this was accepted. The South Carolina Senator is interested in a mill which had a contract for $3.50 a ton, he stated, and which could not get delivery because the mine operator could not get coal. He is willing to wait, he said, if the Senate makes the contract unlawful.

Mine prices of bituminous coal should range from $2.50 to $3.50 in his opinion, Senator Kellogg declared, figures which Senator Sutherland characterized as "absurd."

The whole purpose of the bill, Senator Cummins asserted, was to supply the Interstate Commerce Commission with authority "to classify preferences on account of unreasonable prices that may be charged," and while he disclaimed any intent to cause coal operators as a class to be declared some power necessary to "check the greed" of those who would take advantage of the situation.

The most strenuous objections voiced against the Borah fact-finding bill were directed against its instructions that the proposed commission report on the advisability and wisdom of nationalization of the mines.

Senator Borah by Senator Shields of Tennessee, to amend the Borah bill so as to exclude from membership on the proposed commission any coal operator or miner not objection from Senator Borah and was defeated. The Idaho Senator declared the President should be free in his selection. The bill as passed excludes members of Congress and executive officers of the government from the commission.

Senator Dial attempted to have the Federal Trade Commission make the investigation instead of a special commission but this amendment was rejected. The South Carolina Senator then tried to have the nationalization and government-control sections of the instructions to the commission stricken out, declaring them to be merely "an invitation to all the disgruntled people of the country to appear before the proposed commission to complain and take up questions having to do with the coal industry.

The State Illinois state coal commission committee has passed into history. The passing was entirely informal. It received official word from the U. S. coal distribution administration that the federal body regards the strike as ended, that it can no longer look after allocation of coal to applicants and that normal trade channels may be relied on to take care of the country's requirements. Governor McCray had designated the Indiana Public Service Commission to cooperate with the federal administration.
May Apply Class 1 Priority to Gas Coal
For Utilities Having Contracts

Washington, D. C., Sept. 9.—The Federal Fuel Distributor in replying to urgent requests from numerous artificial gas and manufacturing companies for supplies of gas coal, which they are unable to obtain from West Virginia, Virginia, Kentucky and Pennsylvania steam mines, has granted requests from New York City, Chicago and various smaller cities in Michigan, Illinois, Indiana, Iowa, Missouri and other midwestern states. The difficulty in supplying this coal is due to the inadequate car supply in the districts nearest and to the fact that the gas-coal producing companies are promoting their coal among parties who have contracts. This means an even greater pinch in the supply of what coal is available, as the whole is being taken for steaming.

Fuel Distributor Spencer is considering the policy of applying Class 1 priority to gas coal moving to public utilities with whom the mines have contracts.

Dangerous of coal at the lower Lake ports for this week will amount to approximately 450,000 tons, with 3,500 cars reported at Lake ports this morning. As coal is not moving to the Lakes under the usual November specification, the differential is not available and it is impossible to make up the Fuel Distributor's program. Priority No. 1 letters are being issued today directing lake-side sufficient supply of coal to insure the attainment of the full Lake program for next week. These priority authorizations are being placed with a view to causing the least possible disturbance to the normal movement of coal. Difficulties experienced in the unloading of iron ore from boats at lower Lake ports have been solved, and there is now no shortage of vessels for the transportation of coal to Lake Superior docks.

The Fuel Distributor has found it necessary to issue Priority No. 2 orders for the movement of a limited tonnage of coal necessary to keep some non-essential industries in the Southeast from closing. Authorization for the movement of 10,000 tons of coal from Norton, Va., to the State Fuel Commission of South Carolina has been given. Representations are being made from time to time that industries will be compelled to close unless given certificates of priority which will aid them in obtaining fuel supplies. These cases are being considered on their individual merits, under a general policy of issuing priority authorizations only where real emergency needs cannot be provided for by other means.

New York Coal Dealers Pledge Support to State Fuel Administrator

Recalling from its policy of opposing federal or state administration of fuel supplies, the New York State Coal Merchants' Association adopted a resolution Sept. 8 at the convention at Richfield Springs supporting Governor Miller and State Fuel Administrator W. H. Woodin in their effort to provide an equitable basis for the distribution of coal and pledging full co-operation to prevent a crisis.

Use of bituminous coal as a substitute for anthracite in homes until the emergency is passed, restriction of the quantity given each consumer that all may have coal, and licensing of all dealers, both wholesale and retail, in order to curb irresponsible dealers, were among the measures advocated for dealing with the crisis. The "fair price" differential of 5 per cent fixed for jobbers' profit was denounced as four times too high.

Illinois Protests Priority Order That Favors Domestic Coal

Illinois coal trade is somewhat exercised over the recent amendment to I.C.C. Service Order 24, giving car priority to anthracite of all. A protest meeting held in the office of State Fuel Distributor R. M. Medill in Chicago brought up the argument that the amendment should be lifted because if steam sizes are not readily shipped from the mines they will accumulate to a point where many mines will have to shut down. Two plans of action may result. Mr. Medill on Saturday last urged that a committee go to Washington forthwith and plead with the Interstate Commerce Commission for a temporary repeal on the ground that there is no coal shortage in Illinois now and therefore the ruling should not apply to that state. The other plan which wise heads counsel is that the ruling be observed with all possible rigor so that its effect on coal consumers would cause such loud public complaint that the repeal would be granted.

Cape Breton Miners Return to Work:
Recall of District Officers Asked

All troops have left the Cape Breton mining district and the miners have returned to work. All of the mines with the exception of those flooded when the pumpmen left their places are in action again. The flooded mines are being pumped out gradually. The flooding has created much danger to the miners.

Springhill local of the United Mine Workers Union has petitioned John L. Lewis, International president, for the recall of the recently elected officers of D. strict 26, including District President Dan Livingstone. The local asserts that the new officers of the district were instructed to agree to nothing short of the 1921 rates. Instead a compromise was agreed upon with the coal operators.

Distribution of Lake Cargo Coal Loaded at Lake Erie Ports to Sept. 1

<table>
<thead>
<tr>
<th>Destinations</th>
<th>Lake Superior Ports</th>
<th>Net Tons</th>
<th>Per Cent</th>
<th>Lake Erie Ports</th>
<th>Net Tons</th>
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<tr>
<td>totals</td>
<td>969,020</td>
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<td>totals</td>
<td>727,832</td>
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<td>Lake Michigan Ports</td>
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<td>2,012,007</td>
<td>totals</td>
<td>727,832</td>
<td>21.79</td>
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<tr>
<td>Milwaukee, Illinois</td>
<td>213,456</td>
<td>2.75</td>
<td>539,205</td>
<td>Totals</td>
<td>727,832</td>
<td>21.79</td>
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<tr>
<td>Other Lakes, Mich.</td>
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<td>0.25</td>
<td>140,154</td>
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<td>Detroit &amp; Lime Island</td>
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<td>472,446</td>
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<td>Detroit &amp; St. Clair River</td>
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<td>Lake Erie Ports</td>
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<td>Other Places (Total)</td>
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<td>Welland Canal, Lake</td>
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<td>Oconto &amp; St.</td>
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<td>100.00</td>
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Connellville Output Mounts, Though
Strikers Flock to Union Mines

Output in the Connellville coke region continues to increase slowly and steadily, most of the companies who are operating continuing to import labor. At the same time there is a large exodus of the strikers taking place to union mines in all directions since the union mines have been getting in operation. During the past week the H. C. Frick Coke Co. has fired additional ovens as follows: At Crossland plant, 50; at Leisenring No. 1, 40; at Leisenring No. 2, 40; at Leisenring No. 3, 70; at Davidson, 40, and at Trotter, 70, a total of 266. W. J. Rainey, Inc. has started up the Allison plant with imported labor.
Herrin Grand Jury Has Indicted 59 Thus Far; Jail Is Filling; Union Has Big Defence Fund

The grand jury in the Herrin massacre case is making good its declared intention of doing its duty in spite of "pressure" and threats. Thus far, after two gruelling weeks of investigation through the hottest kind of southern Illinois weather, it has indicted fifty-nine men on the three charges of murder, conspiracy to murder and riot. Up to Saturday night thirteen of the fifty-nine men—most of them union members—have been tried in Herrin jail and demurred to the securing of the country for the trial. Many of them gave themselves up through lawyers for or officials of the United Mine Workers of America who have been in Marion, county seat of Williamson County, watching proceedings from the beginning of the investigation.

This group of officials has told Attorney General Brundage it will bring in and surrender every union man who is indicted, providing Brundage will agree in advance to accept bail for their release. Brundage refuses that every man who goes to jail goes there to stay until the case comes to trial later in the month. The union's first attempt to obtain release of the prisoners on bail failed, but it is daily expected that some new effort will be made.

The main interest in the case just now is to see what further action the union forces will take. On Sept. 8 the Illinois miners' executive board, in session at Peoria, voted to assess every union member. Evidence came easier from the long line of reluctant witnesses after that and on Sept. 7 a list of thirty-seven more indictments was signed. Next day the judge indited twenty-one more and then adjourned until Sept. 18, when it will resume.

It has announced in a statement to the public that the jury intends to delve thoroughly into the part which the Southern Illinois Coal Co. and its president, William J. Lester, played in the circumstances leading up to the massacre on the company's non-union strip mine, June 22, the surrender of the men therein and the slaughter of nineteen and wounding of thirty which ensued. Thus far practically all the indictments have been against union men. If findings are to be made against the coal company or its employees for the killing of two union miners the day before the massacre they will have to be made after the jury resumes Sept. 18.

The investigation thus far has been greatly hampered by the incompleteness of Coroner William McCown's records of the individuals killed in the riot of June 22 and of the records of undertakers who buried them. The coroner's list identified only ten of those buried. There was a description filed of one more. The others were merely put in graves marked "Unknown" and little or no record made of them. Even the belongings of the slaughtered men were jumbled up or thrown away. Thus the case is much befogged. There is clarity enough, however, in the case of the following dead: C. K. McDowell, mine superintendent, the first man to be killed and for whose death Otis Clark, the first union man to be indicted and arrested, is now held; Robert J. Anderson, Sparta, Ill., who was hanged to a tree and riddled with bullets; J. H. Shoemaker, civil engineer, son of the Mayor of Charleston, Ill., shot at John Kuehl; Fred Landers, Saline, Mo.; John D., John N., and John H., Chicago; Ed Miller, of Chicago, who died wearing a Chicago police badge; Antonio Muklevich, American legionnaire; Robert March, of Chicago, an overseer veteran, and Howard Hoffman, of Huntington, Ind., and was one of those who escaped the slaughter at a barbed wire fence where so many died, but who was caught later, taken to the Herrin cemetery and killed there.

The jury has heard and recorded volumes of testimony about the revolting events of the attack on the mine and the massacre. Several of the victims were savagely mutilated before they were killed. A taxicab driver, who is among the indicted and for whose arrest the jury was especially anxious, is to be charged with driving through the region of the slaughter feeling every victim he found on the ground and cutting the throats of any who gave signs of life. This man, known as "Hillie" by the miners, is charging men in jail, is the man said to have stood over a bound group of terribly wounded men in the hot sun and who refused at the point of a gun to allow anybody to give even a drink of water to the dying.

The general sentiment among men who are watching the case and who stand for law and order is that it is going to be difficult indeed to mete out full justice to the guilty. The grand jury appears to be doing its level best. It is accumulating a mass of damning evidence against many prisoners and a good many of the indicted men are behind the bars with no sign yet in the troublesome county of a jail delivery to free them. It is freely prophesied, however, that, when the case comes to trial before a jury impanelled in the regular way, and not hand picked, as the grand jury was, in order to exclude possible partisans, the progress of the case will be difficult. The Rutherford Miners of America is armed with a large fund and an array of legal talent purposes making a powerful and intricate legal defense. There is little chance of removing the case from Williamson County because of the constitutional right of every man to be tried within the jurisdiction where the alleged crime was committed and because of his constitutional protection against being tried twice for the same offence. Thus: Indicted mining millionaires, the two church men, the former mayor, police commissioner, county commissioner, the marshal, a lawyer, the editor of the local newspaper, eight guards, the mining company's president, three members of the executive board, the manager of the strip mine and the Rutherford union's secretary, with whom the above are associated.

The fifty-nine men indicted, including Fred and William Travelstead, sons of one of Marion's respectable families; James Brown, a negro deputy sheriff of the town of Colp, and Otis Clark, president of a miners' union local, are these: Peter Miller, Charles Reaugh, Marion; Joseph Carnegie, Nava Cannaday, Herbert Rushing, John Rushing, Clyde Lee, James Galligan, Joseph Rhodes, William Stanley, John Kelley, Hubert Walker, James Norris, Roy Pennington, Harvey Perdue, Dallas McCree, Otis Maynard, Alvin Stewart, Joe Murray, Campbell Lively, Wesley McPharon, Frank Adams, Alvin Lollis, Floyd Stokes, George Anderson, Fred McGough, Phillip Fontanetta, Tom Weeks, Lee Howard, Louis Corbett, Bert Grace, Gerald Bernard, Peter Black, Noble Bell, Lew Corian, Charles Hancock, Ernie Craig, V. R. Wilson, Henry Skeltcher, Bill Gullidge, Darby Babington, Sam Catone, Jesse Childers, Orrie Kirby, Earl Baxter, Bill Clander, Fred Cooper, Lee Herron, William Sellers, Fred Travelstead, William Travelstead, Otis Clark, James Brown, Percy Hall, Blockhouse, Hastings, Giles Holley and Tony —

Strike Slowly Petering Out in Utah

It is difficult to say whether the coal strike in Utah is at an end. All but twenty-five or thirty members of the National Guard have been sent home, but no one, including the state officials, is willing to be quoted saying the strike is over. Following overtures from the strikers the opera-

Buying of British Coal Has Passed the Peak

Late in June British coal began to seep through to the Atlantic ports. It came slowly at first, largely as an experiment on the part of a few Eastern railroads and utilities. As the shortage of home coals became more pronounced, however, heavier orders were placed, taxing British export facilities and calling into service a number of U. S. Shipping Board vessels. This flood of foreign coal reached its peak late in August, when in New York harbor above 1,25,000 tons was received in seven days.

As September opened seaports not accustomed to handling a heavy volume of coalsea coals were congested with British cargoes, and even Boston harbor, the best equipped to receive coal by water, was plugged with the arrival of six thousand cargoes. Eight more ships, arriving forty-eight hours later, were forced to anchor and await their turn at the unloading machines. The congestion at New York, with its lower daily discharge rate, necessitated diversion of tonnage to other New England ports. All this meant heavy demurrage charges for someone.

Prices mounted with the volume of business placed. When the Shipping Board first chartered a few of its vessels for this business it set a freight rate of 7%, having chartered eighty-nine vessels in all at this writing. The British rate was slightly higher at the outset and rose to 13½@13½, because of the scarcity of bottoms and the urgency of orders. The Shipping Board rate advanced to 15s., but remained lower than the British figure at all times. British 1, 5, 6, prices also advanced, good Admiralty coal going from 20s. late in June to a high of 32s. 6d. in August.

When late in August production in the United States started upward the effect on the British market was instantaneous. Ocean rates and coal prices began slipping, but the reductions brought little business. Shipments to this country are expected to continue throughout the year and may reach 1,500,000 tons by the end of September. But now, as in the beginning, shipments are largely on firm orders placed by railroads and utilities. A few traders bought cargoes and shipped them "free" to this side when prices were nearing the peak. When American coal quotations declined with better production harbors were congested, heavy vessel demurrage accumulated and this trading speedily became unprofitable.

British coal can still undersell ours in our own seaport markets but with domestic reductions paralleling those abroad the time consumed in filling orders introduces an element of risk that deters coal men from ordering tonnage to throw on the present sensitive spot markets of this country. It requires nearly six weeks' time to obtain British coal, about one-half of which is consumed in ocean transportation. The coal received and still on order is needed to fill the strike gap, but this is rapidly closing.

United States production is better and British coal "on spec" faces an uncertain reception on this side of the Atlantic.

The illustration shows three British cargoes of coal being unloaded at New York Central R. R. piers at Weehawken, N. J., across the river from New York.

Depreciating Cause for Alarm, Woodin Urges Economy in Use of Electricity and Gas

William H. Woodin, New York State Fuel Administrator, appointed on Sept. 6 by Governor Miller, has already issued a warning against profiteering, stating that he sees no reason why coal should be any higher in price than it was last winter.

Mr. Woodin, who is the president of the American Car Manufacturing Co., entered upon his duties the day following his appointment and after conferring with the members of the Governor's Coal Commission appointed Colonel William J. Donovan, of Buffalo, legal adviser, and continued in office the existing Coal Commission members.

The Fuel Administrator has been promised the cooperation of the city administration of New York City in his work. He attended the conference of anthracite producers and representatives of the federal and state governments held in Philadelphia on Sept. 7 but before going to the conference Mr. Woodin announced that the state would be divided into nine districts with a district fuel administrator in charge of each.

Names of the nine district administrators will be announced this week and they will meet in conference with Governor Miller and State Fuel Administrator Woodin at Albany.

Permanent offices for Mr. Woodin and his staff have been opened at 165 Broadway, New York City.

It is the intention of Mr. Woodin, in order to avert any emergency that might result from a continued shortage of anthracite, to educate the public in the use of substitutes. He will ask all consumers to exercise economy in the use of electricity and gas, but made it plain that at present there was no cause for alarm.

J. W. Paul, coal-mining engineer of the U. S. Bureau of Mines, recently examined a fire on Neville Island, Pittsburgh, Pa., in a fill composed of coke breeze, cinders and slag. This fill is 500 ft. wide, 2,000 ft. long and 20 ft. deep. At the time of Mr. Paul's examination the fire was not yet under control and had already caused a loss of more than $300,000.
MINING of anthracite was resumed on Monday, Sept. 11. At Scranton, before noon of that day the United Mine Workers and the representatives of the operators signed the contract that is to insure uninterrupted operations for the next year. The signing of the contract was but a formality following the ratification by the miners’ union of the compromise agreement between John L. Lewis and the operators arrived at on Saturday, Sept. 2, at Philadelphia.

According to the decision of the Shamokin convention last January, it was necessary to submit the terms of this agreement to the vote of the men. A gathering of delegates from the locals in the hard-coal region assembled in Wilkes-Barre on Wednesday, Sept. 6, to listen to the speeches of the officials and vote on the proposed contract. The meeting was stormy; it lasted until late Saturday, giving everyone a chance to get his views into the record. But after every supporter and every opponent of John L. Lewis had had his say, the vote was overwhelmingly in favor of acceptance, as Mr. Lewis had said it would be.

The men go back to work at the same wages and with the same working conditions they had before the strike. They are under contract to stay at work until Sept. 1, 1923. They were obliged to forego the advance in wages they had demanded and they did not get the check-off, which they asked among their nineteen demands of last January. On the other hand, the operators did not get the wages of the men reduced, as they had desired, nor did they succeed in providing for arbitration of future wage contracts, a point on which they were urgent.

Delegates to the Wilkes-Barre convention from around Pittston, Olyphant and Kingston were instructed to oppose any ratification of the agreement. Many of the delegates from Shamokin and around Pottsville wore badges on which was emblazoned “Stick and Fight to the Finish.” There was a general feeling that Lewis would meet strong opposition. On the opening day he was made chairman of the meeting. Thursday morning Thomas Kennedy, president of District No. 7, read the 55-page report of the scale committee.

Friday morning he offered the agreement to the convention. Philip Murray spoke at length in favor of acceptance. “We need not deduce ourselves at the nineteen demands,” said he. “Industrial conditions of the country did not warrant the granting of these demands. All other basic industries in the country have taken decreases. Eighty-five thousand maintenance of way men work at 23c. per hour. Ours is the only organization that kept its wages of 1920. The union that has succeeded in retaining what it has won a great victory. In principle the victory of the anthracite miners is a greater one than that of the bituminous miners. Arbitration means that some outside party that knows nothing arbitrarily says to you what hour you shall rise in the morning, what wages you shall receive, and compels you to accept.”

After speech-making through Friday and until six o’clock in the evening on Saturday the miners overwhelmingly voted for acceptance of the agreement. The opposition remained silent and registered no vote of protest.

Meanwhile steps were being taken by the national and state governments looking toward control and regulation of the price and distribution of hard coal, when it should again be made available. Secretary Hoover called the representatives of the operators together at Philadelphia on Thursday, Sept. 7, to get their views as to the best way to handle the situation. As a result of this meeting a Committee on the Distribution of Anthracite was appointed. Hending the committee is S. D. Warriner. The others are W. J. Richards, W. H. Williams, W. L. Connell, Alan C. Dodson and John F. Bermingham, all executives of producing companies. E. W. Parker, director of the Steel Bureau of Information; R. C. Morse, representing the State Fuel Commission, and W. H. D. Alvey, chairman of the Pennsylvania Public Utilities Commission and acting state fuel administrator, also are on the committee. A member is to be named by Secretary Hoover.

This committee has made no official announcement of any action but it is understood that the sentiment of the trade is that each producer and shipper shall allocate his tonnage equitably on the basis of the last coal year, 1921-22, although it is recognized that until the tonnages that are to be sent up the Lakes and to such distant markets as Canada and northern New England are sent on their way, such ideal distribution will be difficult to realize. The trade has made it plain that in its belief the best results will be obtained with the least interference on the part of the authorities, and it is understood that both Washington and Harrisburg will give the shippers every opportunity to make good. The operators will keep current and definite records of distribution and thereby check up on those who may endeavor to divert coal to take advantage of high prices in certain localities.

If there is to be any check on anthracite prices it will have to come from Washington after the Fuel Distributor bill has been signed by the President. As most of the hard coal goes into interstate commerce the Pennsylvania Fuel Commission has advised the trade that it will countenance no prices or margins higher than those obtained last March, prior to the strike. This advice was tendered to the independent producers and the retailers. Retailers are to be restrained from giving any consumer more than sixty days’ supply and shippers are not to furnish coal to any but established dealers.

Cumulative production of anthracite for the calendar year to Sept. 1, stands at 22,199,000 tons. This is 30,700,000 tons behind last year and 33,800,000 tons behind 1919. In addition to the current production a considerable tonnage of anthracite has been forwarded from storage. Total shipments of ex-storage coal from April 1 to Sept. 1, according to reports furnished by the railroads, amounted to 28,000 cars, or about 4,250,000 net tons.

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The West Virginia Public Service Commission has issued a priority order similar in form to that outstanding with the Interstate Commerce Commission. The order applies to the lines of any coal-loading carrier within the state. Classes of priorities are specified. Class 1 is for special purposes specifically designated by the State Fuel Commission or his agent; class 2 is for fuel for railroads and other common carriers, public institutions, hospitals, United States, state, county or municipal governments, and for their public institutions.
Scientific Study, Not Emotional Denunciation, Says Hoover, Will Solve Nation's Coal Problem

The favorable progress of legislation for the creation of a national coal commission fully empowered to get to the heart of the troubles is the first step in one of the most vital problems we have, according to Herbert Hoover, Secretary of Commerce, before the National Association of American Chemical Industry, Tuesday, Sept. 12, 1922, in New York. That he has been earnestly recommending such a commission for the last three years, he declared, was because he does not believe great solutions are to be found out of emotional denunciation, but out of sober, scientific examination. Portions of his address follow:

We have made the victim of infinite loss and suffering by such disagreements as we have witnessed; when the whole nation can, once every two years or less, be pushed to the edge of the precipice of want and commercial collapse, when our public utilities, hospitals, schools, and kilnites are dependent upon short rations of non-union coal; when the federal government is forced to interfere with business and transportation by the movement in essential points; when we are brought to considerations of price fixing against extortion in peace time; when hundreds of thousands of workers not only in the industry but outside of it are thrown into skipping and starving; when the nation is made to suffer the shame of Herrin and rampant crime that has followed in train of strikes; then some examination of our industrial sanity is called for.

Two Problems Requiring Constructive Solutions

There are two distinct lines of problems for which constructive solutions are needed: employer-employee relationship and economic reorganization of the industry. I believe such a commission would find that collective bargaining, conciliation and arbitration upon their present basis of organization have been broken down in this industry. In this connection if we look inside workings of this recent strike we will find situations new in industrial relations. Under freedom from the restraint of trade laws the workers' organizations have grown in strength, solidarity and devotion; they have shown able leadership, whereas the organization of employers for the purpose of collective bargaining has been to a large degree destroyed by the raids, wars upon entering into the history of rights or wrongs of this phase, the bare fact exists: that the recent agreement in the bituminous industry was determined by only 15 per cent of the employers, and this minority's decision controlled the whole.

The federal laws on conciliation have failed to obtain any results for years. The conception of arbitration is a settlement based upon compromise to abide by the decision of a third party, but this is now refused "on principle," for in this industry the workers consider that arbitration always results in compromise and that this is compromise with their bread and butter.

Workers have a right to protest to prevent and improve wages and conditions of labor. They have a right to collective bargaining. They have a right to strike. They have a right to refuse to join some organization. They have a right to work without intimidation and assault. Employers have a right to refuse to recognize such organizations. They have a right to lockout. They have a right to keep open shops. No one seriously denies any of these rights, but a lot of people are overlooking a superior right. That is the right of the public to a continuous supply of the vital necessities and conveniences furnished by employer and employee. When these various rights infringe upon the public right, then the dominant right is public right.

Aside from employee relationships, most of the economic demoralization lies in the bituminous, as distinguished from the anthracite, industry, and my discussion hereafter refers to bituminous alone. This industry, indeed, functions very badly. Some state officials say it will work itself out if left alone. But it must be borne in mind that it has not been left alone in the past, and the present situation is in large degree due to legislative interference. The control of decisions among operators, without such restraint among employees, the rules of artificial car distribution, the state legislation of various sorts, and other acts, have a great responsibility for the present condition. I am not here questioning the necessity of these measures, but their influence in the situation must not be overlooked, and they must be either supplemented or amended by wise provisions, if we are to have coal peace.

The perpetual labor disputes are but one of the inevitable byproducts of this poor organization. Labor is struggling on one side to set up remuneration based on such days' pay, and such piece-work rates, as will give a standard of living from 60 per cent of time employed. Labor is thus honeycombed with the worst of stimulants to unrest—instability of employment. At the same time, men who have the opportunity to work full time in regularly operating mines earn returns far above the average income of our most prosperous farmers and other workers. There can be no solution either to the operators or to the workers as long as this condition continues.

The largest contributor to overexpansion of the industry is now the almost regular biennial quarrel, with its undue prior demand for coal and its subsequent shortage with temporary high prices. Beyond this the non-union mines in the South are gradually causing the industry to migrate from the North to the South, with consequent overequipment in the North.

Intermittent operation also arises in the chronic annual shortage of railway cars because a sufficient car supply for the short-peak period is economically impossible to the railways. A bad system of distribution of cars to mines by the railways contributes also.

Should Earnestly Consider Co-operative Schemes

A contributing remedy that will need the most earnest consideration is the possibility of permitting the co-operative system of marketing developed by the farmers to be applied by such mines as wish to adopt it, under circumstances that would assure competitive conditions. Such an arrangement would decrease distribution costs, would give more regular flow to orders, would get better car distribution, would increase transportation, would enable the laying down of coal in storage at points of consumption, and would consequently give more regular operation with reduced working costs.

It has also been proposed, although I have doubt as to practicability, that there should be a penalty in higher wages for short-time employment. Others propose a basic wage with a participation in the realized profit of the industry.

I recognize that stabilization of the industry, or anything that lends stability to the industry, is opposed by a small minority of speculative operators who use the periodically disturbed production to reap a recurrent harvest. It would be opposed on the other side by some of the more narrow-minded labor leaders who contend that their object in all industry is to reduce the number of hours of actual labor to some minor fraction of the time. Then there is the nation's desire to socialize in desperation for coal, or who deny the public right to any voice. However, I believe that the constructive men on both sides are in full agreement that we must have a broader and better solution than results from the truces of the past few years.

These periodic wars in the industry are, therefore, in part symptoms of a disease. But, before we treat this disease, we must have a more accurate diagnosis. We must have adequate, accurate information from which to weigh the different causes. We must be able to apply to all the test of fact. From such an understanding we should be able to return this industry to sanity. The proposed commission has the greatest opportunity for constructive work.

The public demands results; it is sick and weary of periodic warfare and futile attempts at solution.
UNION mined coal is on the market in quantity. Heavier receipts and offerings have softened spot prices in the East. Markets supplied by non-union fields have registered but little decrease in prices and in some cases have shown a slight uptum. So heavily have the facilities of the roads originating non-union coal been taxed in the last five months that the movement of cars and consequent production has been considerably affected.

Coal Age Index of spot prices of bituminous coal rallied slightly, standing at 427 on Monday, Sept. 11, 7 points above last week. The average price was $5.17, as compared with $5.08 in the preceding week.

Consumers are floundering around in the market, some trying to cover on contract but many being tempted to delay buying a little longer in the hope that prices may slip down another notch or two. It is the old story of curtailed demand on a falling market with only the inevitable end in view. Delayed demand following the prolonged strike will shortly push prices up as fast as they have in recent weeks declined.

**SUPPLY OF SURPLUS CARS DWINDLING**

The present rate of coal loadings is fast exhausting the supply of surplus cars. Surplus coal cars numbered 111,521 on Aug. 15, prior to general resumption of mining. On Aug. 23, a week later, they were down to 96,405 cars. Resumption of hard-coal mining is causing an additional drain on car supply.

Domestic sizes are already in strong demand and Ohio, West Virginia and some other Middle Western domestic coals advanced sharply last week. Lake buyers, on the other hand, while clamoring for tonnage, disappear at the slightest price advance. Steam coal is heavy at New England, where receipts via water from Hampton Roads and Great Britain have made active canvassing again necessary to dispose of tonnage. North Atlantic centers are in better supply and prices are easier, as is the case in that section of the country east of Pittsburgh and Cleveland. Illinois and Indiana fields are hard hit by car shortage but comparatively light production is so far meeting with light demand.

Welcoming the news of the resumption of anthracite mining the consumer is hopeful that he may not have to resort to the use of much substitute fuel. Dealers, however, are advising the purchase of such fuel to last through October, when it is hoped that small lots of hard coal will again be available.

The Connellsville labor situation is not clearing as fast as was expected. Beehive coke prices are lower but the supply is not heavy.

**BITUMINOUS**

"Instead of the 2,400,000 tons suggested by the first report, final returns on soft-coal production show only 9,142,000 tons in the week ended Sept. 2," says the Geological Survey. "The record of the week was awaited with interest as an indication of the supply to be expected after general resumption of mining under the Cleveland agreement. Because of the Labor Day holiday, the output for last week can hardly exceed 8,700,000 tons.

"The trend of output day by day is shown by the following statement of cars of bituminous coal loaded. On Labor Day 10,021 cars were loaded by the non-union mines, confirming the experience of other years that the day counts for a

---

**Estimates of Production**

<table>
<thead>
<tr>
<th>Week ended</th>
<th>BITUMINOUS</th>
<th>ANTHRACITE</th>
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<tbody>
<tr>
<td>Aug. 26</td>
<td>3,530,000</td>
<td>192,000</td>
</tr>
<tr>
<td>Aug. 19</td>
<td>3,460,000</td>
<td>188,000</td>
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<td>Aug. 9</td>
<td>3,430,000</td>
<td>187,000</td>
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<td>Aug. 2</td>
<td>3,380,000</td>
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</tr>
<tr>
<td>Aug. 1</td>
<td>3,330,000</td>
<td>183,000</td>
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427
## COAL AGE

Vol. 22, No. 11

### BITUMINOUS COAL DUMPED AT HAMPTON ROADS

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<th>Week</th>
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<td>Mon</td>
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<td>517.0</td>
<td>519.0</td>
<td>521.0</td>
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</table>

The all-rail movement to New England was 1,292 cars during the week ended Sept. 2, as compared with 308 cars in the preceding week. Central Pennsylvania grades are offering freely in that market but are slow sellers because of the heavy receipts of water-borne coal from Great Britain and Hampton Roads.

Dumps at the Roads for all accounts were 315,658 net tons, a slight decline when compared with previous week’s figure of 329,652 tons. Receipts at the piers are slowly rising, despite the heavy Western movement of coal from West Virginia fields. Prices at the Roads are softer, as crosswise markets are now obtaining ample supplies.

The Federal Fuel Distributor’s orders directing coal to the Lakes is reflected in the largest tonnage of the year during the week ended Sept. 11. According to the Ore & Coal Exchange, 623,508 net tons were dumped—594,772 tons varex 28,735 tons vessel fuel—as compared with 463,242 tons in the preceding week. The total movement for the season is now 6,300,803 tons; in the corresponding period last year 17,183,200 tons was dumped.

### Anthracite

It is estimated that full production of anthracite cannot be approached this week or even next, at the very earliest. During the week ended Sept. 2 the output was confined to 38,000 net tons of steam coals dredged from the rivers. This river coal has fallen from grace with the prospect of an early supply of fresh-mined steam sizes. The heavier bituminous coal production also has reduced its sale.

### Coke

Production of beehive coke was 142,000 net tons during the week ended Sept. 2, as compared with 117,000 tons in the preceding week.

Shortage of coal cut deeply into the production of byproduct coke during August. The total output was 1,794,000 net tons, a decrease when compared with July of 692,000 tons, or 48.8%.

To produce the coke manufactured in August required 3,427,000 tons of coal, of which 2,577,000 tons was used in byproduct ovens and 850,000 tons in beehive ovens. The cut in consumption in byproduct plants was nearly 1,000,000 tons as compared with July.

### MONTHLY OUTPUT OF BYPRODUCT AND BEEHIVE COKE

<table>
<thead>
<tr>
<th>Month</th>
<th>Byproduct Coke</th>
<th>Beehive Coke</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug</td>
<td>1,870,000</td>
<td>2,764,000</td>
<td>4,634,000</td>
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<tr>
<td>Sep</td>
<td>2,166,000</td>
<td>2,599,000</td>
<td>4,765,000</td>
</tr>
<tr>
<td>Oct</td>
<td>2,095,000</td>
<td>1,638,000</td>
<td>3,733,000</td>
</tr>
<tr>
<td>Nov</td>
<td>2,165,000</td>
<td>1,748,000</td>
<td>3,913,000</td>
</tr>
<tr>
<td>Dec</td>
<td>1,600,000</td>
<td>432,000</td>
<td>2,032,000</td>
</tr>
<tr>
<td>Jan</td>
<td>2,537,000</td>
<td>432,000</td>
<td>2,969,000</td>
</tr>
<tr>
<td>Feb</td>
<td>2,410,000</td>
<td>450,000</td>
<td>2,960,000</td>
</tr>
<tr>
<td>Mar</td>
<td>1,794,000</td>
<td>539,000</td>
<td>2,333,000</td>
</tr>
</tbody>
</table>

- Excludes screenings and breeze.
- Coke produced in Aug. 1927.
- Gross tons, i.e., b. v. c., Hampton Roads.

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

#### Low-Volatile, Eastern

<table>
<thead>
<tr>
<th>Market</th>
<th>Aug 14</th>
<th>Aug 28</th>
<th>Sep 5</th>
<th>Sep 11</th>
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</thead>
<tbody>
<tr>
<td>Franklin, Ill. lump</td>
<td>$4.00</td>
<td>$4.00</td>
<td>$4.00</td>
<td>$4.00</td>
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<tr>
<td>Franklin, Ill. mine run</td>
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<td>$4.00</td>
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</tr>
<tr>
<td>Standard lump</td>
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<tr>
<td>Standard mine run</td>
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<td>West Ky. lump</td>
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<tr>
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#### South and Southwest

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#### Midwest

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<td>$4.00</td>
<td>$4.00</td>
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</tbody>
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### Notes

- Prices shown in heavy type, declines in italics.
- NOTE: spot prices now include New River and Pocahontas.
How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

<table>
<thead>
<tr>
<th>Field</th>
<th>July 1 to 30, 1921</th>
<th>Apr. 1 to 30, 1922</th>
<th>Apr. 3 to 30, 1922</th>
<th>July, 1922</th>
<th>Aug. 26 to 30, 1922</th>
<th>Aug. 26 to 31, 1922</th>
<th>Aug. 26 to 29, 1922</th>
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<tr>
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Railroads Now Most Important Factor In National Coal Situation

With all the advantages of a large surplus of cars, the railroads did not transport coal during the period that the surplus was available at a rate sufficient to transfigure the market. It only slightly in excess of 9,000,000 tons was transported during the week ended Sept. 2, for instance, it is regarded as a good indication that the railroads will not be able to come anywhere near that figure again while the shopmen's strike continues. On the other hand, it is apparent that enough coal can be transported to meet the necessities for immediate consumption, which will mean that careful attention must be given to distribution until the railroads can handle twelve to thirteen million tons a week.

The Attorney General's injunction has been the source of constant coalmen discussion on Capitol Hill since the day of its issuance. As Congress is composed so largely of lawyers, the subject is one in which all members are taking a keen personal interest. Little has been said about it on the floor of either house, largely on the ground that discussion of the subject in Congress prior to action on the request for the injunction might be interpreted as an untoward attempt to influence the judiciary. While it is apparent that the majority of the members in each house, regardless of party, believe the Attorney General's action is entirely justifiable, there are some prominent figures in Congress not particularly friendly to unionism who regard the injunction as snatching at the fiftteenth century. To attempt to restrain American citizens from expressing sympathy for the strikers or from holding peaceable meetings goes too far, they think. Such drastic restraints as are proposed in the injunction would be in a better setting in Russia, they contend. They call attention to the fact that the situation is quite different from that of 1894, when President Cleveland made use of the injunction weapon. At that time there had been a general resort to violence and lawlessness. In the present strike there is genuine reason to believe they say, that 90 per cent of the strikers are entirely innocent of sabotage.

On the other hand it is pointed out that the government has been more than patient since July 1. It has been patient when every day's prolongation of the strike, with its attendant lawlessness, interruption of the mails and interstate commerce, was costing the majority of the people of the United States a stupendous sum, to say nothing of the enormous losses and the menace to the public health. To compare the situation with the situation 1894 was in that of 1894, it is being told, is impossible.
Ships were getting bunkers fairly regularly. Movement of coal to port was about 50 per cent of normal, with railroad equipment improving. The spot market was being subjected to the natural frenzied activity, because of the scarcity of coal in spite of the downward market. All piers showed an activity similar to that of the previous week. Receipts are slowly gaining.

**British Prices Slip with Waning American Demand; Germany Seeks Coal**

British coal is facing the lowering of the tension in the United States. Orders from North America are dwindling, being chiefly from Canadian producers. Prices are slipping downward again. It is estimated that by the end of September, 1,500,000 tons will have been shipped to fill the strike gap and that the movement, in smaller volume, will continue throughout 1922. Germany is also importing coal, but her financial situation is determining closing. Production during the week ended Aug. 28 was 5,428,000 gross tons, according to a cable to Coal Age. This 10,000 tons less than the preceding week's report.

Owing to lowered demand for tonnage, freight from the Tyne to the United States have been reduced and ship-owners are accepting 3s. a ton.

**Hampton Roads Pier Situation**

**Week Ended Sept. 7**

<table>
<thead>
<tr>
<th>Country</th>
<th>Price (in British Pounds)</th>
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<tr>
<td>England</td>
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<tr>
<td>France</td>
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<td>Germany</td>
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<td>Italy</td>
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<td>Italy</td>
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<td>Spain</td>
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<tr>
<td>Portugal</td>
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</table>

Coal Paragraphs from Foreign Lands

**Greece** - Production in the Ruhr district has increased by 1,500,000 metric tons, according to a cable to Coal Age, as compared with 1,500,000 in the preceding week. The price of Cardiff steam coal is unchanged at 42s. 3d. according to a cable to Coal Age.

**France** - Reduction Heavy Mine Stocks

The situation of the coal mines of the Nord and Pas-de-Calais remains compactable, as favorable stocks are being reduced, although still running very high. Almost nothing came out of the offers which were made by French coal mines to American producers.

In July, France and Luxembourg received from Germany on repARATION account the following: France, 365,473 tons of coal, of which 132,957 tons carried by sea, Luxembourg, 4,969 tons. France received 403,550 tons of coke; Luxemburg, 131,471 tons.

The adjusted price of German reparation coke delivered to French blast furnaces by the Sociétés des Cokes de Hautes-Fourneaux has been maintained at 97 fr. at the Franco-German frontier. On the other hand, from Aug. 1 to Oct. 31, French mines of the Nord and Pas-de-Calais have agreed to sell to the Sociétés des Cokes de Hautes-Fourneaux, for pooling and distributing purposes, metallurgical coke at 55 fr. and coking coal at 67 fr., at mines.

**FRENCH IMPORTS IN JUNE AND YEAR TO DATE**

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<td>Belgium</td>
<td>2,488,505</td>
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<tr>
<td>Germany</td>
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<td>Netherlands</td>
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<td>Other countries</td>
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**Coke**

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**Briquettes**

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**Prices Drop at Hampton Roads**

No change was apparent in the situation last week except a slight reduction in prices. The outlook has not improved much from any angle, dealers expecting another price increase soon.
North Atlantic

Will Consumer Seek Cover Or Gamble on Lower Prices?

Buying is spasmodic, due to Waver- ing in policy—Complaints Heard of Car Shortage, Especially on B. & O.

—Few Orders for British Coal.

Many complaints of car shortage are heard. It is reported that conditions are especially bad on the B. & O. The effect of this lost time is not yet reflected in the larger markets, where heavier receipts have softened spot prices. Buying is spasmodic. Consumers appear to be floundering between a desire to get under cover and the temptation to delay purchases in the hope that prices will drop further.

Very few orders for British coals are being placed. Cargoes are arriving daily but the receipts are now mainly on old orders for railroads and public utilities. It is likely that deliveries against these orders will continue throughout the balance of the year.

PHILADELPHIA

Production grows, and better shipments are coming in, although not anywhere near normal yet. The real difficulty is car supply.

Service on the Pennsylvania is good, with a car supply up to 75 per cent. and movement of loaded cars quite prompt. Much the same condition applies to shipments coming off the N. Y. C. and the Western Maryland. There does not seem to be any likelihood, however, of an improved car supply when it is considered that a great number of cars in the bituminous coal trade are fast being withdrawn for anthracite loadings. It is on the B. & O. where the real trouble is.

There is very little active solicitation by houses for orders, as every shipper already has far more orders on the books than he will be able to ship for several weeks.

Prices continue to fluctuate unevenly, with just a slight downward tendency, and while some houses report firmness or even a slight upturn in quotations, it is not believed that another forward movement has as yet developed.

Each day now sees the survival of one or more cargoes of British coal, but it is not likely that any new business of consequence is being closed.

CENTRAL PENNSYLVANIA

Production is steadily increasing. The forces in most of the mines are being recruited to something near normal. Production is now running around 3,000 cars daily, something like 500 cars short of what is considered normal.

There are still some local strikes resulting from on cause or another, while the operation of operators do not, as a rule, have a full complement of men. Production for August was 35,129 cars, as compared with 14,079 in July.

Some operators, whose miners drifted away during the period of the strike, have not been able to get them back again, so that it will be some time before the normal output is reached.

BALTIMORE

An increasing volume of shipments have brought a decline in prices for steam and gas coals at this point. Demand, however, has prevented anything like a rush drop and there is now every indication that the present level is likely to be retained, at least for some weeks.

While there is practically no coal of Pools 1 or 71 now offering, and Pool 9 is also scarce in supply, good coal such as Pool 10 still runs $5.50@5.60. There is now considerable Pool 11 on the market, offering at $4.75@5.50. As the market supply increases there will be a let-up in the rush for gas and industrial coal as the market for gas coals are not changing hands as freely as steam varieties.

The above situation applies, despite the fact that the State survey conducted under the auspices of the Maryland Fuel Distribution Committee showed that a serious shortage of coal exists in nearly every section. It is probable, therefore, that the Maryland committee will be in service by Governor Ritchie for some time and that a representative will be named in each of the twenty-three counties to keep the committee informed so that it can act to secure coal in emergencies.

NEW YORK

There is no lack of coal at the local ports, 1,280 cars being reported on Sept. 8, although most of it is Pool 11 or coal of that quality. In addition there were small free tonnages of both British and Southern coals which were offered at higher quotations than coals regularly offered here.

Buying was spasmodic. There were many inquiries, some of them for contracts for the "balance of the coal year." As a rule the small operators practically ignored the latter, preferring to take chances in the open market. The operators with larger tonnages, however, were reported to have negotiated several contracts, some of which it was said were at figures ranging $4.65@$5.25.

The matter of car supply is already entering into the situation. Most complaints so far heard refer to shipments along the B. & O., while Pennsylvania conditions of the New York Central and the Western Maryland are said to be much better.

British coal is still being purchased by American stove companies in small lots. During the six days ended Sept. 8, twenty vessels carrying 125,909 tons arrived in New York harbor. With production of domestic coals increasing it was reported there were some cancellations of British shipments. Shipping Board officials do not believe any of their charters will be canceled unless by agreement. Toward the end of the week a couple of cargoes of British anthracite were offered to local buyers at $111.

Buyers are of the opinion that quotations will gradually become lower and for that reason are holding off.

UPPER POTOMAC

Upper Potomac mines continue to increase production and is now not far short of 40,000 tons a week, with some of the larger companies contributing heavily to the aggregate output and more men return to work. There are still a good many miners on strike however, insisting upon a recognition of the union. Transportation facilities are ample. In the Georges Creek region idleness still prevails, although there is a report in circulation that ten companies have signed an agreement with the union.

FAIRMONT

Trouble has been experienced by mines in securing enough cars to keep running. Most of the mine owners in northern West Virginia have signed the union agreement, and some of them are already putting out record tonnage. From now on it looks like a question of transportation.

Some steam contracts have been closed at $3 for 3-in. slack and purchasing agents are offering sales agents contracts at $2.50, but the opinion of the best-posted sales managers is that the price for steam coal will be higher and they are inclined to play the market.

One of the operating companies which has yards in Fairmont and other points is out with a new retail price list that is causing some concern as this list cuts the price of some grades, $2 and $3. Prices are well maintained at the mines and are as follows: Kanawha lump and run, 80c.; mine run, $2.50; slack, $3.

SALT LAKE CITY

The announcement of an increase of $1 a ton in freight rates is a break throughout Utah. Individuals and business organizations are lifting up their veils and are trying to find ways to get around the situation. During the days when the increase was merely prophesied, a Salt Lake City newspaper and an operator got into a dispute over a headline, resulting in a cancelled contract, to which the coal was withdrawn. The newspaper column read, "Keep out of the contracting business, whereas the operator said, 'Don't buy coal where you haven't bought.'

Car advantage is almost non-existent in this region, although the I.C.C. has promised to put in for all ports of coal increasing.
Anthracite

Resumption of Mines Hailed.

But Sales Are Not brisk

Consumers Seem Confident Substitute Will Be Available, When Necessary

—British Coal Pressed Into Breach

—Price Announcement by Companies Awaited.

The resumption of mining is welcome news to the household. Dealers are advising their customers to procure enough substitute fuel to last through October at least, as they realize the distribution problem that confronts them. The consumer, however, feels that there will be little difficulty in obtaining a substitute at the last moment, if necessary, and sales are not brisk. Some British fuel is being taken in for this purpose.

Price is still an open question, no announcement having been made by the companies. A few independent quotations are heard.

NEW YORK

Well notified orders sufficient to keep them busy for several months retail dealers are anxious to have the mines resume. Since the announcement that an agreement had been reached and that only approval by the miners' convention was needed to send workers back into the mines, there has been no indication about substituting bituminous coal for anthracite. In many instances the consumers have been advised to "hold off" as sufficient anthracite would be available to keep them at least warm.

Prices have received considerable attention in the past week but so far no announcement has been made from the producing fields. It is not expected, however, that the companies will make any considerable changes in the price list of last spring, but it is possible that with the heavy demand for hard coals the independent operators will be able to get premiums.

Some small lots of washery coking and peat were offered here during the week but retail dealers were not buying at the prices quoted, claiming they could not sell the coal to their regular customers.

A few retail dealers in the outskirts of Greater New York have small tonnages of peat and cokemort on hand which they continue to deliver.

BALTIMORE

Some consuming interests are urging upon the governor the necessity of having his fuel commission name a representative to go to the fields and check up on the Maryland allotments. Governor Ritchie has not indicated whether he considers such a service necessary and it seems doubtful that

a step will be taken, especially as the committee would have no powers to enforce shipments.

Consumers should be advised that they should lay in supplies of bituminous coal, at least for the months of October and November. A number of dealers are now selling English coal which continues to arrive. Some of the dealers continue giving their customers demonstrations of the good burning qualities of this Welsh coal. The price runs $13.50-$14.50, delivered in carloads.

PHILADELPHIA

With close to two weeks taken out of the month there is going to be very much of a scramble for the limited tonnage that will be available, during the balance of September. The consumer demand grows more insistent each day.

There is still a meager quantity of peat available at $11 a ton, delivered, but the yards have no stocks now of this size.

As the early opening of the mines is assured, the matter of price is one of much interest. Of course the consumer has lost sight of this factor in a measure, being overshadowed by his desire to get coal, but the retail man is anxious to know what is going to cost him and what he will have to charge. One of the independent companies is reported as having already announced its prices, effective Sept. 1, as follows: English nut $9.25; peat, $7.50; buckwheat, $5; and rice $4.

There is some indication that the larger companies are intending to ship considerable coal to distant points, particularly the West. As it will take the mines some time to get up capacity production, they are apprehensive that they will have a long wait before receiving fuel in any great quantity here.

River barley is fast losing its market, as the better receipts of soft coal are displacing it. Prices are $1.75-$2.50, the latter figure demanded for fuel almost entirely free of pebbles, and with light sales made.

BOSTON

Dealers realize there is but a few short weeks to the time when fuel will be in urgent demand, and, except in the direction of bituminous coal, they are helpless to give any real relief. Most anxiously are they looking forward to the first shipments of proper sizes. Meanwhile, there are but extremely few stray cargoes of peat that come forward.

Pet is selling for $15 per net ton delivered in Boston at retail. One of the newspapers here inquires why the retail dealer does not give the consumer the benefit of the July 1 reduction of 10 per cent on carload lots. And the volunteer fuel committees on the same day insist that no more than one ton shall be delivered to a consumer.

BUFFALO

The public looks for coal in some quantity soon, though the agreement to resume mining is not fully ratified.

The amount of coal held over is quite large here. The prospect of gas is good, both on account of the increased amount of byproduct, and the natural supply which is expected to be good.

Shippers and distributors are trying to keep consumers reassured by calling attention to the fact that we have had a long period of shortage and there was coal enough. As to what the price will be nobody is able to speak with authority, although one shipping agent ventured the opinion that the reduction in freight, amounting to about 36c. a ton, will be absorbed by the companies. He does not look to any material change in prices.

ANTHRACITE FIELDS

In spite of considerable opposition, John L. Lewis last week secured the ratification of the contract negotiated by the scale committee. It is expected that production will reach a high figure by the end of this week. The men will all be in as soon as the mines, which are being washed out of repair, have been placed in shape for operation.

The companies are estimated to have rush orders for at least 20,000,000 tons. Little coal will be made during the early part of this week, and no more than 1,500,000 tons the week following.

The resumption had an immediate effect on the market for river barley, which had already been showed by the heavier use of bituminous coal.

South

BIRMINGHAM

Although inquiries are somewhat more restricted in scope than it has been, spot demand is still good and in excess of the supply. Priority consumers are getting the first call and the requirements of non-essential industries are not so well taken care of.

Market conditions are becoming more stable with the recent pressure from outside territory and prices seem to be settling around the schedule fixed by the State Fuel Administrator, effective Sept. 1. The allowed mine prices are as follows:

<table>
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<tr>
<th>Mine</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Carbon Hill</td>
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<tr>
<td>Montevallo</td>
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<td>5.00</td>
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Domestic coal under contract f.o.b. mines for September ranges $2.75 for Big Seam to $4 for the rest. Railroad service is very inadequate and much time being lost account of car shortage. Slow movement is keeping the operators in a difficult situation and an excessive period. Production for the week of Aug. 26 was approximately 380,000 net tons.

VIRGINIA

Production is gaining slightly, the increase being most marked in that section of the field which during the period ended Aug. 26 was the most affected. Transportation conditions have been somewhat improved. Producers lost share to be attributed entirely to a car shortage.
Car Shortage Handicaps
All Midwestern Fields

Illinois and Indiana fields started off the past week with a fair car supply, following Sunday and Labor Day, but by the end of the week the lack of power had put the production of those states down below 30 per cent and Kentucky was in the same fix. Demand generally continued light, however, so that the only coal to feel any buoyant price tendency was southern Illinois lump, which climbed about 50c.

There was nothing going on to cause any upset beyond a little flurry in Chicago against the I.C.C. supplemental order giving domestic shipments priority over steam. In the Kentucky fields more attention is being given to Lake trade, since much Western business has been lost to other fields.

ST. LOUIS

An unusual quietness for this period prevails in that domestic trade is slow and steam is not as active as it should be normally. Domestic buyers seem to think that something will happen that will reduce the price though there is a shortage of Carterville that cannot be made up.

Generally speaking, things are easy and quiet. The extremely warm weather has prevented heavy deliveries of domestic and the domestic business in the country is reported to be in a somewhat similar condition. Country steam is quiet, with practically no storage going on. The same condition holds in St. Louis. The past week the dealers raised the price of Carterville from $8.50 to $9.90 per ton with delivery. No anthracite, smokeless or Arkansas coals are coming in and the supply of coke is limited.

CHICAGO

The decided handicap or car shortage in all Illinois and Indiana coal fields has so reduced production that the light demand on this market has been met with a comparatively light supply. The expected pick-up in both domestic and steam has not materialized with any speed although domestic call may have been responsible in part for the hike in quotations on southern Illinois prepared sizes from $5 to $8.90@$8.50 along toward the end of the week. This was about the only change in the circular on any coal coming into this market. The general tendency is slightly upward, however, and coal men are predicting the tendency will be more marked next week when the hot spell has passed.

For several days there has been a dragging influence making itself felt here. A good many odd lots of steam coal have not materialized and unloaded at prices that verged close to the red. Occasionally these deals were made at $3.50@$3.75 for screenings when the market waved around $4.25. The fact that domestic sizes are to have priority in shipments hereafter may end this sort of thing though big buyers are still hoping for a marked drop in all steam sizes.

Practically no coal from states east or south of Indiana is reaching here nowadays. Kentucky is as hard hit as Illinois and Indiana by the transportation difficulty and all Eastern coals are absorbed elsewhere or cannot penetrate the various railroad congestions.

INDIANAPOLIS

The Indiana Coal Committee left the price of coal to the operators’ concealments and quotations range at $4.75 at the mines with the accent on the latter price. The termination of the strike has relieved the fuel situation in the state. Few rail dealers are doing business. Quotations from the dealers show prices to be about $2 a ton higher than last year. A number of dealers have been unable to get coal delivered.

No substantial orders are being placed and operators say when winter comes there will be a mad scramble. At the present time the delivery end of the coal market is the big problem.

The mines in Indiana can produce the coal, but the railroads are falling down miserably in making deliveries. During the past week there has been no change in prices of coal from outside the state.

LOUISVILLE

It is the general belief of the local coal trade that other than some big tonnage movement to the Lakes, there will not be much priority regulation of any kind after a few more days. Some operators are having a little trouble, it is reported, in finding buyers at the market price. Demand for prepared sizes is steadily increasing, but operators would rather load mine run.

With the present price range all the way from $4.75 for screenings to $6.50 for best eastern Kentucky lump, there does not appear to be much prospect that Washington will have very much to say for the time being. Coal is much cheaper than the way to $4 to $5.75 at the mines, not including brokerage. Some reports have been received of $5.50 coal in West Virginia and Kentucky, but $5 is also as high as is being bid for anything here with $6.50 asked, some lump selling at that.

Until eastern Kentucky moves considerably higher the mine run—there is not much prospect of any large production of prepared sizes in the districts that are handling this business. As a whole the general situation is much better. No real shortage of coal is being heard of, no plants are closing down, and movement is generally better, with the market steadier all along the line.

WESTERN KENTUCKY

The present small car supply in western Kentucky—said to be 33 to 40 per cent on L. & N. lines, and about 65 per cent on the Louisville and Illinois Central—is preventing any over-production which would tend to weaken prices. Priority orders are still in effect. This is holding down the amount of coal moving on open shipments. Operators are finding some trouble in moving their output unless they have priority orders.

There is better demand for prepared sizes, but operators are not willing to make much lump coal because they feel that cars are too scarce, and they would much prefer shipping mine run or the higher priced material which is on the night switch or partly loaded.

It is rumored that about 100,000 tons of coal from western Kentucky is in prospect for movement to the Great Lakes. The supply moving from other fields to the Lakes is small.

While western Kentucky mine run has not been plentiful at any price under $4.25, there have been some advance offers. Jobbers have been trying to find lump at $4.75, but supplies are scarce. Quotations are reported as low as $3.50 a ton, and prospects are for lower steam prices.

Some of the operators now need business, and are calling jobbers every evening in order to sell the day’s produce. Jobbers have been not nearly as plentiful in the field as they were, since Chicago dropped out as the dominating influence in the market.

SOUTHERN ILLINOIS

The situation is disappointing to operators and more than likely accounts for the shortage. The average working time is only a little better than three days a week in the Carterville field on account of no cars. The weather is bright and the domestic demand seems heavier than usual. Steam mines are not active. There is nothing unusual going on in the southern end of the state except that the miners are watching closely the investigation of the Herrin massacre at Marion.

Somewhat similar conditions prevail in the Duquoin field, though the miners are getting ready to do so. Prices in the districts range $4.90, $5.00 on domestic sizes and $6.50 to $2.25 on screenings. Mr. Old fool conditions are quiet with good tonnage moving to the Chicago and Northwestern markets.

In the St. Louis field a peculiar situation prevails, but coal is moving as low as $3.25 for domestic 200-lb. bags while others are asking as high as $4.25 for the same size and about $3 for the 90-lb. bag. Last week, 100 cars were open on the cars, but it is understood that lower prices will be made on contract. It is a peculiar market but what the value of coal is,
Eastern Inland

Demand Slackens as Prices Fall and Receipts Mount

Scrambling Buyers of Recent Weeks

New Baby on Stocks—Car Shortage Increasing—Empties Return Slowly—Movement to Lower Lake Ports Gaining.

Larger receipts have softened spot prices. Consumers who recently scrambled for tonnage at any price are now using this supply and are not buying. It is the old story of curtailed demand on a falling market. Car shortage leaves are growing rapidly and there is no doubt that production has about absorbed all the serviceable cars that were idle when the union mines resumed work. A slower return of empties is now noticeable.

Lake buyers are anxious to obtain coal but fail to place orders when the faintest sign of price advance appears. The movement to the lower ports has been aided through priorities and the 1,000,000-ton per week goal is nearing.

COLUMBUS

The Ohio coal trade is in a peculiar condition. While domestic demand is keen there is not as much strength to the steam market as might be expected under the circumstances. Public utilities and all industries are pretty well supplied and general steam users are holding off for lower quotations.

Retailers are selling a fair amount to householders, but as in the case with stockholders, many of the domestic consumers are waiting for lower prices. Retailers are selling Hocking and Pomeroy lump around $3.50-$4.10, while West Virginia grades are somewhat higher. Only a limited amount of cokes and other grades from West Virginia is coming into the market.

Lake shippers are anxious for tonnage but prices are too high and they are holding to class contracts. Offerings at $6-$6.50 have not attracted shippers to any great extent and the Lake is held off to see what happens. Operators are not facing serious contractions are shipping coal and the various Lake docks are handling a fair tonnage.

DETOIT

While extremely hot weather is prevailing from the midwest and south, there is no thought of winter fuel requirements, the condition of unsatisfactory supply is developing a situation that could become a trade trouble for many later in the year.

There is very little steam inquiry. While the amount of free coal is not great, it is possible to find a few cars when demanded. Most of the coal now reaching Detroit, is the product of union mines in Ohio and prices range $6-$8.25 for slack or near run.

With practically no anthracite in retail yards, the outlook for household consumers in Detroit is far from encouraging. Many of the homes are equipped with heating plants unsuited to using bituminous coal. The supply of coke is scarce and retail prices have advanced from $12-$13.50 to $14-$15.50 over approximately three times the pre-war cost.

CLEVELAND

Sharply increased production is being reflected in larger supplies of fuel in this section and consequently lower prices and a much larger active market. Coal is now available in ample quantities at $5.25@$5.75, the average for the past few days being about $5.50.

Buyers who were scrambling to get fuel a few weeks ago at any price are now following a policy of using up their stocks before going into the market again.

While the present price looks good compared with that prevailing recently, it is the old story of curtailed demand upon a falling market. Consumers have not forgotten the $3 level prevailing before the strike. Operators, however, point out that railroad equipment is bad on some lines and distribution may become more and more hampered as the season advances and the strain upon the roads grows heavier.

The Lake movement is being successfully expedited through priorities. Shipments now approach the 1,000,000-ton weekly goal of the Ore & Coal Exchange, however, do not believe that it will be possible to move more than 10,000,000 tons between Sept. 1 and the close of the season. This will give the Northwest about 15,000,000 tons in all.

EASTERN OHIO

Notwithstanding a car supply of only 35 to 40 per cent on the B. & O. and W. & L. E. production during the week ended Sept. 2 was increased 21,000 tons over the preceding week. Total output was 288,000 tons as against a potential capacity of 620,000 tons, or 46 per cent of normal. Only 660,000 tons have been produced out of a potential capacity of 21,120,000 tons for the week.

While there is a ready market for all coal offered for sale at this time, inquiries are not numerous and no anxiety appears on the part of steam users to take cars of coal more than is immediately required. Spot prices have softened somewhat during the week, quotations ranging 25c. @ 40c. lower than those obtainable a week ago.

Receipts at Cleveland during the week ended Sept. 2 registered a decrease of 30 cars under the quantity received during the preceding week. Total arrivals amounted to 784 cars, 451 for industries and 113 for retail yards. The decrease at industrial centers is accounted for by the failure of non-union coals from West Virginia and eastern Kentucky to get through the blockade at Ohio River gateways and also the price structure on the part of buyers, who anticipate that as production is speeded up, prices will be lower.

PITTSBURGH

Although the Pittsburgh Coal Company's wage scale a day after its resignation from the Pittsburgh Coal Producers' Association, the remaining members of the association having then signed, it is understood that the resignation has not heretofore been withdrawn.

Resumption of mining has been fairly rapid. There has been no scarcity of cars, but the loadings thus far are no certain criterion as to the future. It seems certain that each of the cars that have long been idle. The real test of transportation capacity will be furnished in the attempt to bring cars back to their former and subsequent loadings. Already reports are accumulating of large numbers of loaded cars lying near mines.

The first regular business in Pittsburgh district coal was in Yougicoheeny gas, nearly a fortnight ago, the price being $6.50. Now there is an open market in steam and byproduct also, with the trend in both fields downward. Pittsburgh steam mine run is quotable at $4.50@$4.75, and fair grades of gas mine run, $4.75@$5.

Connsville steam is held at $4.50 but for the 300,000-ton annual run a Connsville byproduct is at about $5@$5.25 but there is not much movement as offerings are light.

BUFFALO

The market is not brisk, for the consumer now looks on the supply as sure to be adequate with a possibility of lower prices. Cars are already running down, however, and a shortage always means stiff prices.

At the same time consumers are pretty well supplied and they will not need the needed cars away. They are enjoying a reduction of $2 or more from the strike prices, though the suggested bottom price of $2.50 did not appear.

The prospective return to anthracite mining tends to further ease off the stress, but if it cuts into the car supply, as it likely will, the soft coal supply will be sure to run down. Prices are standing down some, with a fair quotation, mine price, of $6 for Yougicoheeny gas slack, $5.50 for Pittsburgh $6.50 for mine run and $5 for slack, with Allegheny Valley mine run at $5@$6.25.

Vessels are paying $8.50 for 30-inch coal on the board. There is a very small spurt of soft coal from Ohio ports this way, but it will be light till cars are more plentiful. August receipts were only 35,000 tons. For the season the amount is 690,310.

NORTHERN PANHANDLE

With union mines again producing and open-shop mines also running at the usual rate, production is again increased, but in normal proportions as the railroads are not supplying all the empties needed. Much of the output is being secured by the railroads and a large proportion is going to the Lakes.
Lake Vessels Once More
Begin to Deliver Coal

But Demand Keeps Docks Empty—
Prices Are Stiffening—Doubtful Quality
In Blunden or Pooling Plan at Lower Lake Ports.

While the flow of coal by Lake has shown signs of strengthening considerably the demand for coal is so keen that the docks are emptied as fast as vessels dump. The country trade is hungry for fuel and is grudgingly buying it at the prevailing high price rather than take a chance of getting caught short later on. There is little chance of anybody loading up too heavily this year. Altogether the Northwest feels that its loud wail of recent weeks has not won much compassion from the rest of the country but that, now that coal is slowly coming in, there surely will be enough unless the car shortage down in the mining fields shuts off the supply. A good deal of dirt in cargo coal draws condemnation for the Lake pool.

MINNEAPOLIS

While fuel commissioners are working tooth and nail to get an adequate supply of coal on the docks for the coming winter, here they are finding the reception accorded them and their wants rather indifferent. Producers are not much inclined to go out of their way at all to help out the Northwest. Since prices at the mines are higher than the Northwest wants to pay, purchases for this region are not as heavy as they might be. Even the effort to get all-rail coal from Illinois and Indiana is not lively and car shortage interferes with that source of supply also. As the situation stands now coal is on its way up with quotations especially high for immediate delivery.

There is serious consideration of rationing fuel and of reducing consumption by cutting off unnecessary street and window lighting and other places where economy might be practiced to avert a fuel shortage.

MILWAUKEE

The coal strike has been eased to some extent by the arrival of a number of cargoes of soft coal. All sizes of Pocahontas and the popular grades of steam coal are now obtainable in reasonable quantities, while they last, at the prices fixed on the first of the month.

However, this temporary relief does not allay the anxiety regarding future supply, and it is freely admitted that the fuel problem will be the worst that Milwaukee has ever confronted, unless the railroad situation improves soon.

Save for Heavier Receipts
By Water. Market Is Quite

Quotations Erratic on Fuel Bound Inland—Buying Scattered. Consumers Reluctant on Accumulations—Outlook for Shippers Not Rosy,

With the improving condition of the All-rail market, the shippers are using the water in a manner that is not attractive to the market. However, the market is rather quiet as a whole, and this is due to the fact that the receipts are not heavy enough to affect the market.

DULUTH

Receipts for August at Duluth—
Prices and freight were far below the average, according to announcement made by official weighing bureaus here, aggregating but 9,502 tons, of which 9,002 tons were 11.75 and 8,802 soft. August receipts last year aggregated 492,012 tons—25,512 soft and 466,500 hard.

Despite the fact that the Northwest has been in desperate condition for coal, reports show that 5,000 tons were shipped from this port to Lake Michigan ports in the past months. This brings the total of down-shipments for the year to 224,500 tons.

Since the first of the month nine ships have arrived in port and eight more are scheduled to arrive soon. Shipments from the docks for August were 20,373 cars. This seems to indicate that the dealers throughout the territory served are willing to get their own in immediately and that there will be no tie-up on the docks to hinder arrivals.

An increase in price has taken place. Heaver lump is now quoted at $12.25 a ton, while the coal is quoted at $11.50, and screenings at $9.50.

Elkhorn, which is scheduled to arrive this week will be $1 higher than the dock men say. One five-car lot of Illinois coal has been received, at $8.50 at the mine.

New England
Cincinnati Gateway

Strike of Coal Buyers Makes Its Appearance

lake and Hamilton Pashers Missing From Market When Hoover Press Fail to Hold—Heaver Output Handled Without undue Congestion.

A coal buyers strike, sporadic but of definite proportions has made its appearance in the Cincinnati market. Some weeks ago, Lake buyers, in the hope that the government price would hold, attempted to get values down to the Hoover level, less the transportation. Now that the Hoover prices have gone by the boards they are playing another game. As soon as prices take an upturn, the Lake buyers are strangely missing from the market. Coal that was offered at $5.50 was bought while $5.75 asked in other quarters was turned down. Hoosier production has so far been handled by the carriers without any additional congestion. Cars are becoming scarcer, however, and during the past week these losses have been mounting. Prices are stronger, high-volatiles leading the smokeless coals.

HIGH-VOLATILE FIELDS—KANAWHA

Strike troubles prevent the railroads from furnishing enough cars to keep the mines going near to their peak. An entire week is going by at present without a delivery of cars. In the Kanawha district, that is where there has been no union agreement—there are more mines at work. Much of the product has been moving at the Hoover prices since May. Some coal has been sold within the last few days at $5.50.

LOGAN AND THACKER

Logan mines during the week ending Sept. 2 appeared to be harder hit by a shortage of cars than the plants in any other high-volatile field, the supply at times dropping as low as 180 cars a day. Limited operation made it almost impossible to take care of contract customers and to comply with priority instructions for Lake movement.

Kisson-Thacker mines are beginning to recover after a fashion from the effects of a car shortage which materially curtailed production. Of the tonnage, however, only 500 tons daily large volume for Lake points.

NORTHERN KENTUCKY

Owing to large production elsewhere there is not so strong a pressure for fuel in northeastern Kentucky as there was a short time ago. Consequently prices are on a somewhat lower level, the range being $4.50 to $5.00. There is a better demand for gas coal than for other kinds of fuel.

LOW-VOLATILE FIELDS—NEW RIVER AND THE GULF

Although transportation conditions underlying improvement in the New River field, mines are on a limited basis. Car shortage is chiefly responsible for limited production, most of the miners being at work notwithstanding the fact that the mines are operated on an open-shop basis.

Gulf mines have been able to speed up production to some extent owing to an important turn round in the furnishing furnished by the Virginian and the C & O. But car service is still far short of normal. It is now possible to move more coal to Tidewater.

POCAHONTAS AND TUG RIVER

Pocahontas mines are once again finding it possible not only to speed up production but to hang up some new records, at least at intervals, Monday, Aug. 26 being a red-letter day, when 10,000 tons were loaded. The most prominent of them is the move to Western points, to which little Pocahontas fuel has been moving recently, owing to embargos. Although spot prices have reached $8.00 a ton, based on the average is about $4.50, the figure at which the bulk of the coal has been moving in recent months.

In contrast with the Pocahontas field, Tug River has found it possible to increase production in view of improved transportation facilities. The Western gateway was not so congested so that it was possible to move more coal to Western markets and particularly to steel and byproduct plants. With production much increased a labor shortage is beginning to develop again. Even with the larger output there is comparatively little coal available for the open market.

CINCINNATI

Lump coal has gone soaring, $8 being asked in some quarters without the hat of an eye. This because most of the output is now on a straight mine run basis. The result is that the takers of domestic coal are buying only as their absolute needs require, hoping for the turn of the market to lower levels. Still other concerns are taking another course. Instead of going after coal of high grade and efficiency they are taking off-grades that can always be picked up 800. @ 75c, a ton below the market, hoping that in this way they will be able to get action toward a lower level.

One fact is outstanding and that is that the smokeless operators and sales agents, while they moved prices upward with the removal of the Hoover restrictions, they are holding these way below that of the high-volatiles, comparatively.

The movement of two days a week from the Pocahontas fields has been going forward. Car shortage could be avoided if there were a set time for this instead of the coal being taken under the tipples on the days that the railroad personnel decide.

The retail price adjustment made last week still holds. Even though there has been a general advance $11 is still top for Pocahontas lump, with $8.75 for mine run; $8 is top for bituminous lump, with $8.75 @$7.50 for the slack.

COKE

UNIONTOWN

The Connellsville coke region will remain the greatest non-union field in the country but only a portion of the miners who went on strike April 1 will return to work under the present conditions. A great labor turn-over is taking place in this district. Miners who became thoroughly imbued with union principles are leaving the field for those working under the Cleveland agreement and their places are being taken by miners from other fields. Increased production by imported الو万人次 to be found near New Kensington, up by operators by a general increase in the number of evictions. Since the strike became effective a total of 3,500 miners have been broken up and it is declared to be the policy of operators to claim possession of every company house before cold weather arrives.

The coal market for the time being seems to have been stabilized at $4.50 @5. There are an abundance of orders but consumers are disposed to balk at higher prices.

Connellville

Statements that a car shortage has definitely developed are premature but the condition is much the same as if a shortage were actually visible, since the limit of possible production for cars has evidently been reached. It is plain that no material increase in shipments can occur with transportation conditions as they are practically certain to be in the near future. In other words, the strike is not really the dominant factor in the situation.

The strike continues with remarkable perseverance. So far from the posting of the high wage scale, some men have drifted back to work, but the drift has been no greater than formerly. The operators have various reasons for feeling that, but apart from these reasons the ending of the strike on account of transportation conditions, would not materially increase the shipments.

Furnace coke has softened a trifle in the week, being now quotable at $11 @11.50, but the total offerings would probably be insufficient to run a single blast furnace, so prices have been as regards transactions between operators and blast furnaces. The coke offered goes to miscellaneous consumers, in small lots. Foundry coke is off about 50c. @ $12.50@13.

The Courier reports production during the week ended Sept. 2 at 73,810 tons by the furnace owners, and 16,490 tons by the merchant owners, a total of 90,300 tons, an increase of 4,200 tons.

BUFFALO

The situation in the Connellsville district does not appear to be clearing up as fast as was expected. Car shortage would be avoided if there were a set time for this instead of the coal being taken under the tipples on the days that the railroad personnel decide.
News Items
From Field and Trade

ILLINOIS

Coal mines in seven states closed for one day on Aug. 25, out of respect for the memory of Francis S. Peabody who was buried on that day. A five o'clock service that evening.

The Peabody Coal Co., of which Mr. Peabody was chairman of the board, Mr. Peabody died on the Sunday preceding. Pallbearers at the funeral were George F. Geis, Frederick W. Upham, C. D. Caldwell, C. J. Gray, Henry H. Hooper, M. F. Piter, G. W. Gainer, W. D. Reedy.

A contract by which the Southern Grov Coal Corporation, of Chicago, has arranged for twenty-five years from the Willis Coal and Mining Co., of St. Louis, 7,000 surface acres of two- vein coal property in Perry and Randolph Counties, for which negotiations began six months ago, was signed with the end of the coal strike in Illinois. The Chicago company agreed to a mine minimum of 1,500,000 tons in the period of the lease. The property includes two mines, and the lessee contracted to open a new 5,000-ton shaft.

Charging Illinois operators with unnecessarily increasing the prices of coal sold to the public, Freeman Thompson, a union official at the hearings of the recent petion court injunction to prevent operators from charging more for coal than they did last winter, Mr. Thompson argues, therefore, the coast of coal has been raised.

The following September itinerary of the Illinois Miners' Examining Board has been announced: H. M. Battaglini, of Medill, of the Department of Mines and Mining, Champaign, Sept. 5; Harrisburg, Sept. 5; Herrin, Sept. 7; Waukegan, Sept. 13; Frankfort, Sept. 8; Du Quoin, Sept. 9; Stauton, Sept. 11; Dickson City, Sept. 13; Decatur, Sept. 14; Danville, Sept. 15; Springfield, Sept. 18; Peoria, Sept. 17, and La Salle, Sept. 19.

A. J. Hall, of Minneapolis, Minn., has been named district manager of the Peabody Coal Co., for central Illinois, with headquarters in Springfield. He succeeds W. S. White.

E. F. Stiehl, New Baden, Clarence and E. H. Reinhart, Belleville, have purchased the interest of Frank Patterson in the Patterson & Harding Coal Co., operating a mine near St. Louis, and have opened a new field out of Belleville. Eno G. Harding retains his interest in the mine.

The Ellisville Coal Mining Co. has been incorporated with capital of $30,000 by William H. Peck, A. H. Donaldson and W. R. Hawkins.

Harry Weeks, sales manager for the new Mining Service Coal Co., which has operations in Indiana and offices in Chicago, is returning to business after a summer's vacation.

The Springdale Coal Co. of Pana has been incorporated with capital of $25,000 by John H. Jones, L. W. Sherlock, Silas A. Shafter and L. B. Shafter.

INDIANA

An organization meeting of the Seventh Ward Coal Co., was held in Terre Haute recently, at which plans for the operation of a mine owned by the Shirkles and Shafter families were announced. The mine is the only one that the newly-formed company is contemplating taking now. The mine has been opened for about a year and a half. If the new company continues the business and the operators are Clement J. Richards, Frank H. Bickford, S. O. Hoyse and R. W. Ham.

One case set for trial in the September term of the St. Joseph County court in the State against Dave Jones, one of the officials of the Eleventh District, of M. W. W. A., and others, with 50 miners whom the police are defendants are charged with riot. The charges are that the miners struck when they sought to close the strip mines and wagon mines. Sixty of the defendants were arrested and gave bond and the others escaped from the scene of activity.

Two of the oldest coal companies dealing in coal, both wholesale and retail, and building materials in Indianapolis, the Indianapolis Mortar & Fuel Co., and D. B. Meyer & Co., have been consolidated into one company called the Indian- apolis Consolidated Mortar & Fuel Co. Articles of incorporation have been filed with the State. Consolidation creates probably the largest company of its kind in Indiana.

MASSACHUSETTS

The New England Coal Co., of Waltham, has completed a new coal plant and in the future will be able to handle the seven million dollars worth of business which has been opened in the lower section and the Tioga fields.

The Carnegie Steel Co. has awarded the Kewanee Company a contract for a large expansion to the present by-products plant at Clarksburg, already the largest of its kind in the country. It will consist of 364 by-products coke ovens, a benzol motor fuel recovery plant and by-products plant. This will bring the number of ovens the company has in operation to a total of 1,134, with a carbonizing capacity of 2,715 tons of coal per day.

Bituminous coal companies recently incorporated at Harrisburg were: H. K. Coleman, of Philadelphia, capital $25,000; treasurer, James P. O'Leary, Allentown, Pa.; W. L. Arlinghaus, mining, quarrying and selling coal. Incorporators are Mr. Arlinghaus; James Holm, of Jacksonville, Ill.; George H. Meyer, of Pennsylvania; W. S. Fish, mining and quarrying. At Mingo, capital $25,000; Edward T. Kelley, Comfort, and Della Ford have incorporated in this town. This will increase the number of ovens on which they will operate to a total of 24 to 120,000 tons of coal per day.

Again reports come from Pittsburgh of the coal merger, this time with more details than before. The following companies are involved according to one report. John H. Barbee, president of the Carnegie Coal Co., said that the Carnegie Coal Co., 1,500,000 tons Versailles Coal Co., 250,000; Carnegie Coal Co., 250,000; Henderson Coal Co., 250,000; Kies Creek Coal, 250,000; Morceller Creek Coal, 250,000; Mayfield Mining Co., 250,000; Pittsburgh & Eastern Coal, 250,000, including the western Pennsylvania Counties to remain under the management of Mr. Barbee. The new corporation will be called the Pittsburgh & Eastern Coal Co. The new coal companies are held by the new project and will be controlled by Barbee.

Mahaffey Coal Mining Co. of Harrisburg, has 100,000 capital, has been incorporated by J. H. Mahaffey, Paterson, New Jersey. The company is in the mine and all properties and the incorporators are P. W. Mahaffey, P. W. Mahaffey, and Alex. Key Mahaffey.

UTAH

Professor Schaefer of the University of Utah and thees students are at present on a trip up to the mining districts in the State. The students are accompanied by a number of men who are mining engineers and are on the same trip.

The four mines which are being held ready for occupancy near the mines at an approximate cost of about $1,000 to $2,000 each.

David G. Gray, Big Basin Coal Co., of Winchester, Ky., was in Cincinnati recently for a few days, claiming the prize hardluck operator of the eastern Kentucky. When business was at its best and business on the company off for two months.

The Peabody Coal Co., Chicago, has taken over the new western Mining Co., which includes operations of the Tri-State Coal Co., in the Dubois section and the Tioga fields.

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Recent Patents

Traffic News

Association Activities

Northern West Virginia Coal Operators' Association

The car shortage in northern West Virginia has been recognized as a problem early in September and was interfering so materially with the loading of coal at that time that a meeting of the transportation committee of the Association was held at Charleston to devise ways and means to meet the shortage and find a remedy. It was suggested that the Pittsburgh & Lake Erie and the Western Maryland lines be connected by a line from the Fairmont region over the B. & O. and the coal after being loaded be transferred to the Pittsburgh & Lake Erie for the emptying, a sub-committee was appointed to investigate the possibilities of the project with Vice-President C. W. Galloway of the H. & O.

Obituary

O. A. Blackburn, aged sixty, president of the Pittsburgh Coal Operators Association and one of the best known bituminous coal promoters in the country, died recently at his Pittsburgh home after a short illness.

National Exposition of Chemical Industries is holding its eighth national exposition at the Grand Central Palace, New York City, and will be followed by the American Mining Congress, twenty-fifth annual meeting and exhibition of coal mining equipment in the Auditorium of Public Hall, Cleveland, Ohio, Oct. 9-14. Executive officers are: President, Henry F. Sharpless, Hollenden Hotel; H. F. Sharpless, convention manager.

National Exposition of Pottery and Ceramic Engineering is held at the Grand Central Palace, New York City, Dec. 15-18. At the meeting they will be followed by the American Mining Congress, twenty-fifth annual meeting and exhibition of coal mining equipment in the Auditorium of Public Hall, Cleveland, Ohio, Oct. 9-14. Executive officers are: President, H. F. Sharpless, Hollenden Hotel; H. F. Sharpless, convention manager.

American Institute of Mining and Metallurgical Engineers held its fall meeting during the week of Sept. 26 at San Francisco Cal. It is proposed to form a party for a tour to New York on Sept. 28, stopping at various cities on route. Executive officers: F. F. Sharpless, Engineering Societies Building, New York City.

American Gas Association will hold its annual meeting Oct. 23-25 at Atlantic City, N. J., Secretary-Manager Oscar H. Foote, 158 East 15th Street, New York City.
Congress and Price Control

An Act of Congress extending the powers of the Interstate Commerce Commission to permit the granting of priorities in transportation to prevent the purchase or sale of coal "at prices unjustly or unreasonably high" is now or soon will be the law of the land. In so far as it pertains directly to price control this is the extent of the coal-control bill urged by the administration and as framed "on the hill." The Federal Fuel Distributor, an officer created by the act, is empowered to ascertain, among other things, the prices normally charged for coal and the prices correctly charged and whether current prices, "considering the costs of production and distribution, are just and reasonable."

Nothing is said in the act about fixing maximum prices. The inference is that arbitrary limits for prices will not be set by the government. Every time the government has set maximum prices it has been obliged to defend them and the defense has been costly and difficult. It would be more than ordinarily difficult now, for the final disposition of the cases instituted by the government against "profiteers" under the Lever Act have heartened those who would take the top of the market. To define when a seller of coal takes more than a reasonable price and becomes a profiteer is more of a task than to define "socialism." Those, for instance, who took issue with the navy over the price at which its coal was commandeered were able to regain substantial amounts through the courts.

No price can be set for the product of a particular field that is within reason as respects the majority that is not below the cost of a small portion of the production. Should the Federal Fuel Distributor and the Interstate Commerce Commission attempt to say what price should be charged for all the coal from any field, these high-cost producers would, it appears, have a clear case in court to prevent the application of the price. A consideration of the official statements of those who appeared before the House committee when the bill was pending leads one to expect rather that Washington will endeavor to avoid some of the pitfalls previous attempts at price fixing have disclosed and will steer a course designed to put the offending "profiteer" entirely on the defensive. It is obvious that individual instances of "unjustly high and unreasonable" prices may be uncovered if the expected spirit in the market develops, instances with respect to which it may be possible to establish that the price level is opposed to the public interest. The penalty, denial of cars in which to ship further coal, is sufficiently severe to dampen the superlative price ambitions of others when once the offense is defined and the penalty successfully applied.

Seemingly it would be difficult to maintain the position that charging a price, however high, that was mutually satisfactory to both buyer and seller is in violation of the general welfare clause of the Constitution or interferes with interstate commerce, the legal back logs of the legislation. Such disruption to distribution as undoubtedly would follow unfettered selling at "mutually satisfactory" prices could be corrected by the exercise of priorities in cars. If field prices are not fixed under this legislation, we may then expect a multitude of car priorities. From the standpoint of the producer, the transporter and the consumer, priorities are infernal nuisances. They are possible of terror abuse. They interfere with the movement and therefore with the production of coal. The Fuel Administration hung itself high and dry through the initiation of this practice in the early months of its régime and abandoned the method at the first opportunity.

There is a string in this coal-control bill that is new. He who buys coal at "unjustly high and unreasonable prices" is as subject to the penalty of embargo as is the seller to the denial of cars. We may yet be treated to the spectacle of an industrial plant or railroad closed down by order of the government as penalty for tempting the coal operator with too much money for his coal.

In between the producer and consumer there may be the wholesaler or jobber who does not physically handle the coal or the car in which is is loaded and is transported. He cannot be denied cars, for he does not ask for them and he cannot be embargoed if his name is not on the consignment. Heretofore in a strong buyers' market with fixed limits on price the tendency has been to short-circuit the middleman. He may be found useful this time in facilitating the "bootlegging" of coal.

The legislative remedy is unique. It doubtless goes as far in controlling price and distribution as the government considered it has the power to proceed. Its effectiveness will not really be tried until the market is much more active than at present, when the Federal Fuel Distributor and the Interstate Commerce Commission will require for their arduous task all the sympathy and support they can muster.

The "Conspiracy" of March, 1922

"Operators and miners conspired to cause this strike in order to boost prices." How often is this base charge heard in the byways—and even in high places! There is no use denying that today it is given general credence. Many a good man and true is convinced in his own mind that there was a conspiracy against him in March, 1922, and that the battles of Cleveland and Pittsburgh and the skirmishes of Chicago, Terre Haute, Kansas City and other points were fought purely for moral effect upon the American people. It is difficult for even average efficiency in楼市 today to coal quotations from their dealers without becoming more definitely convinced than ever. They cannot see, for instance, the logic of the operators'
argument that the heavy cost of mine accidents should be
borne by coal and being mined, apparently forgetting
that mine maintenance, property depreciation and in-
interest on indebtedness take no entire of strikes and
that, since coal is the operator has to sell, it must
bear the entire cost of its production.

Did operators "conspire" to strike prices upward?
Turn back to March, 1932, the last month of pre-strike
operation. Industry and the demand for coal were at
low ebb. Summer was coming on with its accompanying
stock market for coal. Non-union operations throughout the
country had a producing capacity of 5,000,000 tons a week. Stocks in the hands of con-
sumers were at unprecedentedly high levels. The wild-
erness industrial optimist could not honestly prophesy that
the country would need more than a minimum weekly
volume of coal until fall. There was no sound reason
expect a transportation would be hamstring and the flow of non-union coal choked. Railroad strikes had loomed before—and collapsed. If ever a time was un-
necessary for union labor to quit work, if ever the ex-
erction were ill for a long or successful strike of miners,
that time was the end of March, 1932. How could a
strike at such a time be counted on to boost the price of
coal enough to compensate for the inevitably heavy
expense of labor strife and non-operation?

This is not to deny that operators generally welcomed
the strike of March 31. The non-union producers were
well satisfied to be in undisturbed possession of the
market. The union operators welcomed it mainly be-
cause they hoped that out of the conflict would emerge
a new set of wages and working conditions that would
deflate the cost of coal not only to themselves but to
every coal consumer as well. They were seeking oppor-
tunity to meet the non-union field competition with
lower cost coal. It is true also that operators in certain
sections welcomed it as an opportunity to regain once
more from the union the control of their own business.
It is equally true that many an operator who had been
selling coal below cost said frankly that he didn't care
if his men did strike, for he couldn't go on doing busi-
ness "in the red" forever. But the circumstances and
events of the day were not those of conspiracy to boost
prices.

Then came the summer. Railroad strikes with their
accompanying car and power shortages, the exhaustion
of industrial and railroad fuel supplies and other de-
velopments over which the operators had no control
combined to increase the price of coal. After the re-
sumption of mining the market subsided somewhat but
whereas the average spot price of all coal near the end
of March was $2.02 today it is just above $3. This is
proof enough for the man who charges conspiracy, he
needs no further. The circumstantial evidence appears
heaping. But a fair consideration of the facts of March,
1932, should clear the operators in spite of flagrant atti-
tion by some among them. Coal is high but a "conspiracy" of operators to put it there by strike
is yet to be proved. In view of their inability to stick
together on any program or project, the charge is one
of those of the "interesting if true" variety.

A THIRTEEN STRIKE would put us out—Wall Street Journal.

As NEARLY AS WE CAN figure it, a living wage is pay
sufficient to enable you to strike a couple of months each
year for a living wage.—New York Tribune.

Haulage Accidents

FROM dangers resulting from the weakness of the
mine roof we can never hope to be entirely free.
There always will be a degree of risk in excavations of
this kind. It is true something nearly approaching
absolute safety might be found in measures such as
forepoling, cribbing and square setting, but the cost of
mining then would be prohibitive. Such plans even in
building subways are not found to be universally suc-
cessful in the entire prevention of accidental death.

In mechanical details such as hauling, however, it
would appear possible to make accidents less frequent.
Why do we have so many derailments? Surely a little
testing would reveal a loose wheel in some less signific-
antly more important way than is afforded by the wrecking of a trip. On
well-conducted railroads how rarely do trains leave the track and how seldom do cars pile up in the ditches?
Something surely might be done to reduce such acci-
dents in mines and also to make coupling accidents less
frequent.

These protective measures are engineering problems, but unfortunately our mechanical and electrical en-
engineers are not often consulted in their solution. Our
mine managers, who try to answer them, are mostly
better skilled in coal mining proper than in transporta-
tion problems, and our mine inspectors usually are
men who have not studied engineering and whose up-
bringing has been in manually operated mines with
mule haulage.

The mechanization of the mines involves problems in
safety that only mechanical engineers can solve. We
must look, at least partly, to such men to perform our
inspection work. We may have to employ two kinds of
inspectors if we are going to follow out in our methods
of inspection the lines of development of our mines and
the present practice of the coal companies. At well-
ordered plants there is either a power and mechanical
engineer or one engineer for mechanical and another
for electrical problems. No attempt is made to leave
these difficult subjects to men without such professional
training.

In all inspection little attention is paid to the rolling
stock or any other kind of machinery. The mine ins-
pectors are supposed to supervise such matters, but
they are not trained for that purpose, so they find their
way rapidly to the working faces, of which their pre-
vious experience makes them the more competent
judges.

The great advances in safety have mostly been made
by engineers, and it has been found that being safe
pays, not alone in freedom from accident and compensation
charges but usually in economy also. Two in-
stances may be given: When careless handling of lead
caused many deaths in the lead industry, the engineers
devised ways of keeping the lead out of the air and the
devices used made the cost of handling so much cheaper
that the change could be measured not only in lives but
in profits also. When band saws were bursting and kill-
ing men in sawmills, frequent sharpening was recom-
ended by engineers as a means of reducing the "strain
on the saw.

The result was a reduction in lives lost, fewer men
injured, fewer broken saws and a greater output per
man and per unit of power. A dull saw is an unecono-
nomical unit at best. In a similar way due attention to
the safety of mechanical haulage probably would save
both lives and dollars.
Manner of Operating Electrical Apparatus in the Automatic Substation at Van Lear, Ky.*

Station Is Set in Operation and Shut Down by Action of Time Clock—Detailed Description of Its Self-Acting Regulatory Devices—After a Month of Tuning It Needs No Further Regular Attention

IT IS safe to say that in the mining industry central power, either bought, pooled or made by the coal company itself, has come to stay. The automatic underground substation for 250-volt direct-current operation will year by year supersede the old heavy feeder system, and the 600-volt system with its heavy maintenance cost will go with the feeders. This evolution will be hastened by the greater risk to life of such high voltages and by the legislation which such risks are likely to put on the statute books.

A station of the type suggested is that furnished by the Westinghouse Electric & Manufacturing Co. and installed by the Consolidation Coal Co. in its Millers Creek Division, Van Lear, Ky.

This station was put in operation Jan. 12, 1922. It has now been in operation a little over seven months, and with the exception of the first month of operation, during which time the station was given daily attention by a man who was acquainted with the workings of the switchboard, this attention being required to adjust the different relays for load conditions, only weekly and sometimes semi-weekly inspection of this equipment has been made. The mine foreman, who was a mine electrician for many years, has a key to this station, looks it over once or twice a day and at any time when he happens to pass the door.

The Consolidation Coal Co. has five mines in this division, numbered 151, 152, 153, 154 and 155. The automatic substation is located inside of Mine No. 154, a distance of about 4,400 ft. from the pit mouth. The drift mouth of Mine No. 153 is located on the opposite side of the valley about 1,000 ft. from that of Mine No. 154. A substation, equipped with two 150-kw. motor-generator sets, is located about midway between the two openings. For a number of years both of these mines were supplied with 250-volt direct-current power from this one substation, but the working places in Mine No. 154 advanced so far away from this substation that it soon became necessary to consider some means of bettering the power at this mine.

The problem was solved by installing a 150-kw. motor-generator set inside the mine about 4,400 ft. from the drift mouth and about 5,000 ft. from the outside station. Both stations were then operated in parallel. In order to take care of any emergency that might arise the inside substation was given the entire time of an attendant. Conditions made it impossible to give him any other duties such, for instance, as looking after a pump, so his whole salary had to be charged against this substation. This was a heavy item and made the direct-current power at this station rather costly.

After the station had been in operation for about three years an outside substation located at the entrance to Mine No. 155 became overloaded, so it was necessary to get more power. This substation had only one 150-kw. motor-generator set, which was a duplicate of the one installed in the underground station in Mine No. 154; so it was decided to move the 150-kw. motor-generator set from the underground station in Mine No. 154 into the substation at Mine No. 155, making the capacity of this substation 300 kw.

This move having been decided on, it was necessary to plan for a unit for the underground station in Mine No. 154, and having in mind the high operating cost of the manual substation at this point, it was decided

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![Complete Switchboard for Automatic Control of Synchronous Converted Station](image)
to install one that was automatic, so a 150-kw. synchronously converter with three 55-kva. transformers and a full automatic switchboard were purchased. The equipment complete was received in about seven weeks after placing the order and, as already stated, was put under load Jan. 12, 1922.

This automatic sub-station is run in parallel with the outside manually operated sub-station, the distance between the two sub-stations being about 5,000 ft. The room in which the automatic sub-station is located is about 20 ft. square with a cement floor. The walls and ceilings are of natural rock, which received a heavy coating of cement applied with a cement gun. The current is brought down to the station through a 122-ft. borehole by a three-conductor No. 2 stranded cable. Each conductor is covered with A-in. varnished cambric insulation, and the three conductors are then covered with the same insulating material. This is coated again with a lead-sheet covering % in. thick, a wire armor jute and asphalt finish being laid over all. This makes the outside diameter a little over 2 in. This cable furnishes the transformers with 4,000-volt three-phase current.

The operation of the automatic sub-station is regulated by an eight-day time clock so set that the station will start at 6:15 a.m. and shut down every day at 4 p.m. At any time after the station closes down its operation on the following day can be prevented by pulling the main operating switch 19. As it is not necessary to operate the station on Sunday, a certain pumper has been detailed to pull this switch. In order to arrange for the starting of the station on Monday morning, the pumper puts back the switch at any time after 4 p.m. on Sunday. He also winds up the clock on Sunday evening.

The following is a description of the scheme of operation of this station:

This station is designed to start either by the pressing of a push button or by the operation of a time clock. When either of these devices makes contact, the station starts, comes up to speed, straightens its polarity if necessary, applies full voltage from the transformers, and connects itself to the direct-current load. Although this converter is a commutating-pole unit, the brushes are not raised during the starting period.

The various relays and contactors are so connected and interlocked that they will perform the same opera-

tions as the attendant does in a hand-operated sub-station. Of course, everything must be right electrically before the next step is started. After the unit is on the line delivering energy to the load, protective relays will anticipate every electrical condition and secure it against external or internal damage.

In a manually operated sub-station the operator goes through the following routine in putting the converting unit on the line: (1) He closes the line oil circuit breaker, thus energizing the power transformers; (2) he closes the starting switch, putting low voltage on to the converter rings, the unit coming up to synchronous speed; (3) he watches the direct-current voltmeter as the slip approaches zero and makes the armature slip a pole by reversing the shunt field circuit in case the voltage is "upside down"; (4) he transfers from the starting to the running switch when the direct-current voltmeter reads in the right direction and (5) he closes the carbon circuit breaker and knife switch in the direct-current outgoing line.

By referring to the schematic diagram, Fig. 4, or to the wiring diagram, Fig. 5, it will be seen that the automatic control equipment goes through the same routine as fast as the electrical conditions permit.

As the push button of the time switch makes contact the circuit of the master relay 3-A is completed, and the relay closes. This circuit is from one side of the operating transformer A, through contact 7-A on the polarized motor relay, through resistance R1, through the operating coil of 3-A, through the overspeed device, and through the push button of the time-switch contact to the other side of the operating transformer B.

**MACHINE FOLLOWS MANUAL-CONTROL METHODS**

The master relay 3-A has but a single contact which is in series with relay 3. Hence the latter relay closes as soon as the master relay 3-A makes its contact. This action locks in the master relay 3-A by paralleling the contact 7-A by a contact on relay 3. That relay, through another contact, energizes the A1 bus. Thus circuits are set up so that the starting operation may begin. As stated before, this sequence follows the same lines as with the manual control already described:

(1) The line oil circuit breaker closes. This operating unit consists of the three operating coils 20, 21 and 22. This mechanism is shown in Fig. 3. It consists of the main closing magnet, 20; the latching magnet, 21, and an auxiliary contactor, 22. This contactor closes as soon as the A1 bus is energized. As contactor 22 makes contact, the main-coil circuit of 20 is completed, and the breaker is closed. The latching magnet 21 is energized as the breaker goes in. The breaker is mechanically held in this position as long as 21 is energized. An interlock on the latching contactor opens the coil circuit of contactor 22, which, as that contactor opens, de-energizes the main closing coil, 20. Thus the breaker closes, latches in mechanically and cuts off its own main closing circuit.

(2) The starting switch, 6, closes. This is accomplished through the closing of relay 4. The circuit of this relay is interlocked with both relay 19 and the running switch, 11. Thus starting voltage is applied to the converter rings, and the converter starts and comes up to speed. During this starting period the commutator end of the converter has an alternating voltage of the frequency of the slip across its terminals.

(3) As the slip approaches zero, or the unit pulls into synchronism, a direct-current voltage is established.
on the commutator. The polarized motor-driven relay 7 is connected across the direct-current end as long as the starting switch is closed. This relay has a permanent magnet field, so that its direction of rotation depends on the direction of current through the armature circuit. In case the unit "pulls in upside down," the current through the armature will be in such a direction as to rotate toward and make contact 7-D. The closing of this contact affects that of a multi-contact relay, 9. This action energizes the four-pole double-throw contactor, 10, which reverses the shunt-field connection on the converter.

The shunt field is divided into halves, the two parts being in parallel when the field reversing switch 10 is energized. The converter armature is then forced backward until the midpole position is reached. At this point the direct-current voltage is zero and the multi-contact 10 drops out. The field-reversing contactor is de-energized, and the normal field connection is restored. The converter armature continues through the midpole position and again synchronizes with the correct field-pole rotation.

The right direct-current voltage is now on the commutator and relay 7 runs in the opposite direction to make contact 7-B. This action completes the circuit of transfer relay 12, which, upon closing, opens relay circuit 4 and completes its own holding connection. Thus it is seen that the polarized relay 7 operates to effect the transfer from the starting to the running switches only when the direct-current voltage of the converter as it pulls in step is found to be in the right direction.

(4) Through the opening of the contact of relay 19 in the operating coil circuit of relay 4 that relay is opened, which in turn opens the starting switch 6. An interlock on the starting switch makes contact as that switch opens and completes the circuit of field-control relay 5. This relay closes the running switch 11 and short-circuits a resistance in series with the shunt field of the converter. Full direct-current voltage is then available on the converter terminals.

(5) The converter unit is now ready to be connected to the direct-current line. Field relay 38 is a series relay which picks up as full voltage is applied to the alternating-current rings when running switch 11 closes. The circuit of the service-restoring contactor 12 is now complete. This circuit may be traced from the positive terminal of the machine through a 5-ohm grid resistance, through the operating coil of circuit breaker 12, and then through the contacts of the overload relay 12T, a single-pole single-throw knife switch, master relay 3, field current relay 38 and an interlock on the running switch 11 to the negative side of the machine. An interlock on the direct-current breaker 12 bridges the contact of relay 3, which connects the A and A1 buses.

The converter will now deliver energy to the load until it is shut down by the push button or time switch, or some protective device. The total time re-
required for the foregoing operation of starting the unit and connecting it to the line is approximately 12 seconds.

In case the load on the motor-generator set rises to such a value that it would be advisable to open the direct-current breaker, the overload relay 12T will pick up and open the operating coil circuit of breaker 12. This disconnects the load from the machine. The resistance of the circuit being fed must rise to a point where the breaker may reclose and stay closed. The breaker 12, in opening, completes the circuit of a timing relay, 12B, which makes a contact in the circuit of the restoring relay 12A after a predetermined time.

The restoring relay 12A is calibrated to close its contact only when the resistance of the feeder section has risen to a value that will limit the output of the machine to a safe capacity. When this value is reached relay 12A energizes the reset coil of breaker 12. The breaker, therefore, opens on overload, stays open a definite time before the resistance-measuring circuit is set up and then recloses only when the reason for the overload has disappeared.

The usual procedure in shutting down a manually controlled substation is as follows: (1) Trip the direct-current circuit breaker and open the knife switch. (2) Open alternating-current oil circuit breaker of the incoming line. (3) Open the running switch.

As in starting up, the shutting-down action is practically duplicated by the switching equipment. When, as is most usual at this station, the motor-generator set is shut down by the time switch, the contact in series with relay 3A is opened at a predetermined time. This relay in dropping out opens relay 3.

Although relay 3 opens its contacts between the A and A1 buses, the connection is retained by an interlock on direct-current contactor 12. However, as relay 3 opens, one of its contacts opens the circuit of contactor 12, causing it to drop open. Thus the direct-current coil of the converting unit is disconnected.

(2) The action of disconnecting the direct-current load, just described, opens the bridging contactor 12 between the A and A1 buses and de-energizes the A1 bus. The holding contactor 21 on the oil circuit breaker mechanism is therefore opened, and this, in turn, opens the coil circuit breaker.

(3) The running contactor 11, with its control relays 5 and 19, also drops open as the A1 bus is disconnected from the transformer. It will be observed that relay 5 in opening inserts a resistance in series with the shunt field of the converter, thus causing the voltage to fall rapidly. This makes it possible to get back on the line in three or four seconds in case of a momentary outage.

The protective features also should be described: (1) Lockout relay 30 is used to permanently lock the station out of service until a maintenance man has visited the station, located and remedied the trouble and reset the lockout relay by hand. This relay is operated when something has happened inside the station which makes further operation of the equipment hazardous.

(2) Overload relays of standard induction-motor type are set to operate on short-circuit in the converter, on transformers or in case of flash-over on the direct-current end. When a flash-over occurs the unit is not put in service again until an insulation test has been made to make sure that the armature has not been permanently damaged. The service restoring breaker, as previously described, takes care of legitimate direct current overload. However, one other condition remains to be provided for; this is continued small overloads which would never open the direct-current circuit breaker but would overheat the machine windings if allowed to continue long enough. Thermal relays 29 furnish this protection and simply shut down the unit until it has cooled sufficiently that it may be allowed to start again without injury.

(3) In case a phase opens while the unit is running and the load is of sufficient magnitude to overheat the
converter, the unit is locked out of service by phase balance relay 46. This action may be made selective so that the relay will lock the station out in case of phase failure on the low side of the power transformers and will simply shut the station down in case of phase failure anywhere on the incoming high-tension line. A polyphase low-voltage relay, 18, will then hold the substation out of service until three-phase voltage is again available. Thus this relay prevents the station from starting with single-phase high-tension line current.

(4) A contact-making thermostat is located on each of the main converter bearings. These thermostats are mounted on the pedestals, and the operating tubes are inserted in holes where they touch the outer surface of the babbitt. The heat drop through the babbitt is small, and the unit is locked out of service before any damage is done to the bearing surface. As a rule after a little scraping the overheated bearing may be returned immediately to service.

(5) If the overspeed reaches 15 per cent the standard contact-opening overspeed device permanently opens the coil circuit of the master relay 3A. This device must be reset by hand, and for this reason its operation locks out the apparatus.

(6) Eighty per cent of normal high-tension voltage must be available for starting the station or it will not start. This applies to the converter as well as the various alternating-current relays and contactors. The polyphase low-voltage relay 18 is calibrated so that it closes its contacts at all voltages below 80 per cent of normal and by short-circuiting the coil of master relay 3A prevents the unit from starting.

(7) In the same way the polyphase low-voltage relay 18 shuts the station down in case the high-tension voltage drops below 80 per cent of normal. In case of momentary "high-line" outage, the station would shut down and come back immediately upon restoration of normal voltage. To make sure that there can be no false electrical indications during a rapid restart, a short-circuit is put on the coil of 3A by contacts on the oil circuit breaker 20 and the shunt field series relay 38. This prevents restarting until the voltage of the converter falls to a point where relay 38 will open. All this requires but two seconds, for resistance is inserted in the shunt field circuit when shutting down. This same connection shuts the station down in case the circuit breaker opens for some unusual reason while the unit is operating. While this condition is unlikely with this type of circuit breaker, it is important that such a protection be provided.

(8) A standard reverse-current relay is used to shut down the unit should the current reverse.

(9) If the circuit in the shunt field of the converter be opened the unit will fall "out of step" on small direct-current load. It is important that the direct-current load be disconnected at this time. A contact of shuntfield circuit 38 is, therefore, placed in series with main direct-current breaker 12, which removes all load from the converter as relay 38 opens.

The switchboard of this unit is equipped with the
Graphic Time Study of the Efficiency of
A Shovel Removing Overburden

GRAPHIC records possess an advantage over those of tabular form chiefly in that they show their results almost at a glance. When prepared to show the performance of a coal-stripping shovel they exhibit plainly whether the machine is doing what may be logically expected of it and whether it is attaining its maximum efficiency. A record of this kind is shown in the accompanying illustration.

To make such a record the observer, watch in hand, notes the number of shovel dips made during any given time interval. He is in a position to decide whether any decrease in the speed of operation arises from unusually difficult digging or is the fault of the machine crew; whether delays encountered at any given time are warranted and how and by what means better efficiency can be attained.

This system is especially useful when a stripping operation is first started. At such time the shovel operator is not accustomed to the operation or, as it is said, “has not got his bearings yet.” A little coaching will then help appreciably in effecting better operation and bigger output. It may also be employed advantageously whenever the superintendent notes any falling off in the yardage moved.

It will be noted that the total amount of overburden moved during the day on which the record here shown was made was 1,537 cu.yd. This is far below a normal day’s output. If observations are carried over a number of successive days and the records made are placed side by side a comparison of the results will be easy.

This method of recording shovel operations graphically has been adopted by the Stine Coal Mining Co. in its Shoveltown operations, near Osceola Mills, Pa. The record shown in the accompanying illustration was made at the firm’s strip pit. As previously stated, the results obtained are far below normal and the record is here presented to illustrate the principle involved and not to show a phenomenal movement of overburden.
How Mechanical and Electrical Engineers Can Increase Their Usefulness in the Operation of Mines

Rapid Evolution of Electrical Engineer—Economies Possible Where Unit Cost of Every Operation Is Known—Cost Sheets Help Management to Determine Relative Upkeep of Machines and Efficiency of Repairmen

BY W. C. SHUNK
Big Stone Gap, Va.

O NLY a little more than two decades have elapsed since electricity was first introduced in a crude way for power purposes at collieries. A short time prior thereto the electrical engineer was completely foreign to the personnel of any coal-mining organization. Since then, however, and more especially during the past ten years, he has become an important and essential figure at the mines.

During the early days of the electric mine locomotive and the coal-cutting machine, electricians in charge of the comparatively few electrified collieries were looked upon as being finished and qualified engineers as soon as they had become familiar with the mechanical routine of dismantling and reassembling direct-current motors of the simple series and shunt-wound types. No one expected that they would understand the principles of field and armature winding. All that was required of them was that they always use the utmost care in marking corresponding leads of the connections they opened so as to assure their proper reconnection. The average mine electrician was satisfied to follow such methods not merely for the sake of convenience but because he lacked knowledge of the paths by which current flowed through the windings and was unfamiliar with the characteristics of the mysterious electric motor and so could follow no other plan without injury to the equipment.

ELECTRICAL ENGINEER DOES HIS OWN DEVISING

Meantime a great evolution has taken place. No longer merely an electrician he is now an electrical engineer. Not only has the design of equipment been improved but the average electrical engineer has himself developed so that he now can more successfully cope with the characteristics and peculiarities of the complicated types of motors and other apparatus used today than he could formerly with the simpler equipment of earlier years.

The electrical engineers now employed in the field are better equipped from the standpoint of general knowledge because they keep in closer touch with manufacturers' designing engineers than they have ever done before. Indeed, these men in the field can not only operate the machinery entrusted to their care but are to be credited also with originating many new and highly practical suggestions as to the way in which the design of equipment could be improved.

Many able engineers are now engaged in the power departments of the coal industry, and not a few of the collieries already have in their employment or are developing men of contriving genius who have the ability to devise methods of making their electrical equipment operate more and more efficiently.

The wonderful progress made during the past ten years in coal production has been rendered possible to no small extent by the more or less complete electrification of the old as well as of the more recently developed collieries. This has created a demand for the electrical wizard and his protégé, the practical repairman.

MEN IN CHARGE COME FROM THREE SOURCES

The vast expansion in the use of electrical energy along with the proportionate growth of the coal industry has demanded the attention and services of some of the most eminent engineers and technical men of our country. Many of the men emerging from our colleges and universities also have been absorbed directly by the operating end of the electrical and mechanical professions. In addition to these, a surprisingly large number of electrically inclined young men, particularly those of the so-called "self-made" type, have passed through the school of practical experience, having begun in an elementary way and having risen to positions where they can perform services of real worth to their respective companies.

Notwithstanding the dependable and efficient equipment and apparatus introduced during the recent past, which requires only a little attention and repair, there is still a marked demand for competent electrical and mechanical engineers in the coal-mining industry. This arises from an increase in mine electrification, the displacement of other means of transmitting power, the installation of new plants and the substitution of equipment of modern design for that now old and obsolete.

DIFFICULTIES BOTH MECHANICAL AND ELECTRICAL

Men now connected with mining operations are confronted with many perplexing problems of which their predecessors of a half decade ago never dreamed. They range in importance from the simple application of the incandescent lamp to the complex undertaking of erecting and maintaining a modern central-power station. Between these extremes at the average colliery lie problems of many degrees of complexity, for all types of equipment have their peculiar difficulties.

As most electrical problems to be met are in a degree mechanical, and vice versa, it is becoming the prevalent custom of mine managements to select one man to supervise the whole power department, seeking to find some one person adept in both mechanical and electrical engineering. Exceptions to this rule can be found only in the plants of the largest mining companies and then only when the nature of operations lends itself to the major use of mechanical equipment. Generally speaking, therefore, men who would be successful should...
be skilled in both the professions and should study and
gain experience in both branches of the industry.

It might be well here to call to the especial attention of
electricians who shoulder the responsibility of super-
vising the installation and maintenance of mining
machinery that a lack of knowledge and interest in
machinery of the reciprocating type is becoming rather
prevalent. Since the advent of the central power sta-
tion and the consequent abandonment of the small iso-
lated power plant and its reciprocating steam engine
the electrical engineer at mines has concentrated his
efforts upon equipment of the rotary type, the me-
chanical characteristics of which lend themselves to
extremely simple alignment. A machine of the rotary
or some other equally simple type that may be sub-
stituted for the reciprocating air compressor, upon
which the majority of collieries must still depend for
rock and other hard drilling, as well as for many other
uses, must yet be developed.

On account of their flexible application portable
machines of this kind are more or less adapted to all
kinds of hard drilling below ground. Recently the
general tendency of compressor design has been toward
smaller units moving at higher speeds. In order to
secure efficient and certain operation these machines
require somewhat more intelligent attention than the
mechanical parts of the electric motor. Consequently
they, along with pneumatic drills and tools, should not
be overlooked as part of the mine equipment to be
carefully studied.

MUST FURNISH POWER BUT DO IT WITH ECONOMY

There are many ways in which the personnel of
the power department can and should religiously co-operate
with the mine-operating department. Of course, this
co-operation should be reciprocal, but here only the
duty of the electrical engineer in this matter will be
referred to. Favorable earning capacity depends, of
course, on costs; and, naturally, the economic aim of all
reputable industry is to yield the greatest production.
in a safe and sane manner, at the least possible expense
per unit of production, whatever that unit may be. In
coal mining that unit is the ton of coal, and accordingly
the significant object is the cost per ton.

As machinery is now one of the most important
factors in connection with the industry, naturally it should
become one of the foremost items in cost consideration.
There are many avenues in the power department
through which a share of the cost per ton may leak
incompletely. These avenues treated individually
may seem unimportant and in some cases almost
negligible. When viewed in the aggregate, however,
because of the many machine applications involved, the
loss is often found to express itself in surprisingly large
figures. These so-called "leaks" really are too numerous
for mention here, so their character will be only outlined
and reference made merely to some of their more im-
portant phases.

One of the important ways in which the power de-
partment can co-operate with the operating officials is
by preparing authentic data regarding the costs of
power consumed in the various mining operations and
transmitting this information to all branches of the
organization concerned. Those responsible for produc-
tion cost from the management down generally are
eager to know all the items in detail entering into the
total expense.

Unfortunately, however, at most collieries the power
department has prepared itself only to submit the total
cost per ton for electrical energy consumed and the
number of kilowatt-hours used per ton of coal produced.
This information the mine clerk can readily prepare
by a simple calculation when the three quantities in-
volved are known. In most cases the mine-operating
personnel is wholly dependent on those in the power
department for the more intimate power-cost information.
Lacking this co-operation from the power engineer the
management in many instances trails along in the dark,
inunformed as to the power cost per ton for each item
of the highly diversified consumption at mines.

FINDING COST OF EACH INDIVIDUAL OPERATION

Much benefit would be derived from a knowledge of
the exact cost and the kilowatt-hours per ton consumed
in ventilation, haulage, machine cutting, tipple opera-
tion and other classified items peculiar to the general
average operating conditions. It would be constructive,
as well as interesting, also for those in the operating
department to know the power cost of operating each
machine in the mines over a given period of time—in
an hour or a shift, for instance.

If an employee is engaged to perform a certain class
of work, his wage is rated at so much per hour, day
or month, the exact rate being supposedly commensurate
with his occupation, training and ability. The fore-
man, superintendent and their superiors know how
much the services of that employee are costing per day.
Why not know, approximately at least, how much it
costs per day to operate any particular piece of equip-
ment?

It is needless to say that this would be interesting
indeed to everyone, even to the foreman and to the men
who are operating the equipment. Such information
would give the foreman an opportunity to compare
the power costs of one with any other operation and
enlighten the machine runner as to the real value of the
energy he is consuming. It would, of course, involve
much detail to follow out such a practice at close and
regular intervals, but it is certainly worth while to
obtain such information for distribution from time
to time as convenience permits.

Those in charge of the upkeep of equipment can be
of much assistance to the organization in general by
lending their efforts toward obtaining reliable facts and
figures regarding maintenance cost. Maintenance is a
phase of operation where large sums of money may
be expended without attaining the desired results. This
economy depends somewhat, however, upon the knowl-
edge and experience of the repairman and his capacity
for making good, workmanlike repairs, as well as on
the degree of care taken of the machine by the at-
tendant or runner during operation. Proper super-
vision along these lines is as important as efficient
operation, and the costs when obtained will give an
indication of the places where closer supervision is
needed.

Considering the variable conditions under which simi-
lar machines work, one may readily ascertain by check-
ing up maintenance cost whether equipment is being
properly operated or is working under normal or
abnormal conditions, also whether it is being properly
repaired. Furthermore, by it may be determined
whether one machine is or is not better adapted than
another for any particular service.

Some inference indeed may be drawn from close
observation, but a real and convincing conclusion can-
not be obtained without a careful analysis of the cost figures. The operating force is as dependent as the power department on the facts and information obtained regarding this matter. Consequently intelligent cooperation from those familiar with power technique is of much importance to the mine manager.

In yet another and an effective way can the mechanical and electrical engineers convince other branches of the organization at their mines of the real importance of the work they are able to do. In every industry the ability to train men to the highest point of efficiency is one of the most desirable of accomplishments. This desired end may be obtained by establishing conferences at which men who have to handle electrical equipment may receive training and instruction and gain inspiration and help from the experience and ideas of other men. All this can be accomplished by group meetings and conferences.

In nearly all organizations periodical executive conferences, superintendents' and foremen's meetings are now held for a similar purpose. Their value is beyond question. Why do not the power departments at our mines hold like meetings? Perhaps they already do so in some organizations, but in all probability not as frequently as is desirable.

Another invaluable trait in a power engineer is the development of foresight. He should carefully inspect his apparatus so as to forestall interruptions of service and injury to equipment. It is well known that continuous operation is reflected directly in cost. Expensive delays have occurred, and many more will be encountered, until at last foresight and inspection have been much more highly developed than they now are. Those who anticipate trouble and are prepared for it in advance—or who, better still, prevent its coming—never fail of recognition by others. They are recognized as exceptional men.

The suggestion is therefore advanced that occasional careful surveys and analyses be made of all equipment, and that decisions be made beforehand, as far as possible, as to the procedure to be followed when a breakdown occurs, assuming that such an event is inevitable and cannot be averted. Each machine should be considered separately. To keep the wheels turning with the least delay to operation oftentimes requires real genius, and this qualification cannot be overlooked.

Careful planning and forethought will correct many seemingly "impossible situations."

The importance of systematized, emphasized and relentlessly practiced inspection is nowhere more evident than in relation to the uninterrupted service of electrical and mechanical equipment. The intricate mechanism and complexity of such devices need only be considered to substantiate this statement to the full. Never was the old adage "a stitch in time" applied more appropriately than to the upkeep of machinery and its appurtenances.

The continuous operation of machines cannot be relied upon without proper anticipation, inspection and repair, for without these the process of deterioration will soon progress to the point of不可逆转的 stoppage. Substantial reduction in upkeep expense can be effected by adhering to the rule requiring frequent detailed inspections followed by necessary minor repairs, thereby forestalling subsequent costly replacements and probable delays.

Nothing is more desirable in the make-up of a real supervising engineer, electrician or mechanic than an ability to observe and to carry out rigid inspections. His capability along these lines should be carefully weighed and regarded as more important than many other desirable traits.

Along with the few suggestions here presented it should not be out of place to mention the importance of keeping in touch with other branches of the coal industry. Is there any fundamental reason why the progressive mechanical or electrical engineer should not share along with the mining engineer the honor of rising to executive positions in the organization? Surely there is not, providing he takes advantage of opportunities to inform himself as far as possible of the workings of the other branches of the organization and shows a keen interest therein while not losing sight of his own particular job. The successful executive is careful not to overlook men possessed of these qualities, and it would be unwise in any electrical engineer not to acquaint himself with all kinds of data and experience likely to fit him for such preferment.

Making Comminuted Smokeless Powder Available for Blasting Purposes

At the close of the late war the government had on hand vast quantities of various military explosives—far in excess of the current needs of both army and navy. As such explosives differ somewhat from those ordinarily used in industry and deteriorate to some slight extent with age, it was deemed advisable to seek means whereby they might be adapted to use in the arts and sciences of peace. Experiments have shown that detonating explosives such as TNT and picric acid may be used in various kinds of industrial blasting with entire success.

Among the explosives left over when the armistice was signed, however, was a large amount of smokeless powder. As ordinarily manufactured, this possessed qualities ill adapted to commercial blasting. It has been found, however, that granular introcellulosics which function as propellants by progressive burning, when ground to a fine powder may be detonated by a dynamite primer. This renders this explosive, known as comminuted smokeless powder, available for use in blasting.

The Bureau of Mines has performed extensive experiments upon this explosive, the results of which are set forth in a report (Serial No. 2.386) entitled "Comminuted Smokeless Powder as a Blasting Agent," by C. E. Monroe and Spencer F. Howell. Some of the conclusions drawn are as follows: This explosive can be used to advantage for certain kinds of blasting in the open, such as for stumps, boulders and ditches, but it should not be used where inflammable dust or gas is present or in close places such as tunnels or mines unless the ventilation is exceptionally good and ample time is allowed for the gases to be swept out by the air current circulating. It is fired most effectively by means of an electric detonator. In loading, an adequate quantity of stemming should be used.

A SANITARY SURVEY of the mining town of Torrington, Utah, has been completed by Dr. A. L. Mury, superintend of the Bureau of Mines. A compilation of mortality and morbidity statistics of Park City, Utah, has been made by Dr. Mury. Conferences have been held with the state health authorities regarding sanitary surveys of the Price River and Spring Canyon districts in Carbon County in that state.
Safety Congress Debates Hazards to Health and Limb—II

Radio Fails Underground—Metal Vs. Fabric Ventilating Tubes—Rounded and Gabled Locomotive Covers—Dangers of Broken Trip—Gongs, Lights and Tags—Cable Substitutions and Their Dangers—Hoisting Hazards

INTERESTING indeed was the discussion at the meeting of the mining section of the National Safety Council, Aug. 30, on the effect of air which is grievously lacking in oxygen as may result either from breathing fresh air unsupplied by or supplied with oxygen or fed from an oxygen supply in which nitrogen is present in some quantity. The subject opened with the reading of an article by D. J. Parker on "Mine Rescue Training and Operations," at the conclusion of which R. F. Tillson, the chairman, remarked that too great a restriction had been placed on traveling up ladders in mine-rescue work.

He could not altogether sponsor such a statement as that made by Mr. Parker: "Travel by crew up or down vertical ladders in irreparable atmospheres should be absolutely forbidden, unless it is definitely known that there is a probability of saving life by such action."

Mr. Tillson felt that mine-rescue apparatus showed such reliability as to make such precautions unnecessary. He thought that mine-rescue work still had coal-mining conditions mainly in view and that rules were made to suit conditions where vertical raises were the exception rather than the rule. His experience in apparatus had made him feel quite ready to undertake to climb ladders and crawl long distances. He realized, however, that laboring under the terrific strain of rescue work the nerves were likely to be unstrung and the action of the heart and breathing organs different from that under normal conditions. D. J. Parker said that men were only too prone to climb ladders and take risks. At the rescue work at the Argonaut mine fire in California, and still going on, he had been informed, a crew of men climbed up ladders for a distance of 200 to 300 ft. to open a door. They achieved their purpose and returned without injury, but had one fallen none of them would have come back alive.

FORGOT TO TURN HIS OXYGEN VALVE AND DIED

R. H. Seep asked D. J. Parker, the author of the paper, whether it was well to use more than one type of rescue apparatus. Commenting on Mr. Parker's reply that uniformity resulted in certainty that each man would understand the type of apparatus apportioned to him for use in any emergency and that uniformity also made a considerable saving in the number of spare parts required, J. S. Boardman related an incident of a man who went to the rescue station of the Anaconda Copper Mining Co. for an apparatus for the shift boss and one for himself.

Though shift bosses alone are allowed to requisition for these he was permitted to take them. It was arranged that he and the shift boss were to plaster up certain cracks in a brattice built to seal up a mine fire. The shift boss and man met in the mine and the boss, having other duties to perform, went away, saying he would be back in half an hour. The man could meantime mix the batch of plastering material. He did so, but as at the end of that time the shift boss had not arrived, he put on the apparatus himself and went in and nearly completed plastering up the brattice.

For some reason—probably because trembling of his limbs convinced him that all was not right—he came out, got within about 6 ft. of the fresh air and fell dead. The nose clip was still on his nose. He was in fact practically in fresh air. Had he taken off the nose clip he would have had a fighting chance for life. It was found that he had failed to turn on the oxygen and had been working in the same air which was in the bag when he started in. The action of his breathing had, however, converted the oxygen into carbon dioxide, which the regenerators had in turn absorbed. Consequently the air had been largely depleted of oxygen. The air near the brattice contained 13 per cent of that gas and had he divested himself of the nose clip or the whole apparatus he could have continued to breathe and even to work in the atmosphere surrounding him.

Dr. R. R. Sayers said that with carbon dioxide absent there is no irritation of the respiratory centers in the brain, for the absence of oxygen causes no such stimulation. For this reason the lack of oxygen is not noticed until after a while, when the victim begins to tremble. He added that no pain is experienced from a deficiency of oxygen if it comes slowly. D. J. Parker remarked that such a deficiency will cause the victim to fall suddenly.

LOW OXYGEN PRODUCES NO REACTION BUT DEATH

Dr. Sayers said that during the war the British found that whereas only 2 per cent of their flyers were shot down, as many as 8 per cent fell with their planes. This was ascribed to men attempting to fly when not in normal condition. The men would not reveal their unfitness to the commanding officer because such a declaration of momentary unfitness might have been construed as cowardice. It was finally ordered that every man submit to inspection before every flight. In rescue work no man should be allowed to participate unless he has been examined and found to be in normal health.

J. S. Boardman said that the automatic valve of certain apparatus did not begin to feed until the oxygen percentage fell to 16 and the automatic valve of other apparatus delayed action until the percentage fell to 13.

D. J. Parker remarked that with automatic apparatus the relief valve should be opened every 20 minutes so as to clean the machine of excess nitrogen. Dr. Boorier asked whether that was necessary only with the automatic feed and Mr. Parker replied that working hard with a fixed feed it was well also to open the relief valve by hand. With ordinary work the fixed feed is so excessive that the relief valve opens itself. With pure oxygen the relief valve would be needed only in case of excessive pressure, but with oxygen made by the liquid-air process and not electrolytically quite

*This trembling is not usually regarded as significant by the raw rescue-apparatus man and he may delay action till too late.
a percentage of nitrogen might be present—perhaps as much as 4 per cent—and then with the removal of oxygen by the combined action of the human organism and the regenerator the quantity of nitrogen in the air being breathed might be dangerously or at least injuriously excessive.

J. S. Boardman sided with Mr. Parker in regard to the climbing of ladders. In rescue work men rarely have to scale ladders, for before being overcome the men in the workings have usually been able to get down to the roadways and are all to be found there. In the North Butte disaster not a single one of the victims was found in his working place. It is rarely that anything is gained by leaving the levels. Nevertheless the Anaconda Copper Mining Co. is leaving room so that the apparatus men fully equipped can travel up ladderways without danger of colliding with the timbers, and moreover in fighting mines the crews have at times ventured to climb 100 ft. in their apparatus.

D. E. A. Charlton's paper on "The Use of Telephones in Mines" was then presented by R. H. Seip. Joseph W. Reed said that his company, the Consolidation Coal Co., had been experimenting with qualified success on the so-called "wireless telephone," which, though it does not operate with a wire specially strung for that purpose, depends on a single metallic feeder which is either a pipe line or a rail, the ground serving for the return of the circuit. This system is practically identical with the Reineke system, described in Coal Age, Jan. 31, 1914.

D. J. Parker took exception to Mr. Charlton's statement that the telephone should be kept under lock and key. He knew a case where the men in a rescue party found a telephone that they had managed to reach of much assistance in their work, and he felt that men shut in the mine by a disaster would hardly regard a locked telephone as a safety provision. C. L. Colburn said that the U. S. Bureau of Mines and the Westinghouse Electric & Manufacturing Co. were collaborating in an attempt to use radio-telegraphy underground.

**Radio Waves Intercepted by 50 Ft. of Cover**

They had endeavored from a point in a coal mine to listen in on the KDKA sending station. Where the cover was less than 50 ft. they could hear satisfactorily, but beyond that the volume decreased rapidly. The ground appears to absorb the waves, and this made the sending to points at great depth quite problematical. Perhaps it might be different where the radio communication was made with the underground workings of a metal mine. The metallic minerals might assist in conducting the waves. Experiments were still being made and it was found that the equipment which gave best results on the surface proved less effective underground. A 20-watt sending current was used.

Mr. Colburn then described his safety visits in the past year, those of the present year and those which he planned during the rest of the year, illustrating his itineraries with a chart. He stated that some criticism had been leveled at his short stops at any one station, but this activity was unavoidable in view of the large area to be traversed and it could hardly be corrected until two or three were engaged in making the rounds instead of one. Mr. Colburn described his duties as those of a consulting safety engineer. He furnishes information on safety practices only at the request of the managers at the mines visited. Not only does Mr. Colburn visit the mines, however; he also contributes two pages monthly to the proceedings of the National Safety News.

After the election of officers for the ensuing year, with which the third session opened on Aug. 31, E. G. Ludlam, of E. I. duPont de Nemours & Co., delivered an address on "Portable Ventilating Equipment for Mines." He said that a flexible tube is being made that will give as little resistance to air as metal tubing. It was, of course, unsuited to suction ventilation, but it had the advantage over metal tubing that it did not leak, which metal tubing invariably does after extensive use under the conditions to which it is subjected in mines. It furthermore was resistant to acid, which metal tubes, such as were used, were not. Mr. Rowe, of the American Blower Co., who had made many experiments, said that a coefficient of 0.302 could be obtained for the use in the equation \( p = \frac{ke^2}{a} \) where \( v \) = velocity in feet per second.

Lucien Eaton, superintendent of the Ishpeming District Mines of the Cleveland-Cliffs Iron Co., was not present. His paper on "Underground Transport" was read by William Conibear.

**Locomotives Should Ring Gong Before Start**

In a discussion on the use of gongs on locomotives Mr. Tillson said that such bells had been connected with the axle of the locomotive so that any movement would actuate the clapper of the gong. Some believed that locomotives in motion made noise enough to warn anyone and that the men soon became accustomed to the sound of the gong and failed to be warned by it. Some gongs were actuated electrically, but such bells did not operate when the locomotive was coating. All such gongs sounded only when the locomotive was moving, whereas they were most needed perhaps when locomotive engineers were preparing to start, as at switches.

Mr. Eaton's paper was followed by those of H. L. Reese, electrical engineer of the Susquehanna Collieries Co., and J. S. Boardman, safety engineer of the Anaconda Copper Mining Co. These were discussed concurrently. Mr. Boardman said that in view of the use of chutes, which made the trolley wire especially dangerous, his company had begun to install storage-battery locomotives. They had now fifty such units. The first thirty had curved covers, which were furnished so as to make it impossible to use the top of the locomotive as a tray for tool steel. The new units are gable-covered for the same reason. He believed that, owing to the damage from trolley wires, storage-battery locomotives should be used wherever they can be installed with economy.

B. F. Tillson said that a man had recently been killed at his plant when riding on the electric locomotive. It had been the custom to allow two men besides the motorman to use this means of transportation. The men who dumped the cars into the skip had also to fill the cars at the chutes. To this they had to travel with the locomotive, and he wondered why the designers of locomotives never made them long enough to accommodate more than the motorman. Since then he had provided on each trip a sort of caboose for these two men.

J. W. Reed wondered what could be done with such a caboose under normal operating conditions with the locomotive pulling the trip, as the caboose could not fail to be in the way. The manufacturers were always ready to make any needed changes if they could be embodied without detriment to the equipment. Any ins-
COAL AGE

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Denny, of the U. S. Bureau of Mines, read a paper written by himself in collaboration with G. M. Gillette, general manager of the Maryland Division of the Consolidation Coal Co., Frostburg, Md., on "Methods for Maintaining Safety Interest at Mines." Mr. Tillson declared that bonus systems for safety work were good if they were so arranged that an unfortunate occurrence early in the year would not destroy a foreman's chances of earning a bonus throughout the rest of the year, for if it did it would remove his interest in safety. Bonuses should be given for monthly, semi-annual and annual merit so as to give the man who had a bad record one month a chance in the following month to receive some reward for his safety activity.

FOR ATTENTION. PUT BUT ONE BULLETIN ON A BOARD

R. T. Somers, supervisor of bulletins of the National Safety Council, spoke on "Bulletin Boards," urging that bulletins be posted on a proper board and not posted on the sides of cars or barrels or even the walls of a shed. The psychological effect of giving the bulletin an honored place was not to be neglected. Bulletins should be posted one at a time and not more than one should be exhibited at any one time. They might be varied with photographs, especially such as are of local interest. Such bulletins might or might not convey a safety message. Some might have merely a gossipy interest to those for whom the board is intended.

J. S. Boardman condemmed bulletins which instilled fear and someone remarked that if posted they would tend to make men fear to work at the plant even though its dangers were far less than those at plants which displayed no such bulletins. Another questioned bulletins which condemned tomsawd as they were likely to promote imitation rather than abdication from the practices portrayed. One advocated that bulletins be posted when the men were gathered around, as the action advertised the bulletins. It was recommended also that the night watchman be designated to post bulletins under the instructions of the safety engineer. When left to the foreman the work was likely to be neglected. Mr. Colburn stated that one company employed a schoolboy to post bulletins in the evening.

Rudolf Kundlich, assistant to the chief mechanical engineer of the U. S. Bureau of Mines, then read an article on "Hoisting Equipment at Mines"; Graham Bright, general engineer, Westinghouse Electric & Manufacturing Co., one on "European Hoisting Practice," and E. O. Kentor, civil engineer, of Dayton, Ohio, an article on "Wire-Rope Connections."

DANGER WHERE LOW-STRENGTH IS SUPPLIED

Mr. Kentor's remarks emphasized the importance of standardizing wire rope. His attitude to the subject was that of a civil engineer who had seen the ill effects of lack of uniformity in the cables used on contractors' equipment. Possibly it is true that contractors buy cable from jobbers without much inquiry as to the type of cable supplied or needed and that jobbers are likely not to know plow-steel cables from crucible-steel or the latter from iron cable.

Consequently accidents occur, but around the mines cable is bought mostly from the manufacturer, who has a likable failing for demanding specifications or details as to the kind of service required. No mistake is likely to be made by the purchaser after receipt of the cable, for he probably does not have more than one cable of the required length and diameter; so he can make no unsuitable substitution. Errors, of course, might be made with ropes purchased for crane hoists and general purposes but not with main-hoist equipment.

There is, however, some call for a little better understanding as to rope clips. The foreman may use too few clips and may fail to make them tight enough to hold the rope. However, as Mr. Tillson remarked, for hoisting purposes the clip is so far inferior to the speltered cap that clamps should be discarded. Care should be taken to use spelter and not babbitt or lead, and the wire should not be bunched but spread. The spelter takes such a hold on the rope that there is some justification for the statement that the spelter alloys with the steel. Mr. Tillson said, however, that some foremen preferred clamps because their condition could be noted and because the strain is not likely to be localized as it is when the speltered cap is used.

Someone advocated that not only should overwind devices be provided against raising men above the landing at which they left the cage but also for the decelerating of the hoist so that it could not arrive at the landing for the men at a speed that might tend to carry the cage beyond the landing.

Mr. Reese said that indications of the landing at which keps were out were furnished to the engineer because he was likely to forget to which level he was required to lower the cage. Mr. Tillson said that it would not be impossible to so interlock keps with the mechanism of the hoist as to prevent letting the cage fall on the keps with undesirable violence. He did not know of any instance in which this interlocking had been provided.

F. C. Carstephen, of the American Steel & Wire Co., read a paper on "Aerial Tramways." At the close of his paper the meeting adjourned.
Coal Reserves in Washington County Are Second Largest in Pennsylvania

By John F. Reese

WASHINGTON COUNTY has the second largest reserve of coal within the State of Pennsylvania. Five beds are considered of economic value, and the quantity of coal in the ground has been calculated for each of these beds. In order of present importance as shipping coals, these are the Pittsburgh, Redstone, Waynesburg, Washington and Freeport.

Extensive mining and prospecting in the Pittsburgh bed and its outcrop throughout the county have furnished many measurements of its thickness, thus making possible a reliable computation of quantity. For some localities, particularly the old abandoned workings along the Monongahela River and large areas in the northwestern part of the county, no maps or other data are available from which to determine the size of the areas already mined out.

The Redstone bed is developed locally in three townships within the county—namely, Union, Carroll and Fallowfield. Measurements on the outcrop and in mine workings furnish the only data available for computing the quantity. It has been assumed that the bed is continuous within these townships and an average thickness of 3 ft. has been used in the calculations. This coal is mined on a small scale for shipment and for local use.

The extensive outcrop of the Waynesburg bed throughout the county has furnished many measurements of its thickness, thus making possible a fairly reliable computation of quantity. This bed is broken by many partings, is extremely variable in its section, and in many localities is under shallow cover. For these reasons it cannot be considered as a good reserve for future commercial use, and in computing the quantity of coal only a small percentage of the bed has been figured as workable. The coal is mined for local use only.

Measurements on the outcrop of the Washington coal bed have been obtained in sufficient number to make a fairly reliable computation of tonnage. Like the Waynesburg coal, this bed is broken by many partings, is variable in section, and in places lies under shallow cover. It is extremely dirty and in many places is represented by carbonaceous shale. For these reasons in computing the quantity of coal only a small percentage has been considered recoverable. The Washington coal is mined for local use only and cannot be considered as a good source of future supply.

Records of drillholes along the Monongahela River furnish the only reliable data on the thickness of the Freeport bed. Churn-drill records show coal at its horizon throughout the southeastern and central parts of the county. It is assumed that this coal underlies the entire county. A thickness of 42 in. has been assumed in the townships along the Monongahela River.

The county has been divided into several northeast-southwest belts and an arbitrary thickness for the Freeport coal assigned in each zone. The assigned thickness was regularly decreased westward to a minimum of 24 in. in the northwestern part of the county. The quantity recoverable has been estimated as 50 per cent of the whole, from which has been deducted 15 per cent for loss in mining.

Because of the irregularity and many partings of the Redstone, Waynesburg and Washington coals, it is believed that the Freeport bed will yield a larger output than any of the others when the Pittsburgh bed had been exhausted and necessity demands the development of deep-lying deposits.

Other coals are mined for local use, but as they come from small beds and little is known of their extent and thickness, they are not included in the computation of reserves.

The result of computing the coal reserves in Washington County based on the latest maps, engineering data, and methods is shown in the following table:

<table>
<thead>
<tr>
<th>Bed</th>
<th>Original Deposit</th>
<th>Mined Out</th>
<th>Recoverable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pittsburgh</td>
<td>5,091,110,000</td>
<td>556,463,000</td>
<td>3,516,640,000</td>
</tr>
<tr>
<td>Redstone</td>
<td>1,210,540,000</td>
<td>500,000</td>
<td>360,000</td>
</tr>
<tr>
<td>Waynesburg</td>
<td>2,914,084,000</td>
<td>700,000</td>
<td>645,380,000</td>
</tr>
<tr>
<td>Washington</td>
<td>972,315,000</td>
<td>300,000</td>
<td>232,548,000</td>
</tr>
<tr>
<td>Freeport</td>
<td>2,386,244,000</td>
<td>600,000</td>
<td>1,604,000</td>
</tr>
</tbody>
</table>

* The total area of Washington County is 884.6 square miles.

Detailed tables of the coal reserves in each township have been prepared and will appear in printed form in a report now being written on the bituminous-coal fields of the state. They can be consulted in the office of the Topographic and Geological Survey, or figures for a single township will be sent on request.

Shows Possibilities of Distillation of Pennsylvania Bituminous Coal

In Bulletin No. 9 of the Bureau of Topographic and Geological Survey of Pennsylvania, George H. Ashley, state geologist, treats the subject of the "Future Use of Raw Coal." In this paper, mimeograph copy of which may be obtained upon request, Mr. Ashley shows some of the possibilities of distilling the bituminous-coal output of Pennsylvania.

After reviewing briefly the shell and ordinary byproduct process of distillation the author takes up the various low-temperature coking processes that have been developed into commercial propositions. These include chiefly the Coalite process in England and the Charcoal process in this country. While these two yield a residual fuel differing widely in appearance and physical characteristics, the byproducts, both in quality and volume, are closely similar. The solid fuels produced also are far more efficient as heat producers than are the coals from which they are made.

In the latter part of the paper Mr. Ashley goes into the possibilities of coking by the low-temperature process the bituminous output of Pennsylvania. It would appear that it would be well within the range of possibility to produce 400,000,000 gallons of water fuel, 1,260,000,000 gallons of diesel and lubricating oil; also 1,050,000 tons of sulphates of ammonia and about 105,000,000 tons of residual solid fuel, which because of its smokelessness and efficiency in burning is more valuable than an equal weight of raw coal.
Testing a Safety Lamp Before Entering The Mine

Every Lamp Should Be Tested Before It Is Taken Into the Mine

Blowing Hard Against the Lamp: A Good Test—Tighten the Lamp Only After It Has Become Heated—Custom in France

WITH much pleasure I read the several letters that appeared in Coal Age, Aug. 17, p. 247, regarding the practical testing of a safety lamp to ascertain that it is in safe condition to be carried into the mine. This is no important matter that I feel has not been given the attention it should receive in this country.

In addition to carefully inspecting every part of the lamp when it is assembled every lamp should be put to a practical test. In the old country, we have apparatus for that purpose. There, the lamp is subjected to horizontal and vertical air currents by the use of compressed air. Besides this, each miner tests his own lamp by blowing against it. He also examines the lens by skewering the bonnet that protects the lamp.

Many of the modern lamps are not made with a bonnet that can be removed without unblocking the lamp. For that reason, it is important that the gauze should be carefully examined before the lamp is locked. This, of course, must be done in the lamphouse when the lamp is assembled.

Blowing Against the Lamp Is a Good Practical Test

One writer seeks to regard it as not being a good test to blow against the lamp. It is his belief that there is no danger of cracking the glass in a lamp having good expansion rings. When properly made and adjusted in the right position in the lamp, these rings should take up any expansion due to the heating of the glass.

Back in 1896, when working in a mine in France, it was my duty to serve several entries with fresh safety lamps. The lamps had no relievers, in those days, and were easily extinguished when tilted only a little. It was nothing uncommon to have sixty lamps brought to the lamphouse in a single day to be relighted.

There have been many changes since that time, but there is far less care taken in the right use of lamps, today. Then every miner was made responsible for his lamp if it was found defective on being returned to the lamphouse. For that reason, if a miner thought his lamp was unsafe he had the right to refuse to take the lamp and ask for another.

Precautions Taken in French Mines to Insure Safety

In this connection, a brief summary of the practice at the Carvin No. 2 mine (Pas-de-Calais) will be of interest. In that mine 500 miners were employed. On going to the lamphouse in the morning each miner would find his lamp completely taken apart, glass, bonnet, small and big gauzes, standard bowl, etc. The miner would assemble his lamp, and, after satisfying himself that it was safe, He would then take it to the testing man, who must pass on the lamp before it is taken into the mine. This practice would, of course, not do, at the present time, in large operations; but it shows the care that was then taken to see that the lamps were safe.

A flame safety lamp is a dangerous thing at the best; and when carried into the mine by an inexperienced person, or is carelessly handled by a miner at his work, it is doubly dangerous. Sufficient attention has not been given, in this country, to instruct miners and foremen in how to use the safety lamp.

Miners Gassy in Southern Illinois

In a mine in southern Illinois, some time since, I noted a firefellow, at a lively gait, with a lighted carbide lamp in his cap and a lighted safety lamp swinging at his side. I mention this only to draw attention to the fact that a man who falls into the habit of swinging his safety lamp will be apt to do this sometime when he is traveling in a gas charged atmosphere. The swinging of a lamp exposes it to a velocity greater than what is safe and should be avoided at all times.

Peru, Ill. GASTON F. LIBEZ.

Other Letters

PERMIT me to add a few words to what has already been said in the interesting letters on the practical testing of safety lamps before taking the same into the mine. I fully agree with my friend, Joseph Cain, whose letter in Coal Age, July 13, p. 60, started this discussion.

With Mr. Cain, I believe there is no more practical test that can be readily applied by every miner, to test his safety lamp before going into the mine, than to blow hard against the lamp, both at the base of the gauze and below the globe. In my opinion it is a most effective way of telling whether the lamp is really safe.

To my knowledge, this method has been practiced for many years in the British Isles and I believe the same test is used by a large number of miners, in the majority of our coal fields, today. My observation is that it has always given satisfaction.

A CAUTIOUS MINING INSPECTOR

Not so very long ago, a mine inspector, in the bituminous fields of Pennsylvania, was making an inspection of a mine, with the foreman in attendance. After descending to the shaft bottom, the inspector examined the foreman's lamp and found it to be improperly assembled. By blowing at the bottom of the globe, the lamp was readily extinguished.

Leaving the lamp at the bottom of the shaft, the inspector proceeded to make his inspection of the mine, accompanied by the foreman, who had procured another lamp. In their rounds, they found one entry that contained several hundred cubic feet of gas accumulated at its face.

It is easy to imagine what might have happened at that time had not the inspector taken the precaution of inspecting the foreman's lamp and blowing against it. It is probable that not only the two men would have been killed or badly burned, but other fatalities might have resulted.

In one of the letters, in this discussion, the belief is expressed that a lamp can be readily extinguished by blowing hard against the lamp. My experience is that if the lamp is properly assembled it cannot be put out by blowing anywhere around the globe or the gauze of the lamp.
Let me say, also, that the carbon dioxide exhaled from the lungs, in blowing, would have no effect to extinguish the lamp flame. Although the proportion of carbon dioxide exhaled in the breath is 2.6 per cent, at rest; and, I believe the Wolf lamp is extinguished in an atmosphere containing 3 per cent of carbon dioxide, it must be remembered that the exhaled air blown against the lamp will be rapidly diluted before reaching the flame. Neither of these statements appeal to me as correct.

Dante, Va. J. A. Holmes, Jr.

REFERRING to the instance narrated by Joseph Cain, in his letter Coal Age, July 13, p. 60, there is only one conclusion at which a person of any experience in the use of safety lamps can arrive. Either these three firebosses were very careless in putting their lamps together, or they did not know how to assemble them.

Whenever view is taken of the situation, a fair judgment must pronounce these men as clearly incompetent to hold the responsible positions for which they were chosen. It is not stated specifically, in any way, with respect to the lamps failed; but I assume that they were all alike defective by reason of not being tightened up sufficiently.

Practice of an Old Fireboss

My last experience of this nature was with a Wolf lamp. The lamp was equipped with an expansion ring and I also used a rubber or asbestos washer on each end of the glass, where the cylinder came in contact with the metal frame of the lamp.

On arriving at the mine in the morning, it was my custom to light my lamp and tighten it up only partially. This lamp was done, so as to proceed to change my clothes and by that time my lamp would be hot and ready to be tightened up securely. I would continue to screw up the lamp, while blowing against the glass cylinder, until the flame seemed to flicker.

One mine at which I was employed was worked exclusively with safety lamps, and the practice there was to treat all lamps in the same manner that I have just described. I never heard of a glass cylinder being broken by expansion.


In regard to testing safety lamps to ascertain that they are safe, before taking them into the mine, in British Columbia the law calls for all oil safety lamps to be submitted periodically to a test in a gaseous mixture. The results of this test determine whether or not the lamp is in a safe condition to be taken underground.

In a proceeding to follow: Each miner receives his lamp at the lamp cabin where it has been assembled by men appointed for that work. At the mine entrance, each lamp is again examined by the fireboss, as the man enters the mine for work.

Just here is where I claim the blowing test has its value. I regret to see that some contributors, in this discussion, speak lightly of the test by blowing against the lamp. Besides blowing on the lamp, the fireboss examines to see that it is properly assembled and no parts missing.

Blowing Test Must Be Properly Made To Be Effective

When the blowing test is properly applied it shows, by the flickering of the flame, that the parts are loosely fitted together or that some part is missing, or a washer is broken or damaged. If any one of these defects is revealed the test shows that the main principle on which all safety lamps are constructed is violated. In other words, no air must reach the flame, except through the proper channels and gauze-protected openings.

As far as the extinction of an oil-burning lamp by reason of the carbon dioxide in the exhaled breath blown against the lamp is concerned, Dr. Haldane has shown that the extinction of an oil-burning lamp by reason of the presence of carbon dioxide requires about 14 per cent of that gas; whereas the presence of carbon dioxide in the exhaled breath varies from 2.6 to 6.6 per cent, according to whether the person is at rest or is undergoing violent exercise.

From these facts it is easy to see that the slight amount of carbon dioxide in the breath would have no effect to extinguish the flame and would in no way affect the result of the test. It may be of interest to state here that, within the past year or two, the advent of the electric cap lamp has almost entirely eliminated oil-burning safety lamps, in this province, except for the purpose of testing for gas.

George Murray.

Nanaimo, B. C., Canada.

Improved Longwall Panel System

Method of side approach to longwall face—Plan reduces cost of development if properly applied—Criticism of proposed plan.

REFFERING to the interesting article of M. L. O'Neale, Coal Age, May 25, p. 877, in which he has proposed a new modified longwall panel system of mining, permit me to offer a few comments on the method he has outlined only too briefly.

If I understand correctly, the plan has many features that commend it to careful consideration. As Mr. O'Neale has stated, it can be modified in various ways to suit different conditions. The description he has given applies particularly to a fairly level seam of coal underlying a slight cover.

In my opinion, the method has certain features that cannot be excelled. It is certainly an improvement on the ordinary longwall advancing method, which requires the building of extensive backwalls to maintain the roadways leading to the working faces.

Agam, the whole plan promises an increased production of coal from a given territory, together with a much desired concentration of the working faces, a practically complete extraction of the coal and the utilization of improved mechanical equipment.

In all of these respects, the proposed method possesses distinct advantages over the room-and-pillar system of mining and either the longwall advancing or the retreating systems. As I regard it, the chief feature that distinguishes this method from other longwall panel systems is the driving of face headings that enable a side approach to the working face, without entailing the expense of driving separate pairs of headings.

Save Cost of Development by Driving Face Headings Single

I may be wrong, but it seems to me that the sketch presented in Mr. O'Neale's article, page 877, does not properly illustrate the method he describes. In attempting to show both the longwall-advancing face and the drawing back of the face-heading pillars in one sketch, it appears as though the development required the driving of the face headings three abreast.

In this respect, let me say that, to my mind, the cost of development can be much decreased by driving only single headings, one on each side of the longwall face, keeping them in advance of that face, say 80 ft., or the distance between crosstabs. I believe this is the plan intended by the description given, as it would afford good ventilation of the working face, at a minimum cost for yardage in entry driving.

In the accompanying figure I have attempted to show this feature of the

REVISED PLAN OF LONGWALL PANEL plan, as I understand it. Of course, it is understood that the face-heading pillars can be withdrawn before the panels on either side have been abandoned. Allow me to offer one other criticism of the plan, having reference to the distance apart of driving the butt headings; or, in other words, the length to which the face headings are driven before driving back the pillars.

In the previous sketch, the distance between the butt headings was given as 1,200 ft. Assuming face cost considerations, I cannot understand why the face headings should not be extended to a distance of 800 yards, or more, before turning another pair of butt headings.

The face headings are supported by good pillars on either side of the roof.
Inquiries
Of General Interest

**Coal Age**

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and there is no particular weight thrown on these figures, rough as
they may seem, since the estimated
rise of the coal in the past runs
perfectly consistent.

If I am not mis-

the proposed method can be
improved in respect to producing coal at a minimum cost for
development.

Finally, may I say, that this method has now before it, the present, progress.
progressive strike, there would not be, nor
will there be, a desire to lay aside the expenses of mining required to put the mines in
good shape again for work. I only wish that Mr. O'Shaunessy was present and given us an ap-
proximate estimate of what it would cost to open a mine as an affair capable of producing say 5,000 tons of
coal a day. I believe such an estimate would show some interesting figures in favor of the plan.

Linton, Ind. W. H. LEXINGTON.

Reply to Criticism of a Recent Canadian Report

Chemical analysis of air samples given by Freer's report—Vesfion of gas generated, per ton of coal mined, estimated.

**My** attention has been called to a criticism of a previous report, contained in the Annual Report of the British Columbia Mines Department.

The criticism appeared in Coal Age, July 18, p. 60, and calls for some comment.

The criticism is signed "Mining Engineer;" its references are rather scarce terms, an alleged variance on the part of Freer in arriving at the report. It is claimed that he neglects an explosive gas found in a mine that is rated as generating 4000 cu.ft. of gas, per ton of coal mined.

Our critic does not state the page of the report from which he gleaned his conclusions, however, it is probably he has not read Freer's report, appearing in pages 227-231 of the Annual Report of the Inspector of Mines for British Columbia, for the year 1921.

On this page is given the chemical analysis of air samples taken in the various coal mines, located in the east coast district. He has not read all the data contained in the table mentioned, he would have found the answer to his question as to what is a fair percentage of gas that may be expected to be found in the return airway of such a mine.

Now, considering the percentage of gas contained in the return air of a mine, it is absolutely necessary to have the quantity of atmospheric air passing into the mine also the quantity of gas generated. These data are fully given in the table to which I have referred.

The chemical analysis of sample 247, taken in the main return of No. 3 East Mine, North, Aug. 23, 1921, is given as follows: Carbon dioxide, 14.1 per cent; oxygen, 20.5 per cent; methane, 1.08 per cent; nitric, 7.37 per cent.

The quantity of air circulated in this mine is given as 100,800 cu.ft. per min.; intensity 100 per cent; methane generated, 1,085 cu.ft. per min., or 1,569,600 cu.ft. in twenty-four hours. The output of this mine is given as 350 tons of coal, per day, from which it is estimated that the volume of methane generated is 3,500,000 = 4,480 cu.ft. per ton of coal mined.

These quantities, let me say, were obtained by the compilation of all the samples taken during the year. In the course of inspection, explosive gas was found ten times, generally located in cavities in the roof (see p. G335 of the report). The mine employed 98 men and 8 hores were working in the twenty-four hours.

Tests were made daily, in the return of every split, with the Burrell gas detector, and the results were entered in the fireboss's book kept for that purpose. The percentage of methane shown in the return air (1.09 per cent) would only give a small cap on the Wolf lamp. This percentage is far below what is considered, by the Coal Mines Regulation Act of British Columbia, as necess-

in view of these facts, there appears to be little need of the "rigid investigation by some higher official in the district," as thought by this correspondent.

HARRY E. MIAROL, Member of Board of Examiners.
Department of Mines.
British Columbia.

**Inquiries Of General Interest**

**Coal Age**

Vol. 22, No. 12

**Horserpower of Engine: Specific Gravity of Gas**

**Estimating the Horserpower of an Engine—Data Required: Diameter of Cylinder, Mean Effective Cylinder Pressure, Piston Speed—Specific Gravity of a Gas Its Relative Weight Referred to Air as a Standard**

KINDLY explain, through the columns of Coal Age, two questions that are not clear to me and which, in my present situation, I have not the means to study, at hand. They are: 1. How is the power of a steam engine estimated? 2. What is meant by the specific gravity of gas, and how is it measured?

--- W. Va.

The horsepower of an engine is an expression of the work it is capable of performing in a given time. The unit of work is the foot-pound, or the work performed when a pound is raised through a vertical distance of one foot; or a pound pressure exerted through a distance of a foot. The accepted horsepower is the power capable of performing 33,000 units of work in one minute: or 550 ft.-lb. per hour.

In the steam engine, the total steam pressure acting to drive the engine is the mean effective steam pressure in the cylinder multiplied by the sectional area of the cylinder. The distance traveled by this pressure is exerted in a single minute, is the piston speed (ft. per min.) of the engine.

Therefore, to find the horsepower of the engine, multiply the total steam pressure (lb.), in the cylinder, by the piston speed (ft. per min.), and the product will be the foot-pounds per minute, or the work performed in that time by the engine. Finally, dividing this item by 33,000, gives the horse-

power of the engine.

Calling the mean effective steam pressure in the cylinder (lb. per sq.in.); p; the sectional area of the cylinder (sq.in.), a; length of stroke (ft.), l; number of strokes per minute, n; the indicated horsepower of the engine (H) is expressed by the formula

$$H = \frac{\text{plan}}{33,000}$$

In this formula, pa is the total average pressure of the steam in the cylinder, in pounds, and ln is the piston speed of the engine, expressed in feet per minute.

**Specific Gravity of Gases**

Specific gravity is another expression for the relative weight of a substance, referred to an accepted standard, taken as unity. The standard for gas is air, at the same temperature and pressure as the gas. The specific gravity of a gas, therefore, expresses the relative weight of the gas as compared to the same volume of air, at the same temperature and pressure.

For example, the specific gravity of carbon dioxide is 1.529. This is another way of saying that carbon dioxide is 1.529 times as heavy as the same volume of air, at the same temperature and pressure. Again, the specific gravity of methane or marsh gas is 0.559, which shows that this gas is 0.559 times as heavy as the same volume of air, at the same temperature and pressure.

It is clear that when the specific gravity of a gas is greater than one, the gas is heavier than air; and when it is less than one, the gas is lighter than air. In practice, the specific gravity of gases is determined in the laboratory by careful measurements of equal volumes of the gases, at equal temperatures and pressures.
**Examination Questions Answered**

**Miscellaneous Examination Questions**

(Answered by Request)

**Question**: How much work expressed in horsepower is done in raising 400 tons of coal up an incline 3,000 ft. long, having an inclination of 1 in 3, when the friction of the cars adds 40 per cent to the load?

**Answer**: For a rise of 1 ft. for every 3 ft. measured on the incline, the total rise or vertical height through which the load is lifted in ascending this incline is 3,000 ÷ 3 = 1,000 ft.

Adding 40 per cent for friction, the gross load hauled is 400 × 1.40 = 560 tons.

The work performed in a single hoist is, therefore, 560 × 1,000 = 1,120,000,000 ft.-lb.

It is not possible to express this work as horsepower, without knowing the time in which it was performed. For example, 100 hp. would perform this work in 1,120,000,000 ÷ (100 × 33,000) = 340 min.

which would represent an 8-hr. day, less 40 min.

**Question**: A shaft, 900 ft. deep, is passing 200,000 ft. of air per minute, under a water gage of 2 in. What is the horsepower producing the circulation; and what is the width of the furnace if the bars are 5 ft. in length?

**Answer**: The horsepower on the air, in this case, is $H = \frac{(200,000 \times 2 \times 5.2)}{33,000} = 63$ hp.

The area of grate (A), in square feet, for a depth of shaft (D), in feet, and horsepower (H) on the air, is estimated by the formula:

$$A = \frac{34H}{34 \times 63} = \frac{V}{900} = 71.4, \text{ say } 70 \text{ sq. ft.}$$

Therefore, if the grate bars are 5 ft. long, the width of the furnace is $70 ÷ 5 = 14$ ft.

**Question**: An airway is 5 ft. wide at the top, 8 ft. wide at the bottom and 6 ft. high; if the average speed of air is 250 what is the quantity of air passing?

**Answer**: The sectional area of this airway is $\frac{1}{2} (5 + 8) \times 6 = 39$ sq. ft. Then, assuming the given reading represents an average velocity for the entire section of the airway, the quantity of air passing is 250 × 39 = 9,750 c.u.f. per minute.

**Question**: If you suddenly found yourself in an explosive mixture of gas, state briefly what you would do.

**Answer**: Keep cool; make no quick movement, but promptly and slowly lower the lamp, at the same time muttering it as well as you can beneath your coat, while withdrawing as carefully and quietly as possible from the place. Any quick movement would only disturb the gas at the roof and cause it to descend, thereby increasing the danger of the lad passing flammable and igniting the gas surrounded by coal gas. A fire boss, under these conditions, requires great presence of mind to enable him to act intelligently and safely.

**Question**: Do you believe in systematic timbering? Who is the better judge of the need of timbering, the boss or the miner? How often should the roof be examined?

**Answer**: Under uniform roof conditions, requiring the setting of posts to support the top, the safest plan is to adopt such a systematic form of timbering as is best suited to the conditions. Where the conditions are not uniform, the style of timbering employed must be determined by the best judgment and experience of the miner and the officials in charge.

Many experienced miners are good judges as to what timbering is needed in their places. However, such is the miner's desire to make a good day's run that he often does not think the roof above him is not unsafe for a time. On the other hand, the foreman or safety inspector, feeling his responsibility for the safety of the men will generally make the best judge as to the need of timbering in a place. The roof in a working place should be examined frequently during working hours and every precaution taken to avoid even the possibility of accident.

**Question**: How much air will be required to dilute 500 c.u.f. of marsh gas to a 4 per cent mixture?

**Answer**: In this case, 500 being 4 per cent of the mixture, the total volume of gas and air is $500 ÷ 0.04 = 12,500$ c.u.f. The volume of air required is therefore $12,500 - 500 = 12,000$ c.u.f.

**Question**: What precautions should you take to avoid accidents on a gangway along which men are obliged to travel and on which cars and mules or cars and motors are passing frequently?

**Answer**: Where men are obliged to travel on haulage roads there should be provided a good clear space on one side of the road to enable men to pass the cars in safety. There should also be provided refuge holes, at regular short intervals, on one side of the road, and these should be kept free from all obstruction and whitewashed so that they can be easily found in the dark. In addition, all locomotives should be tripped, if possible, with headlights and guards, or other means of warning to herald their approach. The speed of hauling cars and trips should be limited to a reason-

able amount, say not to exceed six miles per hour.

**Question**: What are the dangers pertaining to a broken power wire or a poorly insulated wire, in a coal mine?

**Answer**: A broken power wire may, by contact with pipes or rails or other wires in that vicinity, cause a short circuiting of the current and the dangerous charging of such pipes, rails or wires. Anyone coming in contact with a pipe or wire so charged would receive a shock that might prove fatal. A poorly insulated wire presents the danger of accidental contact with the wire, together with loss of voltage, by reason of the short-circuiting of the current at that point.

**Question**: How would you determine whether a hoisting rope is unsafe and what portion of the rope would you consider the weakest part, or the part most liable to give out first?

**Answer**: Every hoisting rope should be carefully examined at the beginning of each shift to detect any possible broken wires or other points of weakness. This is done by allowing the rope to pass through a bunch of waste held in the hand, while the engineer hoists the cage slowly. A close examination must be made of all ropes, sockets and fastenings on the drum. That portion of the rope within a few feet of the cage coupling is weakest and most liable to give out first, owing to its being subjected to the most severe usage and bending.

**Question**: State how you would commence to remove a large body of flooded water in the mine and what precautions you would take. State what danger there would be in doing the work.

**Answer**: Without knowing the particular conditions, it can only be stated, in a general way, that no attempt must be made to disturb or remove the gas from its lodgment, until all the men have been withdrawn from that section and the mine area cleared. There is no danger to the men if the mine is cleared of the gas. This being done, the work of removing the gas must start from the back end of the section. The circulation must be increased as much as practicable and praticable and be permitted to reach the air in such a manner that it will sweep the gas from its lodgments. Lights other than safety lamps and approved type must be permitted, and each lamp must first be carefully examined and tested before being taken into the mine. The breathing must be extended gradually, keeping a careful watch on the progress, and the men must be instructed in the use of a lamp or making ready to use the lamp with a lamp or other substitute. In the meantime the work must be continued, until all the gas has been removed from the section. Each working face must then be examined and reported safe before the men are permitted to return to work.
Anthracite Produced in 1921, by Regions

<table>
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<th>Region</th>
<th>Local Sales</th>
<th>Total Production</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Quantity</td>
<td>Value</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>93,121,329</td>
<td>$1,122,714</td>
</tr>
<tr>
<td>Ohio</td>
<td>1,118,762</td>
<td>$1,118,762</td>
</tr>
<tr>
<td>West Virginia</td>
<td>2,560,000</td>
<td>$32,774,775</td>
</tr>
<tr>
<td>Total</td>
<td>93,121,329</td>
<td>$1,122,714</td>
</tr>
</tbody>
</table>

Anthracite Shipped in 1921, by Regions and Sizes

<table>
<thead>
<tr>
<th>Region</th>
<th>Wyoming Region</th>
<th>Sullivan County</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mines</td>
<td>Washeries</td>
</tr>
<tr>
<td></td>
<td>Quantity</td>
<td>Value</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>1,143,335</td>
<td>$1,143,335</td>
</tr>
<tr>
<td>Ohio</td>
<td>1,118,762</td>
<td>$1,118,762</td>
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<tr>
<td>Total</td>
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<td>$1,143,335</td>
</tr>
</tbody>
</table>

Value of Anthracite Shipped in 1921, by Regions and Sizes

<table>
<thead>
<tr>
<th>Region</th>
<th>Wyoming Region</th>
<th>Sullivan County</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mines</td>
<td>Average</td>
</tr>
<tr>
<td></td>
<td>Value</td>
<td>Value</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>$1,143,335</td>
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</tr>
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</tr>
<tr>
<td>Total</td>
<td>1,143,335</td>
<td>1,143,335</td>
</tr>
</tbody>
</table>

To substitute a coal of the same general character so that the engine crews will have no trouble in burning it. An effort is being made to induce the Bureau of Mines to undertake the preparation of such a classification.

One of the staff working on distribution remarked recently that they are not much better equipped to undertake distribution than were the Soviet authorities who attempted to distribute fuel on a B.t.u. basis. As a result, gas plants got peat, and plants equipped to burn peat were allotted gas coal. They got their requisite number of B.t.u.'s but in a form deficient to utilize.
Smokeless Output in June 90,000 Tons in Excess of That of May

West Virginia smokeless fields produced and shipped 3,777,558 net tons of coal during June, approximately 90,000 tons in excess of the May figure and 907,584 tons more than in June, 1921. Total smokeless output for the first six months of 1922 was 19,388,409 tons, 5,382,239 tons in excess of the corresponding period last year.

JUNE OUTPUT OF SMOKELESS COALS OF WEST VIRGINIA

<table>
<thead>
<tr>
<th>District</th>
<th>1922</th>
<th>1921</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pocahontas</td>
<td>1,920,590</td>
<td>1,333,925</td>
<td>586,665</td>
</tr>
<tr>
<td>Winding Gulf</td>
<td>784,560</td>
<td>618,954</td>
<td>165,606</td>
</tr>
<tr>
<td>New River</td>
<td>582,515</td>
<td>467,520</td>
<td>115,000</td>
</tr>
<tr>
<td>Clinch Valley</td>
<td>489,885</td>
<td>449,625</td>
<td>40,260</td>
</tr>
<tr>
<td>Total, June</td>
<td>3,777,558</td>
<td>2,867,974</td>
<td>909,584</td>
</tr>
<tr>
<td>Total, May</td>
<td>3,544,512</td>
<td>2,677,580</td>
<td>866,932</td>
</tr>
</tbody>
</table>

Of this production the Norfolk & Western hauled 2,410,475 net tons, the Virginian 632,833 tons, and the Chesapeake & Ohio 734,190 tons. Total coal movement by these roads in June was as follows:

HAULED BY NORFOLK & WESTERN RY.

<table>
<thead>
<tr>
<th>District</th>
<th>1922</th>
<th>1921</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pocahontas</td>
<td>1,920,590</td>
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<tr>
<td>Total, May</td>
<td>3,544,512</td>
<td>2,677,580</td>
<td>866,932</td>
</tr>
</tbody>
</table>

HAULED BY CHESAPEAKE & OHIO RY.

<table>
<thead>
<tr>
<th>District</th>
<th>1922</th>
<th>1921</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logan</td>
<td>641,060</td>
<td>512,550</td>
<td>128,510</td>
</tr>
<tr>
<td>New River</td>
<td>221,840</td>
<td>114,160</td>
<td>107,680</td>
</tr>
<tr>
<td>Coal</td>
<td>82,720</td>
<td>46,670</td>
<td>36,050</td>
</tr>
<tr>
<td>Total, June</td>
<td>1,064,620</td>
<td>783,370</td>
<td>281,250</td>
</tr>
<tr>
<td>Total, May</td>
<td>1,005,620</td>
<td>769,240</td>
<td>236,380</td>
</tr>
</tbody>
</table>

HAULED BY VIRGINIAN RAILWAY

<table>
<thead>
<tr>
<th>District</th>
<th>1922</th>
<th>1921</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>New River</td>
<td>70,165</td>
<td>36,348</td>
<td>33,817</td>
</tr>
<tr>
<td>Total, June</td>
<td>179,241</td>
<td>106,815</td>
<td>72,426</td>
</tr>
<tr>
<td>Total, May</td>
<td>701,805</td>
<td>460,420</td>
<td>241,385</td>
</tr>
</tbody>
</table>

"Standardize" Still Is Watchword of American Mining Congress

Some notable advances in standardizing mining methods and machinery are expected to be made known at the twenty-fifth convention of the American Mining Congress, October 9 to 14. Much will be said on the general subject at several sessions of the convention but the entire day of Oct. 12—the heart of the convention—is to be devoted to standardization, for this is to be the third national standardization conference. Many committees on various phases of the question will report.

It is expected that striking progress will be made known in the following discussions and recommendations: "Drilling Machines and Drill Steel," by W. R. Braly, general manager of the North Butte Mining Co.; "Mining and Loading Equipment," by E. N. Zern, of the Keystone Consolidated Publishing Co.; "Mine Timbers," by Gerald Sherman, consulting engineer of the Phelps-Dodge Corporation, and by R. L. Adams, chief engineer for the Old Ben Coal Corporation; "Outside Coal Handling Equipment," by Dr. H. M. Payne, consulting engineer, of New York City: "Fire-Fighting Equipment," by William Conibear, of the department of safety, Cleveland-Cliffs Iron Co., and "Mechanical Loading Underground," by Lucien Eaton, superintendent of the Cleveland-Cliffs Iron Co. Many other reports will be read, in addresses made, opening with an address on "What Standardization Has Done for the Coal-Mining Industry," by Colonel Warren R. Roberts, former chairman of the general committee on coal mining of the congress' standardization division.

Coal Production Costs and Profits in Great Britain

Costs of production, output and proceeds of the mining industry in Great Britain during the first quarter of 1922, as published by the Iron & Coal Trade Review, are as follows:

<table>
<thead>
<tr>
<th>Costs of production:</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wages</td>
<td>£34,827,193</td>
</tr>
<tr>
<td>Stores and miners</td>
<td>£6,727,913</td>
</tr>
<tr>
<td>Other costs</td>
<td>£9,271,373</td>
</tr>
<tr>
<td>Miners' Welfare contributions</td>
<td>£1,470,391</td>
</tr>
<tr>
<td>Royalties</td>
<td>£1,622,953</td>
</tr>
<tr>
<td>Total costs</td>
<td>£51,704,431</td>
</tr>
<tr>
<td>Deduct proceeds from miners' coal</td>
<td>£300,408</td>
</tr>
<tr>
<td>Net costs</td>
<td>£49,304,023</td>
</tr>
<tr>
<td>Proceeds</td>
<td>£54,627,927</td>
</tr>
</tbody>
</table>

Balance: Debits: Credits: £2,323,904 £1,028,297

Lake Coal Loaded During Season to End of August

<table>
<thead>
<tr>
<th>Ports</th>
<th>1922</th>
<th>1921</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Carse</td>
<td>Final</td>
</tr>
<tr>
<td>Toledo</td>
<td>1,750,575</td>
<td>47,946</td>
</tr>
<tr>
<td></td>
<td>1,776,610</td>
<td>50,471</td>
</tr>
<tr>
<td></td>
<td>1,230,322</td>
<td>51,553</td>
</tr>
<tr>
<td></td>
<td>58,091</td>
<td>24,147</td>
</tr>
<tr>
<td></td>
<td>25,892</td>
<td>18,907</td>
</tr>
<tr>
<td></td>
<td>28,346</td>
<td>11,514</td>
</tr>
<tr>
<td>Total</td>
<td>5,819,218</td>
<td>1,194,844</td>
</tr>
</tbody>
</table>

* Compiled by Ore & Coal Exchange, Cleveland, Ohio, H. M. Garrett, Manager.
Legislation Passed in Ohio Would Control Coal Price at Mine and Bin

Final action on Ohio's coal-price-control legislation came shortly before noon Sept. 12, when Governor Davis signed the measure without the appointment of a fuel administrator and setting up price-fixing machinery and that approximating $9,077,000 for the use of the administrator in operating mines taken over under the bill and far payment of orders. Officers of both houses of the Legislature had stipulated the measures that morning and officially adjourned the special session.

By the action of the General Assembly, Governor Harry L. Davis, when making his address at his address, effective whenever he does its use necessary, to create the necessary machinery to fix prices at the mines and at the coal bins and, if necessary, to seize the mines of the state to assure production and distribution. The Senate enacted the bill by a vote of 25 to 3 while the vote in the House of Representatives was 61 to 2. The concurrence carries an emergency clause, both branches effecting this step by a margin of a single vote.

By virtue of the power conferred upon him Governor Davis is vested with authority, at his discretion, to appoint a state fuel administrator, who shall make such an investigation as may be necessary to ascertain basic costs of production and distribution, in order to fix prices which may be charged by the producer and the distributors.

Governor Davis, chairman of the State Utilities Commission and present State Fuel Administrator, has been most frequently mentioned as the Governor's probable choice for the position.

What use the Governor will make of the new law depends on the course to be pursued by Ohio coal operators. If they refuse to regulate from their present position that $3.50 at the mines is the lowest price at which they can sell their product, the Governor will appoint a fuel administrator and set the machinery of regulation in motion.

It is not expected that the Governor will make use of his power to seize and operate the mines until a complete survey of the situation in Ohio by the administrator shows that coal cannot be obtained at prices fixed by him.

No official suggestion has been made as to the prices which may be fixed for the operators. Inasmuch as the Governor, in his advice to reach a voluntary agreement with the operators prior to the calling of a special session, urged prices ranging from $3.75 to $4.30 a ton at the mines, it is believed that mine prices will be approximately those figures.

There have been no indications as to retailers' prices.

Coal operators and dealers and mine-union officials opposed passage of the bill and now predict its failure as a final measure. Furthermore, existing high prices is the drawback of cars. Were there a full supply of cars and adequate motive power, prices would soon come down to normal, they aver.

While the ink on the bill to provide for price fixing was still damp, Hocking Valley operators came to the Governor with a proposition, presented by John S. Jones, head of the Sunday Creek Coal Co., and E. M. Putnam, president of the New York Coal Co. It provided for a price of $3.50 at the mines when the car supply is 100 per cent, the price to increase 5c. on the ten each time there is a reduction of 10 per cent in the car supply, the maximum price to be $5.

In the meantime Governor Davis indicated that the state would proceed with the organization of the Fuel Commission as provided in the new law.

Skilful Utilization of Reserves Was Achievement of H. B. Spencer

The most striking accomplishment of Henry B. Spencer in his handling of fuel distribution was the skilful way in which consumers were induced to utilize their reserves of coal. There has been no small amount of criticism of Mr. Spencer's acts, but to those who see the entire picture it is plain that it is entirely unfair to make Mr. Spencer the scapegoat for an impossible situation. It was apparent from the first that he would have to make bricks without straw. His job necessarily was a thankless one, since the character of his decisions obviously would offend many where one was pleased.

Despite these difficulties, many disinterested observers believe that the distribution plan as carried into effect by Mr. Spencer saved the consumers of the country many millions of dollars. It is true that the tangible effects of his handling of the hard times situation of existing coal production again approached normal volume, but the psychological effect of the distribution plan unquestionably was to hold prices within bounds. Large consumers were prevented from bidding against each other and means were found to relieve all cases of acute distress before serious disruption occurred.

It must be kept in mind that Mr. Spencer was not responsible for the general policy of distribution, which was framed prior to his appointment. In Mr. Spencer's case, however, control began at the point of production—distant from the point of consumption. In the best of times coal originating in the middle Appalachian region cannot be delivered in New England, in the Middle West or at the Lakes much under two weeks. Under the conditions such as existed during August, the delay in the movement from the mines to the point of consumption necessarily gave rise to complaints from impatient consumers.

Sight must not be lost of the fact that the acute emergency lasted only 23 days after Mr. Spencer took hold. As a result the accomplishments of the distribution plan were not fully apparent during the time that it was functioning.

There are those who characterize the work done under Mr. Spencer as an absolute farce. They characterize the whole scheme as a gesture, and a menacing gesture at that, in which a club was held in a menacing position in the effort to carry out the so-called voluntary agreement. The public utilities feel that the operators dominated Mr. Spencer's administration and as a result things were so manipulated as to sever effectually the consumers having low-priced contracts from their source of supply, thereby making it necessary for them to buy coal at the higher prices. It was the equitable distribution of cars. Had the wishes of the operators been observed it would have meant a preferential car supply to mines with contracts. This, it is argued, would have disrupted the whole co-operative plan.

New Tariff Increases Duties on Explosives

The new tariff bill transfers dynamite, blast powder and other high explosives suitable for blasting, when put up in sticks, cartridges or other forms, from the free list to the dutiable list with a rate of 11c. per pound.

Coal-tar explosives are carried in the new bill at a heavy increase over the duties in the 1913 tariff law and the supplemental rates adopted in 1916. These rates are 60 per cent ad valorem, based on the American selling price of a 50-lb. box of product. Plus 7c. per pound for two years, after which the duty shall be 45 per cent, American valuation, plus 7c. per pound.

Coal and coke remain on the free list, with a provision for a retaliatory duty equal to the duty any other country may impose on these products from the United States.

Lumber, including mine timbers, remains on the free list. Structural steel was increased to 0.20c. per pound if not assembled and to 20 per cent ad valorem if drilled, punched or assembled. Wire, nails, spikes, nuts and screws were increased over the 1913 rates. Steam engines were given a duty of 15 per cent ad valorem.
Coal Distribution Control Bill Goes to President; Probably Will Become Law This Week

With the approval by the Senate on Saturday, Sept. 16, of the conference report on the bill intended to prevent profiteering in coal and providing for the control of distribution, the measure was sent to the House. The signature of the President probably will be affixed and the bill become a law during this week. Only twelve votes were cast in the Senate against the conference report on this bill, despite the fact that it was vigorously opposed by such influential members as Senator Underwood, minority leader, and Senator Sutherland, of West Virginia.

Senator Underwood contended that the emergency has passed and that under the changed conditions, the bill should not assume the great responsibility of the precedent established by this measure. He declared that the government could not undertake to regulate the prices of commodities every time the price level exceeded that which commonly is regarded as fair. He expressed doubt as to the success of the Fuel Administration during the war. While there may have been some reason for attempting this control under war conditions, he contended that there is no justification for it in peace times, especially when it is doubtful whether such control does not more harm than good.

He emphasized the fact that he intended no criticism of Dr. Garfield and admit that certain phases of the Fuel Administration may have accomplished good, but, he declared, “it annoyed nearly every man, woman and child in the United States and seriously hampered the business of the United States.”

Misses Profiteer, but Lands on Consumer

One of Senator Underwood’s objections to the legislation is that it does not reach the profiteer but concentrates its penalties on the consumer. “No provision is made,” he said, “for a jail sentence for the coal profiteer. The only way he will be punished is by the refusal of the Interstate Commerce Commission to back up cars to his door. On the other hand, the consumer—the man who is being frozen because he cannot get coal—is to be sent to jail, if perchance, he should lie a little about the coal he needs. I do not think it would be a very great crime for a man whose family is cold to exaggerate a little bit about the coal he will need to run his house during the winter. He will not exaggerate a great deal, because he will not want to pay present prices. If he exaggerates, then the coal dealer can send him to jail. The only question now involved is whether consumers will have to pay a dollar or two more a ton than they should pay. That is not a great emergency.”

Senator Sutherland, in the course of his remarks, said: “It is a great mistake to pass this bill. It is establishing a precedent that will be very dangerous. It is in contravention of the Constitution. It will come before us many times to plague us when similar measures are attempted in the future for the purpose of fixing prices by governmental action.”

Too Much Left to Opinion of Bureau Official

“The bill is intended to be retroactive in its effect. It is not even intended that contracts in actual existence shall be protected. When those contracts are tested in the courts there is no question but that they can be sustained, but so far as it can be done by the arbitrary act of a bureau official, those contracts will be abrogated and the coal diverted. The entire matter will rest upon the personal opinion of an underemployee of a bureau here in Washington as to whether or not the coal has been sold at a fair and reasonable price.

This situation will cure itself in a short time in so far as soft coal is concerned. The entire difficulty would be solved more readily if the transportation companies and the shippers were authorized to proceed to get this coal to the market in the usual manner, according to methods that have been adopted after many years of trial and experiment.”

Senator Reed, of Pennsylvania, among other things said: “Because for the moment what we call profiteering is unpopular, we have an effort to tear up the Bill of Rights of the Constitution; an effort to pass an ex post facto law; an effort to take from the owner of coal a part of the market value of his property without pretending to make compensation to him for what is taken. It is all attempted to be justified by the assertion of an emergency which now has ceased to exist. Every time anything goes up in price and some people wish to get it cheap, they will come rushing again to Congress to fix the price.”

Senator Kellogg, of Minnesota, asked if it is not reasonable that some priority in the distribution of coal be given to mines willing to charge a fair price. “The so-called Fuel Administration,” he said, “was nothing more than a board of inquiry to furnish the Interstate Commerce Commission with facts and to make recommendations. The commission has not the force, the time nor the facilities for doing that. The government has been carrying on similar activities for some time. This bill merely is designed to enlarge the powers of the Interstate Commerce Commission temporarily to meet a great emergency. I submit that this bill is not retroactive at all. There is no power in the commission to deny cars on account of anything that has occurred in the past.

Does Not Think Emergency Has Passed

“I do not think the emergency has passed. It is true that coal is being produced in considerable quantities, but it is not possible before Lake transportation closes to produce and transport a sufficient quantity of coal to supply the needs of the Northwest.”

The Senate bill was not greatly changed in conference. The length of the period during which the act may remain in force was increased from six to twelve months. The word “extortion” was eliminated from the bill and the words “unjustly or unreasonably high” were substituted where reference was made to prices. As much as may be necessary but not to exceed $50,000 of the appropriation may be used to meet the expenses incurred since May 15 by the President’s Fuel Distribution Committee. The full text of the bill follows:

EMERGENCY ENDANGERS PUBLIC HEALTH

“That by reason of the prolonged interruption in the operation of a substantial part of the coal-mining industry in the United States and of the impairment in the service of certain carriers engaged in commerce between the states and by reason of the disturbance in economic and industrial conditions caused by the World War, a national emergency exists which endangers the public health and general welfare of the people of the United States, injures industry and business generally throughout the United States, furnishes an opportunity for the disposition of coal and other fuel at unreasonably high prices, limits the supply of heat, light and power, threatens to obstruct and hamper the operation of the Government of the United States and of several departments, the commerce and defense of the United States, the operation and efficiency of the army and the navy, and the operation of carriers engaged in commerce among the several states and with foreign countries.

“Sec. 2. That the powers of the Interstate Commerce Commission under the act entitled ‘An act to regulate commerce,’ approved Feb. 4, 1887, as amended, including the Transportation Act, 1920, and especially under Section 1 of the Transportation Act, 1920, are, during the aforesaid emergency, enlarged to include the authority to issue in transportation of coal or other fuel orders for priorities in car service, embargoes, and other suitable measures in favor of or against any carrier, including vessels suitable for transportation of coal on the inland waters of the
COAL AGE
Vol. 22, No. 12

Purposely states which, for such period and shall be subject to the Interstate Commerce Commission, and as may be determined, con-
mencing on the 1st day of January next, and to take into account necessary and appropriate steps for the provid-
end in transportation and for the available distribution of coal or other fuel as best to meet the emergency and to pre-
mote the general welfare, and to prevent undue or ex-

a sign of public convenience or necessity, or for the pur-

purpose, association or company, for its own purposes, or in steady or un-

jectably high. This rule shall not be construed as

binding any of the provisions hereinbefore granted by law to

the Interstate Commerce Commission, but shall be construed as

conforming supplementary and additional powers to said

Commission, and as an amendment to Section 1 of the Inter-

state Commerce Act, and subject to the limitations and

defense of that act, and all laws hereby said Interstate Commerce Commission shall be

applicable in the execution of this act.

CREATES OFFICE OF FEDERAL FUEL DISTRIBUTOR

"Sec. 3. Because of such emergency and to assure an ade-
quate supply and an equitable distribution of coal and other fuel
and to facilitate the movement thereof between the several states and with foreign countries, to supply the
army and navy, the Government of the United States and its several departments, and carriers engaged in interstate
commerce with the same during such emergency, and for other
purposes, and for the further purpose of assisting in

carrying into effect the orders of the Interstate Commerce Commission, enacted or under Section 2 above
there is hereby created and established an agency of

the United States to be known as federal fuel distributor,

whose appointment shall be made and compensation fixed by

the President of the United States. Said distributor shall

perform his duties under the direction of the President.

Sec. 4. It shall be the duty of the federal fuel distributor

to ascertain:

"(a) Whether there exists within the United States or

any part thereof a shortage of coal or other fuel and the

extent of such shortage;

"(b) The fields of production of coal and other fuel and

the principal markets to which such production is or may

be transported and distributed and the means and methods of

distribution.

Thus far normally and usually charged for such

coal and other fuel and whether current prices, considering

the costs of production and distribution, are just and reason-

able and

MOST IMPORTANT WHO SHALL BE GRANTED PRIORITY

"(d) The nature and location of the consumers, and what

present, anticipated, corporate and personal, municipali-
tes or communities shall under the acts to regulate com-

merce administered by the Interstate Commerce Com-

mission, including the Transportation Act, 1920, in time of

shortage of coal and other fuel, or the transportation

thereor, receive priority in transportation and distribution,

and the degree thereof, and any other facts relating to the

protection, provision Ay, and control of the general

welfare; and when so ascertained the federal fuel dis-

tributor shall make appropriate recommendations pertain-

ing thereto to the Interstate Commerce Commission from

time to time, either on his own motion or upon request of the

commission, in the end that an available distribution of coal

and other fuel may be secured, as best to meet the

needs of the general public welfare. All facts and data

within the possession of the federal fuel distributor shall be

at all times accessible and furnished to the

State Commerce Commission upon its request. The

Interstate Commerce Commission is hereby authorized and

to receive, consider and act on the recommendation of the

federal fuel distributor, based upon his reports upon the

foregoing matters or any other information which it may

secure in any manner authorized by law.

"Sec. 5. The federal fuel distributor may make such rules,

regulations and orders as he may deem necessary to carry

out the duties imposed upon him by this act, and may

cooperate with any department or agency of the govern-

ment, any state, territory, district, or possession, or depart-

ment, agency, or political subdivision thereof, or any per-

son or persons, and may avail himself of the advice and

assistance of any department, commission or board of the
government, and may appoint or create any agent or agency

to facilitate the power and authority herein conferred upon

him. He shall be subject to removal, and for the

compensation of such assistants and employees, not in

conflict with existing laws, and to make such expenditures

for rent, printing, telegrams, telephones, furniture, station-

ary, office equipment, travel, and other operating ex-

penses as shall be necessary for the due and effective ad-

ministration of this act. All facts, data, and records rela-

ted to the production, sale, purchase, transportation, or dis-

tribution of coal and other fuel in the possession of any

commission, board, agency, or department of the govern-

ment shall at all times be available to the federal fuel distributor

and the Interstate Commerce Commission, and the person

having custody of such facts, data, and records shall furnish

the same promptly to the federal fuel distributor or his

authorized agent or to the commission on request

therefor.

"Sec. 6. That whenever the President shall be of the

opinion that the national emergency hereby declared has

passed he shall by proclamation declare the same, and

thereupon, except as to prosecution for offenses, this act

shall no longer be in force or effect, and in no event shall

it continue in force and effect for longer than twelve

months from the passage thereof.

FALSE REPRESENTATION SUBJECT TO HEAVY FINE

"Sec. 7. Every person or corporation who shall knowingly

make any false representation to the Interstate Commerce

Commission or the Interstate Commerce Commission, or any

person acting in their behalf or the behalf of either of

them respecting the price at which coal or other fuel has

been, is being, or is to be, sold or bought, the inquiry being

made for the purposes of this act, or whoever having ob-

tained coal or other fuel through a priority order or direc-

tion shall dispose of the same for purposes other than those

for which said priority order or direction was issued without

the consent of the Interstate Commerce Commission, shall

be deemed guilty of a misdemeanor and upon conviction

thereof shall be punished by a fine or not less than $1,000

nor more than $20,000: Provided, That any person or any

officer or director of any corporation subject to the pro-

visions of this act, or the interstate commerce act and the

acts amendatory thereof, or any receiver, trustee, lessee,

agent, or person employed by any such corporation, who shall be

convicted as aforesaid, shall, in addition to the fine herein provided for, be liable to im-

prisonment in the penitentiary for a term not exceeding two

years, in the discretion of the court. Every violation of

this section may be prosecuted in any court of the United States

having jurisdiction of crimes within the district in which

such violation is committed or through which the trans-

portation is conducted, or in which the car service is per-

formed, or in which such concession or discrimination is

granted or given or solicited or accepted or received; and

whenever the offense is begun in one jurisdiction and com-

pleted in another it may be dealt with, inquired of, tried,
determined, and punished in either jurisdiction in the same

manner as if the offense had been actually and wholly com-

mitted therein.

SCHEDULE. There is hereby authorized to be appropriated

the sum of $250,000, available until expended, for the pur-

poses of this act, including payment of personal services in

the District of Columbia and elsewhere, and all expenses

incident to organizing the work of the President's fuel

distribution committee, and not exceeding $50,000 thereof

shall be available for reimbursement or payment upon

specific approval of the President of expenses incurred

in May 15, 1922, in connection with the work of the

President's fuel distribution committee organized for the

purpose of helping to meet the emergency existing in

the matter of fuel.

THE HERCULES POWDER Co., of Wilmington, Del., announces a reduction in its selling prices of high explosives and blasting powder effective Monday, Sept. 18.
Nash Counsels Better Co-operation Among Rocky Mountain Mining Men to Hold Trade

Oil and electricity have cut so deeply into the natural market for coal that today it is more than ever necessary for the operating men of a coal-mining company to work in thorough harmony with the selling end of the business, Harry F. Nash, vice-president of the Oakdale Coal Co., of Denver, Col., told the Rocky Mountain Coal Mining Institute at its fall meeting in Glenwood Springs, Colo., Sept. 7 to 9.

The program of the meeting included a good deal of sport as well as some solid and interesting technical contributions, including these papers: "Electricity in Coal Mining," by Graham Bright, of Pittsburgh, Pa.; "Wire Rope in Mining," by J. P. Howe, of Worcester, Mass.; "Practical First-Aid Work," by W. F. Murray, of Dawson, N. M., and Mr. Nash's paper on co-operation. Mr. Bright was the particular star in swimming contests in the Glenwood pool, winning three events. In the water sports for mine inspectors Robert Sneden, of Wyoming, won the all-round swimming championship from John Crawford, of Utah, though Mr. Crawford was the victor in diving. Thursday night some absorbing coal-mining and industrial moving pictures were shown and Friday evening C. W. Darrow, the principal speaker at the annual banquet, over which Harry Nash presided as toastmaster. A dance followed the dinner. All sixty of the men at the meeting enjoyed the automobile rides through beautiful canyons near Glenwood Springs as the guests of the Lion's Club.

**Potential Bituminous Output Greater Since War**

"Within the last ten years," said Mr. Nash, "electricity and oil have largely displaced coal in industry, so that the use of bituminous coal is decreasing, relatively, though the potential production of bituminous coal has largely increased since the war. High wage scales and high freight rates make the delivered price of coal to the consumer 50 out of proportion to the cost of electricity and oil—and strikes make the supply of coal so uncertain—that industry is rapidly turning to electricity and oil. The energy in 1 ton of coal can be transported by electric current a distance of 250 miles for 78 per cent of what it costs to ship the coal in bulk by rail in the East, and for about 60 per cent of what it costs in our section of the country."

"The use of fuel oil, distillate and gasoline in industry has increased by leaps and bounds. Especially was this noticeable during the strike this year, as the large New York plants in Kansas City, Omaha and Chicago, and the chemical plants in Kansas City,Omaha and Chicago, that formerly used nothing but coal, are now practically all using oil. This also applies to other industrial plants throughout our territory in Texas, Oklahoma, Kansas and Nebraska. Many railroads are using oil, as are also the smelters, cement plants, etc. Then years ago 100 per cent of the threshing in the State of Kansas was done with coal; today not over 25 per cent of it is done through that means, and so it goes all along the line. The use of our coal is being yearly more restricted in industry."

"In the case of domestic consumption the circle is also ever decreasing. In small towns and on farms kerosene, gasoline and wood are largely utilized for cooking. For the past four years along any country road it has been a common occurrence to hear a buzz-saw cutting old fence posts or tintering old fence rails. Many thousands of tons of coal are displaced each year through the use of corn and cobs. In larger towns gas plants have been installed, and many housewives use gas—in communities contiguous to natural gas, that is used for industrial and domestic purposes.

"Time has gone when industrial and domestic consumers or dealers satisfied with anything that is black. Competition among the coal-producing states is keen, and will become more so. Eastern and Southern fields are turning out splendidly prepared coals of high quality, and with their lower freight rates to competitive territory, will entirely nullify the use of our Western coals unless harmony and co-operation exist between the sales department, the mine superintendent and his assistants."

"To be successful, the salesman must, first of all, believe in his product—must feel that he has a good article in point of quality and preparation to offer his customers—and must feel that the initial shipment a new customer receives will measure up to the salesman's representations—and all subsequent consignments to be done. The salesman knows full well that if the coal shipped any customer is not up to standard, the next time he calls, the customer's reception to him will be fair from pleasant; in short, the salesman will be unable to sell that customer again because through no fault of his, the salesman's representations have been false. A salesman further knows that a disgruntled customer will tell other dealers of the poor preparation of his coal, so that, even if he wants him in the face wherever he goes, as he sees dealer ordering other coals of better and more uniform preparation.

"Probably the mine staff do not realize what trouble, expense and loss a company is put to in forwarding a car that has been refused by the original consignee. Let us take for example a poorly prepared car of coal arrives at Brush, Col. The original consignee refuses it and the shippers invoice it to the new customer at Holdrege, Neb., but without paying a $6.75 reconsigning charge, plus any demurrage which might have accrued at Brush. Let us suppose the car is also refused by the consignee at Holdrege. In order to get rid of the shipment, the company is compelled to pay another reconsigning charge of $6.75, plus demurrage and the through freight charges to Holdrege, plus the local freight rate from Holdrege to wherever the car is finally placed. Offtimes this local rate is greater than the sales price of the coal at the mine, so that the transaction is a total loss. To cap all of this, it is very often necessary to make a reduction in the mine price of the coal, to say nothing of telegrams and telephone calls incident to reselling the originally refused car of coal.

**Cities Advantages of All-Round Co-operation**

"How much better it would be to have every car sold out of the mine absolutely free from risk, how and at an excess amount of slack. How many companies have had their attention called by someone at the mine to the fact that the coal in certain cars was not up in standards, but have taken the attitude that they were too busy to inspect these cars, have the coal cleaned, or even to notify the sales department of the poor preparation of coal in that particular car? How often have they known that the coal coming from certain mines in the mines was being loaded dirty, that permitted the cars with this poor coal to those to be billed out, with the idea of "passing the buck" to the sales department? How many of them, when they receive a letter from the sales department, to the effect that customers are complaining of preparation, give the sales department a "hawling out" before their assistants, and do nothing to obviate further complaints? How often is the co-operation between the various departments of the company weak to stop this friction and insure larger revenue for each company.

"I am quite sure that the sales department will always gladly co-operate with the mine force. Most of the salesmen know the many troubles that confront them at the mine, as many of them have worked at the mines formerly in various capacities or have at least often visited the properties.

"As soon as the mines throughout the country have recovered from the recent short and the coal shortage is a thing of the past, the coal operators of the West will have to "fine-cash" the territory for orders, and unless the operating departments see to it that nothing but clean and well-prepared coal is sent out, a decrease in annual production is sure to follow, rather than the increase we should expect."
Questions Propriety of Car Distribution
Based on Price of Commodity Carried

The attitude of the Interstate Commerce Commission toward the emergency fuel distribution and price control act was pointed out in the testimony of Commissioner Cyrus K. Atchison to the effect that the commission never seeks jurisdiction, yet in every emergency finds the duty of coal distributor for the country thrust upon it, and if this is to be the case without the additional authority granted it under the Wilson-Cummins act.

In giving his testimony before the House Interstate Commerce Committee, Commissioner Atchison appeared more in the role of a member of the President’s coal committee than as a member of the Interstate Commerce Commission yet because of his office it was generally considered by committee members that he speaks for the commission.

Commissioner Atchison agreed with Representative Graham that the Federal Fuel Distribution, created by this emergency legislation, functions as a referee and that the Commission, as executive, has the active duties of creating priorities or authorizations for the equitable distribution of coal and control of the price rates in the Interstate Commerce Commission.

“I do not think it is sound public policy as a business proposition that the Interstate Commerce Commission should have to do this,” said Commissioner Atchison. It is federal upon us and we are confronted with a situation of this sort, to be the coal distributor of the country.”

Later, Mr. Atchison said: “I trust the position of the commission in the past that it never seeks jurisdiction is clearly the mind of all the members of the committee.”

Commissioner Atchison asserted his opinion that the Transportation Act, in its emergency clause gives the commission the authority to deal with emergencies of car service and not for medical emergencies to distribute any commodity equally among various sections of the country, and certainly not to order a distribution of cars based upon the price of the commodity these cars are to carry. He declared that Chairman McChord and, he believed, Commissioners Lewis and Cox, held a contrary position that the emergency clause “is broad enough to cover anything that may occur to us as being detrimental to the conditions of the country,” excepting the question of price, but that no other member of the commission, or its chief counsel, had voiced such views and that it was not the policy administered by the commission in its last efforts to handle the car situation two years ago.

The questions of whether the Transportation Act is broad enough to include all emergencies, excepting price control was the basis of considerable debate in Congress during passage of the Wilson-Cummins Act and it generally was answered in the affirmative. Senator Cummins, chairman of the Senate Interstate Commerce Committee, declared repeatedly that the only additional power conferred upon the Interstate Commerce Commission by the emergency legislation was the power to regulate car supply according to the price charged for coal at the mines.

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Woodin Names District Fuel Administrators

William H. Woodin, State Fuel Administrator of New York, appointed his district fuel administrators last week, all of whom have accepted. They are Arthur S. Leary, of Thoro, Nealo & Co.; Albert E. Cluss, Troy; Clarence B. Kline, Saratoga Springs; Samuel J. Knebel, Binghamton; George D. Bondbright, Rochester; Arthur W. Lawrence, Bronxville; A. Conner Goodyear, Buffalo, and Carlton H. Chase, of Syracuse.

Mr. Woodin held several conferences during the week. In Albany he met his newly appointed district administrators and at a conference in New York City he met the representatives of the public-utility advisory group at which J. W. Lieb, vice-president of the New York Edison Co., presided.

Roderick Stephens, formerly president of the National Retail Coal Merchants’ Association will represent the coal dealers on the staff of the State Fuel Administrator. Harry T. Peters, of Williams & Peters, was appointed Assistant State Fuel Administrator and Girvan M. Snyder will be the director of the bituminous coal division.

The first general order issued by the State Fuel Administrator prohibits dealers from delivering more than a two weeks’ supply of domestic sizes or peat anthracite and then only if a customer has less than that quantity in his bin.

Defends Kentucky-Tennessee Operators

Editor Coal Age:

We refer to statement in your valued paper, page 256, Aug. 17, to say that we deny in toto the malicious implications contained in statement referred to.

Members of the Kentucky-Tennessee Coal Operators’ Association have not profited to the extent that some others have, now active in spreading propaganda detrimental to the Kentucky-Tennessee membership. Our membership is in full sympathy with the Hoover plan to control prices and are co-operating fully to that end with federal and state committees.

The Kentucky-Tennessee Coal Operators’ Association was the first to restore the 1920 wage scale in the mining industry and has no apology to make to anyone. Our operators know, or they think they know (time has proven), the trend of the industrial conditions, that living costs were advancing and that there was a shortage of labor in the steel mills and that they were going to increase wages immediately following settlement of the coal strike, if not sooner. This information coupled with other well-known financial and economic facts indicated clearly we were entering another period of inflation and that the sooner operators realized the situation and made just wage adjustments, the better for all concerned.

The Kentucky-Tennessee Association is operating under a local wage agreement, open-shop basis with no “check-off,” being a modification of the Knoxville 1920 wage agreement, extended to run to March 31, 1924. The principal feature of the modification is the clause providing for wage adjustments from time to time to meet competitive conditions. Under this plan our mines have operated (barring car shortage) almost continuously until the railroad strike, July 1.

J. E. McCoy, Secretary.

Kentucky-Tennessee Coal Operators’ Association.

Knoxville, Tenn., Aug. 26, 1922.

Government Department Reorganization to Be Carried Out; Plan Being Modified

There has not been the slightest surrender on the part of the administration of its intention to bring about practical reorganization of the executive departments of the federal government. A tentative report was laid before the President several months ago. It has not been made public due to the fact that the report as submitted is not acceptable to all of the department heads. It is believed, however, that certain changes in the plan can be made so as to obtain for it the unanimous support of the department heads or at least any dissenting opinions that may be offered will be of minor importance.

Were the report to be sent to Congress without the endorsement of certain of the department heads, it is recognized that the possibility of obtaining the legislation would be lessened. Moreover the legislative situation, since the report was submitted to the President, has been such as to preclude action on reorganization. In addition if the report were made public in its tentative form and before unanimousendorsement by department heads had been obtained, there is a feeling that it would invoke non-constructive criticism and arouse agitation which would serve no good purpose.

It can be stated authoritatively that the reorganization proposal has not been laid aside indefinitely, but will be taken up at an early date.
C. E. Spens to Be Appointed Federal Fuel Distributor, Is Report

Washington, D. C., Sept. 19.—It was stated unofficially today that Conrad E. Spens, vice-president in charge of traffic of the Chicago, Burlington & Quincy R.R., would be appointed Federal Fuel Distributor under the distribution and price-control act.

Mr. Spens was director of transportation of the U. S. Food Administration in 1918 and early in 1919 was appointed assistant in the director of traffic of the U. S. Railroad Administration and later that year also assumed the duties of manager of inland traffic of the U. S. Wheat Corporation. He resumed his official position with the Burlington R.R. March 1, 1920. His home is in Chicago.

Though Anthracite Shortage Is Inevitable, Public Lags in Ordering Substitutes

Indifference marks the attitude of the general run of householders who depend on anthracite for their homes. The same is true of most of the small retail dealers. Ask the man on the street what he has done about his hard-coal supply for this winter and more than likely he will tell you that he has put in his order and that his dealer has told him that he will get the coal all right. "It may be a little later this year than usual, you know, because there has been a strike, but you will get it," is what they are being told. On the part of the householder there is little or no planning to use substitutes. The feeling seems to be that whereas some may have to do with soft coal, this particular fellow stands all right with his dealer and therefore will get his hard coal as usual. Many dealers feel the same way.

The general manager of a moderate-sized house in the East recently sent out a letter to his retail dealer trade, telling them that the supply of hard coal would be short this winter, and belated as well, and suggesting that dealers order some well-prepared soft coal. Just one out of twenty was the way they replied with orders. The order nineteen intended to wait, they said, until they had some orders on their books for soft coal. Then they would order. But, they were told, that would be too late.

The vice-president of another company, producing several million tons of bituminous coal, has found considerable interest in bituminous coal on the part of a certain class of consumers, notably large apartment houses, hotels, schools and churches and this interest is manifesting itself in orders through the dealers. The order starts with the ultimate consumer, however, and the dealer orders soft coal only when he has to.

Opinion is divided among the larger producers as to how serious the situation will be this winter because of the lack of production of anthracite this summer. There are some in high places who feel that they will be able to worry along without causing anyone hardship, that all they have to do is to distribute their larger sizes with care, that there is no cause for alarm. They are said to be advising the several state fuel administrations and officials at Washington to that effect. The result is that there has been little effort on the part of the public servants to whom the people look for advice to get the ordinary man interested in putting in substitutes for part of his winter’s requirements. The figures of production and consumption of hard coal show, it is pointed out, that the country will have but little over 80 per cent supply and that even that will be late in reaching the consumer.

A week ago Mr. Woodin, state fuel administrator for New York, ordered that dealers should in no case deliver a customer more than two weeks' supply. This is considered by the trade as an impossible and impracticable dictum. Two weeks' supply may be, and in most instances is, less than half a ton, they say, and add that they hope for modification setting a minimum of at least a ton. The trade feels that this order, however, has done much to awaken interest in the hard-coal situation.

Next to distribution, price of anthracite is bothering the trade. About half the "company" tonnage has announced circular prices. These prices are little different from those of last March. The Hudson Company has adopted the new range size and quotes that instead of nut and pea. The other companies are said to be disposed to want advances over last year, but as time goes on and the older prices come out, their chance of adding anything is lessened. Independents are feeling their way about with price ranges on the large sizes from $9.25 to $11 per gross ton, having one eye on the Pennsylvania state administrator and the other eye on Washington and the price-control legislation.

Deadlock of Conferences on Coal-Commission Bill May Endanger Its Passage

Washington, Sept. 19.—Failure of the conferences of the two houses of Congress to agree today on the terms of the bill to create a fact-finding commission to investigate the coal industry led administration leaders to express some fear that the deadlock might be prolonged, so as to endanger passage of the measure before the adjournment of Congress.

While this was considered an extreme view, it is true that members of both houses are extremely anxious to end the session this week and adjourn until the regular session, which will begin Dec. 4. Although not considered strictly as emergency legislation, administration leaders are anxious to have the fact-finding bill enacted immediately in order that the commission may be named and begin its labors within a few weeks, so that there may be opportunity for full investigation before the time for the next wage contracts in the coal fields to be negotiated.

Conferences on the bill stated that the deadlock was over the scope of the instructions to the proposed commission, principally because of inclusion by Senator Borah, author of the Senate bill, of instructions to report on the wisdom or advisability of nationalization of the coal mines. The House conferences are vigorously opposed to this clause and also oppose inclusion in the Senate bill of instructions to report on various forms of standardization.
Consolidation Coal Co. Gets Restraining Order in Georges Creek Region

In an effort to prevent crude and coal shipments in the Georges Creek region, the Consolidation Coal Co. obtained a temporary restraining order as Sept. 25, against the officers of District No. 16, which controls the Georges Creek and Upper Districts.

The order denies crews, local organizers and members of the United Mine Workers as defendants, President Francis J. Driscoll being included in the suit. A hearing in the suit is held on Sept. 28, at which time arguments will be made upon the question of making the injunction permanent. Many charges of lawlessness and violence are incorporated in the bill of complaint. The Consolidation and other companies operating in the Georges Creek region have refused to recognize the union in this field. Here as in the Upper Pocahontas district the coal strike is still officially in effect.

The miners are being operated on a non-union basis with a short labor supply.

Fines and jail sentences were imposed on several individuals by Judge George W. McClintic of the United States District Court for the southern district of West Virginia during the course of a special term of district court held during the week ending September 9. These fines and sentences were imposed for violation of federal injunctions issued by Judge McClintic in recent months in connection with the coal strikes. The defendants being adjudged in contempt of court in a dozen cases.

According to reports received in Cincinnati the Kanawha operators who have refused to deal with the United Mine Workers because of the strike-off and other features that are erected are still firm in their stand and each week shows more and more men returning to work in their mines. Some at length of the agreement are taking stock of the situation and are voicing their sentiments. The director of the union corporation wrote his instructors the other day that he had had out $1,600 to the union as check-off money. "This means $60,000 a year that we are giving them as the expenses of war to fight us again when the time comes," was his concluding remark.

Storrow Quits as Massachusetts Fuel Chief

Phelan Appointed to Succeed Him

James J. Storrow has retired from the chairmanship of the state advisory fuel committee of Massachusetts. Governor C. has accepted the resignation and has appointed as chairman James J. Phelan, who has been head of the Boston fuel committee.

The reason given for Mr. Storrow's resignation is that as he is chairman of the Governor's committee to work out a plan for grouping the New England railroads, it has become urgent that he devote his greatest efforts to preparing for the hearings to be held before long in New England by the Interstate Commerce Commission.

It was announced that the fuel committee will continue to seek a fair abatement of coal, an equitable distribution and to restrain prices.

Middle West Does Not Enthusiate Over Ogle Plan for Legislative Conference

Leaders of the coal industry in the Middle West are deeply interested in but not seriously worried by the pending coal legislation in Congress. The idea of national price fixing and control is generally regarded as fraught with great possibilities for confusion and the bills, now in the hands of various committees, that are aimed to create a coal-investigation commission are not regarded with interest because they may very well produce governmental action that will completely subvert the Lewis plan for a fact-finding body of miners and operators. In spite of the fact that some operators profess a desire for Congress to create a federal commission quickly—even before the Oct. 2 Cleveland meeting which President Lewis of the miners' union has arranged—there is general hesitancy in the West about pushing to Washington to express an opinion to the congressional committee which is working over the bill.

The suggestion of A. M. Ogle, president of the National Coal Association, for a meeting of operators either in Cleveland, Buffalo, or elsewhere, this week, to formulate a legislative plan did not receive a favorable reply in Illinois. The position of many operators is that if Congress is going to do something that will cast even greater confusion into the coal business, the quicker it does so and the greater the confusion thus caused, the sooner a normal condition will thereafter be attained.

Logan Mine Marcher Convicted of Treason; Ten-Year Sentence Recommended

Walter Allen, accused of being one of the union marchers on the unorganized mine fields of Logan and Mingo Counties in August and September of 1921, was adjudged guilty of treason against the State of West Virginia by a jury at Charles Town, W. Va., Saturday, Sept. 16. The jury, which was out forty-six minutes, recommended that a sentence of ten years in the penitentiary be imposed.

Allen's bond was increased from $10,000 to $15,000, and he was sent to jail until the higher bond is furnished. Attorneys for District 17, United Mine Workers of America, who conducted the case for the defendant, will appeal to the State Supreme Court for a writ of error.

C. Frank Keeney, president of District 17, United Mine Workers, is the next defendant scheduled for trial. His trial, which is expected to begin Oct. 23. He is also indicted for treason. There have been two previous convictions and one acquittal so far, the Rev. James E. Wilburn and his son John having been convicted of second degree murder and William Blizzard, the first to be tried, acquitted.

Herrin Grand Jury Resumes Its Work

On Monday, Sept. 18, the Williamson County grand jury, which has already indicted 59 men in connection with the massacre of a score of non-union miners and the wounding of 30 others at Herrin, June 22, resumed its investigation at Marion, Ill. It is expected the jury will not open its work soon. Of the 59 men indicted, many are still at large though the Williamson County jail with its remodeled tier of cells is about full. Men indicted for murder have been refused bail but those indicted for conspiracy to kill are out under bond given through lawyers for the miners' union. Prisoners are fed the best that the Marion restaurants can supply and at the expense of the union. This relieves Williamson County of part of the heavy cost of the case.

ARTHUR W. AMBROSE has been selected to succeed E. A. Holbrook as assistant director of the U. S. Bureau of Mines. Mr. Ambrose has been in the service of the Bureau since 1917, during which time he has risen through the various grades from petroleum technologist to chief of the petroleum division of the Bureau. His appointment as assistant director is an indication of the increasing importance of the Bureau's petroleum work. F. B. Tough, who has been serving the Bureau as chief supervisor of oil and gas leases, will succeed Mr. Ambrose as chief petroleum technologist.

F. J. Bailey, the assistant to the director, under a re-arrangement of the work, will take over a portion of the duties formerly assigned to the assistant director so as to allow Mr. Ambrose to give a portion of his time to the petroleum work. Salary provision has been made to compensate for Mr. Bailey's enlarged responsibilities.

STUYVESANT PEABODY, president of the Peabody Coal Co., automatically assumes the office of chairman of the board lately vacated by the death of his father, Francis S. Peabody. Thus is ended a great deal of speculation throughout the coal industry as to who the successor of the late Mr. Peabody would be. There remains a vacancy in the directorate of the company that has not been filled. No other changes in the personnel of the company are to be made, it is informally stated at the company's headquarters in Chicago.
Pledge Aid to Expedite Movement of Bituminous Coal; Distribution on Highest-Bidder Basis Decreed

A pledge by leading commercial interests to aid in expediting the natural processes of increased supply, in order that the price of bituminous coal may be kept down and complete supplies be assured the householders and industry, was given at the conference on the bituminous coal problem held last week at the Department of Commerce in Washington. At the same time determination was evidenced on the part of the government that advantage shall not be taken of the recent strike to exact high prices for coal. Officials of the U. S. Chamber of Commerce, the American Railway Association, the National Association of Manufacturers, the National Association of Purchasing Agents and the Public Utilities Associations met with the Secretary of Commerce, H. Foster Bain, Director of the U. S. Bureau of Mines, and C. B. Aitchison, of the Interstate Commerce Commission.

Secretary Hoover, in opening the conference, stated that the government welcomed the co-operation of the commercial and industrial community in solving the situation. It was most desirable, he said, that readjustments in prices and distribution take place by the natural means of increased supply and the holding down of consumption pending such increase. Protection for the public must come, he warned, by one means or another.

"In every situation such as this," the Secretary said, "there are social considerations which absolutely override the economic. The government cannot permit the distribution of coal this winter on a highest-bidder basis. That condition during the present emergency is an impossible social condition."

The Secretary stated that while the bill pending in Congress would give powers to embargo shipments of extortionate priced coal moving in interstate commerce, the federal government could exert no constitutional control over coal produced and sold within state boundaries or over speculation in interstate coal once it had reached its destination. Many states were taking drastic legislative powers in these domestic matters and unless the situation quickly improved no doubt many more of them would do so in order to protect their citizens.

It was agreed that the mines had ample capacity, even to the point of surplus, to meet the situation, that the problem was wholly one of transportation, and that the price would ameliorate if transportation could be increased and if in the meantime consumers would purchase only for their immediate needs.

The conference voted to organize voluntary campaigns for three major purposes:

1. To induce manufacturers, utility corporations and buyers generally not to purchase coal beyond their day-to-day needs until the flow of coal becomes more normal.

2. To persuade holders of contracts not to call for delivery on those contracts past their day-to-day needs. It was considered that about one-half of the coal in the country is under contract at normal prices and that a relaxation in the demand for this coal to the minimum daily requirements would increase the supply to the general public.

3. To expedite movement of coal in every possible way.

The co-operation of the responsible coal operators in these matters will be sought.

The question of priorities in coal movement was discussed at great length, it being the consensus of opinion that the problem that more mobility would be given to those areas with less of the supply for special purposes and the priorities to special uses, which have been necessary prior to the reopening of the union mines, should be relaxed and priority parallel with agricultural produce should be given to the movement of all coal without discrimination as to consignees. It was also pretty generally the opinion of the meeting that all reconsignment rights upon coal should be abolished in order to prevent speculation in coal.

It was decided to organize special committees under the leadership of the U. S. Chamber of Commerce to advance these purposes. Those present were:

Harry Conly, Pickands, McQuiddy & Co., Cleveland.
R. F. LaMond, American Steel Foundries, Chicago, Ill.
A. A. Lamborn, American Radiator Co., Buffalo, N. Y.
A. S. Clarke, Connecticuta & New York.
J. P. Jackson, representative, Baldwin Locomotive Works.
S. M. Vannin, president, Baldwin Locomotive Works.
W. Atterbury, president, Interlake Steamship Co., Chicago.
R. C. Wright, general traffic manager, Pennsylvania System.
C. W. Sneed, chief of transportation, Pennsylvania System.
S. Barr Perch, general traffic manager, Pennsylvania R. R.
J. N. Spiker, coal traffic manager, New York Central Lines.
A. N. Needles, vice-president, Norfolk & Western Railway Co.
D. E. Spangler, superintendent of transportation, Norfolk & Western Railway Co., Roanoke, Va.
J. E. Purser, general superintendent transportation, Illinois Central Railroad Co., Chicago.
H. W. Miller, vice-president, Southern Railway System.
C. B. Kellogg, vice-president, Monson Steamship Lines.
H. H. Carpenter, president, National Association of Manufacturers, Nashville, Tenn.
Nathan H. Williams, associate counsel, National Association of Manufacturers, Nashville, Tenn.
Frederick Nash, associate counsel, National Association of Manufacturers, Nashville, Tenn.
Conrad E. Spens, vice-president, Chicago, Burlington & Quincy R. R.
Charles K. Foster, vice-president, American Radiator Co., New York.
J. A. Campbell, president, Youngstown Sheet & Tube Co.
D. Willard, president, Standard Oil Co.
R. H. Vors, president, Chicago, Rock Island & Pacific R. R.
M. J. Gormley, chairman, Central Traffic Co., Kansas City, Mo.
Charles D. Aitken, associate general counsel, Self-Service Commission.
C. G. Hoxie, director, Bureau of Service, Interstate Commerce Commission, Chicago.

Alexander Logan, president, International Harvester Co.
Julius H. Barnes, president, U. S. Chamber of Commerce.

F. E. Waddish, Department of Commerce.

Acting on the recommendations of Friday's meeting the Chamber of Commerce called on national business associations, local chambers of commerce and individual corporations and firms in an attempt to equalize and expedite the distribution of coal and to prevent prices from soaring to undue levels.

Full co-operation by all concerned, the Chamber declares, will enable the federal and state governments of increasing regulatory legislation and will be welcomed by the administration as offering a promise that business itself will solve its problems without injection of government into its affairs.

Industries throughout the United States are asked in a letter which is being sent out over the signature of Julius H. Barnes, president of the Chamber, to lend their assistance to the effort by performance of the following acts:

1. Confine purchases of coal under present conditions of supply to current needs only as safety permits.

2. Suspending accumulation of advance stocks of coal until the present emergency passes and production is relaxed. This particularly applies to persons having low-priced contracts and who are, therefore, under no price pressure to withhold necessary delivery.

3. Distributing coal among immediate and retaining them to service.

4. Promptly furnishing names and addresses of coal handlers and equipment or repairs.

5. Cooperating with the government in the purchase of local railroad, electric and steam equipment and in the establishment of local lending banks to accommodate them in the purchase of local railroad, electric and steam equipment and in the establishment of local lending banks to accommodate them in the purchase of local railroad, electric and steam equipment.

In his letter to industries, Julius Barnes, president of the Chamber of Commerce of the United States, says: "It is obvious that the bituminous coal problem is one solely of transportation, as the productive capacity of the mines is able to care for the current needs and at the same time to supply the normal amount of coal under the law of supply and demand."
Production is being held in check by the diminishing supply of cars and the congestion of loads. The surplus of empties on hand when the strike ended has dwindled to almost nothing and a shortage is now general. Car shortage usually enlivens the market, but so far this one has had little stimulating effect on prices. With the exception of the growing Midwest demand for domestic coal, caused by the approach of cold weather, bituminous coals weakened all along the line and Coal Age Index of spot bituminous prices declined to 412 on Sept. 18 from 427 last week. This represents an average mine price of $4.99 as compared with $5.17 the previous week.

The lowering prices continue to hold back orders. Consumers, anticipating that the rail strike is about over, argue that with the roads functioning properly they should be able to pick and choose their replenishments at prices that are more attractive than at present. So, while the quality fuels still make easily much of the tonnage now produced is sold under strongly competitive conditions. Nevertheless there is a wide range in quotations and a strong undercurrent of belief that the market is due before long for a long sharp upturn.

JAM OF LAKE COAL AT LOWER PORTS

Priorities are taking most of the production. Shipments under Priorities 1 and 2 have eliminated free tonnage for general demand, particularly from those fields shipping to the Lakes. The pressure on Lake shippers has forced a jam of 12,000 loads at Erie ports awaiting dumping. Slow vessel movement, disability of machines and multitude of pool classifications is responsible for the congestion, to offset which barges have been placed in several fields. These are only temporary, although they cause the priority shipper to coast around in a hurry for another outlet, often at a cut price.

The situation in the Northwest is improving. More coal is afloat and while Canadian, Lake Michigan and river points are obtaining more than their share, the upper docks are sure to benefit. The Northwestern buyers' strike shows signs of weakening. The Great Northern R.R. has just purchased 600,000 tons of Lake and rail coal, setting an example which it is hoped others will follow, so that the docks can cover on seasonal commitments while there is yet time. It is not anticipated that to exceed 50 per cent of the requirements on Lake Superior will be moved up the Lakes.

Heavy arrivals of British coals have congested the Atlantic seaports. Demurrage costs are large and it is evident that few new orders will now be placed. Southern coals via water are plentiful, especially since a N. & W. embargo on west-bound movement makes mandatory larger shipments to Hampton Roads.

Anthracite has commenced to move in good volume. Production is not expected to reach normal before Oct. 1 at the earliest, but mines are seeking to reach maximum work time as soon as possible. The resumption has drawn many cars from the soft-coal fields, where they had been used during the strike. But few prices have been announced although all sorts of independent quotations are rumored, ranging from 50c. above old company schedules up to $14 for the family sizes. Half of the companies have announced circular prices approximating their old schedules and absorbing the Pennsylvania State Tax. No settled policy of distribution has as yet been made. The entire movement so far has been eastward and no coal has been sent to the Lakes.

BITUMINOUS

Production of bituminous coal during the week ended Sept. 16 may reach 9,500,000 net tons, according to the Geological Survey, based on statistics at hand when the report was issued.

"Final returns on soft-coal production in the week ended

<table>
<thead>
<tr>
<th>Estimates of Production (Net tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BITUMINOUS</td>
</tr>
<tr>
<td>Week ended:</td>
</tr>
<tr>
<td>Aug. 26 (b)</td>
</tr>
<tr>
<td>Sept. 2 (b)</td>
</tr>
<tr>
<td>Sept. 9 (b)</td>
</tr>
<tr>
<td>Daily average</td>
</tr>
<tr>
<td>Calendar year</td>
</tr>
<tr>
<td>Daily av. cal. yr.</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>ANTHRACITE</td>
</tr>
<tr>
<td>Aug. 26</td>
</tr>
<tr>
<td>Sept. 2</td>
</tr>
<tr>
<td>Sept. 9</td>
</tr>
<tr>
<td>Calendar year</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>COKE</td>
</tr>
<tr>
<td>Sept. 2 (b)</td>
</tr>
<tr>
<td>Sept. 9 (b)</td>
</tr>
<tr>
<td>Calendar year</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

(a) Subject to revision. (b) Revised from last report.
Seventh 9 show 8,758,000 tons, which, although less in the aggregate than for the week before, was at a higher daily rate, the holiday (Labor Day) considered," says the Survey. "For last week (Sept. 11-16) the output of bituminous coal is not expected to exceed 9,500,000 tons. Over the three-weeks period following general resumption of mining under the Cleveland agreement production has been at a rate less than 9,500,000 tons a week."

LAKE LOADINGS PASS 1,000,000-TON MARK

Priority movement to the Lakes has increased rapidly in the last few weeks. Dumpings were 1,058,600 net tons during the week ended Sept. 10-10,650 tons and 30,926 tons vessel fuel. The season's movement is now 7,453,307 tons, as compared with 17,669,670 tons last year.

Tidewater dumpings at Hampton Roads increased to 341,558 net tons during the week ended Sept. 14 from 315,628 tons in the preceding week. The C. & O. piers showed a decline, the others a substantial increase. Accumulations at the piers are growing as the railroads are able to make quicker deliveries. New England is taking the bulk of the tonnage dumped, although the surfeited condition of that market is making it increasingly difficult to place spot coal.

TIDEWATER SHIPMENTS FOR AUGUST, 1922

<table>
<thead>
<tr>
<th>Destination</th>
<th>New Phila-, Balty</th>
<th>Hampton Roads</th>
<th>Charles- ton</th>
<th>August</th>
<th>June</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consign. to Ne w York</td>
<td>40</td>
<td>4</td>
<td>5</td>
<td>711</td>
<td>1</td>
</tr>
<tr>
<td>England</td>
<td>40</td>
<td>4</td>
<td>5</td>
<td>711</td>
<td>1</td>
</tr>
<tr>
<td>Exports</td>
<td>101</td>
<td>6</td>
<td>6</td>
<td>140</td>
<td>4</td>
</tr>
<tr>
<td>Bunker</td>
<td>40</td>
<td>6</td>
<td>6</td>
<td>140</td>
<td>4</td>
</tr>
<tr>
<td>Inland Shipment</td>
<td>39</td>
<td>42</td>
<td>42</td>
<td>540</td>
<td>42</td>
</tr>
<tr>
<td>Other tonnage</td>
<td>122</td>
<td></td>
<td></td>
<td>445</td>
<td>6</td>
</tr>
<tr>
<td>Total, August</td>
<td>264</td>
<td>50</td>
<td>53</td>
<td>1,439</td>
<td>14</td>
</tr>
<tr>
<td>Total, July</td>
<td>215</td>
<td>53</td>
<td>24</td>
<td>1,484</td>
<td>1</td>
</tr>
</tbody>
</table>

Tidewater business has been greatly affected by the strike, chiefly through the curtailment of exports. The total of 18,988,000 net tons dumped during the first eight months of 1922 was a third less than the average during the three years preceding. The principal factor in the decline was a drop in exports to 1,592,000 tons. During the corresponding period in 1920 and 1921, 3,049,000 and 8,782,000 tons, respectively, were exported overseas. Dumpings for bunkers also decreased sharply to 3,171,000 tons, which was little more than half the 1921 figure. Waterborne shipments to New England were greater than in any of the three years.
## Car Loadings and Surpluses

<table>
<thead>
<tr>
<th>Car loadings</th>
<th>All Cars</th>
<th>Coal Cars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week ended Sept. 2, 1922</td>
<td>941,908</td>
<td>148,487</td>
</tr>
<tr>
<td>Previous week</td>
<td>890,610</td>
<td>110,010</td>
</tr>
<tr>
<td>Same week a year ago</td>
<td>831,288</td>
<td>153,586</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Surplus cars</th>
<th>Sept. 3, 1922</th>
<th>54,560</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept. 23, 1922</td>
<td>936,405</td>
<td>130,596</td>
</tr>
<tr>
<td>Same week a year ago</td>
<td>246,740</td>
<td>130,596</td>
</tr>
</tbody>
</table>

Preceding because of the necessity for replacing all-rail shipments which were shut off by the strike.

## Cumulative Tidewater Shipments, January to August, 1919-1922

<table>
<thead>
<tr>
<th>Destination</th>
<th>Shipments (in net tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1919</td>
<td>1,298,800</td>
</tr>
<tr>
<td>1920</td>
<td>1,302,000</td>
</tr>
<tr>
<td>1921</td>
<td>1,303,900</td>
</tr>
<tr>
<td>1922</td>
<td>1,308,000</td>
</tr>
</tbody>
</table>

## Anthracite

Production of hard coal started promptly after the ratification of the wage agreement on Saturday, Sept. 9. Work was resumed the following Monday and the loadings—1,783 cars—while not large, are encouraging evidence of the operators' determination to lose no time in filling the gap caused by the strike. In the last week of the strike 63,000 net tons was loaded, principally steam sizes dredged from the rivers.

Consumers are not yet clamoring for coal but with the first cool weather the distribution problem will be a difficult one. Small lots only, of course, will be doled out for many weeks to come. Not much substitute fuel has been purchased, as the feeling prevails that bituminous coal can be had quickly if needed.

## Coke

Production of beehive coke was 139,000 net tons during the week ended Sept. 9, practically unchanged from the preceding week. Connellsville prices are unchanged, offerings are very light and the takers of merchant coke are largely miscellaneous users. Furnaces are only occasionally in the market because of the prevailing high prices and variety of grades offered.

## Shipments of Soft Coal from Producing Districts

Reference page 147, Coal Age, July 12, 1922.
Foreign Market
And Export News

British Prices Sof ten as
American Buyers Withdraw

French Market Improves as Result of
Diversion of British Coal to America,
but Wages Are Still Vexing Issue—
Labor Unrest Upsets German Trade.

British shippers feel the slump caused by the withdrawal of Ameri-
can buyers. Prices have dropped to
a point where they are attracting
new business from the Continent and
South America. An attempt is to be
made to effect a further reduction in
British rail freight rates.

The French market has improved
materially. Emergency business in
America, secured by Great Britain,
diverted much tonnage that had been
entering France to the detriment of
home fuels and mines have been able
to clear their heavy pit-head stocks.
The wage controversy still continues
and has resulted in an ultimatum by
the owners, announcing a cut in pay
as the last resort.

Germany is in the throes of labor
shortage and unrest. Production is
not ample for her own needs and
imported coal is flooding in, further
depreciating the value of the mark.

Declining British Prices Attract More
Continental Buyers

British shippers are very active in
filling all orders for the United States.
This movement continues around 200,-
000 tons weekly. New business from
this source is falling off rapidly, but
prices have receded, attracting more
buyers from the Continent and South
America. Germany is seeking a heavy
tonnage but shippers are cautious in
accepting these orders because of Ger-
many's unstable financial condition.
Production during the week ended
Sept. 2 was 5,204,000 gross tons, ac-
cording to a cable to Coal Age, close
to the record for the year.

The recent increases in the retail
prices of household coal have led to
much speculation as to the causes that
prompted them. What has happened
is this: Recent developments have led
to an increase in demand for certain
varieties of house coal produced at cer-
tain mines. The inevitable effect of
an increased demand is the same in the
coal trade as in every other industry
for producing or manufacturing com-
modities—there is a tendency for prices
to rise.

It is no longer a case of disposing
of stocks and cutting losses, but of
producing something approximating
an economic figure. It is not reason-
able to expect colliery owners more
than anybody else to sell at an actual
loss. This explains the slight increase
in prices, which, however, is sent only
a fraction of the amount which has
been taken off the price of domestic
varieties since last autumn.

The failure of representatives of
the collieries and ship-owners and the
men to come to an agreement on the ques-
tion of the three-shift system in re-
spect of the northeastern ports has
cause profound disappointment.

Overtime may do something to help
matters, but it is by no means a satis-
factory substitute for the third shift.
It is all the more regrettable at a time
when unemployment is so prevalent,
for the additional "turn" would have
absorbed an amount of extra labor.

As far as the collieries are con-
cerned, the continuance of the two-
shift system must tend to congest traf-
cic, check output, and from time to
time hold up operations.

The Mining Association has issued
a statement pointing out that the Scot-
tish coal trade is entirely unaffected
by the reductions recently conceded by
the Scottish railways to the representa-
tives of the P.B.I. Except in respect
to coal for shipment and for ironworks,
the rates remain at the maximum at-
tained in September 1922, 100 per
cent of the pre-war rate, plus 6d. per
ton flat rate. The representatives of
the Scottish coal owners met the Scot-
tish railway managers recently to
press for a substantial reduction.

The English and Welsh railway com-
panies are again to be approached by
the Mining Association of Great Brit-
ain with a view to obtaining a further
reduction on the rates for the carry-
ing of coal. These, under the agree-
ment which took effect at the beginning
of the month, are 60 per cent above
pre-war level with the addition of a 2d.
flat rate. It is the prevailing opin-
ion in all branches of the coal trade
that these rates should be reduced to
50 per cent and the flat rate abolished
altogether.

It is understood that the subject will
be reopened at the Railway Clearing
House late this month.

July Exports, by Customs Districts

<table>
<thead>
<tr>
<th>Districts</th>
<th>Massachusetts</th>
<th>New York</th>
<th>San Francisco</th>
<th>St. Louis</th>
<th>Rochester</th>
<th>Buffalo</th>
<th>Illinois</th>
<th>Indiana</th>
<th>Michigan</th>
<th>Missouri</th>
<th>Ohio</th>
<th>Pennsylvania</th>
<th>Virginia</th>
<th>West Virginia</th>
<th>Arkansas</th>
<th>North Carolina</th>
<th>South Carolina</th>
<th>Alabama</th>
<th>Georgia</th>
<th>Florida</th>
<th>Texas</th>
<th>New Mexico and N. M.</th>
<th>California</th>
<th>Oregon</th>
<th>Washington</th>
<th>Alaska</th>
<th>Hawaii</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount</td>
<td>20000</td>
<td>20000</td>
<td>20000</td>
<td>20000</td>
<td>20000</td>
<td>20000</td>
<td>20000</td>
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<td>20000</td>
<td>20000</td>
<td>20000</td>
<td>20000</td>
<td>20000</td>
</tr>
<tr>
<td>Barrels</td>
<td>20000</td>
<td>20000</td>
<td>20000</td>
<td>20000</td>
<td>20000</td>
<td>20000</td>
<td>20000</td>
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<td>20000</td>
<td>20000</td>
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<td>20000</td>
</tr>
</tbody>
</table>

Outlook Improves at Hampton Roads

The situation was without much
change last week, some slight improve-
ment in coal movement being noted. A
better supply of coal was on hand at
the piers, while a slight increase in dump-
ings took place during the week.

The market was somewhat easier,
with prospect of increased movement
on the three roads serving the port. The
downward tendency in prices on the
spot market continued, reaching a low
of $85 during the week.

Some prospect of a revival of export
business was seen. One cargo of 9,000
tons moved to the Canal Zone. All
ships were being hunkered with fair
regard to lines of the present embar-
rassing difficulty in serving the trade. Delay
in service was being steadily diminished.

Hampton Roads Pier Situation

<table>
<thead>
<tr>
<th>Pier</th>
<th>Cargo on hand</th>
<th>Cargo on hand</th>
<th>Cargo on hand</th>
<th>Cargo on hand</th>
<th>Cargo on hand</th>
<th>Cargo on hand</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. and W. Piers</td>
<td>100</td>
<td>150</td>
<td>200</td>
<td>250</td>
<td>300</td>
<td>350</td>
</tr>
<tr>
<td>Cars on hand</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>30</td>
<td>35</td>
</tr>
<tr>
<td>Tons on hand</td>
<td>50</td>
<td>75</td>
<td>100</td>
<td>125</td>
<td>150</td>
<td>175</td>
</tr>
<tr>
<td>Tons awaiting</td>
<td>100</td>
<td>150</td>
<td>200</td>
<td>250</td>
<td>300</td>
<td>350</td>
</tr>
</tbody>
</table>

French Market Improves; Miners' Wage
Cut Is Imminent

The present selling activity of the
Northern and Producers' coal 
mainly satisfactory. House and indus-
trial coals are good demand, and
picket lines are being further reduced.

Some idea of the amount of British
coal received at Hampton Roads dur-
ing August did not amount to daily aver-

Sept. 21, 1922  COAL AGE  471
Germany Must Check Flood of Import Coal by Working Longer Shifts

The coal situation in Germany has again become one of the chief topics of the day. Complaints are raised in all public and engineering meetings and the situation is affecting the industry in 1921. It is being pointed out that the imports coming from the coal districts show a steady decline in the past, with a slight rise last week. Imports are rising at an alarming rate. Import coal is mostly used in the shipping trade, which is growing steadily, and it is feared that domestic coal will be penetrated further inland, and the coal situation in the Ruhr area is being felt. The situation is not as serious as it was in the past, but the situation shows some signs of improvement.

The coal situation in Germany has been such that the manufacturers have been forced to import coal to meet the demand. The coal situation has been affected by the decline in the Ruhr production, which has dropped to a new low. The import coal has been used to meet the demand, and the coal situation is not as serious as it was in the past. The coal situation in the Ruhr area is being felt, and the situation shows some signs of improvement.

Coal Paragraphs from Foreign Lands

ITALY—The price of Cardiff steam first is now 40s. per ton according to a cable to Coal Age. Last week's figure was 42s. 3d.

A note from Milan says that Italy is feeling the indirect effect of the American demand for coal. The coal business is not as active as it was in the past, but the demand is still strong.

GERMANY—Production of coal in the Ruhr region during the week ended Sept. 3 was 1,792,000 metric tons, according to a cable to Coal Age, as compared with 1,819,000 tons in the preceding week.

SWEDEN—According to a message from the Stockholm ship owners, the export trade to Spitsbergen this year, beginning with July, will be directed to Gothenburg instead of Narvik. The trade is expected to be carried by both Swedish and German ships, which still charge considerably lower freight rates than Swedish vessels.

BELGIUM—The coal market shows signs of greater activity, even in the Belgian coal districts. The export trade of coal in Belgium has been considerably reduced, owing to the low strike in the United States. Competition on the part of British coal is no longer so much felt as it was on the Belgian market. The coke market has also improved as a result of consignments to France and Luxembourg.

NEW SOUTH WALES—Coal shipped from Newcastle outside the state during June amounted to 347,273 tons, as compared with 362,012 tons in June, 1921.
North Atlantic

Spot Prices Sag as Demand Drops and Receipts Mount

Consumer Nurses Belief That Heavy Offerings Will Produce Bargain Replenishment Prices—Car Shortage Handicaps Output—Market for British Coal Hard Hit.

Consumers are not taking more coal than they actually need for current use. Heavier receipts, coupled with the weaker demand, have lowered spot prices still further. The weakness is attributed to the consumer’s belief that, with the rail trouble over, the volume of offerings will depress prices to a point where he may replenish his supply. The car shortage is proving more troublesome, however, reducing production at the recently reopened mines and it is hard to see how prices can go much lower. The anthracite resumption has also taken away many cars that had been used in the soft coal industry during the strike.

The market for British coal is hard hit and new business is scarce. Cargo receipts have been heavy and discharging is slow, resulting in heavy demurrage costs.

NEW YORK

The receipt of anthracite had its effect upon the situation. Buying was quiet throughout the week. Car supply is playing a prominent part in the situation. On the B. & O. and Pennsylvania it was estimated that there were about a 50 per cent car supply while along the Oswego and B. & P. complaints had to do with locomotive equipment.

Southern coals came forward in good volume, with the exchange averaging $14.50 per ton New York harbor. Considerable British coal arrived here during the week. Railroads and public utilities continue to receive it, but it was reported toward the end of the week that the enthusiasm was dying down and that orders were not being placed so freely. During the period, Sept. 7-14, 19 vessels arrived in this port with 114,591 tons. While most of it was on order there were some free cargoes which were offered to local houses around $8.25. Consumers were also offered Welsh anthracite at $14.50 per ton.

There were 1,446 cars at the local piers on Sept. 15, considerable of which was on order.

UPPER POTOMAC

Still further gains are being made in the output of the Upper Potomac as men gradually drift back to work. All the cars needed are being furnished, despite the shortage on other roads. Although there are a few mines in operation in the Georges Creek region, most of the miners are still on strike. Strange. There is even a mad rush to sign agreements, however, are attempting to operate with varying degrees of success and a few companies have signed an agreement with the union.

FAIRMONT

Between a holiday at organized mines on Sept. 4 and a most acute shortage of equipment less coal was produced during the week ended Sept. 14. The car supply was on the day following the holiday but as soon as the accumulation had been absorbed, the supply dropped again and many mines were forced to close for several days at a time. Mines having orders in preferential classes were given cars for the most part. Lake shipments were on a fairly large scale. As far as spot coal was concerned the price ranged $4.50 to $6.25.

CENTRAL PENNSYLVANIA

Operators and miners alike are reaping a big harvest and production is steadily increasing throughout the entire union territory. In Somerset County, where the operators refused to sign the agreement, production is somewhat curtailed owing to the inability to secure a sufficient number of men. The shortage of cars is already being felt and it is feared the pinch will seriously affect production before long. The reopening of the anthracite mines has already felt the effect of taking cars from this field.

During the strike, many new operations in Clearfield and Cambria Counties were prepared for production and are now in operation and the capacity of the railroads entering these fields is taxed almost to the limit.

PHILADELPHIA

Car supply more than anything else is dominating the situation. The consumer having found the shippers anxious to accept orders, is now becoming somewhat anxious that deliveries have slowed down.

There have been moderate receipts. The Pennsylvania continues to give the best service, but this road is also beginning to feel the transfer of many thousands of cars to the anthracite trade.

Buyers in many instances areやはり making heavy commitments at present, fully believing that much lower figures are due. There has been a particular tendency for high-grade coal to become scarce, as the smaller consumer seems intent on buying the best now, after having put up with some very inferior fuel during the past few months.

Some of the central city buildings which had shifted to bituminous coal on account of anthracite shortage have been both satisfied and pleased, and are now inclined to try out oil. For the present, winter this will not worry shippers and many still express the opinion that the increasing cost of freight will eventually offset all of its advantages.

The end of the month will probably see the last of the British receipts, as no new business has been placed. It is difficult now to interest the larger consumers in this coal.

Baltimore

While nobody is laying in any material amount of soft coal for storage, due to both the urging of producers and the fact of a wide distribution as possible and to the thought on the part of a number of consumers that they may get better prices later, demand for anthracite is keeping well up with the receipts. This has a tendency to hold prices firm, except that there is a little wider distinction between classifications.

Demand has been for the sweeping embargo placed by Eastern railroads on freight competing with coal which is being speeded up the movement that has been delayed by coal freight applied for the way for the rush of anthracite shipments that must take place if the public is to be protected.

Except for the taking the English coal and some other substitutes, the usual burners of anthracite here have ignored the suggestion that they lay in stocks of soft coal. In many cases consumers who have taken British fuel report excellent results, and a number of smaller houses, some who bought with the expectation of getting practically all lump, and who received instead a broken-up coal through frequent handlings, have complained to their dealers.

West

SALT LAKE CITY

The agitation here against the recent increase in price has grown so severe that an official investigation may be made. Talk of placing mining under the control of the public utilities commission by special legislation. The Salt Lake Telegram has led the attack from the first, criticizing the railroads on the retailers because they have no organization whereas the operators of the state have none.

One company with mines in Wyoming has announced a reduction of $1, which brings its retail price back to 90. It is claimed that this coal is of a inferior grade, but its producers deny this. The agitation has big enough to be found and customers are very hostile. The newspaper responsible for the trouble is trying to show that costs of operating are no higher than they were before the strike, if at all.

Production continues satisfactory, except as far as the car supply hinders.

KANSAS CITY

An ample supply is being produced in the Southwestern states in care for all demands. Much is turning up, too, from handling the coal in an expeditious manner. Very little steam coal is coming in from outside fields.

Prices for domestic coal are higher than last year, due to the low prices on steam grades that must compete with fuel oil. The higher grade of domestic coming from Oklahoma, commonly known as second anthracite, is being quoted at $8.50 for car loads and slack is going begging at $7.

September 21, 1922
Anthracite

East Gets Fresh-Mined Coal Soon After Resumption

No Lake Tonnage Shipped—Western Markets Not Likely to Receive Any for a While—Some Prices Named but Companies Not Releasing Coal Pending Their Own Announcement.

Fresh-mined coal put in a prompt appearance in Eastern markets following the resumption of mining. The entire movement so far has been eastward. No Lake tonnage has been shipped and little is anticipated before Oct. 1, while Western markets will receive little hard coal for some time.

Prices have been published by only half the companies as yet, and no settled policy of distribution has been made. The announced prices adhere approximately to the old circulars, absorbing the State Tax. Companies are not releasing their coal to dealers at destination pending their announcement of prices. Independent coal is moving on sales ranging $9.25—$14 on egg, stove and nut.

BUFFALO

Some coal is said to be on the way, so that it remains to be seen what will be done with it. The administrator for the district has not given out what he intends to do. The local distributors were not allowed to place the coal as they thought best, will give it out in small quantities until every consumer has had a share. No real coal yet it is expected that most of the coal will be sent up the Lakes for awhile at least.

One point also to be considered is the price to the companies will make. It appears that even the independents do not know what to expect, for as yet they have declined to give out any price.

NEW YORK

The delay of the larger producing companies in announcing their prices at the mines for the various sizes caused some uneasiness among the retail dealers. Coal has been coming forward in increasing volume since early morning of Sept. 1, when the first shipment, consisting of 40 cars, arrived at Port Amboy.

Retail dealers took in whatever coal they could get without waiting for the prices, as the general average being around $10. Some few operators were reported as quoting $11.50. Per quotings ranged $8.25—$8.50; buckwheat, $5.00—$5.50; range, $5.25—$6; barley, $2.50—$3.25. Many consumers of anthracite have apparently put in a supply of bituminous coal to tide them over until plentiful. Because of this retail dealers do not look for much rushes before it is time to start furnaces.

BOSTON

Retailers are much relieved to find that large are winning to be assigned at the Philadelphia and New York piers. The process will be slow for awhile, but it is something to have a light gain in output from the mines each day. Originsiting companies are slow in announcing prices. Eight dollars and fifteen cents has been named by one producer for grate, egg, stove and range and chestnut or peat, while still another that was classified in 1918 as "indispensable" has named $8.25 as the figure for egg and stove.

ANTHRACITE FIELDS

There seems to be quite a shortage of labor at the mines, many of them reporting that they are short from 30 to 40 men each. At the same time, the general average being around $10. Some few operators were reported as quoting $11.50. Per quotings ranged $8.25—$8.50; buckwheat, $5.00—$5.50; range, $5.25—$6; barley, $2.50—$3.25. Many consumers of anthracite have apparently put in a supply of bituminous coal to tide them over until plentiful. Because of this retail dealers do not look for much rushes before it is time to start furnaces.

PHILADELPHIA

Some coal is now arriving in the city, being evidence of the railroads' intention to give the best of service.

The one drawback to better shipments is that the mines have not been able to reach about 60 per cent of their production, due to lack of men. It is believed that normal production will not be approached before Oct. 1.

The companies have not yet announced prices, although some independents have set schedules. At least one of the latter have announced $8.25 for egg, stove and nut, and $6.75 for peat, but most of the independents who have given out prices are 25c. higher than this all sizes. There was quite a definite rumor that one of the small concerns was asking $14.

It would seem that the companies are intent on increasing their prices of last March by 25c—30c., but are having difficulty to convince the various fuel authorities. Those who speak for the Government have repeatedly stated that there would be no increase over prices prevailing last March. It appears that the companies are determined to cover themselves for the State tax and something in addition for the losses suffered during the past five months.

Baltimore

Anthracite men here are figuring that they will probably get some fair receipts around the first of October. As a rule Baltimore gets some cold snaps in November and dealers realize that they have only about one month in which to make deliveries. They are now figuring for the most part to hold down their deliveries to small lots. An open early winter will certainly prove a blessing not only to the public but to the coal men.

Coke

CONNELSVILLE

Car shortages are now frequent and it is plain that the strike, which continues in a way, must take a remote place as constituting any factor in limiting the total output of the region. A very important proportion of the present working force are men far out of the region, some imported by definite arrangement, some drifting in from union districts. Evictions have become common, as the houses are needed for workers.

Coke prices are quotable at precisely the same level as a week ago. There is a free movement in the foundry coke market but of limited proportions. Offerings and demand are relatively light, many foundries being unable to pay prices now asked for pig iron.

In furnace coke the market is very narrow, sales being usually to water-gas producers, lime burners, bakeshops, etc. Furnaces are only occasionally in the market, which presents a far from inviting aspect. Only one lots can be picked up, usually of indifferent grade, and any furnace attempting to operate on open-market purchases might have to use it.

The Courier reports production during the week ended Sept. 9 at 77,920 tons by the furnace ovens and 20,010 by the merchant furnaces, a total of 97,930 tons, an increase of 7,030 tons.

BUFFALO

The situation does not clear up as fast as the bituminous coal trade does, for the standard ovens do not appear to be open and accounted for. About three dozen coke furnaces.

Recovery from the coal strike is now dependent upon the ability of the railroads to provide transportation. While the number of strikers who have returned to work is yet negligible there has been sufficient labor secured to load all the cars placed. The policy of evictions continues without abatement but instead of locating in tents near the above evidence the strikers are gathering up their belongings and going to other fields.

Furnace operators are again looking toward the Connellsville region for coke requirements and there are numerous active inquiries for tonnage, with at least one contract closed for 15,000 tons, delivery in September.
Shortage of Cars Cuts
Middle West Production

But Fields Working at 30 Per Cent Can Meet Fair Domestic and Light Steam Demand—Prices Generally Firm but Screenings Are Softening.

This region is having its troubles. Car shortage is the greatest of them. Railroads have been totally unable to supply enough cars to handle even a fair-sized output. Generally speaking, car supply has been about 30 per cent although it has averaged a little better than that in the central and northern Illinois regions where hauls average shorter and where several railroads are able to make most of their coal deliveries on their own lines without letting loose of their cars. The sharp restrictions upon production have reduced the available coal on the market to a point which makes it possible for a few jobbers to hike prices on domestic sizes although company circulars show few increases over those of last week.

Steam demand is still light. Buyers appear to expect a drop in the price of screenings. They were rewarded with a 25c. reduction on central Illinois and on the Chicago market every day or two big consumers were able to gather in large lots of mine run and screenings that had been shipped on consignment and were getting into distress. The price went as low as $2.90 in one case. St. Louis, with less coal available, steadily maintained as high a scale of quotations on most coals as prevailed in Chicago.

SOUTHERN ILLINOIS

Box car supply has almost put the Carterville field out of operation. This week will show about a two-day car supply. Some mines are getting less than that but few get better than three days. An average would show about 25 to 30 per cent.

Some of the mines are loading almost entirely railroad coal on account of the increased traffic which means the railroads cannot assign cars to mines and give the mines more working time than competitive mines working on commercial business. This has practically tied up some of the big fields in Illinois and is the subject of much controversy at the present time.

Prices vary from day to day, but always going higher. There are no unusual labor troubles. Everything is quiet, excepting that the miners are uneasy over working time. Somewhat similar conditions prevail in the Duquoin field. Mt. Olive district gets about 300 cars daily, and the priority ruling that everything must be billed out in class 2 of Order 23 of the I. C. C.

CHICAGO

Coal trade on the Chicago market maintained its comparatively even way during the past week. The demand for domestic sizes of Illinois and Indiana coals continued sufficiently strong to hold last week's increased price firm and the call for steam sizes continued so weak that some operators stored fire coal on the ground in order to use the scarcity of carfith for more profitable shipments. Practically no coal other than the output of those two states was traded in here. A little volume of coal from the West was moved at prices ranging from the Hoover level of $4.50 plus 8 per cent, up to $7.50 for a little that got into the hands of jobbers. It is expected that smokeless coal will continue here in fair demand as soon as it can be had. Certain heavy priority orders are filled by the producers.

Steam buyers still are holding aloof and have been losing every day or two by the chance to pick up large lots of mine run and small sizes, that have been moving into this city on consignment more or less regularly. Although screenings and screenings have not dropped below $3.50 in any case except the central Illinois field, these consignment shipments often have sold for as low as $3.25.

Output has been so restricted by car shortage on practically every railroad serving the Illinois and Indiana fields that the market glut predicted at the end of the strike by several big buyers, and still confidently counted on by them, has not yet appeared.

INDIANAPOLIS

A scarcity of cars is reported from virtually every coal county in the state, and despite the approach of cold weather, has not been very active. Both industrialists and domestic consumers are waiting until the last minute to buy in the hope that the price will drop. Some quotations for Indiana coal at the mines have reached as high as $5.75 and foreign mined coal is very scarce. Only from this week the Indiana office of the Indianapolis reported quotations of $4.75 for screenings at the Indiana mines. At present quotations Indiana coal will cost the consumer about what Pennsylvania did last year.

WESTERN KENTUCKY

It is claimed that unless Northern lines return cars more promptly, profits made in the summer may be turned into losses, as car supply is reported at around 17 per cent on the L. & N., and about 63 per cent on the I. C. The latter was furnishing 100 per cent prior to the reopening of Northern mines. The I. & N. supply is as bad as it was at the worst. Operators report good demand for all sizes, but are producing very little other than mine run.

Retailers are demanding lump more freely, while general demand for steam is picking up. With priority orders practically off the market, there is more and more coal moving for general use.

LOUISVILLE

With a full car supply it is felt that there would probably be some trouble in selling production. But with a car supply estimated at 50 to 75 per cent in Kentucky, and between 15 and 30 per cent in Indiana, the coal trade is excepted on the I. C. C., which is reported to have about 65 per cent, operators are not making much headway in meeting demand, and so far there has not been much domestic stocking, as retailers are not supplied, and producers are not making prepared sizes in any amount. Eastern Kentucky production is so small that by the time contracts are filled and some Lake coal shipped, there is very little left for general utilities, gas and byproduct plants, steel and general industrials, to say nothing of the retailers.

With the whole country demanding coal, movement on shorter hauls will eventually slow down demand, but in the meantime prices are holding and are a little stiffer. Jobbers report that eastern Kentucky lump is quoted as high as $7.50 this week.

ST. LOUIS

The present week shows an improvement in the demand for domestic coal. Several of the big companies have suspended prices on Cartersville, being unable to get it, even though they offer $6 at the mine. The dealers are here in it. Olive points which retail at $7.50, though some dealers are charging slightly in excess of this. Standard is moving slowly on account of price, excepting on contract for apartments, of the like.

No smokeless and no Arkansas has arrived thus far, but some anthracite is promised for late in the season. Steam trade is quiet. As a general rule the steam trade is fairly good. Several steam plants are unable to get any coal on account of the heavy ruling, even though the mines are reported as not.

The situation is an uncertain one and carries with it an air of anxiety for the future.

Canada

TORONTO

There is now no immediate sight and it is not expected that any considerable quantity will be received and in the market. All supplies available are on the Lakes. Demands come from the machines, as a rule, only in small quantities for present needs.

Quotations for bituminous coal are 10c. for 75 pounds and 75c for 500 pounds. Some fluctuations from day to day. British coal is beginning to show. The Welsh coal entered in the last week will be released for local.
COAL AGE

Vol. 22, No. 12

Eastern Inland

Output Rests on Car Supply: Congestion Slows Deliveries


Production is now measured by the car supply. Line congestion is slowing deliveries, but despite these warnings the consumer remains out of the market, except for his day-to-day needs. Prices have declined further.

The slow movement of Lake vessels has caused a jam of 12,000 cars at the lower ports and has resulted in temporary embargoes along the lines. Priorities are taking most of the current output and these embargoes are forcing priority shippers to cast around hurriedly for an outlet, often at a cut price.

The passage of the Ohio fuel-control bill is an important development of the week and this, together with the end of the labor trouble on the B. & O., is mainly responsible for the spastic buying attitude of consumers in that state.

COLUMBUS

With possible state control of prices in the future, buying has not been quite as brisk. Dealers are rather anxious, however, to replenish stocks, which are still at a low point, and since some householders have been delivered, retailers are asking for quick shipments. Retail prices are still at high levels, with Focliment selling around $11 and Hocking grades, $9.50@10. Only a small amount of West Virginia coal is coming in.

Steam demand has fallen off. Purchasers are loath to pay the high prices and have been waiting for some sort of price control.

The Lake trade is considerably up in the air. Shippers are objecting to the prices asked and in many cases are holding off. But since priorities force the producer to ship a large tonnage to the Lake much of it is going begging. Except for the Pennsylvania the car supply is far below 100 per cent. There is little hope for improvement in this situation and consequently firm prices are expected to prevail for sometime.

PITTSBURGH

Production is now at the limit of car supply. Mines are not shipping their product with little if any interference by the distribution authorities, or congestion by the railroads. Substantially all the merchant production is absorbed by priorities, and any further shipping without a priority is almost certain to find himself with cars the next day.

There are about 12,000 loaded cars at Lake docks, due to slower vessel movement than was expected. Embargoes are being put on or taken off almost daily, sometimes on roads, sometimes on small divisions. The bulk of the merchant coal produced in the district for the Lake trade. Placing of an embargo requires a shipper to find a new customer in a priority class and as coal must be moved promptly the regular price frequently has to be cut. Sales have been made at $4.25 and even $4. In such cases, the regular market, otherwise applying, being $4.50@5, for Pittsburgh district steam coal.

There are reports of byproduct coal being sold at $5, but it is impossible to see how such sales could be effected in the case of the byproduct plants of the MiddleWest which as a whole are similar. Only steel works can use the by-product and the utilities, and thus have no priority.

CLEVELAND

The settlement of the railroad strike on a number of important roads, and the passage of the coal control bill by the Ohio legislature have been developments of outstanding interest to the coal trade. The immediate result of these events has been to further slow down the demand for industrial fuel. Consumers feel certain that the end of the strike will help to expedite coal shipments, and that the state machinery will cause quotations to work lower. The prevailing level in the last days has ranged $4.50@$4.75 for spot coal. This represents a decline of $1 in a week, and about $3 since the termination of the coal strike.

The natural operation of the market is expected to do more in regulating the price than the state. The railroad operators have offered to settle on a price of $3.50 at the mine, based upon a 100 per cent car supply. This proposal is being studied by state officials.

Lake shipments are being speeded up. For the season up to Sept. 11, 6,019,000 tons of cargo coal had been shipped, against 3,650,000 tons in the same period of 1921 and 12,201,000 in 1920.

EASTERN OHIO

Daily output during the week ended Sept. 11 was increased some 8,000 tons, notwithstanding no operations on Labor Day. Total production was 280,000 tons against a potential capacity for the 5 days of 227,000 tons. Cumulative figures for the year indicate that 6,280,000 tons have been produced, with potential capacity placed at 21,937,000 tons, 29 per cent for the year. Now that the railroad strike seems to be in a fair way of settlement, a more optimistic tone is prevalent that not only a greater quantity of coal will be available in the open market, but that it may be had at lower prices than those now quoted.

No general or widespread demand for coal exists and steam users throughout this section continue to procrastinate so far as commitments for immediate delivery are concerned. Despite a sliding off of 50c@$.10 a ton on spot quotations during the week, no increase in inquiries is discernible.

Retail dealers have not yet been able to replenish their yards to meet the fall demand as little domestic fuel can be had. West Virginia and eastern Kentucky because of the railroad congestion at Ohio River crossings, and on railroads originating coal in those fields. However, relief from this situation is expected within the next few weeks.

Bituminous coal receipts at Cleveland during the week ended Sept. 9 were only 697 cars, 577 cars for industries and 120 cars for retail yards. Industrial receipts have declined during the past two or three weeks.

BUFFALO

Consumers refuse to be disturbed by the warnings of a car famine. The idea seems to be that the crisis is over and there is coal enough. Jobbers believe that the 250 cars delivered to the West Virginia coal market soon will convince consumers that it is the thing to buy freely now, before prices go up on account of a short supply.

Hence the natural attitude is to permit some members of the trade, as well as consumers, find that the higher the price the better the coal is as a rule and the faster it moves. So shipment has been moving with increased rapidity and the consumers are often able to get $6 in preference to a lower price and some coal is selling for even more than that. A fair quotation would be $6.25 for gas lump, $5.75@6 for Pittsburgh 4-inch, and $.25@$.50 for all mine run, with slack scarce enough to command a few cents more than mine run.

DETOIT

Consumers display no eagerness to add to their stocks although the supply of coal available continues far short of normal requirements. According to daily reports, the coal receipts have averaged about 250 cars through the last month, while local representatives of the coal trade place the daily requirements at about 550 cars.

William W. Potter, Michigan Fuel Administrator; Charles F. Dunn, Wayne County Administrator, and the Detroit Coal Exchange have joined in a protest against the I.C.C., issuing a modification of Service Order 23. It is their contention that the continuance of this order in effect serves to prevent obtaining for domestic consumers the coal required by law, provided that the coal be sold to public utilities. No improvement has taken place in the situation as regards anthracite.

NORTHERN PANHANDLE

Some mines were unable to work for a time during the week ended Sept. 9, owing to a wreck on the main line. The effect of this curtailed production to some extent. Little more than half the potential capacity of the district is being produced, due to lack of cars. There is a ready demand, much of which is for railroad fuel. Lake shipments are larger in volume.
Lake States Feel Good

Over Arrival of Coal

Vessels Deliver Heaviest Volume Seen
Since Normal Times—Prices Remain
High—Many Buyers Hold Out—Wise
Men Say There Will Be No Drop.

There is better cheer in the
states around the Lakes nowadays.
During the past week more coal
reached the docks than had arrived
in any one week in a long time. The
tendency of prices does not seem to
be definitely upward any further for
the time being and all in all con-
tions are much brighter.

Many buyers are still holding off,
counting on a heavier flow of fuel
within the next two or three weeks
and a resulting drop in price. Others
expect all-rail coal from the Midwest
to reach here in great volume. Coal-
men, however, feel that prices will
not drop and that the Northwest will
get just barely enough fuel for the
winter. The first hard coal is yet
to be loaded.

DULUTH

Twenty-six cargoes arrived during
the last week, and twenty-four more
are scheduled to arrive here before the
week end. This will be by far the
highest number of coal laden ships to
come here for several years within one
week. This resumption of shipments is
perhaps the best indication of the way
the Northwest is recovering from the
coal strike. Coal moves off the docks
as fast as it arrives which insures
against dock congestion. No contracts
are being made by the dock men.

The first anthracite is expected
Thursday, Sept. 21. It may sell at the
old price. Fairly steady levels have
been reached in soft coal. Youglio-
gherb, Hocking and Splint lump are
selling at $14 per ton, run of pile at $11.50
and screenings at $7.50. Strangely, one
dock is selling the last Pocahontas at
the same price as high-volatile coal.

Since the Northwest got plenty of
c Coal after the 1902 strike which ran
a month later than this one, it seems
certain enough will arrive this year.

MINNEAPOLIS

A few cargoes of coal have finally
reached the upper docks. But instead
of the 400,000 tons a week which were
supposed to be the minimum there was
barely 200,000 per week. This still
appears that priorities do not
assure coal. Buyers here apparently
must bid high if they are to get coal.
Car shortage has its inevitable effect on
coal buying generally. Dock men are predicting a shortage
that cannot be prevented. State of-
icials are alarmed over this, and have
issued proclamations urging economy
of fuel and cutting down unnecessary
consumption. They are looking to the
Illinois all- rail fields for a supply at
lower prices. All- rail coal from south-
ern Illinois has been offered at $4.75 @
$5 at the mine, and has been refused in
some cases as too high. Buyers are
counting upon a break in the market
and ample supplies of coal within a
short time. They recall the situation
two or three years ago, when after a
panic fall, the first of December saw
all the coal that could be used, and
prices slumping constantly.

Coal men fear that a bad situation is
being made worse by the frantic efforts
of politicians, doubtless earnestly seek-
ing to find coal, but not forgetting the
main chance of personal aggrandizement.
They have pyramided the proba-
table needs of the district to an impos-
ible figure.

MILWAUKEE

Milwaukee is experiencing consider-
able relief from the soft coal shortage
for eleven cargoes, aggregating 124,815
tons, have been received since last
week's report. There is still an
unknown quantity in this market, and
the outlook for consumers is not good.
Railroads have been refusing cars for
carrying coal to interior points because
of a federal order directing the prompt
return of empty cars from the mines, but
they have now agreed to provide cars
to dock companies when shipments are
authorized by the state committee.

A local coal company, which has a
contract to deliver 54,000 tons of coal of
a specified analysis has requested the
city council to relieve it from com-
pliance with the quality clause of the
contract until it is able to secure coal
which does not have to be shipped to the
pooling ports established by the government. The company stands to
lose approximately $200,000 if it is held
to the contract.

The following figures show the re-
cipts from all sources at Milwaukee
from April 1 to Sept. 1, 1922, compared
with the receipts during the same
period last year:

<table>
<thead>
<tr>
<th>Year</th>
<th>Hard</th>
<th>Soft</th>
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<tr>
<td>1922</td>
<td>700</td>
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<td></td>
<td>18,511</td>
<td>14,945</td>
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<td>1921</td>
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New England

Big Buyers Well Supplied,
Market Lacks Life

Rehandling Piers So Congested That
Few Shippers Send Coal Forward—
Hoover Level is Price Basis—Recess-
ion Expected Before Long.

There is no life to the current mar-
ket. The larger consumers are sur-
feited with supply for a long time to
come, and there is so much congestion
at rehandling piers here that few
shippers will take the chance of send-
ing coal forward on the market. It
is only with the utmost difficulty that
contract deliveries are being received,
for practically every unloading facil-
ity is being worked to the limit.

The west-bound embargo on the
N. & W. is throwing an extra volume
to Hampton Roads. The Hoover fair
price now is the basis of trade and
lower figures can be looked for
within a reasonably short time.
Several of the agencies are working
hard to plug what holes are remain-
ing and there is every reason to
think that September quotas will be
amply filled by the end of the month.

At this writing there are seventeen
steamers in the harbor with British
coal awaiting berth, and since but two
of these are for utilities or retail
dealers at their own wharves, the
rest are for railroad docks where there
is now detention for at least three
weeks. The changes on these cargoes
will therefore mount to high figures
and there are more than a few large
consumers railroads included, who regret
following the broad advice given them a
few weeks ago. We understand there has been but one cargo of
Southern coal shipped here on the order
of Mr. Hoover's organization for dis-
tribution under direction of the
Distributor, and on this one shipment not only have there been diffi-
culties over landing the coal but the
original applicants have in several in-
stances cancelled their orders.

Steam grades from central Pennsyl-
ania are offering freely at prices up
from $4.50 per net ton at the mines.
Efforts to interest retail dealers in
carloads of one ton or more have met
with meager results. Now that the
press informs consumers that anthra-
cite is being produced in volume it will take
a touch of colder weather to
holders take notice. Pennsylvania opera-
tors are also apt to overlook the high
rates that apply to New England points; in many cases the prices
are only 10 cents lower than for
main line coal on the bargain and makes the cost well in advance of what the
companies are assuming their intention
to charge for prepared anthracite.

At Boston, Providence, and Portland
there is the same coal awaiting dis-
charge that consumers are naturally
induced either to charter steamers or
agree to receive further deliveries
even on a contract basis. Steamers that have
been operating regularly for several
months are now being laid up.
Softness in Market Brings
To Light More $5 Coal

Recession of $1 from Early in Previous Week—Railroads Now Turn Back
Cars Shipped on Open Contract—Cincinnati Jobbers Underbids by Some Competing Fields.

A perceptible softness has developed in the market and as a result there is more $5 coal to be had, in small lots to be sure and for the lower grades, but this is in direct contrast to the price that was $1 higher early last week. The ear-
marks of the buyers' strike that could be seen last week became more and better defined. Perhaps the hardest blow of all is the fact that the railroad-
roads, which have been the heavy takers of coal, are now turning back cars that were being shipped on open contract. Lake buyers are proceeding cautionously and there is no longer a rush to complete cargoes.

More and more the Cincinnati job-
bers are coming in contact with Ohio and Indiana as well as Illinois coal, and in many plates these fields are underbidding. Operators not shipping under Permit 1 will bewail an ever-
increasing car shortage.

LOW-VOLATILE FIELDS
Pocahtanzas and Tug River
Progress is being made by Poca-
htanzas producers in speeding up pro-
duction to some extent in view of more favorable transportation conditions pre-
vailing on the N. & W. During the early part of September mines were giving out in a large part of the state. Relief from the congestion which prevailed for a time is enabling the N. & W. to handle more coal upward. TheBetter is securing the bulk of the coal, with some moving north-
ward by rail but with a prospect that rock movement will cease with better grades. Production Spot prices $4.50 to $4.80, but with comparati-
vely little tonnage moving.

Under more favorable transportation conditions the Tug River field is now main-
taining production at about 90-
000 tons a week, which is considered normal. Western territory, to which much of the product of this field is usually shipped, is now shipping slightly. Prices are getting more stabilized, not ranging much above the Harvet maximum.

NEW RIVER AND THE GULF
Mines in the New River field are not getting a car supply of more than 30 per cent of the total to which they were entitled under their allotment. Trans-
portation conditions are being slightly improved but the process is very slow.

Conditions in the Winding Gulf are much the same as in the New River region. Following an improvement in transportation conditions on the west-
ern Virginia, however, a little more coal is being handled. There is an active market with the demand still in excess of the supply. What short coal there is to be had is quoted $4.50@$5.50.

CINCINNATI
Small operators in the splint and gas districts have not awakened to the change in market conditions. They do not care to ship coal even though there is a tremendous shortage of coal. The competition from other fields is in-
creasing and there is only one thing that talks when the two meet on a com-
mon ground. Cincinnati jobbers, how-
ever, are fully aware of the situation and some of them already are reverting to tactics that mean sale.

Permit 1, by which certain mines are favored with either cars or billing, is the big problem. Some mines saw the light this week and as a result have reverted to the flow of empties. Others that could not square with the permits have been bawling a shortage.

The smokeless situation seems to have hit the most even stride of all. Prices are balanced better with mine costs and orders are booked ahead with the hope that they will be caught up with some day. Orders for total ship-
ment here are too low, on other words of operators who were about to catch up with the orders ahead.

The retail situation has not varied since the last report. Most dealers are putting in only what will just run their customers instead of making an attempt to fill orders that have been on the books for months. Pocahontas lump sells for $3.75@$4; bituminous lump, $8.75@$9; slack, $6.50

HIGH-VOLATILE FIELDS
Kanawha
Labor Day had a tendency to curtail production, although an accumulation of coal over the double holiday made it possible to make up for the loss later in the week. Open-shop mines con-
tinue to produce to a great extent on the holidays. The biggest handicap under which all operators are laboring is the car shortage. Not more than 20 or 25 per cent of the normal supply is being furnished. The car supply is a little better in Kanawha & Michi-
gan than on the C. & O. There is a strong demand for coal in all grades, but the difficulty is in getting orders in preference to others which it is hard to secure cars.

LOGAN AND THACKER
Not more than a third of the number of cars allotted to the Logan region are being actually furnished so that mines are limited to between 35 and 40 per cent of potential capacity. With so few cars available, mines having orders coming within certain classifications are of course being given preference and that is tending to disarrange marketing plans of producers. There is little or no spot coal available and much of the fuel shipped from that field is greatly delayed in reaching its dest-
ination.

More coal is being mined in the Kenova-Thacker field owing to a bet-
ter run of cars. Labor Day made a little difference in the region, the only fac-
tor standing in the way of capacity production being a shortage of operators and equipment. Railroad fuel loadings are large but there is also a heavy commercial movement to West-
ern points when embarkages do not in-
clude or prefer coal moving under contract or preferential orders so that there is comparatively little free coal to be had.

NORTHEASTERN KENTUCKY
A heavier domestic demand is being re-
flected in a call for prepared sizes at some mines even with recent price prev-
ailing, such as $6.50. At the same time there is a firm demand for mine run, but screenings are not quite so active. Conditions have shifted and there is a growing shortness of coal in the mill. Mines are reverting to the use of mine run, not of merely waiting for orders to turn up.

South

BIRMINGHAM
The market is fairly good. Demand from industrial users is general in char-
acter, but not persistent as heretofore. Dealers have sufficient business in hand and being booked to take care of the output, but with any great relief in car supply and accelerated movement the activity will be further lessened. Bunker coal is in fair demand.

Priority in the use of cars has been an-
nulled by the Public Service Com-
nission, as Class 1 and 2 consumers were getting more than they necessarily needed. Others were unable to get fuel account of cars not being available. Domestic sizes are somewhat scarce in the spot market and dealers are slowly stocking account poor transportation conditions.

Prices are practically stable on basis of the fair-price schedule, comparatively little coal being sold above average figures, which is permissible on interstate business.

Car supply was somewhat better in the field the first of the week, but fell back later, particularly on the Southern, where mines lost con-
siderable time. On an average all lines probably furnished 60 per cent. A further decrease in production is not brought about by a more serious shortage of equipment.

VIRGINIA
Car shortage continues to curtail production. There is a demand for further only 3 cent ever-
owing to the inadequate transportation facilities, reducing the output to about 125,000 tons a week or little less than 51 per cent of of capacity. There is an active market for coal but cars are difficult to obtain except where companies have shipments to make under certain preferential orders. Quotations $4.50@$5.50 on mine run on a spot basis.
ILLYNOIS

Eugene McAuliffe, for five years president and general manager of the Odd Fellow Coal Co., has been associated with the company for some three years as its sales manager. The announcement of his resignation, with headquarters at St. Louis, was made to E. Young, who has been associated with the company for some three years in the office of the Pittston Coal Co., in Pennsylvania. Mr. McAuliffe, who has been associated with the company for some three years in the office of the Pittston Coal Co., in Pennsylvania.

INDIANA

Articles of incorporation have been filed by the Celina Coal Co. of Indianapolis, which recently bought the Indiana Fuel Co., owning two mines in Pike County, near Petersburg. The capital stock of the new company is $100,000. Geo. C. Neal is president and Herman E. Neal is secretary and treasurer.

The boiler room at the Glenn coal, No. 1, formerly the Bennett mine, east of Terre Haute, was burned recently. The loss includes part of the machinery, besides the building. The origin of the fire has not been determined.

The Columbus Coal Co., organized in Cincinnati, Va., by Mr. B. E. Clark, of Chicago, and Thomas Grant, of Brazil, as the promoters, has bought the mine of the McCullough Coal Co., near Rockville. The mine, the near Riley. Several of the leading stockholders are interested in the Brazil Collieries Co., and the Bright Gem Coal Co., both of Indianapolis, and the company with which the combined offices of Terre Haute, Thomas Grant, of Brazil, will be manager of the three mines.

KENTUCKY

The Coal, Coke & Iron Ore Committees, of Central Pennsylvania and Southeastern Territory, Pittsburgh, will hold a public hearing on the rates for byproduct coke cars, to New Richmond, Ripley, and Manchester, on Sept. 22. The rates, which are prevailing rates, will be heard at New Richmond, Ripley, and Trinity, Ky. This hearing will be held on Sept. 25, 1922, at 10 a.m.

NEW YORK

Alfred D. Thompson has been appointed vice-president of the Titan Fuel Co. 32 Howland. Mr. Thompson will be in charge of sales for central and western New York and eastern New York, with offices in Utica. Until the end of August he was manager of bituminous coal sales for Patullo & Bowes, Inc., and has been identified with the trade since 1905.

OHIO

The Trojans Coal Co., Cincinnati, has been incorporated with a capital of $10,000 to job coal. The incorporators are Everett C. Kline, Resty W. Dye, George W. Holts, J. F. Roberts and Charles B. Clark.

The States Coal Co., Columbus, has been organized with a capital of $25,000 to do general mining and wholesaling business. Directors: Henry C. Moore, R. W. Kitten, C. F. Weaver and Charles Stokley.

The Dudley Coal Co., W. S. Dudley, president, and the Marion Coal Co., G. F. Yamashita, vice-president, have announced that these concerns have purchased an interest in the Kears Coal Co. of Cincinnati. The monies from the Ohio market will be made to the Ohio field.

Jake Brady has been appointed general sales agent for Jewett, Rigby & Brooks, according to an announcement issued by E. H. Jordon, the president of the company. Mr. Brady takes the place of Louis Stone who has been in charge with headquarters in Cincinnati for several years. Mr. Stone is now connected with the Wall's Creek Coal Co. in Kentucky.

Pennsylvania

The Jefferson Coal & Coke Co. was formed Sept. 1, and is a partnership composed of Messrs. Crawford, Cameron and Ashcom. It will sell the coal produced by the Jefferson Gas Coal Co., the Lindley Coal Co., and the Wet Branch Mining Co. The new company is located at Penova, and is in partnership with the companies operating the coal field.

N. C. ASHCOM, General Manager

Jefferson Coal & Coke Co.

A new company co. is located at Penova, and is in partnership with the companies operating the coal field. The general manager of the new company, N. C. Ashcom, was born in Pensacola, Fla., and has been identified with the bituminous coal trade.

The Dauphin County Court, on Sept. 13, heard appeals from the State substantial key coal tax, which is estimated to range from thousands of dollars and based on the claim that the law is not only unconstitutional, but that its provisions are impossible to carry out. The Washington group of coal companies purchased their coal under the law, under the law, estimated at $20,000. The Philadelphia and Reading group of companies purchased their coal under the law, estimated at $147,000, and those cases were called for hearing.

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WISCONSIN

The Pelican Coal Co., Eau Claire, has been acquired by the Cagney Coal Co. in that city.

The Wisconsin Coal & Coke Co. has been organized by the Wisconsin Consolidated Coal Co. and the Wisconsin Consolidated Coal Co. and the Wisconsin Consolidated Coal Co.

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Trade Literature

Elecon Superheaters. The Superheater Co., bulletin T-1, pp. 8 x 10 in, illustrated. Among the advantages of the Elecon Superheaters are their suitability for application to all types of boilers, freedom from leaks, ease of installation and for inspection and repairs—Advertiser.

Considered Coal Application to Four 2,610-hp. Units. In the May 28, 1922, issue of Power Plant Engineering, was presented by H. D. Savage before the Meet. of the Club of the Electric Society of Western Pennsylvania, at Pittsburgh, Pa. It is a bulletin published by the Combustion Engineering Corp., New York, together with plans and specifications for this installation for a year or more—Advertiser.

Reclaiming Roller Feed Water. Northern Equipment Co., Erie, Pa. Pp. 20; 8 x 10 in. A bulletin of a new method is devoted to an article reprinted from Power Plant Engineering, next is an analysis of a regulator that meets the most exacting requirements, and finally are charts showing how the various service requirements are met.

The following bulletins on lighting have been written out by the Edison Lamp Works of the General Electric Co. Bulletin L. D. 125, a directory of lamps and cabinets on resultant illumination: Bulletin L. D. 138 contains information on fundamentals of projection lighting, and Bulletin L. D. 140 is on the lighting of small stores. These are all 8 x 8 1/2 in. and illustrated.


Obituary

David J. Han, a coal operator near Carbondale, died recently, following a hospital at Danville, Ill., as a result of burns received when rescuing his four children from a house that was wrecked by the explosion of some coal gas powder some of which his nine-year-old son strapped on a hot stove.

George P. Pitchard, head of the Virginia Fuel Co. and connected with several mining interests in West Virginia, died on March 31, 1922. He was known for the talent he displayed in the fields of coal mining and manufacturing in West Virginia. A report from Knoxville, Tenn., stated that David James Wine sold, of Middleboro, is an honest, industrious, strong politician and prominent business man, was stricken with heart trouble in his room at his hotel terminal.

The Birmingham district has lost two prominent mining engineers, Harry L. Fleetwood, superintendent of the British Columbia Co., Hurnwell, Ala., and George R. Williams, superintendent of the Fleetwood Coal Co., Fort Worth, Texas. Both had been undergoing a trip to Chicago, and their deaths were confirmed. Mr. Fleetwood was one of the pioneer mining men of the district.
The Cleveland Meeting

MUCH thinking and some talking is being done these last days of September on the question of whether to go to Cleveland for the gathering of the clans on Oct. 2, and if to go, what to do. Until the gavel falls for the first meeting no one can say how representative the operators' side may be, but as the days pass it seems as if the tide is turning toward participation.

The meeting has two announced purposes—to set up a committee of inquiry to make report at a later date on the best, or a better, method of negotiating wage scales in the bituminous-coal industry and to arrange for negotiations next January looking toward a contract between the United Mine Workers and the operators of union mines to become effective on April 1 next. Necessity for the committee or commission of inquiry seemingly has passed with the provision for a commission of broader power and jurisdiction by Congress. Collection of the same data and hearings on the same general topics by two bodies would be a needless duplication of expense. But a study and report by a group from the main body that may assemble at Cleveland, a study and report on the very important question of future relationships between the operators and miners is something that might be accepted with better grace and be more effective than if the congressional commission should attempt the same thing.

Left to their own devices the operators and miners may not succeed in bringing back that time-honored method of wage settlements in time to forestall a strike in April, 1923. In view of the history of the past year, it is quite possible that the Cleveland meeting and such successors as it may have will be sterile of results. So thoroughly ingrained is the theory and practice of collective bargaining in the soft-coal industry, however, that if peaceful effective relations are not restored this winter, they will be one, two or three years hence. Barring outside interference, the bituminous-coal industry will in the course of time work around to sounder methods of handling its relations with labor. The schisms of recent months will heal.

The industry is not to be left to its own devices, however. The country is in no mood to put up with turmoil year after year, its coal supply threatened and curtailed, prices fluctuating wildly the meanwhile. The war and post-war relations of labor and capital have been such as to produce a definite urge on the part of the public for the initiation of steps to forestall and prevent these periodic upheavals in the coal industry. The congressional coal commission is primarily for that purpose. It is only to be expected that if the coal operators and the miners' union are not able at once to demonstrate their willingness and ability to get together on a sound, sensible basis, then the government will be compelled to step in. Which, being interpreted, means that if the industry cannot satisfy as to its ability to restore collective bargaining in its true full sense, then we will see imposed something in the form of a national coal labor board.

Cleveland therefore presents an opportunity. The miners' union, which does not want the government to settle its wages under such a scheme, must recede from its position of extreme arrogance and power; the several groups of operators must merge their interests and overcome their many differences and the two sides must convince the public and the congressional commission that they are capable of intelligent self-government if they hope to be left to govern themselves.

There are many who think that the day has passed when the country may be left at the mercy of a nationally organized union of miners and another of operators, who feel that some governmental check must be placed on the industry. The federal commission may make such a recommendation. Whether or not that follows, the need is as great for the organization on a national basis of the operators who deal with union labor. The avowed purposes of the Cleveland meeting cannot be attained unless the operators are unionized. Not having accomplished that in advance, such may be a result of the meetings next week.

On the Use of Weapons

CONGRESS has put in the hands of the administrative branch of our national government a weapon to hold over the coal industry. This weapon is the Coal Control Act that provides a method for punishing those who charge for their coal more than some price which an officer of the federal government may decide is just or reasonable. This legislation is predicated on the theory that the country is short of coal and that a high market is impending. A great many consumers are facing short rations of fuel. Generally speaking those who burn coal are in no wise responsible for the present condition of shortage, yet under the circumstances they will be called upon to pay the cost, and then some, of the strife that produced the shortage. The control of prices, whether by state or nation, is held to be justified on the ground that high prices will not, under the circumstances obtaining in either the anthracite or bituminous coal fields, operate to produce an added supply. Lack of men and mines in the hard-coal region and lack of transportation from the soft-coal areas act as a brake on the law of supply and demand. Beyond a certain figure, which is not so very high in either instance, doubling or trebling of price brings forth no more coal. General appreciation of these simple and established facts will tend to popularize price control to governments.

It was an axiom in the older days of two-gun men out West that he who reached for his six-shooter and did not shoot as he drew was not a dangerous man. Our government has not only pulled its gun but has cocked and aimed it at the coal man, but instead of
This has asked him to come along peacefully. There are those who draw the inference that the shells are blanks and that this is but a gesture. A great many are ready and determined "to stand on their constitutional rights" and defy the Fuel Control Act. It will be unfortunate indeed if matters be allowed to come in such a way that the Federal Fuel Distributors and the Interstate Commerce Commission are jockeyed into a position where they attempt to set a price and discriminate in car supply to force its acceptance, and the operators retaliate with legal proceedings to prevent such discrimination—unfortunate on the one hand because the law is unfortunate and on the other hand because of the extremely bad will that will adhere to the coal trade for fighting it. Bear in mind that if there is a prospect coal prices this fall it will first appear in the last half of October, and that the country is full of congressmen campaigning for re-election in November. If the present law isn't effective, more drastic action can be promised if a constituency appears to make the demand.

There is a way, of course, to prevent all this prospective trouble. Just make the railroads haul all the coal the mines can produce and tell the anthracite-learning public to buy one ton of soft coal or coke and two tons of hard coal where three tons of hard coal are nominally required.

**Real Men, These**

DOWN at Marion, Ill., the seat of "bloody" Williamson County, a grand jury of 23 men has finished its investigation of the Herrin massacre of nineteen non-union miners on June 22. It did a masterly job of it. No less than 214 men stand indicted for "conspiracy and rioting," "conspiracy to commit murder," "assault to murder," and 44 of them for "murder." It was a mighty mob of bloodthirsty men who, unhindered by law or any enforcer thereof, encircled the strip pit of the Southern Illinois Coal Co., accepted the surrender of the non-union workers and guards therein and then shot and cut nearly half the captives to death, wound many others. Nobody could hope that a grand jury three months later could learn who all of the men in the mob were. But indictment 214 of them was a masterly job.

When the grand jury was impaneled in August it began one of the most undesirable tasks imaginable. There were, those twenty-three farmers, selected from among the non-mining residents of a county whose main industry is mining. It is a county where popular sentiment was such that a man either said he was against the prosecution or else he kept his mouth shut. Dark threats against prosecutors down there were not uttered idly. It was in "bloody" Williamson County. But at the jury took the case Judge Hartwell, of the Circuit Court, leaped across the rail of the jury box that measurements took and told them "to know them all and he knew they were real men ready to submit themselves as such in the face of 'influence,' bribes, and direct threats. They have done so. Their action and the language of their report to the court is sound evidence that there lives in "bloody" Williamson County an element worthy of the title "American."

The grand jury is to be commended not only for the fearless investigation it made but for the evident honesty of its effort to get at the truth and the whole truth. It minced no language in blaming a mining company for foolhardy action. It flatly said the ill-advised message of John L. Lewis, president of the United Mine Workers, telling the union miners of southern Illinois that the men in the strip mine were strikebreakers "and should be treated as such" was the spark that touched off the magazine of hate. It charged the miner sheriff of the county, a candidate for office, with a cowardice that was indulged for political gain and stripped state officers of the flimsy defence of their own failure to do their duty before the massacre took place. It gave the miners' union a much-soiled bill of health and otherwise displayed its impartiality and stalwartness.

The grand jury's work may be finished. It has named 214 men who may be guilty. The case now goes to the courts for trial. It remains to be seen whether a jury impaneled in the ordinary way in the solidity unionized county of Williamson can be as fearless and honest and impartial in the upholding of the arm of the law. It is by no means proved that government and justice and decency have regained command in "bloody" Williamson.

**Keep Your Hand Close to the Work**

AN ARTICLE this week by Joseph A. Maguire gives an interesting description of the ways in which power is wasted. In fact it was the misuse of compressed air that made it disappear so suddenly from its former rôle as the main medium for power transmission at mines. It was too freely used to remove smoke, gas and even water. Lines were laid too carelessly; valves were left "with just a crack open" for air to escape, and the result was inevitable.

Of course there were other causes, line friction being among them. The lines were designed to provide certain machines with air and to do it at a certain location. As the pipes were extended and more machines were needed and used and more places had to be ventilated by valve cracking (for it seemed inevitable to use the air when it was so handy) and when, also, leaks became more frequent and troublesome, the main lines became inadequate, and it seemed too great an undertaking to dismantle the line, move the pipe forward and put new and larger pipe near the main compressor.

But losses due to leaks and cracked valves turned the tide definitely against compressed air. One way to avoid leaks as also line losses is to put the compressor near the work to be performed, driving it by electricity.

Such a compressor needs no attention, automatic regulation providing for its operation without raising excessive pressure or using power wastefully. When only a few men are served by a compressor they will be more likely to see to it that the air is not wasted, though they may be somewhat careless as to what happens when none of the men is using his drill. Where a big compressor is used the men are too far apart to watch wasteful users of air, and so the responsibility, being largely spread, is almost entirely unfelt.

Small units also provide for the shutting down at off-hours of all the compressors save the one near the pump or other machine that must work during the otherwise idle period. With the compressor portable the hand is kept near the work and the air power is always under control. When generated at the mouth of the mine the chances are that it will be largely wasted in inefficient ventilation and leakage.
More Power Often Wasted by Leaky Pipes and Cracked Valves Than Would Run a Compressed-Air System

In Off-Shift Operation Leakage Consumes Unusually Large Proportion of Power—Partial Change from Air to Electricity May Merely Add Cost of Latter to Former Air Cost

By Joseph A. Maguire

Compressed air plays an important part in the production of coal, particularly anthracite, being largely used to operate inside hoists, pumps and drills. Electrification of hoists and pumps has tended to reduce the use of this medium of power transmission, but this reduction is being offset to a certain extent by the increasing use of air drills. The efficiency of an air system is of the utmost importance, not only on account of the operating expense of such a system but also because the production of coal and its total cost per ton is greatly affected by the efficiency of the air system.

It may be beneficial, therefore, to point out some of the common ways in which this efficiency is lowered. The average mine using compressed air contains a network of distributing pipes, the result of various extensions, generally made in a hurry, with little or no regard for proper sizes, drainage and the like. This network is an ever-growing one, as lines are not generally taken out when the work in a section is stopped. These pipes soon cause losses, for leaks develop either at the joints, where the valve packing gives out, or at points where the roof falls and breaks the pipe. It is not uncommon to find that this method of making extensions to the piping system causes an excessive pressure drop in the pipe lines. In time this results in such low pressure being maintained that neither hoists nor drills can operate effectively. This pressure drop sometimes occurs at the shaft but more often in sections of the mine where lines, put in originally to supply one or two hoists, have been converted, in part at least, into mains. It is not uncommon to find hoists that are barely able to pull a trip at more than a snail’s pace, or to find these machines waiting until the demand eases up and the pressure increases, before being able to operate at all. Frequently this can be remedied by putting in a few hundred feet of larger pipe or sometimes by merely installing traps.

Loss in energy and pressure due to leaks is likely to be heavy unless pains are taken to keep leakage at a minimum. It is not always easy to put good threads upon present-day pipe. The dies employed do not get as careful usage as could be wished, making it a still more difficult matter to get tight joints. For these reasons it would pay handsomely to furnish the mechanics doing this work with white or red lead or some other pipe compound. The practice of running air pipes along the bottom or on the mine floor is another prolific source of leakage, particularly when the pipe is rela-
Proper maintenance and in operating power will be obtained by keeping the pumps on the top.

When it is necessary to maintain pressure on the piping system continually, as for the operation of pumps, leaks become of serious importance. As a rule, 24-hour operation is required for the only one or two pumps or for the installation of a section, but service is nevertheless maintained on the entire system. The average that the losses from leaks on the entire system are going on continually.

Just what this amounts to may be appreciated from the data made to determine these losses. One mine plant tested consisted of two 1,700-cu. ft. crossed compound non-condensing steam-driven compressors supplying hoists, pumps, and drills. One pump was operated by air continually and for this purpose pressure was maintained on the entire system at all times. The results obtained from this test follow:

Average flow of air from compressors during working periods, 1,950 cu. ft. per minute; average horsepower input, 340; flow of compressed air to supply leaks, 350 cu. ft. per minute; horsepower to supply leaks, 157; total power cost per year to supply compressed air, $18,200; power cost per year to supply leaks, $12,400; power cost to supply mechanical apparatus, $5,300.

Thus because pressure was maintained on the lines continually, the losses in energy from leaks were twice as great as the energy actually furnished to the hoists and other mechanical apparatus.

Loss by Reason of Leaks is Great

Another installation which was subject to test maintained pressure 24 hours a day to supply a small dip pump of 200-gallons capacity operating against a 30-ft. head. With nothing operating off the air system but this pump, the input to the air compressor was 105 hp. The magnitude of the loss incurred by reason of leaks can readily be appreciated when it is realized that 3 hp. would be ample to pump the water handled.

These two instances are cited from a number of similar tests. It is believed that they cover average installations, neither better nor worse than hundreds of others.

Another large source of loss is the use of compressed air to ventilate chambers. It is much easier to crack an air valve in a chamber before going home than to stop and put up brattice cloth. Many foremen seem to think that in this practice even when the ventilation in the section is beyond criticism and in spite of strict orders prohibiting it. This probably is because they do not realize the cost of ventilating in this manner. This practice, however, results in more than the loss of power to supply the air. It springs primarily from using compressed air to blow out powder smoke, but gradually grows to ventilating chambers day and night, until together with the leaks it overrides the compressor plant until the pressure gets so low that nothing will operate effectively. When this occurs the miners who are saving themselves trouble with brattice cloth by the use of air are the first to go home because the pressure is low.

To cite one instance of this, I once investigated a mine where trouble was being experienced in maintaining pressure. A 400-cu. ft. compressor had operated a few small air hoists and managed to maintain a reasonable pressure. These hoists were electrified and some air drills installed. It was soon necessary to procure a larger compressor and a 600-cu. ft. machine was put in place. In spite of this the pressure continued low. An investigation showed that leaks and the use of compressed air for ventilation was responsible for this condition. In extending the piping into the chambers many leaks had resulted and the practice of ventilating with compressed air had started. The 600-cu. ft. compressor could maintain only 75-lb. pressure even though no machines were operating. Air-flow measurements showed that the compressor worked properly but was overloaded.

Electrification is Often Disappointing

Leakage and valve cracking have been the cause of much disappointment when air hoists and similar apparatus have been electrified. Estimates have been made showing that large economies should be realizable from the electrification of air-actuated equipment. After electrifying the hoists and other machines it frequently has been found that the compressors consumed as much power as before.

As a case in point, one mine operated two 1,000-cu. ft. steam-driven compressors. These machines were rather old, not in the best of repair and consumed about 60 lb. of steam per horsepower-hour. From these two compressors a number of hoists and pumps were operated. It was estimated that by the expenditure of $50,000 an economy of $18,000 per year could be obtained. After electrification one compressor was shut down and the other operated slowly to supply a few air drills. After a few months the operation of the compressors increased and in a relatively short time both were pounding away at full speed during the day and one at night and on Sundays. Apparently not only was the $18,000 economy not obtained but the power costs were actually increased $12,000 per year.

Careless Pipe Laying Causes Many Leaks

Called to investigate this condition, I found the original estimates conservative and the installations properly executed. What had actually happened was that a number of air drills had been added and in running the connections to the chambers extremely careless piping had been done and old cast-off valves had been used. In addition compressed-air ventilation had gotten a foothold to such an extent that the only reason for operating the compressors other than during working hours was for the purpose of ventilation.

The pipes accordingly were put in proper shape, one compressor was dismantled and the engineer was required to operate the other only during working periods. Later, however, this ruling had to be modified in order to provide for development work. To prevent waste valves were installed on each main distribution pipe, so that all sections other than the one in the territory in which work was going forward were shut off when the "all-over" whistle blew.

In electrification of air-actuated apparatus on the basis of economy it should be realized that for the reasons stated the power actually used to operate the mechanical apparatus may be, and frequently is, a minor portion of the energy consumed in compressing air. If compressed air is to be entirely eliminated this can be disregarded, but if it is to be supplied for any purpose after the electrification of pumps and hoists it should be considered a part of the electrical program.
to overhaul and put in good condition the air pipes that are to remain in service and to dismantle all piping not absolutely necessary.

Another common practice in the utilization of steam-driven compressors which is highly wasteful is to regulate their operation by hand. The regulators that automatically maintain the desired pressure either are overlooked when installing the compressors or are allowed to get out of repair to such a point that the compressors are operated by hand. Theoretically, when no governor is used the engineer adjusts the speed of the compressor to meet changing load conditions. Actually he sets the hand throttle to meet the maximum requirements and allows the safety valve to regulate the pressure. I know no easier method of wasting money.

Efficient compressors of course are essential to economical operation. Many machines are in use which, though sturdy and rugged, are of inefficient design. They were purchased when the low price of fuel at the mines did not appear to justify the expenditure necessary for more efficient types. They have, in the majority of cases, served long and well and under prevailing fuel prices can be profitably retired from active service.

**POWER COSTS PER YEAR**

<table>
<thead>
<tr>
<th>Type of Compressor</th>
<th>Cost per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple steam-driven compressor</td>
<td>$18,950</td>
</tr>
<tr>
<td>Compound condensing steam-driven compressor</td>
<td>6,440</td>
</tr>
<tr>
<td>Electrically-driven machine current costing $1.55 per kw-hr.</td>
<td>1.935</td>
</tr>
<tr>
<td>Electric machine current costing 1e. per kw-hr.</td>
<td>6,640</td>
</tr>
</tbody>
</table>

In choosing between steam and electricity as a motive power for compressors consideration should be given to a number of factors other than the price of steam or electric energy. No hard and fast rules govern, for what may be the more economical drive in one case may easily be the more expensive one in another. Some idea of the operating power costs of simple steam, compound non-condensing steam and electrically-driven compressors can be obtained from the accompanying figures, taken from actual installations and corrected to a common basis of operating conditions. This base is as follows: The machine is assumed to furnish 900 cu.ft. of air per minute for 275 working days of 8 hours each per year and 400 cu.ft. per minute during the rest of the year; the cost of steam is taken as being 30c. per 1,000 lb., whereas electricity is assumed to cost 1c. per kilowatt-hour in one case and 1c. per kilowatt-hour in the other.

**Coal Flotation and Briquetting of Float Make Rapid Strides in Many Countries**

At the annual meeting of the Minerals Separation, Ltd., of London, England, the chairman, Francis L. Gibbs, reported that the company was compressing coal with 50 per cent of water and about a third the usual quantity of binding material and producing a briquet containing only 4 or 5 per cent of water, the water expressed coming out in clear jets without a particle of coal in it. The coal being thus briquetted is that of the Powell Duffryn Steam Coal Co., of Wales.

The statements that follow are taken from a recent annual report of the chairman. The briquets made by the process, which will be known as "Minesep," come out in a compact shape with a more or less hard surface and become in a few hours so strong that they can be thrown about without breaking. The briquets as marketed "can be made to contain only about 3 per cent of ash and 3 per cent of moisture." Thus by this process the cost of drying and driers is said to be saved as well as the cost of pugmills, and the product, having an unusually small quantity of binder, causes less smoke than other briquets. Furthermore, the fuel does not open up in the fire. It is purposed to manufacture 2,000 tons of this fuel daily at the Powell Duffryn plant. Some of the fuel already has been tried on a railroad in Wales having steep gradients, and it has given great satisfaction.

Another briquetting plant is to be installed at Ashington, to be run in connection with the flotation plant in operation at the mines of the Ashington Coal Co. Here tests will be made on the flotation of coal and the briquetting of coals and "brasses."

The work at the Skinningrove Iron Co.'s plant has been delayed by the depression in the iron and steel industry; nevertheless progress has been made in the construction of a plant which will treat 600 tons every 24 hours.

A plant of like size has been erected and operated at the Oughterside Collieries in Cumberland and is said to give a coke far superior to that produced before. At Low Laithe Colliery, in Yorkshire, a plant with a daily capacity of 250 tons is in course of erection and another will be built by the Team Byproduets Coke Co.

Much work has been done in an attempt to coke coals which are rated as semi-coking, and several large-scale tests have been made. This problem is not yet solved completely, for, although part of the charge of coal after treatment produces excellent coke, part does not. The solution of the problem of coking the more resistant material appears likely to be found either in the adjustment of the temperature or in the substitution of a different form of coke oven from that which is generally used, one that will suit the particular product which has to be coked.

At Noeux-les-Mines, in France, a plant is being installed with a capacity of 1,000 tons. This plant should be in operation early next year. A briquetting plant will also be erected, owned partly by the coal company and partly by the Minéraux et Métaux, the representatives in France of the Minerals Separation, Ltd.

In Spain the Aprovechamiento Residuos Minerales Sociedad Anónima, a subsidiary of the Minerals Separation Co., purchased the coal plants Mariana, La Modesta, Maria Luisa and Baltasara, the Mariana plant being put into commercial operation early in April. The high ash content of the coal gave some difficulty, but this has been overcome and the product now meets requirements. This plant, in common with all other coal plants in Asturias, except the Ujo plant, has been shut down since May 16 on account of a general strike. However, construction work has continued.

The Pena Rubia plant continued its production until shut down by the strike, producing a product of good coking quality. At Ujo, after considerable delay a 600-ton plant was put into commercial operation at the mines of Hullera Española and the latest advice indicates that the production is now maximum and minimum production of 200 tons a day of clean coal may be expected. The product has an ash content below the expected figure. Within a short time this plant will be running at its full capacity.

In China a plant is to be erected for the Chinese Engineering & Mining Co., Ltd. It will have a capacity to treat 250 tons every 24 hours. The plants in Belgium, Germany, Australia, South Africa, India and Chili have not arrived at stages of development which would justify reference to them in those columns.
The extensive development of the outcrop of the Pittsburgh bed furnish much information as to its extent and thickness. Pittsburgh coal has been mined so many years in Summit and Elk Lick townships that it is practically exhausted. In Southampton, Brothers Valley and Jenner townships this coal has been developed in recent years. Brothers Valley township contains the largest reserve.

The No. 2 Price coal of the Berlin area in Brothers Valley township has been correlated as the Pittsburgh coal and is here computed as such. From drill-hole records and outcrop it has been possible to define fairly accurately the extent of this bed. The area as defined will subject to correction when more information is available from future prospecting and development.

A fair amount of information is available as to the extent and thickness of the Lower Freeport coal. It is thickest in Somerset and Quemahoning townships, and because of its exceptionally fine quality in the vicinity of Friedens it is in great demand as a smelting coal. As this bed is extremely variable in thickness and persistency, it has been considered as a reserve only in areas contiguous to mines or to drillholes that prove it to be of workable thickness. A low percentage of recovery has been assumed also because the bed is so irregular.

The Clarion coal has been computed as of economic interest in six townships, namely, Addison, Black, Milford, Paint, Somerset, and Upper Turkey Foot. Little is known of its thickness and extent, and only areas surrounding developed or proven ground have been computed. Future prospecting may enlarge these areas, but information is meager at the present time. The Clarion coal is thickest in Black township, ranging from 40 to 58 in. This coal is extremely variable and is broken by partings. Therefore a low recoverable percentage was used in these computations.

The No. 1 Berlin coal in Brothers Valley township has been correlated as the Sewickley coal, and no quantity has been computed as such here. From drill-hole records and outcrop it has been possible to define with fair accuracy the extent of this bed. The area as defined is subject to correction when future prospecting and developments furnish more information. The Sewickley coal is mined only in Brothers Valley township in the vicinity of Pine Hill, where it averages 44 in. thick.

Brookville coal is considered of economic interest in six townships, namely, Black, Brothers Valley, Elk Lick, Milford, Somerset and Summit. Data are meager as to its thickness and extent, and it has been considered as existing only in areas contiguous to localities where mined. This bed is 50 to 36 in. thick in Black and Somerset townships.

The result of computing the coal reserves within this area, based on the latest maps, engineering data and methods, is shown in the accompanying table.
Shaking Chutes, Swung from Roof or Resting on Rollers Meet Loading and Gathering Problems in Low Coal

Chutes Made of Heavy Galvanized Iron in Ten-Foot Sections and Often Over Three Hundred Feet Long Receive Impulse from a Machine Sixty to Ninety Times per Minute—Troughs Deliver Timber

By A. Gerke
Waldenburg, Silesia, Germany

Many considerations influence the choice of a method of mining coal—economy, protection of the workman, preservation of the surface and neighboring seams and, among the others, the provision for conveying the coal when mined. No difficulty is experienced in the conveyance of the coal when the seams to be excavated are of such thickness and of such a moderate gradient that cars can be taken readily to the working faces. Nor is the problem difficult where the coal will readily slide to the gangway, as, for instance, when the gradient is 30 deg. or more. The problem is found where the inclination is oversteep for cars and not steep enough to move the coal by gravity. In such cases to avoid unnecessary shoveling of the coal the length of the “bords” should not exceed 33 to 40 ft.*

It follows, therefore, that in the development of the mine an unusual number of gangways will have to be driven, and in all of these rock will have to be shot down or lifted if the seam is not thick enough to provide headway for the mine equipment. Moreover, the driving of such a multitude of gangways would not only be expensive but the maintenance also, and, furthermore, their many roof falls would interfere with operating efficiency. Such gangways would have to be kept standing for a long time.

It is also true that their ventilation would be both difficult and expensive. In mines generating firedamp another objection would be that it would be no easy matter to keep these many roadways free of gas. Supervision would require several men because of the lack of concentration of the operating faces. Above all, the work would be excessively prodigal of labor, because the work would be done under many disadvantages.

As these many drawbacks are even more troublesome where the coal is thin, and as low seams of coal are becoming ever increasingly operated, no efforts have been spared to devise some method of replacing such a system by another more effective.

That this difficulty has been recognized in America is evident from an article published in Coal Age in 1916, Vol. IX p. 1,044, entitled “Scraper Mining for Low Veins,” which describes an installation in the mines of the Lehigh Valley Coal Co. This, it is true, is used with the room-and-pillar system of mining. It provides for the use of a scraper pulled to and fro by a hoist located in the gangway. The width of the working places usually is 24 ft. and their length about 50 yd. Successful use of this method has been made at the Seneca and Maltby mines, not to mention others.

In Europe troughs of galvanized iron are used to bring coal from the working faces to the gangway, these being either hung from the timbers in the bord or supported on rollers. The trough, which has an ultimate length of from 200 to 230 ft., is pushed to and fro 60 to 90 times per minute by an electric motor or one driven by compressed air. The impulses cause the coal to slide down the trough.

When the trough, suspended by hangers or sustained by rollers, is pushed forward the particles and lumps of coal go with it. When the motion of the trough is arrested at the end of its stroke the coal, not being attached to it, continues to go forward, retarded slightly by the friction of the trough, which trough is now traveling backward. When this movement ends the trough again begins to go forward, aiding in the advance of the coal. The trough, having gone to full range of its motion, again starts forward, causing the coal to continue on its way. In this manner the coal is moved toward the loading point, to which it may be harnessed with speed, receiving as it does 60 to 90 impulses per minute.

Fig. 1 shows a part of the trough on rollers and Fig. 2 a single unmounted trough. It will be seen that it

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*Herr Gerke overlooks the many schemes of driving on a level between pitch and strike, of using a room hoist or two tracks with a retarding “gravity hoist,” of loading the coal into a small “buggie” which is run on a grade nearly level and dumping the coal from the buggie into a full-sized mine car, and of using a trough and “bucketing” the coal in the trough. His reader, however, to another method, that of the scraper above. The English word “bord” is used here to express a roadway driven like a room for the disposal of coal but unlike the room in that it is narrow and without a neck and so resembles a gangway or slighter—backward. See Fig. 6 and 7 in this article.—Editor.
The trough usually is 6 in. thick, and the depth of the trough is 5 ft. At the top the trough is, as a rule, 5 ft. wide and at the bottom 11 ft. Its weight is about 132 lb. per ft. Unit lengths of the trough are from 10 to 15 ft. long, but, as stated, when joined up these units may constitute a trough 200 ft. long, and sometimes the length is made even greater.

For transmitting the motion throughout the length of the trough a so-called "driving trough" is used which rests against brackets bolted to ends of adjacent trough sections, which brackets are curved into a sort of ramp where at their ends. These curving edges are fitted for the reception of bolts. The brackets therefore keep the troughs together in position.

Each 10 or 15 ft. length must be firmly joined to its neighbors on either end, as the reliability of the trough as a whole depends on this characteristic. Only a good joint can successfully contain such severes and continuous compressions as those to which these joints are subjected. Yet it must be a joint that can be disconnected readily, and simply also, for it must not have too many parts that are likely to get loose.

Underneath the bearing trough two rollers are fitted, moved by an axle as in Fig. 1. To prevent them from cutting into the bottom a frame has been devised for them to run on. This frame is so built that the runway for the rollers is at a steep inclination, as shown in the same illustration.

The motion of the trough, as stated, is obtained from a motor, driven by compressed air or electricity or even by steam. The former source of power is preferred and for this reason is here described. The motor can either be placed under the trough and be attached to it directly through an iron rod or it can be located at the side and be propelled by a transmission as illustrated in Fig. 4. In Fig. 3 the cylinder has a piston rod which bears a crosshead with rods which pass outside the cylinder on either side and are connected on the opposite side by another crosshead. An iron rod or rope is connected to the front crosshead at one end and through a three-piece motion is connected with the trough (see Fig. 4). When compressed air from the pipe lines enters the cylinder of the motor, the piston and through it the three-piece motion is moved back, thus setting the trough in forward motion. When, however, the piston has advanced a prescribed distance the compressed air is shut off by a valve, but the piston continues to move forward by the expansion of the compressed air and by the inertia of the parts. Thus the trough is brought slowly to a standstill. The trough then falls back by gravity to its original position, but the coal still glides along and it is still moving when the trough makes its next forward movement.

The motor is screwed solidly to a block of timber or a piece of channel iron and this is held immovably in place by pieces of wood or iron which are braced holes excavated in the bottom of the seam.

So much for the mechanism: now for the methods by which advantage may be taken of it. If the roof in the bord is strong and the seam not too thick, the troughway can be driven a length of perhaps 165 or 200 ft. It is carried, of course, in a straight line, the coal being removed either by working on the pillar or by driving cross bords.

Fig. 5 illustrates the former method of working, one which can be kept open only if the coal is removed with sufficient rapidity. If this precaution is observed the roof will then come down evenly as the work progresses. But if the face remains stationary for some time too much will be demanded of the roof. It will bear down on the face of the coal, thus breaking it off. To avoid this a large force of miners must be employed on the coal face. In fact there should be a hewer in every 11 ft. of face length. As the trough will carry 40 tons an hour it can remove the coal from more men than are thus indicated. This method concentrates the working
force much more effectively than is possible with room-and-pillar methods. Among the advantages are fewer haulageways to be maintained, fewer workmen to be employed, more efficiency from those employed, and fewer haulage plants and appliances needed.

Besides this method of working, which can, it is true, be employed only where the roof permits, others have been devised which may be used with advantage where the seams are thin. Fig. 6 shows pillar workings completely furnished with shaking chutes. In these cases the main bord is driven as far as the gallery above, whereupon cross bords are driven at 33- to 65-ft. distances on either side of the central bord. From these the pillars are removed by slabling them on the ends, slabbing commencing in the upper cross bords before it is started in those lower down.

Fig. 7 shows another method of working. Here a single bord is driven between the bottom level and the top gangway so as to establish an air connection. In this bord a main trough is placed. The pillars on either side may be arranged 65 to 265 ft. wide, depending on the slope. In front of each of the pillars a trough is placed discharging into the trough in the main bord. In this method the coal is worked from the top downward following down the slope of the coal. This method is more simple than that in Fig. 6, and there are only two gangs of miners to be accommodated on the main trough. Supervision is also better than in the type of working shown in Fig. 6.

Timber may readily be transported where the troughs are installed provided the bord is driven through to the highest gallery, for it can be introduced in the trough at that point and the trough will move it down to the point desired. A man stationed at that point can take it off. Where, for any reason, this may be impossible a small windlass operated by compressed air or electricity may be placed in the highest point in the bord, and the timber then can be “snaked up” by this means. Another advantage of troughs is that they can be used where the coal is so thin that it would be necessary otherwise to shoot top or bottom to drive the bords. This saves much expenditure of money but also reduces the time otherwise needed for development.

The advantages of reciprocating chutes in the working of a coal mine are first of all that the work can be expedited to a greater extent than by any other method. Few bords are needed and what there are need be driven only in coal, thereby saving much rock work. As the coal is carefully transported in the chutes its conveyance is marked by an absence of dust. As the troughs are strong and offer much resistance to wear and breakage, the plant deteriorates more slowly than almost any other form of equipment.

Other advantages are that the plants are quickly installed at little cost both for installation and operation. Such troughs can be used for the conveyance of rock, coal, ore and salt—in brief for all materials not disposed to adhere to the chutes. The troughs may be used where the ground is irregular and in surface workings as well as underground. The conveyance of coal by these means has today passed the experimental stage. The troughs have proved their value as a cheap medium of conveyance in a multitude of instances both below and above ground.

Small Steam Turbine for High-Temperature And High-Pressure Steam

SMALL steam turbines, normally used for driving power-plant auxiliaries, such as exciters, circulating, hot-well and boiler-feed pumps, coal crushers, fans, stokers, etc., ordinarily receive, and should require, but little attention. They also should be able to use steam at high pressure and superheat, and for their size, should develop from the steam consumed the greatest possible quantity of work even though arrangements are made so that some of this steam subsequently may be utilized in feed-water heaters or for industrial purposes.

The velocity-stage turbine shown in the accompanying illustrations has been designed to meet these requirements. It is built in sizes up to 1,200 hp., and can be directly connected to high-head centrifugal pumps, blowers and compressors, to alternators and to small direct-current generators, or by means of speed-reducing gears, to alternators and direct-current generators of medium size, to large centrifugal pumps and blowers, to belt pulleys and rope sheaves, and in general to machinery operated at slow or moderate speed.

To adapt it for operation with steam of high pressure and superheat, the steam chest and nozzles are located
TURBINE CONNECTED DIRECTLY TO A PUMP

The simple high-speed rotary motion of both turbine and centrifugal pump naturally adapts them to direct connection to each other. The boiler-feeding unit of this type because of its reliability and freedom from water hammer and other ill effects steadily gains in favor.

The safety and health campaign conducted in the mining camps of Utah by Dr. A. L. Murray and C. A. Allen of the U. S. Bureau of Mines yielded such satisfactory results that they are being extended to other sections. Dr. Murray and Mr. Allen are at present conducting a similar campaign in the Oeur d'Alene district. This work is done in conjunction with the training in first aid.
Proper Handling, Care and Testing of Insulating Oils

Special Mineral Oils of High Insulating Value, Free From Acid, Alkali and Moisture, Used—Danger from Absorption of Moisture and Formation of Sludge—Test Transformer-Oil Samples Twice a Year

EARLY all transformers, compensators and oil switches that are used for lighting, power, etc., employ an insulating oil of some grade or other. In transformers the oil is used for insulating the windings and for the purpose of radiating the heat generated in the coils to the outside, where it may be radiated to the air.

In compensators and switches the oil is not only used for insulating purposes but to extinguish the arc formed on the opening or closing of contacts. It is important, therefore, that a proper grade of oil be used for each purpose. It is considered the best practice to purchase this oil from some standard electrical company that makes a specialty of handling and preparing such liquids.

Oils for this purpose must be of mineral origin, of high insulating value, free from acid, alkali and moisture. They also must be of relatively high flash and fire points, low congealing or freezing temperatures and must make a minimum quantity of sludge at the temperatures experienced when operating at full load for long periods. To obtain these properties great care must be taken during the manufacture of the oil to filter and dry it. The employment of an unprepared oil may cause serious damage to the apparatus in which it is used.

In storing and putting into service insulating oils, much care should be exercised. Oil of this kind generally is shipped to the purchaser in sealed tins or steel drums. Sometimes it is transported in the apparatus in which it is to be used. On receipt, if it is not to be put into immediate use, it should be stored in a dry wareroom. When steel drums are set on end moisture is likely to collect on their heads and this may be drawn into the drum by the breathing action induced by changes of temperature if even minute holes are present in the head. Consequently steel drums should always be laid on their sides with the bung down.

OIL FOR REPLENISHMENT MAY BE BOUGHT IN TINS

Oil for spare transformers or to make up for leakage therefrom should be purchased in tin cans, as these are more nearly airtight than barrels. The cost of holding a steel drum for a long period would more than offset the expense of the tin cans.

In transferring oil from container to apparatus care should be taken to prevent the entrance of moisture or foreign matter. Before opening a steel drum or tin all dirt should be wiped away from the mouth of the container, then the oil should be strained through several layers of clean dry cloth (to remove any foreign matter) into clean previously dried receptacles.

Oil cans or drums should not be opened in a temperature that is materially warmer than the oil. The temperature of room and oil should be nearly equal in order to prevent the inside of the drum from sweating.

Oil should never be transferred in damp or rainy weather without taking every precaution to exclude moisture. If the oil is received in good condition and is immediately placed in the apparatus it is reasonably certain that it is safe, but if it has been stored for some time the only sure way to ascertain its quality is by a dielectric test. This will be explained later.

In transferring oil the drums should not be opened until everything has been made ready for its transfer, and no rubber hose should be used as the oil will decompose the rubber and the sulphur thus set free will attack the copper of the apparatus. When the equipment container has been filled to the proper height it should be sealed up as tightly as possible, making sure that all felt and other seals are properly in place.

MOISTURE AND SLUDGE SPOIL INSULATING OIL

Apparatus containing oil seldom gives trouble, and for this reason it is likely to be neglected. It is a well-known fact that after oil has been in service for a long period it begins to change quality. Moisture will find its way in, sludge will begin to form, impairing the insulating qualities and stopping up the oil ducts. This in turn will either cause the insulation to break down or stop the oil passages, so that the transformer winding will run warmer than it should. It is therefore necessary to give such apparatus systematic inspection and to sample and test the oil regularly.

Apparatus of large capacity where the load is fluctuating through wide ranges should be inspected at least twice a year and samples of the oil taken and tested. A record of each inspection and the results of the test should be carefully kept. In this way it can be determined whether tests should be made more frequently.

In equipment other than transformers where the quantity of oil is small it is not necessary to test so often unless it is known that the apparatus is running overloaded. This may cause the oil to become too warm and result in deterioration. In switches and circuit breakers the oil deteriorates from a carbonizing effect rather than from the introduction of moisture. Lightning arresters usually will contain more moisture than other pieces of equipment because they are in contact with the electrolyte. This does not materially injure the oil for this purpose but when cleaning or restacking the arrester the oil should be passed through a filter or else new oil should be substituted.

It is desirable when taking a sample of oil for testing to obtain the poorest part of the contents of the container. This usually is located at the bottom as water, sludge also being heavier than oil, will settle to this point. If this sample proves acceptable it is reasonable to assume that the rest of the oil is safe. If a bottom sample cannot be obtained the next best expedient is to obtain a test quantity from the top after the apparatus has been working and the oil has been thoroughly stirred. When drawing a sample from a test valve at the bottom of a container, caution should be observed not to include any of the oil that has been standing in

*Report of committee on "Proper Handling and Care of Insulating Oils" presented at meeting of West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers, Sept. 28, held at Huntington, W. Va. The committee consists of W. H. Webster (chairman), T. C. Harmon, T. W. Blake and M. A. Maxwell.
When oil is tested by a company making a business of such work the matter of preparing samples and shipping them must be given careful attention. Bottles for receiving samples must be thoroughly cleaned and dried. They should have a wide mouth and be sealed with cork rather than rubber, the cork first being coated with paraffin. The final closure is made with a sealing compound. This will avoid any possible chance of moisture getting in. After the oil has been placed in the bottle it should be immediately sealed and not allowed to stand even for a few minutes, as this might possibly make the test unreliable.

When the dielectric strength only is to be determined, 16 oz. will be sufficient, but if other tests are to be made not less than one quart should be sent. Each sample should be tagged, stating what part of the apparatus or drum it was taken from, the name of the apparatus and the serial number. The samples should be packed carefully to avoid any chance of breakage in shipment.

Companies desiring to make oil tests of their own might be interested in a few words concerning the apparatus used and its cost. The tester usually employed ascertains only dielectric strength and consists of a transformer, step-up switch and a cup that holds the oil and a standard spark gap. The cost of this outfit is about $125. The standard spark gap used for all oil testing consists of two terminals 1 in. in diameter and 6 in. in apart.

Raising Voltage Until It Breaks Down Oil Gap

This apparatus may be connected to an ordinary 110-volt alternating current. The voltage is raised by degrees until final breakdown occurs. In testing oil with this equipment the cup containing the gap should be carefully cleaned and dried and then filled with the sample of oil. It should then be allowed to stand for a few minutes to permit the air bubbles to escape. This is especially necessary if the oil is cold. The voltage can then be applied in steps as fast as the voltmeter can be read. Five breakdowns should be given to each filling and then the receptacle should be emptied and refilled from the original oil and again tested. This procedure should continue until at least three fillings are consistent within 10 per cent.

Oil in service, except in electrolyte lightning arresters, is graded as follows: If the oil fails between 25,000 and 30,000 volts it is considered excellent; if between 20,000 and 25,000 it is regarded as good; if between 22,000 and 16,000 it is said to be fair and below 16,000 it is considered bad and should be renewed or filtered immediately.

If only a small quantity of oil is involved it would be preferable to renew it outright. For firms having large quantities of oil to keep in condition the filtering process is much more satisfactory and economical. Filtering can be done while the apparatus is in service, the process being continued until the oil proves by test to be entirely safe. When oil is simply renewed it is a difficult matter to remove all of the old inferior liquid. That which remains may lower the dielectric strength of the new oil.

The filtering process consists of forcing the liquid under pressure through several thicknesses of dried filter paper. This removes all moisture and foreign matter. The filtering machine is connected to the top and bottom of the container, and the oil is circulated through the filter press until tests prove it to be safe. Several machines are on the market using this principle. The cost of the smaller sizes ranges between $275 and $300.

The cost of filtering 870 gallons of oil with one of these machines by an outside company that already had its apparatus on the job was approximately 12c per gallon. Another company filtering oil with its own machine filters 1,000 gallons during a period of three days, allowing one day to move the machine from one place to another. This would make the cost of actual labor about 2c per gallon. Where the machine has
to be shipped from one location to another the expense, of course, is much higher. It is a rather difficult matter to determine the exact cost of filtering on account of differences in the oil treated. Some oils would require much more time to filter and dehydrate than others.

In one instance, in 1921, 363 gallons of oil were renewed for 38.6c. per gallon, the cost including the freight and being reduced by the credit for empty steel drums. This shows that it is much cheaper to filter the oil than to renew it.

Another type of filtering and dehydrating machine utilizes the principle of centrifugal force and employs no filter paper. It appears to be highly satisfactory but actual data as to how thoroughly it dewater's the oil or what it costs per gallon to operate are lacking.

A copy of the record sheet of a test conducted on the oil from several transformers owned by a certain mining company is presented in the table herewith. It might be well to note on this sheet that in some tests the breakdown voltage was zero, but on a second trial proved good. This probably was due to moisture getting into the sample at some point. In other samples the dielectric strength of which proved to be low, the oil was dark in color and the low breakdown voltage probably was the result of sludge rather than of water. It will be well also to note the difference in the breakdown voltage of the top and bottom samples from the same transformer, showing in all cases that the bottom is the place where the poorest quality of oil is to be found.

Storing Bituminous Coal in a 40-Ft. Pile

STORAGE of coal is one of the big problems of the day. The following hint by F. W. Randall, assistant to the general manager of the Rockingham County Light & Power Co., of Portsmouth, N. H., published in the Electrical World, is intended for central-station storage but may appeal to any kind of consumer. If operators could recommend to consumers a method of storage that would be reasonably safe and economical it would be possible to approach strikes of mines and railroads with coal on hand convenient to the point where it has to be used. Some features of this plan with trifling modifications should be available also for use in storage of coal around the mines.

It will be noted that pipes are put in place before the coal is deposited. These pipes are used as runways for thermometers lowered and raised by strong cords marked at regular intervals by knots which enable the depth at which readings are made to be noted. Then, by reference to an appropriate drawing the behavior of the coal in any section of the pile can be studied.

When a new cargo of coal is placed in the pocket, tests of the temperature are made daily in each pile until the exact conditions in all parts of the pile are determined. The pipes are 2 in. in diameter and are placed at frequent intervals and permanently clamped into position. The tunnels from which the coal is drawn for station use are numbered, and chutes 5 ft. apart are installed. If any spot shows signs of overheating, coal is drawn from the nearest chute until the hot spot is removed. The thermometers are enclosed in wooden frames to prevent breakage.

The arrangement was inexpensive to install and has permitted the storage of large stocks of coal to a maximum depth of 40 ft. with a substantial degree of security from fire. The pocket installation was designed by W. H. Allen, of the company's engineering department, and has given excellent service.

Chain Curtain Saves Coal on Long Chutes

BY JOHN S. WATTS
New Glasgow, N. S.

COAL or other material traveling down a long chute will attain a destructive velocity, and as it is not always possible to avoid using such a long incline and the excessive velocity thus engendered the retarding curtain shown in the accompanying sketch was devised.

The curtain is made of several lengths of chain salvaged from the scrap pile and connected to a bar which is bolted to the chute sides as shown in the sketch. When the material to be handled is in large lumps a heavy chain spaced 6 to 9 in. apart gives the best results. For smaller pieces a large number of small chains is most effective. The best size and length of chains can be quickly determined by trial.

When the chute is delivering onto a picking table it is most desirable to have the stream of coal delivered in a thin, steady sheet, and to effect this the chain should be fairly long.

This curtain has proved an effective retarder and at trifling cost will keep the speed of the coal within reasonable limits on the steepest and longest chutes. For long chutes two or more curtains may be needed.

Chain curtain saves coal on long chutes.
By Measurement of Current Used and Extended Records

Large Savings Can Be Made in Power Cost*

Importance of Cost Records Grows as Power Use Increases — Need for More Recording Devices — Contracts Should Be Based on Peaks Longer Than Five Minutes — Keep Power Factor Near Unity

In a business as highly competitive as that of bituminous-coal mining, it is essential that accurate production costs be kept covering, by separate classification of items, every step in the operations performed from coal face to railroad car. In the earlier years of the industry the investment was so moderate and the operating expense so low that the item of power cost was almost negligible as a factor in production. As a result recording, measuring or weighing apparatus was omitted from the original equipment and consequently it was impossible to calculate how much was expended in power. Rough approximations were used in the cost sheets of the mine.

Of late years the general introduction of purchased power, with the necessity of comparing costs between energy purchased and that generated, has brought about entirely different conditions. Another reason for proper cost keeping is the fact that the expense of both classes of power has risen so much that the original policy of power expense now represents a substantial percentage of total costs. Records show a variation of from 2 or 3c. up to as much as 23c. per ton over a fairly large output. It is now therefore necessary to give this item close attention.

The checking of power costs falls naturally into two divisions: (1) Where a power plant is installed and operated by the mining company and (2) where power is purchased from a central station.

Totalizing Watt-Hour Meters Needed

In the first case, in order to proceed intelligently, totalizing plant watt-hour meters must be installed. Accurate account should be kept of all items of expense such as oil, wages, repairs, upkeep and the like, and provisions must be made for either weighing or closely estimating the fuel consumption. The man responsible for power-house operation should be furnished with monthly detailed cost sheets for his department, just as the superintendent of mines is furnished with a mine cost sheet, because it is only by scrutiny of these various items and by comparisons of the results that improvements can be effected.

Determination of the proper charge for fuel consumed presents a problem of real difficulty, the solution of which depends both on the point of view of the accountants and the varying mine costs. Obviously under conditions of high market and ample car supply fuel should be charged at the market price, whereas when the market is weak and the car supply is limited a different value is represented. This holds true also when the coal supply is insufficient. This item, therefore, must be left to individual judgment, and on account of its variable nature it is the source of much dispute between mine owner and central-station power salesman.

Assuming that proper measuring devices are installed and accurate cost accounts are kept, power production may be tabulated under the following headings:

<table>
<thead>
<tr>
<th>Total Kw.-Hr. Generated</th>
<th>Total Cost per Kt.</th>
<th>Kt.-Hr. per Tons Mined</th>
<th>Tons Mined Total</th>
<th>Tons Burned per Ton</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other tabulations may of course be used if the completeness of the records make such cost keeping possible. A column headed "Pounds of coal per kilowatt-hour" indicates the generating efficiency from boiler furnace to switchboard. Naturally a wide variation will be obtained in these entries on account of the market, car supply, and similar items that influence the mine output, but after such records have been compiled for months or years, comparisons are obtainable which will cover a wide range in operating conditions. Monthly or even daily study of these records will enable the power superintendent to discover either a falling off or improvement in results and to locate the cause.

In the case of purchased current, which has been largely adopted where available, power superintendents find themselves called upon merely to check the accuracy of the monthly power bills. Some territories are served by several power companies, all with different rate schedules. All, however, first impose a "demand charge" or "capacity charge" at a fixed rate per kilowatt of the "highest integrated demand" over a stated time interval. This period may be one, three, five, ten or fifteen minutes. In fact it may be any period, but the list given covers those that are commonly used. The energy charge is made up by computing the cost of the kilowatt-hours through application of a sliding rate scale.

Demand or Readiness-to-Serve Charge

A word as to the origin and meaning of the "demand charge" may be in order. Many years ago, when the power companies, on account of the great growth of this part of their business, began to pay scientific attention to their rate schedules, it was observed that one consumer might require heavy installation investment on the part of the power company amounting to many horsepower, but through intermittent use might yield only a small monthly return in the shape of a power bill. Another consumer with an installation requiring a similar investment but calling for steady service might afford a highly satisfactory return.

Little-used storage warehouses, for example, equipped with freight elevators might require 25 kw. in line and transformer service though they would return to the power company such insignificant sums monthly as would be in many cases insufficient to pay even the interest on the installation equipment.

Accordingly a charge was established known in the earlier days as a "readiness-to-serve" charge. It was

held that inasmuch as a consumer of large demand but small consumption expected to take from the lines his maximum requirements at any hour of the day, the power company must hold this amount of energy subject to his call—that is, would be prohibited from contracting for it to another. The public service company therefore expected him to pay at least $1 per connected horsepower per month as a "readiness-to-serve" charge.

For some years this was considered in the light of a minimum payment, but later a distinct separation of charges was made based on the following process of reasoning. At that time the cost of one horsepower installed in a steam generating station was considered to be about $100. Figuring 6 per cent interest and 6 per cent annual depreciation, a yearly "demand charge" of $12 per horsepower was indicated. Soon the power companies were basing their rates on, first, a "demand" or "capacity" charge of $1 per horsepower per month, and, second, an "energy" charge of so much per kilowatt-hour consumed. This was done in order to guarantee a return from each horsepower of installed station capacity sufficient to carry interest and depreciation, regardless of the energy the consumer actually used.

**One Dollar Per Month Found Insufficient**

With the development of large steam turbo-generators, which, because of their large capacity, cannot reach out over a sufficiently large territory to absorb their enormous output without both extensive and expensive transmission systems, this charge of $1 per horsepower per month was found insufficient to meet the charges on the heavy unit investments. A change accordingly was made to the "kilowatt-per-month" basis with a substantial increase in the rate.

It must be borne in mind that this charge is in no sense intended to cover the energy delivered but is made solely in order that the consumer may bear the "stand-by" charges of interest and depreciation on the capacity reserved for his use. It takes effect regardless of whether he consumes any energy or not. Obviously, this being the case, this "demand charge" should yield no profit whatever to the power company, which must look to the sale of energy for dividends. The suspicion on the part of consumers that the power companies are really making profits out of these demand charges through overlapping has been the cause of much litigation before the public service commissions and has resulted in most cases in the commissions prescribing the charges for this part of the total billing.

**Demand Charges in Huntington District**

In the territory adjacent to Huntington, W. Va., three large power systems have been installed. One of these charges $1.80 per kilowatt of highest integrated 5-minute demand per month, another $1.92 per kilowatt of highest integrated 3-minute demand, and the third charges $1.65 per kilowatt on a 15-minute demand, the two last named using an alternative method known as "agreed standard capacity" or demand calculated from connected load. All have energy rate schedules with little in common.

Through the courtesy of J. H. Edwards, who has compared the demand made by the same load over several months, based on these different time periods, the following table is presented. This gives an idea of the effect of these different peak-period specifications on the total demand charges.

<table>
<thead>
<tr>
<th>Plant No. 1</th>
<th>Kilowatts Consumed 1-min. Peak</th>
<th>Kilowatts Consumed 5-min. Peak</th>
<th>Kilowatts Consumed 15-min. Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>March</td>
<td>490</td>
<td>440</td>
<td>400</td>
</tr>
<tr>
<td>April</td>
<td>540</td>
<td>510</td>
<td>440</td>
</tr>
<tr>
<td>May</td>
<td>520</td>
<td>480</td>
<td>440</td>
</tr>
<tr>
<td>Plant No. 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One month only</td>
<td>318</td>
<td>285</td>
<td>230</td>
</tr>
</tbody>
</table>

Consideration of this table shows the importance to the mine owner of having a peak period of at least 5 minutes and longer if obtainable.

Other companies in the northern part of West Virginia include in their contracts a clause providing penalties for bad power factor. Inductive load, such as that resulting from the application of induction motors to fans, pumps tipples, etc., causes the current to lag behind the impressed voltage, with which it is therefore out of step to a certain extent. The cosine of the angle of such lag is expressed as a decimal, or percentage, and is used to indicate the power factor or P.F. That portion of the current flowing through the receiving apparatus which is out of step with or is lagging behind the impressed voltage represents no energy, and is therefore known as "wattless current," while that in step is called "energy current."

Without discussing the technical features of this phenomenon it may be stated that the use of induction motors tends to increase this lag and results in low power factor, while synchronous motors possess the inherent capacity of not only correcting the inductive effect of their own windings but of compensating for a certain quantity of other inductive load. This is accomplished by overexciting the field circuit of the synchronous machines, and if the proportion of these units to the total load is large enough, the current may even be made to precede or lead the impressed voltage. Under these circumstances a leading power factor is secured which is fully as undesirable as a lagging power factor.

**Combine Synchronous and Inductive Load**

As unity power factor is most advantageous a judicious combination of synchronous and inductive load is desirable. The rotary converter may be designed with sufficient field capacity to bring about unity power factor and even to compensate for a limited amount of induction-motor load. The synchronous motor, however, has a wider latitude in this respect and may compensate for an appreciable quantity of inductive load.

Central-station companies object to low power factor because the presence of any considerable quantity of lagging or wattless current in their circuits results in poor transformer and line regulation, making necessary an inordinately high generating voltage if a given receiver voltage is to be attained. This also necessitates greater carrying capacity in the generator windings. The line losses arising from this cause may be appreciable.

The consumer, with his short distribution lines and generally ample motor capacity, is not greatly concerned over low power factor so long as it does not affect his pocketbook. In view of the tendency of the power companies toward penalty clauses and with due regard to the betterment of over-all efficiency, modern design should provide for reasonably good power factor on all receiving circuits. It is unfortunate that the
In keeping records of mine power bills the following tabulation has been found convenient.

<table>
<thead>
<tr>
<th>Kilowatt-Hours Used</th>
<th>Maximum Demand</th>
<th>Load Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>157,298 kw-hr.</td>
<td>2,240 kw</td>
<td>7.1%</td>
</tr>
<tr>
<td>108,464 kw-hr.</td>
<td>1,544 kw</td>
<td>6.9%</td>
</tr>
</tbody>
</table>

To illustrate how having the maximum demand on different time intervals over which the load is integrated affects the load factor the following figures taken from actual operating records are given:

<table>
<thead>
<tr>
<th>Peak Time Intervals</th>
<th>Kilowatt-hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 to 10:00 a.m.</td>
<td>3,240 kw-hrs.</td>
</tr>
<tr>
<td>10:00 to 11:00 a.m.</td>
<td>3,240 kw-hrs.</td>
</tr>
<tr>
<td>11:00 to 12:00 a.m.</td>
<td>3,240 kw-hrs.</td>
</tr>
<tr>
<td>12:00 to 1:00 p.m.</td>
<td>3,240 kw-hrs.</td>
</tr>
<tr>
<td>1:00 to 2:00 p.m.</td>
<td>3,240 kw-hrs.</td>
</tr>
</tbody>
</table>

The figures above tabulated have been taken from records of a mine located in the Winding Gulf field. By keeping a sheet for each operation and placing the results for the whole twelve months of the year on each sheet, any bill that is "out of line" may be spotted at a glance. By keeping these sheets in a loose-leaf binder, records covering years of operation are made easily available. As new entries are made comparisons with similar outputs in previous months show whether the bill is normal or needs investigation.

Such companies use meters rather freely about the works, differentiating the power consumed into "used for machines cutting, tipples, fans, town lighting, haulage," and the like. This is of value, however, only where the company is sufficiently large and prosperous to maintain a superintendent of power distribution, as the average mine electrician usually is too busy with pressing repair work to inspect and analyze such records.

### DAILY AND MONTHLY LOAD-FACTOR CALCULATIONS

Careful consideration of the method outlined above of making a total charge based on a combination of the highest peak multiplied by a fixed rate plus a scale rate for the energy (kilowatt-hours) consumed shows that the lowest net rate per kilowatt-hour on the total billing will accrue if the peak is kept down to as small a fraction of the total power used as possible. The daily load factor of a given receiving installation is the ratio of the number of kilowatt-hours actually used to the maximum number of kilowatt-hours that would have been used had the maximum demand been maintained throughout the entire 24 hours. Thus expressed mathematically the daily load factor becomes:

\[
\text{Daily Load Factor} = \frac{\text{Kilowatt-Hours Used}}{\text{Maximum Demand}} \times 24
\]

and the monthly load factor then is:

\[
\text{Monthly Load Factor} = \frac{\text{Kilowatt-Hours Used}}{\text{Maximum Demand}} \times 24 \times \text{days in month}
\]

As showing actual load factors at various plants the following may be of interest. These are taken on a monthly basis assuming an average of 750 hours per month:

<table>
<thead>
<tr>
<th>Plant No.</th>
<th>Monthly Load Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1</td>
<td>720 kw-hrs.</td>
</tr>
<tr>
<td>No. 2</td>
<td>1,240 kw-hrs.</td>
</tr>
<tr>
<td>No. 3</td>
<td>3,240 kw-hrs.</td>
</tr>
<tr>
<td>No. 4</td>
<td>1,080 kw-hrs.</td>
</tr>
</tbody>
</table>

Another term frequently heard among power solicitors is "diversity factor." This is the ratio of the actual peak obtainable by combination of several separate loads to the sum total of the individual peaks. For example, assume a certain coal acreage, with a number of developments, each supplied by its own power plant. The instantaaneous peaks at plants Nos. 1, 2, 3 and 4 may be 200, 250, 300 and 150 kw, respectively. The sum of these peaks is 900 kw.

Now if lines are run to a central point, and the total power requirements are either generated at one central plant or purchased from a power company, the peak will not amount to 900 kw, because of the improbability of all four plants taking their maximum peaks at the same instant. On the contrary, the actual peak obtained may amount to only 700 kw, in which case the diversity factor is 900 or 77.7 per cent.

### WHY FIVE-MINUTE INTERVAL SEEMS FAIR

In mine work, however, because average hauls up tramway grades last but one or two minutes, if 5 minutes or more is the time period over which the load is integrated, it will be found that the combined peak approaches the total of the individual peaks quite closely, so that consideration of the diversity factor assumes less importance except where few units are thus combined.

In reference to town lighting, inspection of available records made by companies that have installed house meters warrants the conclusion that a charge of 1c. per watt per lamp per month will amply protect the power company from loss on this business. All large power users should install curve-drawing meters. Aside from their absolute check on the power company's demand meters, these instruments afford opportunity for study of the load.

Of all the suggestions here made none is more valuable than that advocating monthly tabulation sheets of power costs. It would be a busy electrician indeed who could not find the time necessary to jot down these data and compare results with previous entries. When this is done any power bill that is "out of line" will be spotted instantly.

A LIGNITE FUEL has been produced by the Bureau of Mines in the course of the its North Dakota experiments at a cost comparable with that of the domestic sizes of anthracite in Pennsylvania. No small portion of the credit for this successful outcome of these experiments is given by the Bureau of Mines to Dean E. E. Babcock, of the University of North Dakota. The beneficiation of the lignite was accomplished by a new type of shaft furnace which was built after careful preliminary study. The results show a greater efficiency than had been expected. Two carloads of lignite were recently carbonized at the rate of ten tons per day. A satisfactory residue was obtained at an approximate cost of $5.50 per ton, as against a cost of approximately $6.25 a ton for the residue produced in the oven used in the experiments conducted during the summer of 1921.

The costs are low enough to demonstrate conclusively the practicability of establishing commercial plants. It is understood that North Dakota officials have plans under way which insure manufacture on a commercial scale.
Problems of Operating Men

Edited by James T. Beard

Humidifying Air Currents by Means of Steam

Sprinkling by Water Cars and Pipe Spraying Systems
Not Reliable—Humidifying by Means of Steam Gives Better Results—Plan Adopted in a Western Mine

WHAT appears to be an effective method of laying dust in coal mines is described, in an interesting manner, by F. C. Cornet, Coal Age, Aug. 3, p. 169. The article draws particular attention to the need often presented of treating each air split separately, because of the practical impossibility of suitably humidifying large air volumes with steam.

In reference to other methods of dampening the dust to prevent its suspension in the air current, it is commonly known by those acquainted with the dust problem, in coal mining, that too much reliance cannot be placed on the use of water cars and pipe spraying systems for that purpose. These methods only reach such places as are easily accessible and a wider distribution of the water is required in order to be effective.

In his "Mining Engineer's Handbook," page 1439, Robert Peele gives four ways of wetting dust in coal mines, namely: 1. Liberal hosing. 2. Thorough wetting by force-pump sprinkling cars. 3. High-pressure, fixed sprinklers, at close intervals, on continuous pipe lines, so that when turned on all surfaces will be wetted. 4. Humidifying the intake air current with exhaust steam from the fan or other engine, both by carrying it away from the mine and, by supersaturating, to carry in moisture that will be deposited on the dust on ribs and roof.

PLAN OF HUMIDIFICATION ADOPTED BY COLORADO FUEL & IRON CO.

As previously stated, the first three methods here given are ineffectual. The method last named has been successfully employed by the Colorado Fuel & Iron Co., at several of their operations in the West. The plan adopted there has been described by B. J. Mattox, of that company, and is the following:

Steam radiators are placed on both sides of the intake heading where the entire volume of air is passing into the mine. Live steam is supplied to these radiators, by which means the temperature of the entering air is raised and its capacity to absorb moisture correspondingly increased.

The waste steam from the radiators, passing through a one-inch gate valve, is conducted by a perforated pipe to a point a short distance in the air-way, where is arranged a curtain of burlap or brattice cloth, the purpose of which is to bring the moisture or condensed steam more intimately in contact with the passing air.

By these means, the saturation of the air current is rendered well nigh complete at its increased temperature, which is practically 70 deg. F. It is clear that in its passage through the mines, the temperature of the air will be lowered and much of its moisture will be deposited in the workings.

Suffice it to say that this arrangement has proved eminently successful in every mine where it has been installed. The result has been that all parts of the workings have been kept in a moist condition. In Colorado, the relative humidity of the atmosphere, in the winter time, does not average above 15 per cent. At such times much water must be furnished to the air current, or it will dry out the mine in a short time.

CHARLES M. SCHLOSS.

Denver, Colo.

ANOTHER LETTER

Information asked regarding data that will assist study of the problem—The Mt. Mulligan explosion—What it demonstrated—The Monongah explosion.

As an old student of watering problems and designs intended to increase the safety of mines through the application of water, I have been much interested in reading the article by F. C. Cornet regarding the humidifying of mine workings by steam, Coal Age, Aug. 3, p. 169.

For the purpose of studying the matter more closely, I would like to ask through Coal Age, if Mr. Cornet will kindly furnish interested readers with the following data, calculated to throw much light on the actual results obtained in the application of the method of humidifying a mine in the manner described. The points on which information is asked are the following:

INFORMATION DESIRED

1. Are all the main haulage roads in the mine return airways? 2. Is any reversal of the air current contemplated in the mine? 3. What is the temperature of the exhaust steam, at the point where it issues from the pipe? 4. What is the water gage in the air-way, at this point? 5. What are the readings of the wet- and dry-bulb thermometers, at the same point; also, at various distances from the fan, say at the first working face; at least, at the farthest point in the mine; and at the last working place, say 100 ft. or so from the shaft or slope bottom or the discharge point of the mine? 6. Is the mine naturally wet or dry?

THE MT. MULLIGAN MINE EXPLOSION—QUEENSLAND

Mr. Cornet may have noticed the report of a disastrous explosion that occurred at the Mt. Mulligan collieries, in Queensland. The report of the explosion gave the outside temperature as between 80 and 90 deg. F., and the temperature in the mine about 85 deg., compelling the miners to work in light attire and minus their shirts.

The Mt. Mulligan mine was a dry one. The roof and floor of the seam were of a fireclay nature that disintegrated on the application of water. The packwulls in the mine being built of this material, it was necessary to keep the ventilating current as dry as possible; and, owing to the high temperature of the mine, the mine air must be as dry as possible, in order to enable the men to work with more comfort.

Under these conditions, humidity readings, in the mine, varied from 84 to 88 for the dry-bulb, and from 73 to 79 deg. for the wet-bulb thermometer. These readings showed that the air contained from 6.7 to 9.0 grains of water, per cubic foot of air. While it would have been possible to have saturated the 88 deg. temperature with 14 grains of water, per cubic foot, the miners would not then have been able to work in such an atmosphere.

WHAT THE EXPLOSION PRODUCED

The Mt. Mulligan explosion demonstrated that, in a mine totally devoid of drydamp and where the road dust consisted of about 25 per cent. of non-inflammable dust, and the moisture content was probably in excess of that in Mr. Cornet's proposition, the conditions did not prevent the flame of the explosion from spreading throughout the mine and killing every person therein to the number of 363.

There was, however, evidence of some retarding influence present, as the explosion did not extend throughout the mine at what we might call the usual speed. For example, the force of the explosion was not demonstrated at the...
It is a common practice for a miner to
quarrel with the shotlighter on this
point. Where the coal has been mined
by a machine the miner will often have
arranged a round of shots that he
would fire at one time, claiming that
they are not dependent on the other.
Contrary to this kind will continue
as long as the law is not more specific.

With the ordinary type of coal-cutting
machine that undermines the coal at
the face, particularly in the working
of a hard coal, a complete round of
shots is fired at or near the roof, necessarily
providing a condition of dependent shots
when fired by fuse.

In this connection, allow me to offer a
sketch showing the plan I would suggest
as to how the coal should be cut and
the shots located and which I believe
will prove safe practice. On the
left of the figure is shown the face
of the coal in a wide, double-track room,
in a seam of coal varying from 8 to 10
ft. in thickness. On the right of the figure, is shown a
similar cutting of the coal and locating
of shots when driving a narrow head-
ing, in a thick seam. In each case the
shots at the face are fired first to mine
the lower bench of coal, the shots at the
roof being fired later. Likewise the rib
shots, in the wide opening at the left,
follow the firing of the center shots.

**DANGER IN FIRING SEVERAL SHOTS
IN QUICK SUCCESSION**

The shooting of several holes at one
time, in a working place, is always
dangerous when the holes are fired by
fuse or squib. In the use of that
method one shot follows another in
quick succession and, often, not in the
order desired. In any case, succeeding
shots discharge their flame into a dis-
turbed atmosphere laden with dust and
inflammable gases.

It is not anything strange that this
often results in a local explosion of the
gas and dust produced by the first shots,
or at least a very windy shot. The
miner is particularly fortunate if the
explosion is not propagated throughout
the mine, which will depend alone
on the conditions.

In order to avoid this danger, not
only is it advisable to eliminate the use
of black powder and examine the place
for gas before shooting; but all shots
should be fired with an electric battery,
which will insure their simultaneous ex-
piration, as a single shot.

Incidently, firing shots by battery
will no doubt tend to slow down the
high-speed habit of many shotlighters,
some of whom make a marathon run-
er look like an ice wagon, in their

**MINING AND SHOOTING THE COAL**

burry to seek a place of safety after
lighting a round of shots.

In a few words, let me say that the
firing of shots in rapid succession,
whether they are dependent or other-
wise, has undoubtedly been the cause of
a number of explosions in our mines.

More time given to the firing of shots
will not only increase the cost of pro-
duction, but this will fall far short of the
cost of putting a mine again in
shape following an explosion.

Allow me to remark, in closing, that
where solid shooting is permitted in a
mine the issue can only be met by the
employment of highly skilled, conscien-
tious and practical miners as shotlight-
ners, and clothing them with authority
to condemn and refuse to fire any shots
that, in their opinion, are unsafe.

**THOMAS ALLEN.**

**Why Change the Colorado Law?**

Colorado law requires the certification
of mine foremen and other mine offi-
cials—The law makes any interfer-
ce with the mine foreman a misde-
meanor punishable by fine or impris-
onment or both.

KINDLY permit me to offer a few
comments, in reply to the letter of
"Colorado Miner," Coal Age, July 6,
p. 19, who thinks that the Colorado law
should be changed so as to require all
men in charge of operations underground
to be certified.

In that letter, the writer repeats the
argument so often made that the mine
foreman is frequently overruled by the
superintendent, who is his superior in
office. He claims that for a mine fore-
man to dispute the authority of a super-
intendent will cost him his job. While
that may be true in some few instances,
I cannot think that it applies, in general,
to foremen in Colorado where the law
is very specific in this regard and makes
the mine foreman supreme in this
matter. It further strengthen the belief
that the writer believes the mine superinten-
dent, also, should be required to hold a cer-
tificate, the same as the mine foreman.

In that case, we would have to include
any mine owner, lessee, manager, oper-
ator or agent, all of which are placed
in the same category, by Section 1 of
the Colorado law.

**PURPOSE OF CERTIFICATION**

Now, without prolonging the argu-
ment, I want to ask: What is the pur-
pose of the certification of mine officials
and who is responsible for this require-
ment of the law? Evidently, the pur-
pose is to secure the safety of all mine
workers; and public opinion is respon-
sible for this feature being incorporated
in our laws.

As I read the Colorado statute, any
person in charge of underground opera-
tions is obliged to hold a certificate,
showing his competency to fill that posi-
tion, as determined by examination
and in the best judgment of the state
board of examiners.

Allow me to quote briefly from two
sections of the Colorado law, bearing on

**Shooting Machine Mined Coal**

Dependent shots unsafe—Law restrict-
ing shots in Colorado mines—Firing
a round of shots in machine mining.—
Shooting holes in thick coal.

**REFERRING to the interesting let-
ter of Oscar H. Jones, Coal Age,
June 13, p. 606, permit me to say that,
in writing on the subject of "Following
or Dependent Shots," he has drawn atten-
tion to one of the most dangerous
practices in the mining of coal.

I agree with him that all such shots are
shots on the head.

That dependent shots are unsafe in
underground mining, and no argument is
needed to convince a practical miner
of this point. In my opinion, our mining
laws should be more explicit in defining
allowable practices in the shooting of
coal and severe penalties should be
imposed on violators of the acts.

In Colorado, prohibited, in relation
to blasting, dependent shots and shots
that are synchronized are prohibited
(see 185). Even with these restric-
tions, the question is often discussed as
if a shot being dependent is prepared
by a miner.
the authority of the mine foreman in matters pertaining to the mine as regards its safe operation. Section 44 of the law reads, in part, as follows:

"The mine foreman shall have full charge of all inside workings and of all persons employed therein, in order that all the provisions of this act, so far as they relate to his duties, shall be complied with and the regulations described for each class of workman under his charge carried out in the strictest manner possible. Any superintendent or other person who interferes with the mine foreman in the discharge of his duties as described by this act shall be deemed a misdemeanor."

Again, in reference to penalties prescribed by the law, Section 172 reads as follows:

**COLORADO PROVIDES PENALTIES FOR VIOLATIONS OF THE ACT**

"Any violation of any provision of this act shall be deemed a misdemeanor and shall be punished by a fine of not more than one thousand dollars or by imprisonment of not more than one year in the county jail, or by both such fine and imprisonment." How any law could be more specific in prescribing the authority of mine officials in charge of underground operations is hard to understand. Neither is it clear, to my mind how the certification of the mine superintendent would improve the situation in any respect whatsoever.

Take, for example, any of the large coal companies in this state, say the Colorado Fuel & Iron Co. Let us assume they have twenty-five mines in charge of twenty-five mine foremen. In addition, let us say, there will be fifty assistant foremen, fifty foreboses, and fifty shofitters.

Here are 175 certified men in charge of underground operations in these twenty-five mines. Allow me to ask, if the certification of the twenty-five superintendents of these mines would make the operation of those mines any safer? In discussing these questions, let us use some common sense and view the matter from a practical standpoint.

In closing, I want to say that if a mine foreman is overruled by his superintendent, in matters pertaining to the safe operation of the mine, there is something wrong. If, in the judgment of the superintendent, the foreman is incompetent, a more capable man should be secured at once and the sooner the better.

**ROBERT A. MARSHALL**

Walsenburg, Colo.

**Peace and Harmony**

Timely suggestions applying to the present situation in coal mining—The get-together spirit—Meetings of mine officials and men promote good will and harmony.

J ust now, nothing is of more interest and importance than suggestions looking to the promotion of peace and harmony, in the general rank and file of the coal-mining industry. Ever since reading the suggestion made by one writer, sometime since in *Coal Age*, I have been deeply impressed with the thought then expressed that great good would result if employees and employees would meet together at regular short intervals.

**Weekly Meetings a Benefit**

In my opinion, such weekly or bi-weekly meetings, at some convenient place, would be the means of avoiding much of the trouble that now arises between miners and mine officials. Questions relating to the health and safety of mine workers, the most improved methods of mining the coal, timbering of airways, ventilating the working places, and other matters of interest could be profitably discussed at these gatherings.

To my mind, it would be an excellent plan to hold one of these meetings the night before the regular meeting night of the miners local organization. By so doing, it would give an opportunity to anticipate and discuss any grievances that might be arranged to come before the miners’ meetings the following night.

My idea is that all mine officials, from the superintendent down, should be present at the meeting and, by showing a real concern for all that pertains to the welfare of the employees, establish an ever-growing confidence of the men in their good faith of their employers.

With much pleasure, I read the excellent letter of G. W. Breeden, *Coal Age*, Aug. 24, p. 290, entitled “Gainin g the Confidence of Men,” and I want to endorse what he has said in regard to the effect of kind treatment and a reasonable familiarity of mine officials with their men.

It is not too much to say that many suggestions would often be forthcoming from the men that would enable a reduction in the cost of producing coal and these would relate to every branch of mining, hauling, pumping, drainage, tracklaying and other work with which the men are most familiar.

There are mines where such meetings have been conducted with great success and profit to all concerned. At times, reading rooms and classes of instruction have been organized and it would be a pleasure to know that such a system is, or shortly will be established in every locality. Not the least result is a general reduction of accidents in all classes of work in the mine.

**NANTY GLO, Pa. M. J. FACEMEYER.**

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**Inquiries Of General Interest**

**Estimating Equipment for Engine-Plane Haulage**

**Allowance Made for Unavoidable Delays and Changing Trips—Number of Hoists per Day—Speed of Hoisting—Size of Rope and Drum—Horsepower of Engine and Boiler**

A subscriber of *Coal Age*, I take the liberty of asking its assistance in working out the solution of a proposition with which we are concerned. It relates to the necessary equipment for changing trips, say one minute at the top and one minute at the bottom of the plane. The proper solution of this problem will be greatly appreciated.

**JOFET, Pa.**

EDGAR I. ARZT.

The first step, in the solution of this problem, is to estimate the time occupied in actual hoisting of the loaded trips up the plane. In an 8-hr. day, there are 8 × 60 = 480 min., from which we will deduct, say 40 min. for unavoidable delays during the day. Hauling 200 tons, in 2-ton cars, will require 100 hoists per day. Then, allowing one minute lost in changing ropes at the top of the plane and the same minute at the bottom of the incline, makes a total of 200 minutes lost between trips. The time remaining and consumed in actual hoisting the loads and lowering the empty cars is, therefore, 480 - (40 + 200) = 240 min.

Now, hoisting at a rate of, say 5 ft. per sec. gives 400 ÷ 5 = 80 sec. for hoisting a single loaded car. For convenience in calculation, we will assume the time for hoisting a loaded car is 84 sec. and the time for lowering an empty car 60 sec., making a total of 84 sec. for a single round trip. The total time consumed in hoisting 100 round trips is, therefore (100 × 144) ÷ 60 = 240 min., which agrees with our previous allowance.

The next step is to estimate the load on the rope when hoisting a loaded 2-ton car, adding 40 per cent of the load for the weight of the car, which makes the actual load hoisted 2 × 1.40 = 2.8 tons, exclusive of the weight of the rope itself, lying on the plane where the rope is at the foot of the incline.

- **Hauling on a steep 30°-deg. slope, the slope in the case of the gravity pull and the friction pull.**

- **The weight of the loaded car is 2.8 × 2,000 = 5,600 lb.**

- **The gravity pull is 5,600 × sin 30° = 5,600 × 0.5 = 2,800 lb.**
COAL AGE

Vol. 22, No. 13

June, 1922

Sizing the discharge and the required feed-water. A passing, the
laat from water, written per
foot-pounds, now add the
remaining
square
approximately.
requires (1.25
"im-ming
sauce
1,050 = 300
It would be interesting, if space permitted, to go on and estimate the size
and kind of boiler required. Suffice it to say that, in boiler practice, it
is customary to estimate on an evaporation of 55 lb. of water, from and at
121 deg. F., per hp, per hour. Knowing the feed-water temperature and
the gage pressure in the boiler, it is possible to calculate the corresponding
heat value of this evaporation and, allowing 2,545 B.t.u. per hp, estimate
the boiler horsepower required.

Approximately, it is customary to allow 8 sq. ft. of heating surface, for plain
cylindrical boilers; 10 sq. ft. of heating surface, for horizontal flue boilers; and
15 sq. ft. of heating surface, for horizontal tubular boilers, per horsepower.

Examination Questions
Answered

Illinois Mine Managers' Examination
Springfield, July 17, 18, 1922

(Selected Questions)

QUESTION—(a) What is the law in reference to persons seeking certificates of competency as mine managers? (b) Fly whom and how often should a passageway to the entrance shaft be examined?

Answer—(a) Section 2 of the Illinois Coal Mining Laws specifies that each applicant for a certificate of competency as mine manager shall produce evidence that he is a citizen of the United States, at least 24 years of age, and has at least 4 years practical mining experience, a man of good repute and temperate habits. He must also pass the examination required by the board covering his experience in mines, and handling of men and knowledge of mine machinery and appliances, surveying and other instruments used in mining, properties of mines gases, principles of ventilation, first-aid treatment of injured, mine rescue and the duties and responsibilities of mine managers.

(b) Section 30 (a, 10), requires the mine manager or his assistant to examine, at least once a week, the roadways leading to the entrance shaft, or other openings for the safe entry of men to the surface, and make a record of any obstructions or unsafe conditions existing therein and cause the same to be promptly removed.

QUESTION—(a) What are the provisions of the mining law in reference to air currents and splits. (b) Trolley or other exposed electrical wires. (c) Runaround at shaft bottom?

Answer—(a) Section 14 (b) requires the main air current to be so split or divided as to give a separate current of reasonably pure air to every 100 men at work, and authorizes the inspector to give a written order for separate air splits for a smaller number of men.

(b) Section 17 (b) requires all trolley and positive feed wires, crossing or passing over where persons or animals are required to travel, to be safely guarded or protected, in a manner to prevent contact of persons or animals.

(c) Section 10 (i) requires the construction of a safe passageway, free from all obstruction and dry as possible, around the bottom of a shaft where men enter or leave the cage, or must pass from one side of the cage to the other. This passageway must be 3 ft. wide; and the law forbids animals or cars to be taken through it when men are using the passage.

QUESTION—A return airway is 10 ft. wide and 5 ft. high, the velocity being 600 ft. per min. The pressure is controlled by volum as follows: Nitrogen 79 per cent; oxygen 20.96 per cent; carbon dioxide 0.04 per cent. What number of cubic feet of such gas is passing per minute?

Answer—The sectional area of the airway is 5 x 10 = 50 sq. ft., and the volume of air passing, 600 x 50 = 30,000 cu. ft. per min. The volume of each cubic foot of gas is found to be 12,450 cubic ft. and its specific gravity is 1.15; what was the thickness of the seam?

Answer—The area covered by this pillar is 450 x 132 = 59,400 sq. ft. The specific gravity of the coal being 1.25, its weight can be estimated as 1.25 x 59,400 x 78.125 = 24,560,000 lb. per cu. ft. The gross weight of coal mine being 12,430,000 + 24,560,000 lb., the cubic contents of the pillar worked out is 24,560,000 + 78.125 = 318,208 cu. ft. Finally, the height of the seam is therefore 318,208 + 59,400 = 5.35 ft.

QUESTION—Find the length of a dumb drift, which is driven from a total of 240 ft. from the shaft and enters the shaft at a point 100 ft. above the level.

Answer—The dumb drift is the hypotenuse of a right triangle whose sides are 240 and 100 ft. respectively. Therefore, the length of the dumb-drift is \(\sqrt{240^2 + 100^2} = 260\) ft.

QUESTION—What is meant by the term (a) ventilating pressure, (b) water gage; (c) mine resistance?

Answer—(a) The term "ventilating pressure" describes the pressure required to circulate the air in an airway or mine. The unit of ventilating pressure is this pressure expressed in pounds per square foot. The total pressure producing circulation is the total pressure exerted on the sectional area of the fan drift.

(b) The term "water gage" describes an instrument used to measure the unit of ventilating pressure, by showing the difference in height between the absolute pressure on the intake and that on the return airway by the height of water supported at the point where the gage reading is taken.

(c) The term "mine resistance" describes the work, in foot-pounds, absorbed in the circulation of air in a mine or airway. It is the total ventilating pressure multiplied by the velocity of the air current.
### Number and Annual Output of Soft-Coal Mines Classified by Size of Mine, 1919 and 1920*

**NUMBER OF MINES AND PRODUCTION DURING 1919 and 1920**

<table>
<thead>
<tr>
<th>Mine Size</th>
<th>Class 1 Producing Over 200,000 Tons</th>
<th>Class 2 Producing 100,000-200,000 Tons</th>
<th>Class 3 Producing 50,000-100,000 Tons</th>
<th>Class 4 Producing 10,000-50,000 Tons</th>
<th>Class 5 Producing Less Than 10,000 Tons</th>
<th>Total, All Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>15</td>
<td>4.6 314</td>
<td>30</td>
<td>1,200 27</td>
<td>41</td>
<td>1,400 19</td>
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<tr>
<td>Arkansas</td>
<td>1</td>
<td>0.4 297</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>California, Idaho, and Alaska</td>
<td>229</td>
<td>6.8 469</td>
<td>224</td>
<td>6,660 21</td>
<td>319</td>
<td>9,468 33</td>
</tr>
<tr>
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<td>1</td>
<td>0.6 55</td>
<td>1</td>
<td>5</td>
<td>1</td>
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<tr>
<td>Oregon</td>
<td>1</td>
<td>0.4 297</td>
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<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>11</td>
<td>2.8 262</td>
<td>83</td>
<td>3,302 33</td>
<td>86</td>
<td>3,614 33</td>
</tr>
<tr>
<td>Tennessee</td>
<td>1</td>
<td>0.4 297</td>
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<tr>
<td>Texas</td>
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<tr>
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<td>7</td>
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<tr>
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<tr>
<td>Washington</td>
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<tr>
<td>West Virginia</td>
<td>6</td>
<td>1.7 55</td>
<td>3</td>
<td>15</td>
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<tr>
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<td>1</td>
<td>0.4 297</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

**Grand total**

| 550 | 4.4 372 | 854 | 7.0 260 | 1,181 | 9.5 | 18.1 | 2,784 | 22.4 | 15.3 | 7,040 | 56.7 | 3.1 | 12,949 | 46,055 |

* Compiled by U. S. Geological Survey.

### 80,761,604 Tons of Coal Mined in 1921 in West Virginia; Value, $375,541,458

Official figures covering the production of coal in West Virginia for the fiscal year ending June 30, 1921, given in the seventy-seventh annual report of the West Virginia Department of Mines, just issued, show that there was produced in the period mentioned 80,761,604 gross tons of coal as against 79,991,316 tons for the preceding fiscal year, the gain amounting to 770,288 tons or less than 1 per cent. In the same period coke production amounted to only 836,782 tons, as against 1,172,271 tons for 1920, a decrease of 335,489 tons or 28.2 per cent.

The Department of Mines estimates that the total value of all coal produced in the 1921 fiscal year was $375,541,458; that the value of coal used in operating was $56,074,400; that the value of coal used for power and light was $54,075,000; and that the value of coal shipped from the mines was $35,442,091.30 and that the value of coal mined by small country mines was $3,295,000. It is estimated that the value of coal sold was $364,811,705.50 and that the value of coke sold was $8,015,564.24. The increase in value as compared with the previous year is as follows: for coal, $113,788,553.50; for coke, $560,005.12.

The department estimates that the average price received by pick miners throughout the state for mining run-of-mine coal was 95c. per ton, as against 91c. in 1920. The average tonnage produced by pick miner was 1,287, a decrease of 368 tons from the fiscal year 1920. The average annual wage of pick miners was $1,165.65, that being a decrease of $285.80 from that of 1920. The average daily earnings of pick miner, or the value of the mines was $4.65 per gross ton, run-of-mine coal, which was an increase of 3.25 per cent over the price received in the preceding year. Coke was sold f.o.b. at the oven during the year at an average price of 90c. per net ton, which is an increase over the previous year of 3.22 per cent.

In the fiscal year ended June 30, 1921, there were 116,726 people employed in connection with the production of coal and coke. Of that number 17,140 were employed in preparing and making coke, 39,582 as machine miners, 6,025 as machine helpers, and 32,778 as inside laborers, 29,183 as outside laborers, and 1,050 as coke workers.
Local Explosion in England Takes Toll of Thirty-Nine Lives

A local explosion at the Main Pit of the Whitehaven Colliery Company, Whitehaven, Cumberland, England, near the town of Inverness, on Sept. 8, caused the death of a man. The pit was sunk about nine years ago, the shaft reaching the mineral coal, a B.C. bed, at about 1,200 ft. Working in this bed is carried on under the men, and the point where the explosion occurred was about 1,000 ft. from the adit where the men work. The men are situated in a separate ventilation district, and the explosion is said to have come from the Mine to the surface at the time of the explosion had not been working on the affected mine system nearby.

This phase of mining worthy of notice was the assumption which rescue operations were started. The general manager was within the mine directing the work of rescue operations when the explosion occurred. A number of men were killed by the explosion, and several others were injured. The general manager was killed in the explosion, and one of the rescuers was also killed. The other rescuers are said to be injured, but their condition is not known.

The rescue operations were carried on for several hours, and the rescue party was finally successful in saving the lives of several miners. The miners were rescued from a shaft located near the explosion, and were taken to the surface for medical attention.

British Empire Steel Corporation and Coal Miners to Sign Agreement Soon

The new wage agreement between the British Empire Steel Corporation and the miners of District 26, U. M. W. of A., will not be signed for a week or ten days, according to a statement issued Sept. 18 by J. B. McLachlan, secretary-treasurer, when, after a week's negotiation, he signed the Inverness miners to the new contract, the same as that entered into with the British Empire Steel Corporation.

The new contract is practically the McKinNON award, which is considerably less than that paid under the Montreal agreement, under which contract the miners of Inverness have been working for the past month, but is somewhat higher than the rate of wages awarded the Inverness miners by the Osborne conciliation board. Under the conciliation board award the minimum day rate was $3.10, while under the new contract it is $3.25.

There is considerable work to be done in the matter of straightening out local contracts as well as getting the new rates that the men employed in the machine shops will work under. When this is done, Mr. McLachlan stated, the agreement will be signed.

Underground employees of the Western Fuel Corporation, Ltd., Nanaimo, B.C., are preparing the basis for a new agreement with their employers when it is intended that the agreement shall exist for three years on and from Oct. 1. Their desires have been placed in the form of a report which will be submitted to representatives of the management. The report is interesting not alone because of the several demands made but as illustrating the amicable relations that exist between the men and the company.

Provision is made for the permanent establishment of an agreement committee which, it is proposed, shall hold monthly meetings with a similar body delegated by the management. Before this joint agreement committee will come for settlement everything of a contentious nature.

At a mass meeting of the employees of the corporation held Sept. 16 it was agreed to accept the increase in bonus to the underground workers from the old rate of 84c. to $1. It was decided to reorganize a miners' union, the district having been without a union during the last two years. A committee was appointed with that object in view. A resolution was passed and a copy of it has been forwarded to the Minister of Mines, requesting that the Coal Mining Act be amended and made to exclude Oriental labor in and around the coal mines of the province. A large proportion of the employees of some of the companies working mines on Vancouver Island and Orientals. Another resolution was passed and a copy of it forwarded to John Oliver, Premier of the province, requesting that a system of state insurance be inaugurated.

Plan $50,000,000 Merger of Coal Retailers

Consolidation of retail coal companies in various cities into a national organization with a capital of about $50,000,000 is under way, according to a report current in financial circles. The nucleus of the organization will be the Burns Brothers Coal Co. which recently took over the William Farrell Coal Co. in New York City.

Negotiations already are under way, it is said, to take over the business of the Consumers' companies of Chicago, retail distributors of coal in that city. Other properties which are to be included in the consolidated company, according to the reports, include the Polar Wave Company, of St. Louis; the Metropolitan Coal Co., of Boston, and the Newton Coal Co., of Philadelphia.

The Burns Brothers company, according to an officer of the company, has approximately 3,000,000 tons of unfilled orders on hand.
Bill Creating U. S. Coal Commission Becomes a Law; Compromise Measure Provides for Seven Members

Appearing as a compromise from the conference committee of the two houses of Congress, after pressure had been exerted from high administrative quarters to break an apparent deadlock among the conference, the bill to create the United States Coal Commission, which is to investigate the industry broadly, was enacted into law speedily on Friday, Sept. 22. The conference report was adopted by both houses on the same day and with very little debate.

In its final form the legislation provides for a commission of seven members, instead of the five proposed by the Senate bill and not more than nine provided by the House bill. Restrictions as to the personnel of the commission were removed in conference excepting that no member of the House or Senate may serve if appropriation of $200,000 is provided, this sum being half way between the $300,000 of the House bill and $100,000 of the Senate bill.

The point which nearly wrecked the conference, that of inclusion in the Senate bill of instructions to the commission to report on “the advisability or wisdom of nationalizing the coal industry” and “the feasibility or necessity of governmental regulation and control of the coal industry,” was compromised by rewriting these two subsections into one, reading “the advisability of any legislation having to do with government or private ownership, regulation or control in the coal industry.”

This rewriting of the two subsections into milder form represents a considerable concession on the part of Senator Borah, author of the Senate bill, which was compensated to a large degree, however, by acceptance by the House conferees of the terms of the Senate bill instructing an inquiry and report on various forms of standardization, of wages, production, etc.

The act provides that the first report of the commission shall be presented to the President and to Congress not later than Jan. 15. It provides for a separate investigation of the anthracite industry, with a separate report on this field to be submitted on or before July 1. The life of the act is limited to one year. The salary of the commissioners is fixed at $7,500 annually and no employee of the commission is to be paid a salary in excess of this sum.

The act also provides that any vacancy in either house on the adoption of the conference report. A motion to recommit to the House managers, with instructions to provide specifically for inclusion on the commission of representatives of the miners and of operators, which was made by Representative London, socialist, was defeated, 106 to 156.

Text of Fact-Finding Commission Bill

To establish a commission to be known as the United States Coal Commission, for the purpose of securing information in connection with questions relative to interstate commerce in coal, and for other purposes.

That for the purpose of securing information in connection with questions relative to interstate commerce in coal and all questions and problems arising out of and connected with the coal industry, there is hereby established a governmental agency to be known and designated as the United States Coal Commission, to be composed of not more than seven members appointed by the President of the United States, by and with the advice and consent of the Senate; provided, That the House of Representatives shall be eligible to serve on said commission. Said commission shall elect a chairman by majority vote of its members, shall maintain central offices in the District of Columbia, but may, whenever it deems it necessary, meet at such other places as it may determine. A member of the commission may be removed by the President for neglect of duty or malfeasance in office but for no other cause. Each member of said commission shall receive a salary of $7,500 a year. Any vacancy on the commission shall be filled in the same manner as the original appointment. Said commission shall cease to exist one year after the taking effect of this act.

The term “person” as used in this act means any individual, partnership, corporation, or association; the term “coal” means anthracite, bituminous, and other coal, lignite, coke, and culm, whether in place extracted or not banked.

It shall be the duty of said commission to investigate and ascertain fully the facts and conditions and study the problems and questions relative to the coal industry, with a view to and for the purpose of aiding, assisting, and advising Congress in matters of legislation which will insure a supply of this commodity to the industries and the people generally throughout the country and maintain the uninterrupted flow of commerce among the states, or any legislation which Congress may after said investigation deem wise and which under the Constitution Congress has the power to enact.

To this end said commission shall ascertain and report to the President and Congress: As to the ownership and titles of the mines; prices of coal; the organizations and persons connected with the coal industry; cost of production; profits realized by the operators or owners of said mines during the last 10 years; profits of other persons or corporations having to do with production, distribution, or sale of coal; labor costs; wages paid; wage contracts; irregularities, regulation; waste of coal; and suggestions as to the remedy for the same; the conditions generally under which coal is produced; distribution; the causes which from time to time induce strikes, thereby depriving interstate carriers of their fuel supply and otherwise interrupting the flow of interstate commerce; and all facts, circumstances, or conditions which would be deemed helpful in determining and establishing a wise and efficient policy by the government relative to said industry.

Said commission shall, under the provisions of this act, make a separate investigation and report for the anthracite industry, which investigation and report shall cover all of the matters specified in the last preceding paragraph, and shall cover also every other phase of the anthracite industry, including the production, transportation and distribution of anthracite, and the organized or other relationships, if any, among the mine operators or the mine workers, or among any persons engaged in the production, transportation, or distribution of coal.

Said commission shall also submit recommendations relative to:

(a) Standardizing the mines upon the basis of their economic productive capacity and regarding the closing down of mines which, by reason of their natural limitations, or other conditions, fall below the standard.

(b) Ascertainment and standardizing the cost of living for mine workers and the living conditions which must be supplied or afforded in order to surround the workman with reasonable comforts, and standardizing as far as practicable the amount of work a man shall perform for a reasonable wage, recognizing the value and effect of such surroundings in respect to their efficiency.

(c) Standardizing a basis of arriving at the over-all cost of producing and distributing the coal, including delivery at the door of the consumer, recognizing in this computation that the standardized cost of living to the miners should be the first and irreducible item of expense.

(d) The advisability of any legislation having to do with government or private ownership, regulation, or control in the coal industry.

Said commission shall render its first report and recommendations to the Congress and to the President not later than Jan. 15, 1923. Said commission shall render its separate report on the anthracite industry on or before July 1, 1923, and shall endeavor, in said separate report and in the recommendations contained therein regarding wages in the anthracite industry, to work out the plan which will enable the miners to live in accordance with the standards set up.


Preliminary Statistics of Production of Coal in 1921

(Exclusive of product of wagon mines)

ALABAMA

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COLORADO

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Further details for each state are provided in the full report, which includes data on production, value, and distribution of coal production across different counties.
Harding Signs Coal Distribution Bill and Names C. E. Spens as Federal Fuel Distributor

President Harding signed the Coal Distribution Act and appointed Conrad E. Spens Fuel Distributor, Sept. 22. The selection of Mr. Spens meets with general approval among representatives of operators, wholesalers and railroad executives. Mr. Spens is regarded as one of the outstanding traffic men of the country. He has been given leave of absence by the Chicago, Burlington & Quincy Railroad Co., of which he is vice-president. The appointment was made by the President on the recommendation of Herbert Hoover, Secretary of Commerce. Mr. Hoover had ample opportunity while serving as food administrator, to become familiar with Mr. Spens' ability. Mr. Spens was chief of the traffic division of the Food Administration throughout its existence.

The new Fuel Distributor will have as his chief assistants Donald Conn, who is a specialist in the Lake trade and the requirements of the Northwest, and F. R. Wadleigh, chief of the coal commodity division of the Department of Commerce. Mr. Spens expects to expand the organization which was maintained during the period of voluntary distribution. For the present the Fuel Distributor will occupy the same quarters as were occupied by the voluntary distributor, but Secretary Hoover states that the organization soon will outgrow the floor space available at 718 Eighteenth Street.

Says States Have Principal Control Over Price

One of the first acts of the new distributor was to telegraph the governors to emphasize the fact that the principal control over price must be exercised by the state authorities and that federal control can be applied only to coal which moves in interstate commerce. The text of Mr. Spens' telegram is as follows:

"The federal act signed by the President the 22nd instant provides that it shall be the duty of the Federal Fuel Distributor, among other things, to ascertain in which parts of the United States there shall be a shortage of coal and the extent of such shortage; the fields of production and principal markets to which such production is to be transported and distributed; the prices normally and usually charged for such coal and whether current prices, considering the costs of production and distribution, are just and reasonable; the nature and location of consumers, and what persons, regions or community should receive priority in transportation and distribution, and the degree thereof.

"The federal government can exert its influence on distribution and restrain extortion only so far as concerns coal that may be transported from one state to another.

"It has no jurisdiction as to: (1) Coal produced and sold within the state of its production. (2) Retail or wholesale margins or handling coal within these states.

"Responsibility as to these features must rest with the state authorities and if profiteering in coal is to be prevented, except as to coal that may be moved across state lines at extortionate prices, the proper remedy must be applied by state authorities.

"Coal production capacity exceeds transportation capacity. The problem of adequate supplies and diminished prices is therefore primarily a problem of transportation. The federal authorities, in cooperation with the carriers, are making every possible effort to expedite movements. Coal today enjoys the same priority in transportation as food and feed. Transportation of coal is ample to meet current necessities, but is not sufficient to permit stocking either by household or commercial consumers and possibly will not be ample for that purpose for another thirty to ninety days.

"It is necessary that state organizations or agencies be created in states where they do not now exist that will invite cooperation, that will prevent stocking of coal beyond current necessities and that will establish reasonable margin for retailers and wholesalers.

"As above stated, the constitutional authority of the federal government is limited, but it will gladly cooperate with these state governments as far as it can properly do so. The major responsibility, however, for the price at which the coal is sold to the consumers by the wholesalers or retailers within the state must rest with the state authorities.

"The federal act is, of course, nationwide in its scope and I am, therefore, addressing this communication to the governors of all states and to the State Fuel Administrations, where such agencies now exist, although I understand there is considerable territory in the United States where there is no imminent coal shortage nor complaint as to the cost of this commodity. We shall depend upon the judgment of the state authorities in each state as to whether or not the aid of the federal government is desired or necessary as to interstate coal.

"I would appreciate early advice from you as to the situation in your state and the measures taken or contemplated to meet the emergency."

Donald D. Conn, of Minneapolis, who has been named as Assistant Federal Fuel Distributor, has been stationed in Washington for some time as chairman of a special committee appointed by the governors of seven Northwestern States to represent them in connection with the coal-supply situation.

C. P. White, of St. Paul, Minn., has been designated as assistant to the Fuel Distributor in handling the fuel situation in the Northwest. Mr. White acted in a similar capacity in the later days of the President's Fuel Committee.

C. J. Hepburn, of Philadelphia, has been retained as general counsel to the Federal Fuel Distributor.

F. R. Wadleigh, chief of the coal division of the Department of Commerce, will act as an assistant to Mr. Spens.

E. M. Durham, of the American Railway Association, was directed to Philadelphia Monday to represent Fuel Distributor Spens at the sessions of the Committee of Anthracite operators and Pennsylvania state officials who are considering the problem of the distribution of anthracite.

H. M. Griggs, of the Cleveland Ore & Coal Exchange, who has been handling the movement of lake coal, will continue in this capacity.

It is planned by Fuel Distributor Spens to name special
.advocated inaction, representing the general business and
advocacy of business and the national interests of the country.

The administration, continuing its tentative policies
of the Federal Fuel Policy.

The view of the fact that I have only today assumed the
powers of the Federal Fuel Distributor, I am not prepared to
publicize the provisions of the railroad carriers and
producers of coal, and at this time devote my efforts to the
promotion of the interests of the coal operators.

The coal production capacity of the country is ample to
meet all demands. The immediate problem is transportation.
This demand and the requirements for abnormal transportation
has no known reason for the physical capacity of the
transportation facilities, and at a time when the offerings
of foreign coal are at a peak, we must find a way to ameliorate
the present attitude of the administration as well as of the
public.

Consumers AS WELL AS CARRIER MUST CO-OPERATE

The cooperation of the consumer is practically as
necessary as that of the carrier. At the request of the admin-
istration, Julian H. Barnes, president of the Chamber of
Commerce of the United States, has addressed American
industries, commercial and trade organizations urging that
purchases of coal under present conditions be confined
exclusively to current needs and that there be no accumulation
of stocks of coal moving under contract or otherwise.
I fully appreciate and add my appeal to that of Mr. Barnes,
but will direct my aid only to the 'industrial' consumer
but limned to the 'domestic' consumer.

Sufficient coal can be moved for current consumption, but
sufficient coal cannot be moved within the immediate future
to meet the demand that obtains and provide a surplus
which is necessary. The increased cost of frequent pur-
chases in small quantities creates a situation that might be
repeated by a rapid distribution due to exaggerated anxiety
or lack of preparedness in the coal-going public.

If all consumers of coal, whether domestic or industrial,
will calmly consider this appeal and will co-operate as sug-
gested, not only will their current needs be taken care of
but the result will be reflected quickly in the price of coal,
which today in many sections of the country manifestly
exceeds the market price of coal.

The administration is not suggesting that the operator in
should sell his coal at cost. Nor is it suggesting that he
shall sell his coal at less than cost. The administration
is, however, indicating, and the present act of Congress con-
vention, that he shall sell his coal on a basis that will not
yield an abnormal profit; in other words that he shall not
take undue advantage of the present unfortunate eco-
nomic situation.

Many coal operators are co-operating in a splendid man-
ner. Regrettably I must add that there are some who are
not. It is asking too much that, during these critical times,
our coal operators shoulder the important necessity to comfort
— to live their present case, and that there be only legiti-
mate concern—swing, based on American standards of fair
value.

In announcing Mr. Speer's appointment the President
made public a letter which he had written to the new dis-

The Frisco Railroad Buys Contract Mine-Run
At $2.225 Per Ton

The Frisco R.R., it is understood, has contracted with the St. Louis & O'Fallon Coal Co. for 700 tons per day of standard mine-run coal at $2.225 per ton, and also for a small tonnage of 14 x 23 nut coal at $2.55 per ton. This is the cheapest contract made in that section and operators generally cannot understand how such a low price could be made on a contract that will expire next March.
Service Order 25, Issued Sept. 19, Allows Broader Priority in Coal Movement

Shifting its policy from priorities on coal cars to a broader priority on coal transportation, the Interstate Commerce Commission on Sept. 19 amended Service Orders 23 and 24 and supplanted them with Service Order 25, which removes classifications 1 to 5 for coal-car loading and directs the carriers to observe a priority in movement of open-top cars in which coal ranks with road and building materials, ore, mine supplies and fluxing stone when the movement is in the direction of coal mines. The way is left open, however, for the commission to direct special classifications if occasion arise.

The Interstate Commerce Commission explains the need of the order and outlines the purposes which it intends to accomplish as follows: "By reason of certain embargoes issued by carriers, complaints have been made that various commodities, which in the public interest should be handled currently and promptly, have not been so handled. In addition to the commodities specified under Service Order No. 23 this order adds mine supplies, medicines, fertilizers, seeds, newsprint paper and petroleum and its products in tank cars to the list of commodities to be given preference and priority in movement, when carriers are currently unable promptly to transport all freight traffic offered to them for movement. The words 'fuel' as used in Service Order No. 23 are changed to read 'other fuels.' "

"Service Order No. 23 directed all carriers to discontinue the use of open-top cars suitable for the transportation of coal for the transportation of commodities other than coal so long as any coal mine remained to be served with such cars. There are extensive road-building projects with uncompleted gaps, which, in the public interest, should be completed before cold weather sets in. Furthermore, it appears that the priorities have been made by the states to the federal government. There are large building programs under way which must be completed without undue delay to avoid serious loss. "

"Service Order No. 25 permits the use of open-top cars suitable for the loading and transportation of coal, after the discharge of the coal lading thereof, for the transportation of commodities other than coal with such commodities for any shipper who shall fail or refuse to load the open-top cars within 24 hours after place for such loading thereof and are directed to place an embargo against any consignee who shall fail or refuse to unload such cars within 24 hours after place. The order further cancels the priority afforded consumers now embraced in class 2 in paragraph 7 of Service Order No. 23. The consumption of combustible coal has increased to approximately nine and one-half million tons per week, and should, with reasonable use, take care of current needs, if panic, undue storage and waste of fuel and equipment are carefully avoided. The commission therefore feels that it can now relax its previous order by omitting general priorities by classes of consumers, reserving, however, through special case of great emergency for the direct carriers to furnish rail coal mine with such open-top cars as may, in the public interest, from time to time be designated by it or its agent therefor. By virtue of the general priority which is given both to movement and use of open-top cars for coal, the effect of the change now made is to advance all coal into the priority class, instead of only those classes of consumers formerly embraced in the former designations. While it was necessary during the period of extremely limited production to give priority in use to certain highly essential classes, this necessarily involved deferring others. Under existing circumstances, it is believed that the course now taken will tend to a considerable improvement in the production of coal by facilitating its movement and general distribution. It will be necessary, however, to avoid a return to priority classifications, for continued efforts looking to the avoidance of overstocking, of delay to equipment, and to the curtailment of demand to meet bare daily necessities until the reserve of coal in circulation can once more be built up. "

"Service Order No. 24, which now requires carriers west of the Mississippi River to afford priority in movement to certain commodities, and for the removal of empty cars for such loading, has been amended to correspond with Service Order No. 25, applicable in eastern United States. Service Order No. 22, as to routing of freight to avoid congestion, remains in effect." Service Order No. 24, which provides for the priority in movement of certain commodities in the territory west of the Mississippi River, has been amended so as to enlarge the list of commodities. Paragraph 1 of that order, as amended, reads as follows: "That each such common carrier by railroad, to the extent that it is currently unable promptly to transport all freight traffic offered to it for movement, or to be moved over its line or lines of railway shall give preference and priority to the movement of each of the following commodities: Food for human consumption, feed for live stock, live stock, perishable products, mine supplies, medicines, fertilizers, seeds, newsprint paper, coal, coke and other fuel and petroleum and its products in tank cars." 

C. J. Neal Named Ohio Fuel Administrator: Fair Coal Prices to Be Established

Governor Harry L. Davis has named Clarence J. Neal of Cleveland as state fuel administrator following the passage of the price control law by a special session of the Ohio General Assembly. At the same time the Governor announced that "fair coal prices" will be established under the new law as soon as the necessary machinery can be set up. Mr. Neal is a business man and during Governor Davis' administration as Mayor of Cleveland served as city director of finance. During the war and the attending coal shortage he had been in charge of direction of distribution direct to the public in the City of Cleveland.

The first act of the new administrator was the naming of Clifford Gilversleeve, of Cleveland, as assistant and Frank H. Bear, also of Cleveland, as transportation director.

Illinois May Send Delegation to Lewis’ Cleveland Conference

Though they did not agree to do so in their Aug. 22 contract with the miners, operators of Illinois coal are figuring on sending men to the Cleveland conference, Oct. 2, called by John L. Lewis, president of the United Mine Workers of America. At that conference Lewis hopes to start the machinery of wage-making for the period after April 1, 1923. The operators of the 5th and 9th Districts of Illinois have already decided they will be represented. The other two Illinois operators' associations will meet in Chicago Friday, Sept. 28, to decide their course. It is generally expected, among operators, that a delegation will go. The delegation may point to the creation of a fast-finding commission by President Harding, contending that no parallel commission such as Lewis wants should be set up.

Colonel E. T. Tierney Dies Suddenly

Colonel L. E. Tierney died last week at his home in Powhatan, Va., after an illness of two days. Colonel Tierney was prominent in politics in West Virginia and at one time was on the Governor's staff in Richmond, where he was a director of the Crater Pocahontas Coal Co., vice-president and general manager of the Powhatan Coal & Coke Co., the Climbing Coal & Coke Co., the Eureka Coal & Coke Co. and general manager of the Elk Ridge Coal & Coke Co. The product of the four latter companies was sold by the Crater Pocahontas Coal Co.
Anglers May Tell Their Fish Stories, but Can Anybody in the Coal Industry Beat These Illinois Whales?

Vancouver Island Mine Safety Association Has Mine-Rescue and First-Aid Contests

The Vancouver Island Mine Safety Association held its seventh annual fall day of mine-rescue and first-aid competitions on the Central Sports Grounds, Nanaimo, B.C., Sept. 1. Twenty teams competed—five in mine-rescue work, eight in mine-first-aid work, four in ladies' competitions, and five in boys' and girls' competitions.

In the mine-rescue work the problems were drawn from mined entries, and the teams were allowed twenty minutes to study them before commencing work. The mine had been laid out so that a full view could be had from the ground level.

The results of the mine-rescue competitions for the V. I. M. S. A. shield were: Newbery's team (Western Fuel Corporation), Nanaimo, first; No. 2 team, Canadian Collieries (Hunter, captain); Ladysmith, second; No. 2 team, Western Fuel Corporation (Barton, captain), Nanaimo, third. The other prizes, donated by the Kehler Manufacturing Co., of Vancouver, consisted of six hand-bend aluminum safety lamps.

Winning a heavy downpour of rain it was necessary to hold the first-aid competitions in Odd Fellows' Hall, the first event being for the British Columbia Department of Mines Cup (first and second prizes). Barton's team (Western Fuel Corporation) won first prize and R. D. Keating's team (Ladysmith) won second.

After lunch the W. L. Collieries Cup was competed for. Barton's team won the first prize, and No. 1 team of the Canadian Collieries (Ladysmith, with J. Delaney as captain) was second.

There was keen competition for second place between the South Wellington team and Delaney's team and it took the judges considerable time to arrive at a decision in favor of Delaney's team.

The ladies' first-aid event for the V. I. M. S. A. shield (first and second prizes) was next, and after a hard struggle was won by Mrs. Scott's team, of Nanaimo. Mrs. Covert's team, of Cumberland, was second.

The one-man event was won by Calvert Beck and Evan James (patient), of Nanaimo, Brown and Ferguson (patient) being second.

In the junior competition for the V. I. M. S. A. Cup, the Ladysmith team of the Canadian Collieries came first, and Nanaimo team (Gard, captain) second.

The two-man event was won by Barton, Stobhart and Brown (patient), of the Western Fuel Corporation. McDonald, Aman and Delaney (patient), of the Canadian Collieries, Ladysmith, came in second.

The judges for mine-rescue work were Robert Strachan, of British Columbia, the inspection staff of the British Columbia Mines Department, and Inspector J. J. Moir, B.C. The judges of first-aid work were Drs. D. McCullough, Sutherland, Carson, Lees, Kennedy, Perry, Wilkes, Mrs. Wilson, president of St. Johns Ambulance Brigade, and Miss Pridaux, a graduate nurse, all of Vancouver, B.C.; also Drs. Ingham, Hall, Moore, and McPhee, of Nanaimo; Mrs. Schofield, first-aid expert and lecturer, of Vancouver, and Dr. Cairns, of Nanaimo.

In the absence of William Sloan, who was ill, John Hunt, general manager of the Western Fuel Corporation, distributed the prizes. He congratulated the teams on the splendid work done. After the presentations a large crowd adjourned to the dance hall, where a big crowd enjoyed themselves into the wee small hours.

The recent accident at Cumberland prevented participation in the contests by any teams from there, some of the members being in the hospital.

"Is this wire live? I'll touch and see." They wrote on his gravestone: R.I.P.

Just think, this time last summer our chief anxiety was, would the pressure of the coal burst out the side wall of the bin!—New York Evening Post.
Grand Jury Indicts 214 for Herrin Horror and Reports To the Court Without Fear or Partiality

The activity of the law in the Herrin case is a "private persecution by a political boss and a laboring organization," according to a public statement issued by Marion, Ill., by A. W. Kerr, chief counsel for the United Mine Workers of America. He charges Adjutant General Brundage with trying the case in the press and influencing the grand jury by that means and suggests that the grand jury's report was written by the Illinois Chamber of Commerce, which is raising money to finance the investigation. Kerr injects a play for the sympathy of Governor Len Small and his political machine by stating that Brundage conducted a "political trial" in the courts against Small last spring that "resulted in the death of the first lady of the state."

The special grand jury which for a month has been investigating massacre of nineteen non-union miners and the wounding of thirty others near Herrin, Ill., on June 22, last Saturday reported back to the judge. It brought in enough indictments that day to swell the number charged with murder and considered ringleaders were refused bail. Six were bonded for $20,000 each, twenty for $10,000 each and eighteen for $5,000 each. Several charged with rioting are already out under $1,000 bonds. The eight men refused bail are Otis Clark, Bert Grace, James Brown, Leva Mann, Philip Fontanetta, Pete Miller, Oscar Howard and Jess Childers. Howard and Childers have not been apprehended. Eighty-six men, from bankers to small storekeepers, provided the bail. These included most of the prominent men of Herrin, encouraged by Mayor Pace of that town, who marshaled them by saying this would be a good way of showing who was for and who against the miners' union.

The jury blames the Southern Illinois Coal Co. for its "foolhardy" efforts to operate a non-union mine under armed guard in the midst of such intense union sympathies as prevail in Williamson County. It blames President Lewis and the managers of the miners' union for the broadcasts and inflaming Lewis message saying the strip miners were "strike breakers and should be treated as such." It blames the county sheriff, Melville Thaxton, a union member and candidate for county treasurer, for being derelict in his duty for his own political benefit. It charges Adjutant-General Carlos Black, of the Illinois National Guard, with equal dereliction of duty for failure to rush state troops into the country when it was plain that violence was about to be done. It commends the local police for laxity and makes several other findings indicating the desire of the jury to lay a solid foundation for the enforcement of justice in the prosecutions that may now begin.

The text of the grand jury report follows:

We the special grand jury of Williamson Co. appointed to investigate the riot and the massacre of the miners in the town of Herrin, on June 22, 1922, in consequence of the refusal of the strikers to work at the coal mine of the Southern Illinois Coal Co., do find that the company in the prosecution of the coal business was guilty of a conspiracy to murder and to injure persons and their property, and in causing the death of the miners, by using steam shovels, and then lying about it, and that the miners and their families were terrorized, and that the conspiracy to murder and to injure persons and their property to prevent or hinder the operation of the coal mine lasted from May 21 to June 21, 1922.

The miners' union apparently raised no objection to the un-
SPECIAL GRAND JURY THAT INDICTED 211 FOR HERRIN MASSACRE

universal criticism upon the people of Williamson County, Illinois. Without discrimination, we feel keenly the horror of the tragedy. We protest, however, against the intimidation that all the people of Williamson County are lawless and un-American. The development of the mining industry in Williamson County and the surrounding counties has tremendously increased the population within the last decades. All of the adjoining counties contributed their quota of marauders, and the entire shame of the inhuman murders should not rest upon Williamson County alone.

It is true the electorate of the county is responsible for those of its citizens, weak and cowardly officials who permitted the disorders to grow from desultory rioting into a hideous massacre. These acts can be corrected by the great majority of the population who believe in law and order asserting themselves and refusing to be intimidated by a disorderly minority.

The adjutant general's office and the sheriff's office alternated in passing responsibility, with neither taking decisive action to prevent disorders and protect property.

The case with which firearms were obtained causes the grand jury to believe that legislation should be enacted to regulate or prohibit the manufacture or indiscriminate sale of firearms.

We condemn the laxity of the local police in the various cities wherein stores were loaded for firearms without interference by them.

I recommend the state's attorney of Williamson County, Delos Duty, for his courage and fidelity to his oath of office, and we express our gratitude to the Attorney General of Illinois and his efficient assistants whose aid has greatly facilitated the tremendous tasks confronting the grand jury.

In concluding this report the grand jury begs leave to state that it has indicted some forty persons for murder, fifty-eight for rioting, and five for assault to murder, and your jury asks leave for a recess of three months for the purpose of having those persons tried.

The grand jury is deeply grateful to the many representative, law-abiding citizens of Williamson County, for their assistance and encouragement in its efforts to enforce the law (various), and impartially.

Electrical Engineers at Huntington, W. Va., Present Reports on Mine Practice

Huntington held a well-attended and interesting exhibition in the Chamber of Commerce Building from Sept. 18 to 20. A large number of electrical supply companies made exhibits. Several of these were quite elaborate.

Consequently from Sept. 19 to Sept. 22 the West Virginia Academy of Mines, Mechanical and Electrical Engineers met in the City Hall of Huntington. Only morning sessions were held by the association, the afternoons being devoted to the exhibition, which were not less educational than the meetings themselves.

On Monday a report was made on power costs and on mine locomotives and coke, the first report being presented by C. E. Rogers in place of M. A. Maxwell, who was absent. On Wednesday reports were made on underground distribution of energy and on the relative merits of straight storage-battery, accumulator, and coiler receiving locomotives. These reports were presented by an address by C. B. H. Van Richten on automatic turning and substitution apparatus, this being the paper prepared by W. A. Whiting, also of the General Electric Co. In the afternoon a visit was made to the plant of the West Virginia Rail Co., where a number of interesting tests on the breaking of rails were conducted.

On Thursday reports were made on 'all-rubber insulator table' as compared to ordinary hard-covered cable for portable extensions, insulating cable, mine-machine cable, etc., and on the use on mine and mule lines of resistance grids made of rolled-steel plate as compared with cast grids." The article on "the manner in which mechanical and electrical men can increase their usefulness" was read by R. D. Hall; W. G. Shunk, the author, being absent.

On Friday M. W. Crenshaw read a paper on the wireless telephone with illustrations and display of apparatus. The committee on the proper handling and care of insulating oils reported, and the following were elected to office for the ensuing year:

Roscoe Woltz, electrical engineer, Stoneon Coal & Coke Co., Big Stone Gap, Va., president; R. R. Webster, Elkhorn Mine, Mining Coal Co., Weeksbury, Ky., vice president; Herbert Smith, Elkhorn Pipe Coal Mining Co., secretary and treasurer. The executive committee consists of J. H. Edwards, the retiring president; F. M. Reigher, George Suter, J. J. Flick and H. Maxwell.

John G. Smyth Killed by Fall of Slate

John G. Smyth, general manager of the Consolidation Coal Co., Jenkins, Ky., was instantly killed Sept. 21 by a fall of slate. The accident did not happen in a Consolidation mine but in a small operation on Shelby Creek, in which Mr. Smyth was part owner.

Mr. Smyth was 43 years of age, a son of the late William P. Smyth, Wilkes-Barre, Pa., who at one time was general superintendent of the Lehigh & Wilkes-Barre Coal Co. and the Parrish Coal Co. After leaving school he became connected with the Lehigh & Wilkes-Barre Coal Co., as well as the Parrish Coal Co., but later he left for the Virginia coal fields. Later he became affiliated with the Consolidation Coal Co. and was made general manager of the Kentucky fields, his residence being in Jenkins, Ky.
Production of Anthracite Rapidly Nears Normal Basis;
New Price Circulars Include Pennsylvania Tax

Production of anthracite has been brought up to normal more quickly than had been expected. From 1,064,000 net tons in the first week after the strike, the output rose to between 1,800,000 and 1,900,000 tons in the week of Sept. 23. This remarkable and unexpected acceleration in production brings the output to a figure comparable with that following the “miners’ vacation” in the autumn of 1920.

Fully two weeks elapsed after anthracite mining was resumed before all the old-line producing companies announced their new price circulars. Tonnage held at terminals pending price determination has now been released by the publishing of temporary prices which range up to $8.35 on the large sizes. The increases of from 15c. to 30c. as compared with the last pre-strike quotations presumably are made to cover the Pennsylvania state production tax. Quotations on steam sizes have been increased in line with soft-coal prices. Following are the ruling quotations per gross ton f.o.b. mine as quoted on the New York market:

Lehigh Valley—Broken, $7.75; egg, $8.15; stove, $8.15; chestnut, $8.15; pea, $6.15; buckwheat, $4; rice, $3; barley, $2.

Williams & Peters (Erie)—Broken, $7.75; egg, $7.75; stove, $8; chestnut, $8; pea, $6.15; buckwheat, $4; rice, $3; barley, $2.

Lackawanna—Broken, $7.75; egg $8; stove, $8; chestnut, $8; pea, $6.15.

The opening of Wilkes-Barre Coal Co.—Broken, $7.75; egg, $8; stove, $8; chestnut, $8; pea, $6.15; buckwheat, $4; rice, $3; barley, $2; boiler, $2.50.

Lehigh Coal & Navigation Co.—Broken, $8.10; egg, $8.35; stove, $8.35; chestnut, $8.35; pea, $6.20; buckwheat, $4; rice, $2.75.

Philadelphia & Reading—Broken, $8.15; egg, $8.15; stove, $8.15; range (new size), $8.15; buckwheat, $4; birdseye, $2.75.

Despite the statement by the Pennsylvania Fair Practice Committee that $8.50 was considered the maximum price that independent operators could charge for their coal, quotations are now within a range of $9@$9.50. Immediately after the resumption of operations, prices were fixed at $8.50, which is $14 above-the-ground, and high quotations are still rumored. Some independent producers say that they must receive a price in excess of that given by the committee and as an alternative may ship their product outside the state and beyond the jurisdiction of that body. The Pennsylvania state authorities, realizing that it is necessary to have the maximum production of anthracite to meet the needs of the country, have announced that any mines which cannot be operated at the $8.50 maximum shall be given a hearing and that after an analysis of their production figures by the Fair Practice Committee, a higher price may be granted to cover higher costs. These prices will be announced from time to time as examinations are made and the price determined by the Fair Practice Committee in the State of Pennsylvania.

William H. Woodin, State Fuel Administrator for New York, announced on Sept. 22 that the immediate supply of anthracite has been increased for the several states would be between 50 and 60 per cent of normal. This necessitates, Mr. Woodin said, the strictest form of economy in the use of domestic sizes of anthracite and the full use of substitutes.

Some hard coal is beginning to trickle into the Northwest. Shipments are very small, however, and no Lake charters have been signed as yet. Consumers in this territory are being urged to use lignite and coke as well as bituminous coal substitutes as far as possible.

Burns Brothers, in New York City, are advertising British coal as a substitute for anthracite for certain limited uses, at prices about the same as for anthracite. In New Jersey the Governor has issued a proclamation setting the price of coal for householders at 15c. above last year’s quotations. He did this through the New Jersey State Fuel Commission, after having refused to call a special session of the Legislature to pass on coal questions.

The Pennsylvania Fuel Commission, on Sept. 7, 1922, adopted the following regulations fixing the maximum gross margin for retailers and setting rules for distribution and standard of preparation for anthracite:

(1) The maximum gross margin per ton on sales of anthracite by retailers shall not exceed the gross margin per ton realized during the month of March, 1922, without the authorization of the commission.

(2) Retailers shall limit delivery of anthracite to domestic consumers to 60 days’ supply.

(3) To avoid hoarding and to insure equitable and supervised distribution, anthracite operators are prohibited from furnishing domestic uses for household use to any consignee other than an established retail coal merchant, unless authorized by the Pennsylvania Fuel Commission.

(4) All anthracite offered for sale or shipment shall be maintained at the standard of preparation existing in March, 1922.

Ford Plants Reopen; Idle Four Days

Plants of the Ford Motor Co. which were closed Sept. 16, throwing 70,000 to 80,000 people out of employment in Detroit, when the company was unable to obtain adequate coal supply, began reopening at midnight Sept. 21. Orders for the resumption of operations came within twenty-four hours after announcement of the action of the Interstate Commerce Commission in modifying Service Order No. 23 and substituting order No. 25, permitting distribution of coal to industrial concerns even though not included in the essential classification of priority group No. 1.

Under the operation of the order as it stood before the change the Ford company, though owning and operating eight thousand acres in the Banner Fork district of Kentucky and owning and operating a railroad on which the coal was brought to Detroit, was denied the use of the coal and would be required to turn it over to railroads or public utilities. Modification of order No. 23 will enable the company to use coal produced by its own mines and moved on its own railroad.

Henry Ford made the prophecy last week that coal will soon be much cheaper. He advised the people of the whole country not to buy much now but to wait for the slump. He said in an interview that there is enough coal above ground now to last the country for some time and that even anthracite is going to reach the Middle West, though the motor king is in some doubt about any drop in the price of that coal. The exalted price levels on soft coal were attained, he said, because producers tried to hold coal back from the market, but the prices are tending now. He said his company had recently bought 500 cars in Toledo at $5 a ton including freight and arranged for a 60-day supply through Cincinnati from agencies at $5 at the mine. "Before spring coal will sell a good deal below $3 at the mine," he prophesied.

An attack upon coal prices is being made in the Chicago City Council, where an alderman who is a candidate for office has charged that an operators’ ring and a retailers’ ring are holding up the market with heavy tariffs for those who undersell fixed price levels. The council’s committee on the high cost of living is expected to make an investigation. The Chicago Retail Coal Merchants’ Association denies all the charges and has filed suit against the alderman for $200,000.
Production and the Market

Weekly Review

Declining prices have been checked, temporarily at least, by the strong demand for domestic fuel. While the household consumer is not buying heavily, retailers in some areas, especially the Middle West, are filling their yards with bituminous coal for winter distribution. Dealers are beginning to realize that anthracite will not be obtainable in sufficient quantity before Jan. 1. Steam grades are in no better position than at the beginning of September and in some markets distress lots can be obtained at bargain prices.

The aggregate result of the stronger domestic demand and poor industrial call is reflected in Coal Age Index of spot bituminous prices, which registers a rise of 5 points to 413 as of Sept. 25, from 412 the week before. This week's figure represents an average mine price of $5.00, as compared with $4.99 for the preceding week.

Transportation Conditions Badly Upset

Transportation conditions are deplorable, especially in the West. Coal is moving very slowly, gateways are congested and mines are everywhere short of cars. In some parts of Kentucky production has been limited to one day per week by the carriers' inability to furnish supplies and haul loads. Lines furnishing the Hampton Roads piers are giving poor service. Resumption of anthracite mining has greatly reduced the car supply in the adjacent soft-coal fields. Surplus cars have been exhausted in the past two weeks for the first time since early in 1921, and until the railroads can increase the turn-around there will be no better car supply.

Despite these factors limiting the supply the buyer of industrial coal maintains his attitude of aloofness, in which the passage of the federal coal bills has added point. He believes that prices will not be allowed to ascend. State authorities are modeling similar measures—Ohio has already passed such a bill—and the buyer sees in these an argument for awaiting lower prices. Coal men are divided in their opinion on the future of the steam-coal market this winter. Some are of the very definite opinion that there is so little inherent strength in the industrial demand that prices cannot rise—in other words, the railroads will be able to haul as much coal as is urgently required. Others equally well informed and as thoroughly experienced in the trade look forward to a very definite shortage, a strong demand and high prices.

The Lake trade is very active. Dumpings passed the 1,000,000-ton mark last week and are still increasing. Record-breaking receipts and excellent rates of discharge are reported from the Head-of-the-Lakes, where an easier feeling now prevails. This heavy flow of coal has blunted the edge of climbing dock prices and the lowered quotations have brought in many delayed orders. Coal is flowing off the docks as fast as it is unloaded, and boats are making one-day turn-arounds in a feverish attempt to transport as heavy a tonnage as possible during the remainder of the season.

With the announcement of new circular prices by the old-line producing companies much anthracite that had

Estimates of Production

<table>
<thead>
<tr>
<th>week ended</th>
<th>1921</th>
<th>1922</th>
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</thead>
<tbody>
<tr>
<td>BITUMINOUS</td>
<td></td>
<td></td>
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<tr>
<td>Sept. 2 (b)</td>
<td>7,606,000</td>
<td>9,359,000</td>
</tr>
<tr>
<td>Sept. 9 (b)</td>
<td>7,085,000</td>
<td>8,791,000</td>
</tr>
<tr>
<td>Sept. 16 (a)</td>
<td>8,187,000</td>
<td>9,661,000</td>
</tr>
<tr>
<td>Daily average</td>
<td>1,365,000</td>
<td>1,610,000</td>
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<tr>
<td>Calendar year</td>
<td>278,023,000</td>
<td>251,371,000</td>
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<tr>
<td>Daily avg. cal. yr</td>
<td>1,276,000</td>
<td>1,149,000</td>
</tr>
<tr>
<td>ANTHRACITE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sept. 2 (b)</td>
<td>1,770,000</td>
<td>36,000</td>
</tr>
<tr>
<td>Sept. 9 (b)</td>
<td>1,483,000</td>
<td>50,000</td>
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<tr>
<td>Sept. 16 (a)</td>
<td>1,729,000</td>
<td>1,064,000</td>
</tr>
<tr>
<td>Calendar year (b)</td>
<td>66,034,000</td>
<td>23,325,000</td>
</tr>
</tbody>
</table>

| CORE |
| Sept. 9 (b) | 60,000 | 138,000 |
| Sept. 16 (a) | 64,000 | 139,000 |
| Calendar year | 3,964,000 | 4,305,000 |

(a) Subject to revision. (b) Revised from last report.
been held at destination has been released for retail distribution. The new domestic coal prices are 15c. @ 30c. higher than the latest pre-strike quotations, presumably to cover the Pennsylvania state tax. Distribution is being carefully watched by state authorities, that the meager supplies may have adequate needs only. The movement so far has been eastward, very little tonnage going west of the mines. No Lake charters have been made, although some coal is dribbling into the Northwest.

Independent coal is moving generally at a high of $9.50 compared with the maximum of $8.50 announced by the Pennsylvania Fair Practice Committee. Unless a modification of the committee ruling is made it is likely that most of the independent tonnage will be shipped out of Pennsylvania to enable producers to obtain what they insist is an adequate return for their commodity.

BITUMINOUS

"Production of bituminous coal in the last week (Sept. 18-23) is estimated at 6,900,000 to 9,900,000 tons," says the Geological Survey, "a slight increase over the preceding week. Loadings on Monday, Sept. 18, were 37,330 cars, the highest since the close of the strike. On Tuesday, however, they dropped sharply to 29,496 cars.

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

<table>
<thead>
<tr>
<th>Low-Volatile, Eastern</th>
<th>Market</th>
<th>Aug. 28, Sept. 11, Sept. 18, Sept. 25, Quoted 1922</th>
<th>1922</th>
<th>1922</th>
<th>1922</th>
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<tbody>
<tr>
<td>Smokeless lump. ...</td>
<td>Columbus $6.25 $6.40 $6.25 $6.00 $6.75 $6.25</td>
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<tr>
<td>Smokeless screenings.</td>
<td>Columbus $5.75 $5.75 $5.50 $5.75 $6.00 $6.25</td>
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<tr>
<td>Smokeless lump.</td>
<td>Chicago $5.60 $5.65 $5.50 $5.60 $5.75 $5.50</td>
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<tr>
<td>Smokeless screenings.</td>
<td>Chicago $5.25 $5.25 $5.10 $5.25 $5.25 $5.10</td>
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<tr>
<td>Smokeless run.</td>
<td>Chicago $5.75 $6.00 $5.85 $5.75 $6.00 $5.75</td>
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<tr>
<td>Smokeless run.</td>
<td>Pennsylvania $5.00 $5.00 $4.90 $5.00 $5.00 $4.90</td>
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<tr>
<td>Smokeless run.</td>
<td>Pennsylvania $5.15 $5.15 $5.00 $5.15 $5.15 $5.00</td>
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<tr>
<td>Smokeless screenings.</td>
<td>Pennsylvania $4.50 $4.50 $4.35 $4.50 $4.50 $4.35</td>
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<tr>
<td>Smokeless screenings.</td>
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<tr>
<td>Clearfield run.</td>
<td>Boston $5.85 $5.60 $5.55 $5.85 $5.85 $5.55</td>
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<td>Somersfield run.</td>
<td>Boston $6.00 $5.50 $5.25 $5.60 $5.85 $5.50</td>
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<tr>
<td>Pool 2 (Super Low Vol.).</td>
<td>Philadelphia $6.75 $6.75 $6.75 $6.75 $6.75 $6.75</td>
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"The present output is above that of the corresponding period of the year of depression, 1921, but is below that of the preceding four years. The present condition of the coal market resembles the three years 1918 to 1920 more than that of 1921. In those three years, as now, demand for soft coal was active enough to absorb all the coal that could be transported."

Movement of all-rail coal to New England increased to 3,009 cars during the week ended Sept. 16 from 2,722 cars in the preceding week. That market, however, is well stocked and prices are easy, movement being largely on contract. Chicago coal by water tends to restrict all-rail spot shipments. These Western coals are being kept from lower price levels by the more active Western demand for low-volatiles.

SUMMARY OF NEW ENGLAND RECEIPTS, JANUARY TO AUGUST INCLUSIVE, 1916-1922

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<tr>
<th>(In Net Tons)</th>
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<tbody>
<tr>
<td>1916</td>
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<td>1917</td>
</tr>
<tr>
<td>1918</td>
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<td>1919</td>
</tr>
<tr>
<td>1920</td>
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a Data furnished by the Massachusetts Fuel Administrator.

Hampton Roads dumpings for all accounts were 297,600 net tons during the week ended Sept. 21, as compared with 341,558 tons in the previous week. Some exporting has been
The Lakes are getting little anthracite as yet. Independent quotations are within a range of $10-$13 per ton, although some wild quotations have been rumored since the resumption of mining.

**Anthracite**

Production of hard coal during the first week after the strike was 1,384,000 net tons. Preliminary estimates for last week place the output at between 1,800,000 and 1,900,000 tons, or close to normal.

Large users are in active competition with soft coal. Cleveland buyers invaded Buffalo last week, only to find that no coal would be available to them for some time. Family

**Coke**

Bituminous coke production has remained at a rate of about 140,000 net tons—125,000 tons during the week ended Sept. 16—less than three weeks. Lack of cars is now limiting the output and the strike has been a waning factor since early in September. It is doubtful if additional furnaces can be started, and the only offerings are very limited and at a strong retail demand for coke has sprung up.

**Car Loadings and Surplusages**

<table>
<thead>
<tr>
<th>Car Loadings</th>
<th>Surplusages</th>
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<tbody>
<tr>
<td>All Gases</td>
<td>Coal Cars</td>
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<tr>
<td>Preliminary week of week ending Sept. 16, 1922</td>
<td>1922</td>
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<tr>
<td>U. S. Total</td>
<td>45</td>
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<tr>
<td>Alabama</td>
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<td>Pennsylvania</td>
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<td>West Virginia</td>
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<td>Hazard</td>
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<td>Possum</td>
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<td>Logan</td>
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<td>Camberland-Fairmont</td>
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<td>Winding Gulf</td>
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<td>Known-Unknown</td>
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<tr>
<td>New River</td>
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<td>Oklahoma</td>
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<tr>
<td>Ohio, southern</td>
<td>48</td>
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<tr>
<td>U. S. Total</td>
<td>48</td>
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| How the Coal Fields Are Working |

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table X of the Weekly Report.

**Coal Age Index 418, Week of Sept. 25, 1922.** Average spot price for same period $5.06. This diagram shows the relative, not the actual prices on fourteen fields, representative of nearly 90 per cent of the bituminous output of the U. S., weighted in accord-

ance 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 ending June, 1914, an 100, after the manner adopted in the report on "Prices of Coal and Coke, 1912-1917," published by the Geological Survey and the War Industries Board. (Pittsburgh District prices not included in figures for last week.)

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<td>U. S. Total</td>
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Foreign Market
And Export News

British Market Further Depressed; Better Trade Conditions Aid French

Compared with the activities of the last few weeks the north of England coal market is in a weak state. There is plenty of coal to be had, especially in the gas and coking varieties. Port congestion is still acute and operators are pressing their claims for three shifts for coal transport workers. Steam coals are lower in price and 20,000 tons have been sold for shipment during Jan.-March at 25s. Coasting business is more active but foreign buying is disappointing especially in the American, Italian, French and Scandinavian markets. Few contracts are worth reporting other than 50,000 tons of good Durham coking coal at 20s. 6d. for delivery f.o.b., during Sept.-Dec., and 5,000 tons of Durham gas coals for Bordeaux at 20s. 5d. c.i.f. for shipment in October. Inquiries from Germany continue to be strong.

The South Wales market is in a similar position. Since the rapid fall of off American demands prices have declined and operators have an abundance of coal to sell. On the other hand home demands for Welsh coal are slightly stronger. The Scottish trade is very quiet except for certain shipments to the Continent, especially Germany. Output during the week ended Sept. 9, declined slightly, according to a cable to Coal Age, falling from the previous week's record of 5,204,000 gross tons to 5,161,000 tons.

French Output Steadily Increases

Under the beneficial influence of the diversion created by sales of British coals to North America and influenced also by the present revival in the metallurgical and textile trades and by the approach of winter, the market may be considered quite satisfactory. Northern mines are taking from their stocks, and contracts are easily renewed. Production is being gradually increased by the heavier output from devastated mineworking and from extension and, as the principal cause of the present improvement—the American coal strike—is essentially a transient one, it is easy to understand why French coal owners were so insistent at the recent Douai conference upon an extension of the miners' working time. A bill which, if enacted, would give satisfaction on that point to the coal owners, is now pending before the French Parliament.

Deliveries of German coke to France amounted to 312,000 tons in August, as against 418,000 tons fixed by the Commission of Reparations.

Coal Paragraphs from Foreign Lands

GERMANY—Production of coal in the Ruhr region during the week ended Sept. 10 was 1,761,000 metric tons, according to a cable to Coal Age. The preceding week's output was 1,729,000 tons.

ITALY—The price of Cardiff steam first is now quoted at 39s. 3d., according to a cable to Coal Age, as compared with last week's figure of 40s.

BELGIUM—A rising tendency is displayed by anthracite and some coals on the Belgian market in contrast to the weakness shown by industrial descriptions. Coke remains firm and active, while sales of briquets are good, even for export.

INDIA—The tone of the market is dull. Stock is heavy. Mills and railways are not purchasing. Prices are: Bengal 1st, Rs. 30; Bengal good 2d, Rs. 27; English coal, Rs. 38; African coal, Rs. 27.

PANAMA CANAL COAL PASSAGES were 404,389 gross tons during the fiscal year ended June 30, 1922. Of this tonnage the largest amount—29,549 tons—originated in the British Isles. The United States moved 156,322 tons. The West coast of South America took 153,638 tons of the total movement.

CANADIAN IMPORTS DECLINE SHARPLY

Imports of anthracite by Canada for the first eight months of 1922 were 1,100,223 tons of domestic and 189,784 tons of steam sizes, as compared with average imports during the corresponding period for the last three years of 3,958,980 tons and 164,649 tons respectively. Imports of bituminous coal were 4,678,921 tons during 1922, while the three-year average imports for the same period were 8,368,524 tons.

Exports Clearances, Week Ended, Sept. 21, 1922

FROM HAMPTON ROADS

<table>
<thead>
<tr>
<th>Week Ended</th>
<th>Sept. 14</th>
<th>Sept. 21</th>
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<tbody>
<tr>
<td>N. &amp; W. Pier, Larneport.......</td>
<td></td>
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</tr>
<tr>
<td>Cars on hand</td>
<td>1,864</td>
<td>928</td>
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<tr>
<td>Tons on hand</td>
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<td>75,658</td>
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<tr>
<td>Tons dumped</td>
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<td>152,132</td>
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<tr>
<td>Tonnage waiting</td>
<td>1,385,989</td>
<td>1,424,228</td>
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<tr>
<td>C. &amp; S. Pier, New York.......</td>
<td></td>
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<tr>
<td>Cars on hand</td>
<td>1,953</td>
<td>1,853</td>
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<tr>
<td>Tons on hand</td>
<td>65,496</td>
<td>51,990</td>
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<tr>
<td>Tons dumped</td>
<td>46,565</td>
<td>55,974</td>
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<tr>
<td>Tonnage waiting</td>
<td>4,115,231</td>
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<td>C. &amp; S. Pier, Newport News....</td>
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<tr>
<td>Cars on hand</td>
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<tr>
<td>Tons on hand</td>
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<tr>
<td>Tons dumped</td>
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<td>Tonnage waiting</td>
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Pier and Bunker Prices, Gross Tons

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<thead>
<tr>
<th>Pool</th>
<th>Sept. 14</th>
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<tbody>
<tr>
<td>Pool 10, Philadelphia.......</td>
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<tr>
<td>Pool 11, Philadelphia.......</td>
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<tr>
<td>Pool 10, New York.........</td>
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<td>Pool 12, New York.....</td>
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<tr>
<td>Pool 5-6, Hanlon Rds.....</td>
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<td>Pool 2, Hamp. Rds.......</td>
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BUNKER S

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<td>Pool 10, Philadelphia........</td>
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<tr>
<td>Pool 5-6, Hanlon Rds........</td>
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<td>Pool 2, Hamp. Rds........</td>
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Current Quotations British Coal F.O.B. Port, Gross Tons

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<th>Pool</th>
<th>Sept. 14</th>
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<tr>
<td>Pool 5-6, Hanlon Rds........</td>
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<tr>
<td>Pool 2, Hamp. Rds........</td>
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</tr>
</tbody>
</table>
Coke

UNIONTOWN

Only the tent colonies scattered about the Connellsville region show the existence of the miners’ strike. At plants where cargo is placed for loading there is sufficient labor to operate them.

The car situation is becoming acute but despite that development the coal market remains unchanged with the range of $4 to $4.50 which has prevailed for the past two weeks. There are plenty of orders for available tonnage but consumers are not disposed to bid against each other.

As a general condition striking miners are holding fast and the miners remain with the “lost cause.” Their confidence of ultimate victory despite the many broken promises of the organizers is one of the most remarkable things about the strike. Although union miners have now been working a month no effort has been made on the part of the union to supply that financial relief which was promised to striking Connellsville miners.

Connellsville

The coke market has advanced, furnace coke being at $12 and foundry, $8. Increased output is limited by transportation conditions at most plants. There are thousands of men in the region still who consider themselves on strike but a complete breaking out of the situation is hardly a likely effect except to start some plants and curtail operations at others, there being a re-distribution of cars rather than an increase in the total supply available.

All told only three or four blast furnaces have been able to resume in the past 30 days on purchases of Connellville coke, although running strong coke interests have bought some tonnage, to mix with their byproduct coke. It seems very doubtful if in present circumstances Johna, a quite 72 hr. Connellsville foundry at $13, 48-hr. furnace at $11.50.
Company Price Notices

Start Sales of Tonnage

Quotations Higher Than Latest Pre-Strike Figures — Heavy Independent Movement Beyond Pennsylvania Likely, as Producers Say Fair Practice Maximum Is Too Low — Steam Sizes Again Competing with Soft Coal.

New prices have been announced by the companies, who are now releasing the tonnage that had been held at destination pending this announcement. Quotations show an advance over the latest pre-strike figures, presumably to cover the Pennsylvania state tax. Independent domestic sizes are moving within a range of $9@9.50. The $8.50 maximum set by the Pennsylvania Fair Practice Committee may result in a heavier independent movement to points outside of that state, as many producers say their price must exceed that figure to enable them to operate.

No Lake charters have been reported as yet, although a small amount is dribbling into the Northwest. The movement so far has been almost entirely eastward.

Baltimore

Some light supplies have been received. These receipts are all independent coal apparently, which leaves the trade here in a rather peculiar position. The papers have drawn comparisons between the selling price of the retail ton in New York and the retail price in Baltimore as set by some individual dealers.

The freight differential in favor of Philadelphia and New York, however, together with the fact that the New York price is based on the net ton while the Baltimore price is gross by law, proved the big factor in showing that the Baltimore dealer is not getting too much for his coal. Should the day return when the Baltimore dealer can get one-half, or even one-third of company coal, or when the independent price comes down to or near the company price, then the dealer would be warranted in readjusting.

New York

Coal is coming forward in good volume. One of the features of the situation is the difficulty some dealers in independent buckwheat have in disposing of their supplies, although it is said they offered it at company schedule.

Most companies have made their new price lists and some retail dealers have done likewise. While

nothing has been said by the producers regarding their disposition of the Pennsylvania State Tax it is understood that it has been included in the new prices.

Retailers are advertising in the daily papers the fact that coal is coming forward and that those consumers who have not placed orders should place their orders and that they would be filled in their order. However the State Fuel Administration proposes to see that no consumer secures more than a two weeks' supply at any one time.

Independents are quoting $9@9.50 for the large coals, although there are reports that some of the smaller operators are exceeding those figures.

Anthracite Retail Prices

<table>
<thead>
<tr>
<th>Net Tons</th>
<th>Manhattan</th>
<th>Brooklyn</th>
<th>Bronx</th>
<th>Long Island City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face</td>
<td>12.25</td>
<td>12.25</td>
<td>12.25</td>
<td>12.25</td>
</tr>
<tr>
<td>Stove</td>
<td>13.25</td>
<td>13.25</td>
<td>13.25</td>
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</tr>
<tr>
<td>Chestnut</td>
<td>13.25</td>
<td>13.25</td>
<td>13.25</td>
<td>13.25</td>
</tr>
<tr>
<td>Buckwheat</td>
<td>7.26</td>
<td>7.26</td>
<td>7.26</td>
<td>7.26</td>
</tr>
<tr>
<td>Havana</td>
<td>6.26</td>
<td>6.26</td>
<td>6.26</td>
<td>6.26</td>
</tr>
</tbody>
</table>

Buffalo

There is now a little hard coal coming in. So far no price has been made and the coal goes out without a bid. Practically all of the Canadian dealers have already been over here, asking for coal.

All sorts of reports come in from the independent districts. One jobber has obtained a mine price of $12. Another has sold considerable at $13.50.

There is to be Lake coal to load in a week or so, but no charters have been made. There is ample tonnage yet, in spite of the increased loading at Ohio ports.

Boston

Dealers are much cheered by early shipments that have already been made. The first cargo of prepared sizes reached Boston on Sept. 22, from Philadelphia, and this will be followed shortly by a large cargo from Baltimore. All rail, also, considerable shipments have already been made.

There is satisfaction also in the prices announced by the old-line companies. The new basis is regarded as fair to the public.

Philadelphia

When company producers announced their schedule of mine prices, the Coal Age forecast last week that an increase of $5@6.50 a ton was likely was largely borne out, as the average increase on the three large sizes figures out 25c. None of the companies has issued a circular and prices are quoted for current shipments only; neither has anything been said about State tax and this item has not been covered in the increases noted.

The independents as a whole have been somewhat slower to announce prices. As yet it is not known what action the independents will take upon the Governor's statement that maximum prices shall not be higher than $8.50.

Retail prices are far from settled, although it is thought those handling company coal will have a price of about $14.50 for prepared sizes with $11 for pea. However, those dealers who have been receiving prepared sizes at $9.25@9.50 have been charging $15 for it, and $12 for prepared sizes.

Steam coal prices have been considerably increased by the companies. There is considerable variation in independent prices, with the compelling buckwheat under $4 and some as high as $5. The demand for all steam sizes is strong and there is very little free coal on the market.

Anthracite Fields

Some of the mines have not as yet resumed operation but in these cases the absence of resumption has been due to heavy falls of roof that have to be cleared up first. The condition of the mines really depended on the action of the union locals. Many of the locals were willing for the companies to use sufficient men to keep the mines up while others would not permit any of their men doing this class of work.

Pond like this is probably kept down by the union themselves as they do not desire to see any coal in storage when the expiration of the contract comes.

South

Birmingham

Transportation service is still the greatest matter of concern in this district. An approximate 50 per cent represents the general average of requirements as furnished by all carriers. This situation is responsible for as active a market as now exists for steam coal, the coal being slightly in excess of the tonnage being produced. Consumers in general are not getting as much coal or receiving it as promptly as they would like but this is due to the service alone, which has crippled production and movement from the mines.

Some of the carriers insist on observing the priority regulations, although it is understood that first and second priority classes have been getting more coal than actually required, except in the case of domestic dealers. There is a distinct shortage of this grade in the spot market and inquiry is strong.

Prices on spot steam and domestic grades within the state have practically stabilized on the schedule, a slight premium being offered on both grades of fuel for shipment into adjacent territory.

Virginia

Transportation facilities have been quite as conducive to an increase in the output as was the case earlier in the month so that less than 50 per cent of capacity or less is being produced. There is still a healthy demand, although Eastern markets are becoming more absent, noticeably among domestic, with the result that egg and lump have advanced in price to some extent.
Chicago and Midwest

Car Shortage and Weak Steam Demand Prevail

Kentucky Mines Average One Day

While Illinois and Indiana fields worked two days a week—domestic prices firm but others soften.

Weak transportation and slack demand for steam coal continues.

In eastern Kentucky car supply got so bad last week that many a mine worked but one day and some of them got only a part of a day. Western Kentucky service was almost as bad.

In southern Illinois the average of 30 per cent continued in prevail while in central and northern Illinois the record was brighter, rising up in some sections to a point close to 75 per cent. Indiana was fully as affected in most fields as southern Illinois.

While the call for domestic size continued fairly good and prices level, steam coal here and there got too flexible so that a general softening of steam prices was noticed. The difficulty of moving steam coal was so marked that a number of contracts for the coming six months were reported. Some of these from central Illinois ran below $2.25.

The trade in anthracite promises some sort of revival with the first cold snap.

CHICAGO

The "hook" of big coal buyers is working away fairly fast. Prices are on the move and some continue to soften under the last move of heavy shipments.

As in the market for consignment as that alone limited the week it was possible to pick up large lots of consignments and much was down at prices ranging from $2.75 down to as low as $2.25, on a few invoices, where the premium was felt more deeply by the shippers. Through it all, however, Illinois operators generally refuse to drop their prices below $2.50, and getting away unsold at figures like $1.40, better quotations.

Many producers merely continue to put their coal on steam, waiting for the market to get away unloading at figures like $1.25. Some companies are in the market, but when they have no contracts on hand they are out of business.

The trade is watching sharply for the signing of new steam contracts.

In large cities along that this is the worst time in many years for the filing of such agreements for the future but the fact remains that some producers are buying heavy, and making them for the future. Companies have the tendency to improve car supply in the producer though they do not guarantee it. Much of this service is for the coming winter, although there is a prospect for the coming winter, and some below $2.50, even as low as $2.25 in some cases.

Domestic demand continues fairly strong and prices hold quite firm, but dealers have been doing a lot of buying without unloading to consumers and they have anticipated. In other words the householder has not felt the urge yet. A thin flow of smokeless is getting into Chicago and going to the billiard halls.

The first trip of anthracite is going to appear within a few days it is quietly predicted by one shipping concern but only a small volume of hard coal is expected before the first of the year.

INDIANAPOLIS

In spite of the fact that there is a serious industrial or domestic demand that was expected when the strike was settled. Along with the general unrest in the anthracite trade there is a considerable demand from various sections of the state of proffiteering in coal.

The Indiana Public Service Commission thinks $4.50 at the mine is fair. It is expected that the market will rise from all parts of the state that prices are much higher. Brokers are believed responsible to a large degree. An investigation of all of the shipments made. Same coal is selling at more than $5 at the mines. Practically all grades of foreign-mined coal, largely used in Indiana for domestic purposes, are bringing at least $2, for which they sold at this time last year. Retail demand is light.

ST. LOUIS

Locally there has been a vast improvement in the past ten days in the matter of domestic coal. The public is waking up to the fact that anthracite, coke and smokeless fuels are not available and they are ordering the next best thing, which at the present time is chiefly Mt. Olive. Carterville is hard to get and the big demand has caused St. Louis has refused to take any Carterville orders.

Mt. Olive is selling in greater proportion than all the other coal together. For open market Standard is bringing $4.75, while Mt. Olive for St. Louis is bringing $4 and Mt. Olive at retail is $5.50 and Standard, $6.75. The Standard operators are taking advantage of an outside market to keep prices up and are shipping heavily to Chicago on consignment. Locally in the country steam is quite market come numerous changes in the market and it is settled. Country domestic business is good, consumers taking any coal that can get.

WESTERN KENTUCKY

Car supply, which has been especially poor since Northern coal fields resumed, is growing worse. The Illinois Central, during the general strike furnished almost no supply, while now it is down to about 50 per cent. On the L. & N. car supply is reported at about 15 per cent.

Coal is a little scarce due to the small movement, and prices are slightly stronger than they have been, as there is a fair demand in the Louisville, Memphis, Nashville, Evansville and other central markets, with some demand still from Chicago and St. Louis. Lump coal is scarce and shows indications of further advances. It is quoted $4.75@ $5.25, with very little selling at less than $5.

Right now there does not appear to be much prospect of any material improvement in car supply, unless the plan of shipping cars under other loads in the direction of the owning line, aids in getting them moved from Northern lines. Today it is not a question of getting business but only to secure cars.

SOUTHERN ILLINOIS

A marked decrease in the amount of equipment furnished has almost stopped production at some mines in the Carterville field. The Missouri Western and Illinois Central are in the worst condition. The Burlington seems to be in the best shape. Railroad coal throughout the field is moving out heavily and is making good shipments on ordered sets. It will take at least three months, operators figure, to get caught up on domestic orders on the books now. Steam is dull, though. There is much dissatisfaction among miners on account of poor working time.

Somewhat similar conditions prevail in Duquoin and Jackson. Work time is being given the Mt. Olive operators. It is reported that no cars were furnished for eleven days at one mine on the Chicago & Northwestern. On account of congestion in this field coal tie-up tonnage is moving to Chicago and the North-west.

In the Standard district some mines are getting from within the field for Coventry. There is not a question of quality or preparation any more, it is merely a matter of coal. The county fairs in Illinois have helped to keep tonnage down this week for when these cars the mines would not work, especially on the Mobile & Ohio.

Steam sizes are slow and hard to move on account of the big plants that draw from this territory in Missouri using oil. The cancellation of Order 23 will help conditions some, but the assigned car order may cause another tie-up. The railroads decide they want all the coal.

The future is not good. Colder weather will mean an increased demand that cannot be met, and many indicate that car supply or motive power will show any improvement in the next two or three weeks.

LOUISVILLE

Although production of the country is increasing in Kentucky it is materially off due to the very poor car supply at Kentucky mines, and prices are advancing. Eastern Kentucky is asking as high as $5.25 for lump and mine run are low at $5@$5.25. Retailers need coal, but won't buy it at prices quoted, holding that they can't pay the freight and handling costs, and they quote it at a price that is fair to the consumer. It is reported that the producers of gas coal are getting better demand and a premium of $1.50 a ton.

Hazard field operators reporting only 8 to 11 per cent of cars needed, and Harlan producers report that the situation is even worse. Coal is reported running 18 per cent on L. & N., and 50 per cent on the I. C. The Kentucky coal trade believes that some railroads are holding many serviceable cars on sidings over the country that ought to be in service.
Northwest

Prices Softening Some
As Cargo Coal Flows In
Stream of Vessels Unloading at Every Dock—Make One-Day Turn-Arounds—Threatened Dock Strikes Cause Much Worry—Anthracite Arrives.

The Northwest continues to have its fretted feelings soothed by a heavy volume of cargo coal that is arriving in record-breaking quantity. Docks are concentrating every effort to make speedy discharges so that boats often make one-day turn-arounds. This coal has already blunted the edge of climbing prices. With all this coal coming in and prices softening the Northwest now worries principally about the threatened dock strikes which might cut off Lake coal during part or all of the remaining weeks in the shipping season.

The other main worry is over anthracite. The first shipments since the strike are just beginning to arrive and various conjectures are made as to whether enough will get through to meet the most urgent wants. Yard remnants are selling around $16, but in Milwaukee it is estimated the retail price for the rest of the winter will be at least $17.

DULUTH

Prices of Yougihoghey, Hocking and Splint have dropped. Coal men say that this is not so much an actual decrease as it is an adjustment to true values. It is openly stated in the trade that those who were asking $12 for lump, $11.50 for run of pile and $9.50 for screenings last week, are profiteering and that the downward revision is only an adjustment to the correct scale. At the dock lump is sold at $9.50 now, run of pile at $9 and screenings at $7.50. This adjustment has proven most stimulating to trade and many orders are being booked. The docks, of course, are absolutely clean, as coal is being shipped out as fast as it is received.

Receipts are passing all precedent. Last week forty-one cargoes arrived and thirty-four more are scheduled to arrive within a day or two. The forty-one cargoes brought in more than 350,000 tons. Docks are handling the rush in a most commendable manner. Boats are given one-day dispatch, which is unusual even in normal times.

The possibility of a seamen's strike and the reported disturbance on Lake Erie docks are the only two dark clouds on the coal horizon at present. If the seamen strike Oct. 1 it will mean that the Northwest will be in trouble, and if a strike occurs on the docks it is certain that a large proportion of the coal being routed to the Northwest will be diverted. If shipments continue as at present it is an assured fact that the Northwest will be all right this winter.

There is a large call for Pocahontas, which is selling at $12 for lump and $10 for mine run. Briquets also are being sold for anthracite substitute, the price being around $10. Coke is going at $11 a ton for the Northwest. Carnegie and Northwestern—say that they will start unloading anthracite early this week. No one here knows what the anthracite situation will be. Some claim that the seriousness has been over-estimated, and that not nearly the total tonnage estimated will be required.

MILWAUKEE

Milwaukee's coal supply has been materially increased since last week's report, and an easier feeling prevails. There promises to be a continuous procession of coal vessels to this port from now on. Receipts during September thus far aggregate 233,313 tons of soft coal, making the season's receipts by Lake, including those of anthracite, at 1,686,625 tons.

Interest is now centered in the prospective price of anthracite. Word that $8.55@$8.70 has been set at the mine, leads to the prediction that anthracite will cost Milwaukee consumers $17@18 per ton when the new supply is available. Remnants in town now are selling at $15.75 for egg, $18.95 for nut, and $16 for stove. No anthracite has arrived as yet but a consignment is expected some time during the next week.

The State Fuel Committee intends to prevent dealers from profiteering. The committee is sending a questionnaire to fifty-eight docking companies asking about costs. From this the committee expects to arrive at dealers' real costs and profits.

MINNEAPOLIS

At last cargoes are reaching Lake Superior docks in good number. If this can be continued for a few weeks, stocks will afford a fair promise of meeting the most urgent needs of the market. Only about ten weeks of navigation remain. Transportation troubles limit the volume of Illinois coal that might come up here by rail.

The real difficulty is and has been a matter of getting cars to move the coal from the mines to the docks. There may be now and then a shortage of cars at the lower ports for loading. But the primary difficulty has been cars,—always cars. And the same thing is equally true of the rail-rail mines.

One effect of the tonnage moving to the docks has been a softening of top prices. There will be an easing off right along, if transportation does not fail entirely. Coal men now believe the Northwest will be supplied with enough soft coal to serve all urgent needs, and with a portion of the usual hard coal tonnage.

Much complaint is made over alleged profiteering. One association of flour millers has set up that Illinois screenings were quoted at $1 at the mine less than a year ago, and are now quoted at $4.50 at the mine.

New England

No Improvement Shown;
Market Remains Inactive

Consumer, Well Stocked, Shows Little Disposition to Buy for Future Needs—Current Inquiries Small and Scattered—Car Shortage Severe.

There is no improvement in what is regarded as a very inactive market. Consumers are well stocked and it would take much more attractive prices than are now ruling to induce buying. There is a firm impression that steam coal is bound to be plentiful for months to come and there is little disposition to buy against January or February consumption. The larger corporations have ample reserves and the only current inquiry is from small users scattered all over the territory.

While there is little spot business at Hampton Roads a car shortage has developed sufficiently to curtail mining in certain of the smokeless districts. The market on Pocahontas and New River meanwhile is supported by Western demand.

A f.o.b. vessel at the Roads continue to range $7.90@$8.25 per gross ton, but a large proportion of what coal is dumped is applicable on contracts. Railroad piers at this end are so congested that those who have quotas does them are inclined to postpone shipment for the present.

There is a full line of Pennsylvania prices available for spot shipment at prices all the way from $4 per net ton at the mines to $5.50 for quality coals. The market for Tidewater shipments is sufficiently depressed, however, to have very little opening for rail deliveries within easy range of re-handling points. It is hard to say how there can be any improvement for Pennsylvania coals the boats or 90 days.

Delays on British cargoes continue. At certain of the railroads there is a delay of more than three days before the arrivals, other docks are also tied up for at least a fortnight, and foreign cargoes are still arriving. Very little of this, however, is offered on the open market, because the great bulk of the shipments are for account of manufacturers and other large consumers who made purchases six weeks or so ago.
Eastern Inland

Domestic Coal Is Strong,
Lake Dumpings Gain Rapidly

Yard Stocks Being Replenished and Mine Prices Are Up—Steam Stacks Ample and Demand Weak—Prices Hope for Lower Prices with Close of Lake Season

Domestic coal is the only strong market feature. Retailers are actively replenishing yard stacks and mine prices are up, with not much room real offered. On the other hand, steam supplies are ample and demand is weak.

This steam market quietude has been heightened by the passage of both state and federal coal measures. Ohio is to fix prices for her coal and Ohio tends to restrict current purchases to the hardest needs. Then, too, the buyer feels that with the Lake season closed, enough tonnage will be thrown on the commercial market to settle prices. Lake dumpings are steadily increasing and shippers are still hopeful of moving 15,000,000 tons this season.

Cleveland

Dull and listless market conditions continue. Supplies are ample and the demand weak. The feeling of coal men is that prices would fall if not bolstered by the present. Mine run is selling around $4.50 a ton and nearly $4 a ton in a little market. The demand is being supplied by the trade of developments in the special session of the legislature, the passing of the fuel law and the high prices of foreign coal. The legislation of a state coal commission is in the works. A new backing up of fixing prices is about to begin. No attempt will be made to lower bids for the entire state. Pending these detailed arrangements, prices are remaining their present position with little movement.

Lake prices are making excellent headway. The Erie & Coal Exchange, which has the place for settling the disputes, is still holding at a total movement of at least 10,000 tons.

Tonolulu is beginning to arrive in increased quantities. About 4,000 tons are about four weeks behind in their delivery, and 1,000 tons are being handled as rapidly as it is possible to do so. Shipment in quantity for western and northern on rail is being received.

Pittsburgh

Production is at the limit of coal supply and there is no prospect of any material change in this situation in the near future. In some quarters there is complaint that the line is slow in getting cars, but cars have been allowed to go to the Lakes.

COLUMBUS

Domestic grades are the strongest point in the market while steam has shown a marked reaction in price. Production is going along as well as possible under the circumstances. Available coal is quickly bought up but steam users are loath to pay the extreme high prices and quotations have sagged considerably. Lumps from all fields find a ready sale around $6 and even higher. The larger part of the tonnage coming in is Hocking and Pomeroy. Retail prices are rather high. Hocking and Pomeroy selling $4.75@$5.50, and West Virginia splints, $6.50@$11.

Lake trade is slower due to the high prices asked. One contract was made recently with the Hocking mine run, where the Lake shippers will screen the coal and take the lump and resultant size. Shipments over the H. V. Docks at Toledo during the week ended Sept. 20 were 2,570 tons, as compared with 121,756 tons the previous week, making a total of 2,148,723 tons for the season.

EASTERN OHIO

During the week ended Sept. 16, mining operations were speeded up and the output exceeded that of any week since the settlement of the strike. Production was 324,000 tons as contrasted with a potential capacity of 630,000 tons, or 52.5 per cent. The 300,000 tons that is recordable in the main to coal shortage. Thirty per cent of capacity has been produced so far this year.

Unless improvement can be had in the transportation situation, it does not appear that the proposed 75,000 ton district will be able to operate over 50 per cent of full time. However, with the striking shippers returning to the roads, the trade is more optimistic.

DETROIT

The modification of Service Order 23 has created a more optimistic feeling among both the industrial and domestic consumers and the feeling is expressed that a more favorable market will result. The buying that is now being done seems to come almost entirely from steam consumers who are obligated to come into the market. The market is not being overborne by talk. Hocking lump and egg is quoted at $6.50 f.o.b. mines, while mine run is $5.25@$5.50 and slack, $4.75@$5.50. Fairmont and Pennsylvania No. 8 take about the same price. Lump and egg from Kentucky and West Virginia is $7, mine run is $5.50, and slack, $5.25@$5.50.

Inefficiency of anthracite supply is occasioning much uneasiness. In many Detroit homes the heating equipment is of a character unsuited to use of any fuel except anthracite or coke and the supply of the latter is nearly as short as anthracite.

BUFFALO

Consumers refuse to buy at all liberally, no matter how the matter of car shortage is set before them. They are willing to pay the high prices that the railroads are charging and as they have coal they hold off.

Railroads have cut down the mines to about 30 per cent of capacity and then refuse to furnish that amount. It is not yet stated what the price is there and there will be coal that the railroads held off and as they have coal they hold off.

Prices range $5.25@$5.75 for Pittsburg 3-in., and $4.75@$5.25 for Allegheny Valley mine run. Slack sells a little higher than mine run. Add to this the rebates that are offered in some cases.

NORTHERN PANHANDLE

There is an active demand at the Lakes for the output of the region although there is a disinclination on the part of the Lake buyers to pay the current market prices. Northern shipments are as large as railroad facilities will permit. A large percentage of the output is being utilized by the carriers. Some producers are shipping by water in view of curtailed rail transportation.
Combination of Events Makes Market Uncertain

Softness at Tidewater, Price Fall at Fairmont, Afoofness of Lake Buyers and Change in I. C. C. Order Influence Trade—Buyer Now Better Able to Obtain Fuel at His Own Figure.

Softness of the market at Tidewater, falling prices in the Fairmont field, a general disposition of Lake buyers to remain aloof and a modification of the I. C. C. Order 23 all militate against an easy or set swing to the market. There has been a lot of running around to find out which way things were heading, a general uncertainty as to what might be expected and a disposition to go warily lest there be some untoward change that might upset the best of calculations.

The market in the meantime has developed its own soft spots, with steam coal edging off in price and an ability of the buyer to get fuel at his figures more readily than he has been in the past three months.

HIGH-VOLATILE FIELDS

KANAWHA

Partial paralysis of transportation is still the most potent factor in retarding production. During the week ended Sept. 16 mines were not able to produce more than 40 per cent of potential capacity. There is a better demand in Western markets than in the East. The call for prepared sizes is becoming much more active. Little coal is being prepared, however.

LOGAN AND THACKER

Logan mines have been greatly handicapped by exceedingly poor transportation facilities, the car supply not being equal to much more than 35 per cent of rating. There is little free coal available. There is a growing demand for domestic grades with little to be had, so that prices have stiffened to some extent.

Inroads were made on production in the Kenova-Thacker region by a shortage of cars but notwithstanding this the field is producing more coal proportionately than some other high-volatile regions. The Western movement is far from being satisfactory, however. Railroad fuel consumption is heavy. In common with operators in other fields, Kenova-Thacker producers observe a stronger demand for coking and lump owing to the necessity of retailers restocking.

NORTHEASTERN KENTUCKY

Demand is still much in excess of the output, which is not more than 30 per cent of potential capacity or less than 100,000 tons a week. Most of the priority orders placed in this region have been filled, but the mines are now shipping on regular business. Railroads are securing a good deal of coal and some is also going to the Lakes.

The fact that demand is outstripping the supply of domestic is responsible for increased prices on lump coal, ranging up to $6.50.

LOW-VOLATILE FIELDS

NEW RIVER AND THE GULF

New River mines are still working on an open-shop basis, but the car situation is extremely bad and precludes more than a 40 per cent production. Market conditions are conducive to a larger output than the transportation situation permits, yet very few producers are securing more than the Hoover price of $4.50. There is a growing demand for prepared coals and for mine run in the West. There are a few priority orders still in evidence but they are not numerous, the various committees having virtually ceased to function.

Winding Gulf mines are handicapped to about the same extent as New River. Production losses are still averaging about 150,000 tons a week as against an output of little more than 100,000 tons a week. For such coal as is produced there is a fairly active demand with comparatively little fuel from this field shipped to Western markets, owing to the difficulty of getting such coal through. Priority orders have largely ceased.

POCAHONTAS AND TUG RIVER

Pocahontas mines are faring better than those in other smokeless territories, owing to more satisfactory transportation conditions. The greatest difficulty is in getting coal to Western markets where there is sufficient demand to justify a large movement. The N. & W., however, is able to transport more coal to Western points than other lines operating in southern West Virginia. The bulk of the output is going to Tidewater and to Eastern markets where the demand is not very urgent and where there is a probability that the markets will be glutted with coal before long.

Tug River mines are situated just about the same as Pocahontas. There is also in Western markets an active demand for high-grade coal and for fuel for steel companies having subsidiaries in the West. There are no longer many priority orders in effect. Prices as a rule are not ranging much above the Hoover price level, except as to prepared grades, which are scarce.

CINCINNATI

The buyers' strike—if it may be so called—still continues and the most notable effect has been the number of suspensions of orders and rejections by Lake buyers. There, where all the handlers of coal expected the market to be the strongest, it is the weakest. The consequence of this has been to throw a heavy tonnage on markets which are not absorbing the coal as they used to. The submission of domestic buyers to take coal in quantity has had its effect too. Whether this attitude or the fact that more mines are now turning out domestic sizes is the cause, in any event there has been a drop of $1 on some of the offerings.

The smokeless situation has developed some different curves. More and more New River is being offered through the jobbers. Old-line firms are still offering to book orders at lower prices but with the stipulation that the buyer must wait his turn. Spot shipments are taking a premium, New River and Pocahontas lump selling up to $7.50 and mine run up to $6.50.

The retail situation still continues tense. There was another boost in price this week, one firm advancing bituminous lump from $10.50 to $11.50, and mine run to $9.

Other firms have hesitated in following suit, the range of prices being: Smokeless lump, $10.50 to $12, bituminous lump $7.75 to $10.50, smokeless mine run $7.50 to $8, bituminous mine run $8 to $9, slack, $7 to $8.

WEST

SALT LAKE CITY

Three or four retail yards have been closed during past week, in some cases for want of coal. Many dealers refused to buy coal during the early part of the summer thinking the price would drop. Then came a shortage in other states and coal produced here went elsewhere. Today, local yards have trouble getting fuel.

Following the announcement that a grand jury investigation would be made into the recent raise of $1 a ton, retail demand fell off. Neither operators nor dealers seem to be worrying very much over the investigation, which is regarded as a political move.

Car supply totals only 75 per cent; on some lines. Operators in afflicted areas regard the outlook as rather gloomy in view of the bumper crops that must be moved.

KANSAS CITY

The coal business is getting back to normal, although the market situation is surprisingly low. It may be that householders expect prices to drop. Some of the dealers lay the drop off to the high prices. There are more than 100 in Kansas City, who are putting out oil burning equipment and they are all busy taking orders and installing heating equipment.

DENVER

The shortage in the car supply is causing serious concern. Colorado farmers practically the only districts in the state getting any material are the normal suppliers. The Victor American Fuel Co. mines in Logan are now operating only 32 hours this month. Price increases at the mines vary from $1.50 to $2.50 per ton. The conservative operators are only asking $1 above the Sept. 1 price.
News Items
From Field and Trade

COAL AGE
Vol. 22, No. 13

NEW YORK
The Letchworth Coal Co. has opened an
office at Buffalo, with John A. Bragg, formerly
with the Pittsburgh Coal Co., as manager.

OHIO
The Consumers' & Manufacturers' Fuel
Co. has acquired the name of a new company, char-
tered in Columbus, with a capital of $30,000
stock to sell directly to the consumer. In a letter
to Governor Harry L. Davis, H. H. Shawson,
president of the company, advised that it is
planned to operate in the central Ohio area.

Successfully handled anthracite and bituminous
coals, established in the year 1819, and now
serving as the company representative in a
military and industrial manner, the company
will reorganize its operations.

The Ideal Coal & Eastern Coal Co., Columbus,
has increased its capital stock from
$75,000 to $100,000.

The Mining Co., with headquarters in Chicago, has
leased the Patsy mining company, a coal
company, from the owners for $1,000 per year.

Teresa has been re-organized, the plant
is in good condition, and the output
of 400 tons daily is going forth regu-
larly. The capital of $10,000 the La Vera
Coal Co. has been organized at Jawnsville.

The Star City Coal Mining Co. of Indian-
apolis, has increased its capital stock from
$50,000 to $200,000.

The Saxton Coal Co. has been organized
by the owners, with a capital stock of $12,000
in Jawnsville, and the directors are Hinkle C. Hayes,
C. F. Crooks, W. D. Streit and John T. Taylor.

The Jawnsville Fourth Vein Coal Co., at
Jawnsville, has filed preliminary certificate
of dissolution with the secretary of sta-
te.

The M. Pleasant Coal Co. Terre Haute,
has papers of incorporation. The artifi-
cer is a capitalization of $50,000 and
the certificates of the firm are George W. Wills
president, J. J. Hafer, vice-president.

KENTUCKY
It is reported from Palmetto, that
J. V. Oldham, of that point, had filed
a petition for the purpose of leasing for a
$7,000,000 water power project at that
point and is now furnishing current to cities and towns in
central and eastern Kentucky, and mines in some sections of northern and eastern
Kentucky.

The O. R. Coal Co., Whitesburg, has
been formed by W. C. Darby, H. C. Blower
and others, to operate a string of wagon mines. Wagon
wines are quite at present active, but there are
at present no payments. The owners are able to load cars promptly and are
expected to be prompt in payment.

R. C. Simpson, general superintendent of the Kanawha Elkorn Collieries, Inc.
for the past year, has resigned his position and will be succeeded by J. L.
Morgan, mining inspector, and at present mayor of
Pikeville.

Governor Morrow has disbanded the
Kentucky Fish Commission, which while it
lived, was one of the most active of the
date emergency boards.

A number of new Kentucky coal compa-
nies have filed charter articles the past few
months, list including the following:
Noble Coal & Lumber Co. Which, capital
stock $25,000, of W. Martha and Pearl Noble,
Coalville, operator of all of Coalville,
Brendt Bottom; Pikeville, $10,000.

J. A. Howard, vice-chairman.

The State of Tennessee, is interested in
the State of Ohio, and has recently
leased the Richland Coal Co. in Richland

MOORE mines.

The Richmond Coal Co. has filed
articles of incorporation, with a capital
stock of $50,000, to purchase coal in
Richland.

The Tennessee Coal & Coke Co.
has filed articles of incorporation, with a capital
stock of $100,000, to purchase coal in
Richland.

The State of Tennessee has recently
leased the Richland Coal Co. in Richland.

MINNESOTA
J. H. Sanford, president of the Carnegie
Back & Fuel Co., and J. A. Howe,
vice-chairman and general manager, were
at lunch in an inspection tour recently.
They represented that they had large sup-
plies of coal in that market, and
that the dock might be
all in a week.

A city committee on fuel has been named
Minneapolis by Mayor Leach, to carry
out the plans of the city
in that direction. It is
led by W. A. Kellogg, real
estate and land agent repre-
sentative from the railroads, pub-
lishers, motion picture
operators.

Governor Pease has proclaimed a war-
time fuel holiday.

OHIO
The Burn's Coal & Supply Co., a retail
dealer, has opened a wholesale depart-
ment in Columbus, with Edward Sharafinemker, president.

Edsel Ford, son of the Detroit auto
manufacturer, accompanied by H. S. Southee,
in charge of coal purchase, William Hunt,
purchasing agent, and Homer Lusford, in
charge of the Ford mining properties in
southeastern Kentucky, were visitors to the
Cincinnati market on Sept. 29th. Mr. Ford
had a preliminary agreement in
which they said the purpose of the
visit was to learn in detail the possibil-
ities for the movement of coal.

With the strong demand for coal there
has been a flood of new corporations for
mining and distribution purposes. There
has been on the average of a half dozen a
week chartered under Ohio laws. Among
them are the Wilton Coal Co., Colum-
bus, capital $25,000; mine coal near
Athens; Incorporators, C. M. Rossier, Pearl
Glenn and Andrew C. Gibson, and
F. L. Gibson; Blue Ridge Coal & Dock Co.,
Cleveland, 200 shares, no par value design-
ated; Emile L. Andrews, David A. Gaskill,
Clay Dietrich, Jerome C. Fisher and
D. F. Olmstead; Eastern County Mining
& Coal Co., Columbus, capital $5,000; R. M.
Hunt, L. J. Huggler, J. E. Gilbert,
Griffith, Jr., and S. A. Seiter; Crawford-
ville Coal Co., Crawfordville, Florida,
Cyrus Wheel, Henry E. Crawford, John W.
Crawford, Frank B. Grove and W. C.
Gifford; the Penn Coal Co., Columbus
capital $50,000, to mine coal in Crooksville
Ohio, H. R. Voekler, James E. Beall,
Voller, Ruth Boeller and S. J. Lewis; the
Ohio & West Virginia Coal Co., Columbus,
capital $100,000, to mine coal in eastern
Ohio and West Virginia; H. H. Armstrong,
A. H. Davis, S. M. Hanley and O. P. Amann.

OKLAHOMA
The Coal Movers' Extension Course, Okla-
ahoma School of Mines, started its course of
this year, and is now flourishing with
an enrollment of 200 students. It is now
possible for those desiring to take the state
examinations to prepare for the same, to the
obtained amount of education. Tu-
it is free to all state residents. Informa-
tion: Oklahoma School of Mines, Coal Mine
Extension Dept., Wilburton.

Pennsylvania
A charter has been issued for the Marsha-
ll Coal Co., Robinsonville, with a capital
stock of $20,000. Its purpose is mining and
mining. J. H. D. Neale, Robinsonville,
R. D. no. 1, is treasurer and he with
J. H. D. Neale, R. D. no. 1, incorporated the
company.

The Laurel Coal Co., Clearfield, $50,000
capital, has been formed. A. House, House-
dale, is treasurer. The coal is bituminous coal. Incorpor-
ators: Joseph Jurcak and John Jurcak.

H. B. Powell, president of the County
National Bank of Clearfield, recently pur-
blished a report on the advances of coal
wealth, Cambria County, at a public auction held in handler. The price paid was
$10,950. This land was sold under par-
tion proceedings, it being owned jointly
by the A. S. B. Bank, the Israel Test
estate and the Philip Dott estate.

The Western Defense Co. have taken over
the mine of the Shipman Coal Co., near
Shamokin.
TEXAS

The Dickinson Ice & Fuel Co., of Dickinson, Texas, is the new operator of that mine with the secretary of state. The company was principally interested in the new company is W. K. Hatfield and J. J. Hyndman. The company estimated that it will be able to increase production to the extent of 2,000 tons a day with the new coal tipple.

A tract of between 500 and 600 acres of Coal Land has been purchased by the New Heights Coal Co., of North Panhandle, has completed plans for the construction of a coal tipple at its No. 1 mine. The contract for its erection has already been let. The company estimates that it will be able to increase production to the extent of 2,000 tons a day with the new coal tipple.

UTAH

The Channel Fuel Co., of Houston, has filed an amendment to its charter, increasing the company's capital stock from $100,000 to $200,000.

OREGON

A. E. Green, an employee of the Utah Fuel Co., for more than forty years, has been transferred to the Oregon Coal Co., of Portland, Ore., where his headquarters were recently opened.

HARRY T. HARDY, manager of the Dexter & Carpenter branch of the Chicago, Rock Island & Pacific Railroad Co., of Portland, Ore., has been transferred to the Oregon Fuel Co., of Portland, Ore.

The United Mine Workers of America, with headquarters in Washington, D.C., has filed notice at the State Department, Harrisburg, of an increase in its indebtedness from $2,500,000 to $5,000,000. The increase is expected to be used for coal mining operations.

WEST VIRGINIA

The Lehigh Coal & Navigation Co. has been organized by Grafton people with a view to developing coal lands in Harrison County. This concern is capitalized at $50,000, headquarters at Wheeling. The company plans to develop the coal lands in the new enterprise.

The Robinson Coal Mining Co. has been organized for the purpose of developing coal lands near Morgantown, W. Va. The company plans to develop the coal lands in the new enterprise.

The Averitt Coal Company has been organized for the purpose of developing coal lands near Lone Star, W. Va. The company plans to develop the coal lands in the new enterprise.

The Bell & Company has been organized for the purpose of developing coal lands near North Fork, W. Va. The company plans to develop the coal lands in the new enterprise.

The Fairmont Coal Company has been organized for the purpose of developing coal lands near Fairmont, W. Va. The company plans to develop the coal lands in the new enterprise.

The Four Oaks Coal Company has been organized for the purpose of developing coal lands near Oak Hill, W. Va. The company plans to develop the coal lands in the new enterprise.

The West Virginia Coal Company has been organized for the purpose of developing coal lands near West Virginia. The company plans to develop the coal lands in the new enterprise.

The Allegheny Coal Company has been organized for the purpose of developing coal lands near Allegheny. The company plans to develop the coal lands in the new enterprise.

The Baltimore Coal Company has been organized for the purpose of developing coal lands near Baltimore. The company plans to develop the coal lands in the new enterprise.

The Richmond Coal Company has been organized for the purpose of developing coal lands near Richmond. The company plans to develop the coal lands in the new enterprise.

The Wheeling Coal Company has been organized for the purpose of developing coal lands near Wheeling. The company plans to develop the coal lands in the new enterprise.

The Chesapeake & Ohio Coal Company has been organized for the purpose of developing coal lands near Chesapeake & Ohio. The company plans to develop the coal lands in the new enterprise.

The Norfolk & Western Coal Company has been organized for the purpose of developing coal lands near Norfolk & Western. The company plans to develop the coal lands in the new enterprise.

The Baltimore & Ohio Coal Company has been organized for the purpose of developing coal lands near Baltimore & Ohio. The company plans to develop the coal lands in the new enterprise.

The Pennsylvania Coal Company has been organized for the purpose of developing coal lands near Pennsylvania. The company plans to develop the coal lands in the new enterprise.

The Atlantic Coast Line Coal Company has been organized for the purpose of developing coal lands near Atlantic Coast Line. The company plans to develop the coal lands in the new enterprise.

The Chesapeake & Delaware Canal Company has been organized for the purpose of developing coal lands near Chesapeake & Delaware Canal. The company plans to develop the coal lands in the new enterprise.

The Kanawha Coal Company has been organized for the purpose of developing coal lands near Kanawha. The company plans to develop the coal lands in the new enterprise.

The Ohio Coal Company has been organized for the purpose of developing coal lands near Ohio. The company plans to develop the coal lands in the new enterprise.

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Association Activities

North Dakota Liquid Coal Operators' Association

National Coal Association

Trade Literature


Velocity Stage Turbines. DeLaval Turbine Corporation, Portsmouth, N. H., Catalog C, pp. 28; 8 x 12 in.; illustrated. Describes a line of velocity stage turbines especially designed for high pressure and high temperature steam. The turbines are built in 300 to 12,000-hp units—Conveyors and Conveyors, May 4, 1922; serial No. 116.


Recent Patents


Collecting Main for Byproduct Coke Ovens. WM. C. Knowles, 1101-17th St., N.W., Washington, D. C., 1,417,697, May 22, 1922; filed Dec. 23, 1921; serial No. 280,231.


Means for Closing and Opening Skips. From Unig, Berlin, Germany, 1,415,065, May 9, 1922; filed Sept. 11, 1920; serial No. 148,319.

Miss-Kip Loader. Charles L. Lawton, 2560 104th Pl., Chicago, Ill., 1,416,922, Filed June 4, 1921; serial No. 475,866.

Obituary

Edward J. Coness, widely known as an authority on coal and coal supply and head of the E. J. Coness Co., died recently at his home in Lewiston, Idaho. He had been in the coal business for 16 years.

George J. Boudreaux was president of the Mon-South Fuel Co. and manager of the Shamrock Fuel Co. of St. Louis, Mo. He was a pioneer in the mining and coal business. He was 90 years of age. He had been in the coal business for 30 years. Mr. Boudreaux was not only an authority on mining but was thoroughly familiar with transportation problems. He had been connected with the Missouri Pacific Railway for many years. He was a director of the Missouri Pacific Railway and the Shamrock Fuel Co. He was a member of the St. Louis Coal and Coke Co.,热心于煤炭生产和销售。他于1921年3月14日去世。

Comings

Kentucky Mining Institute will hold its annual meeting Nov. 3 and 4 at Stoddart Hotel, Louisville, Ky. Secretary, Elizabeth C. Rogers, Lexington, Ky.

The National Industrial Traffic League will hold its annual meeting Nov. 15 and 16 at the Hotel Commodore, New York City. Secretary, J. H. Berk, Chicago, Ill.

The American Mining Congress will hold its annual convention and exposition of mines and mine equipment will be held at the Hotel Commodore, New York City. Secretary, J. J. Davidson, Birmingham, Ala.

An American Mining Congress will be held at the Hotel Commodore, New York City. Dec. 7-11. Manager, Charles F. Roth, Grand Central Palace, New York City.

The American Gas Association will hold its annual meeting Oct. 22-24 at Atlantic City. Manager, Oscar H. Fogg, N. J. Secretary, Mr. Fleischman, 120 1st East 24th Street, New York City.

The annual Institute of Mining and Metalurgical Western meeting Nov. 15-17, at Vancouver, B. C. Secretary, C. Mackenzie, Montreal, Quebec, Can.
The Market Outlook

CONDITIONS appear to point to a season of strong demand for coal, of car shortages and high prices. The usual landmarks by which the trade judges an oncoming orgy of coal buying are lacking, however, and many find themselves lost and uncertain. To quote a specific case, a shipper began shipments of eight cars per day to a regular contract customer immediately after the strike settlement in August. Arrivals have averaged one car per day, the remainder being lost in the transportation tie-up. Now, under ordinary conditions that customer would have doubled his order and begun to buy wildly on the open market in fear that he never would get the coal he required. Instead he halved his order. Mines are running on short time, getting cars for one and two days per week. Yet the price is gradually softening and buyers appear confident and cocky.

In 1921 there was produced 415,000,000 tons of soft coal and 90,000,000 net tons of anthracite, a total of 505,000,000 tons. Production of soft coal to Sept. 30 this year was in round numbers 271,000,000 tons and of anthracite, 27,000,000 tons, a total of 298,000,000 tons. By the end of September last year the figures were 295,000,000 tons of bituminous and 60,000,000 tons of anthracite, a combined total of 364,000,000 tons. Thus the output of bituminous coal to date is some 24,000,000 tons less than last year, and that of anthracite about 42,000,000 tons behind.

Stocks of bituminous coal in the hands of consumers on Jan. 1, 1922, were about 47,000,000 tons; they are now not over 12,000,000 tons—some would say even less. This represents a drop of 35,000,000 tons, all consumed in the calendar year in addition to current production. In the corresponding period of 1921 stocks were reduced from 47,000,000 to 42,000,000 tons, or by 5,000,000 tons. In other words, in the first nine months of 1921 consumption plus exports of bituminous coal were 300,000,000 tons as compared with 306,000,000 tons this year.

At the rate at which coal is being consumed the country should have on Jan. 1 next a stockpile of between 35,000,000 and 40,000,000 tons to weather safely the real winter months of January, February and March, when cold and storms delay the movement of freight. That is to say, taking the more conservative figures both as to present and required stocks, some 28,000,000 tons must be added to reserves in the following thirteen weeks of this year. The outside figures indicate 40,000,000 tons as necessary to put the country on the safe side. This will be in addition to coal required for current consumption.

If we assume that the normal consumption of anthracite is 12,000,000 tons per month in coal-burning weather, then for the last quarter of 1922 requirements will be 36,000,000 tons. The prospect is for a production not to exceed 25,000,000 tons, leaving a deficit of not less than 11,000,000 tons to be supplied almost entirely by raw bituminous coal and coke. This added to the minimum estimate of 23,000,000 tons to replenish stocks by Jan. 1 gives us, at the lowest estimate, 54,000,- 000 tons over and above current consumption. That is, in addition to around 9,000,000 tons of winter consumption per week of soft coal there will be required an added load of nearly 3,000,000 tons to build up stockpiles and to pinch hit for hard coal. To those familiar with the anthracite situation this figure of 11,000,000 tons will appear absurdly low, for it is predicated on absolutely uniform distribution each week. The actual demand for hard coal that cannot be supplied currently will be much greater.

The mines, of course, can produce the 12,000,000 tons per week of soft coal thus indicated as necessary, but can the railroads haul it? They have developed real car shortage at less than 10,000,000 tons per week and it is quite obvious that a weekly average of 12,000,000 tons for the rest of the year is out of the question.

The question that is puzzling the coal trade is how to reconcile the apparent requirement for 12,000,000 tons a week of soft coal with an apathetic demand for around 10,000,000 tons. Beyond doubt the country is consuming coal in greater quantity than at this time last year and consumption is on the increase. Stocks in the aggregate are extremely low. Anthracite is lacking. Yet the market does not respond. Testimony of coal salesmen is to the effect that the small industrials are rather well stocked and are not eager for coal. They are not consuming coal at anything like the rate they have in previous periods of good business. Industrials burning a car or less per week represent 75 per cent in number of this class. They consume but 10 per cent of the coal used by industry, yet they normally carry around 20 per cent of the stocks.

The larger consumers are purposely staying out of the market for all save current requirements. An organized effort, engineered by the government through the National Chamber of Commerce, the National Association of Purchasing Agents and others, is being made to hold back the purchase of coal by 25 per cent of industrials—the big fellows—who consume 90 per cent of the coal used by industry, and also to restrain the railroads using 27 per cent of the total production. A demand for some 2,000,000 tons of soft coal per week for winter storage is being artificially held in check. Herein lies two-thirds of the answer.

Buying of soft coal to substitute for hard coal has not begun, and therein lies the remainder of the answer.

If 10,000,000 tons a week is as much bituminous coal as the railroads are going to give the country, then the future market depends entirely on the efficiency of the machinery set up in Washington to regulate coal. If Mr. Spens can so direct the flow of coal this winter that no consumer will be worried no matter how low his reserves may become or how much the railroads may be tied up by storms, then demand will not outrun production and prices will not unduly mount. The alternative is clear.
The American Mining Congress

A technical institution such as the American Mining Congress, approaching the twenty-fifth year—a quarter century of effort to promote in a national way the mining industry. It has achieved much. Perhaps its greatest achievement has been to give to mining a national consciousness, to make the interests of copper and coal, of iron and oil, of lead and gold in those spheres of action and thought where there is a common problem, a mutual interest and a universal contact.

The activities of the American Mining Congress lie in two directions. One of these is toward the general public and hence we find its headquarters in Washington, where the representatives of our federal government are reorganized. The day-to-day work of the energetic secretary, Mr. Callicrath, and his staff is that of keeping in touch with the national legislators and the many departments at Washington, in nearly all of which there is always under consideration some matter of interest to the mining industry.

Frankly and openly the Mining Congress has represented the mining industry at Washington. It has opposed some and has favored other legislation but in all its dealings with official Washington it has been frankly pro-mining. It has come to be recognized as fairly representing a powerful business constituency. Committees of Congress unhesitatingly call on it for suggestions, advice and counsel when matters affecting mining are under consideration. Its function in this respect is a continuing piece of work covering a wide range of subjects and requiring a close contact and never-ending attention to details. In the last sense of the word the American Mining Congress is the official lobbyist for the mining industry, but in this it neither threatens, trades nor cabals. It limits itself strictly to advice and information and finds legislators who do not know enough of coal and mining to listen to its words, and in making use of its fund of facts. Such is its principal purpose, its greatest opportunity and its warrant for continued support and existence.

In any community there are comparatively few individuals who voluntarily take on the burdens and responsibilities of civic progress. The active support and promotion of better government comes from a small minority. The same is true as regards an industry. It is the few who have the vision, energy and will to work for the common good. To muster the support of the many there has been developed the association through which the majority are pleased and inspired into concert with the programs of the active thinking minority. Thus we find the other important activity of the American Mining Congress is holding conventions—bringing members and adherents together, arousing enthusiasm, building support, moral and financial, and rendering other assistance and aid.

The annual conventions of the Mining Congress are real forums for the development of opinion. Here the business and political interests of the mining industry are distinguished from the engineering and their common ground. Taxation, cost accounting, legislation and industrial relations are among the subjects regularly discussed. It does everyone good to go and express his views as well as to hear what others have to say. The exchange of ideas is the worth-while production of a convention, of which this is typical. These meetings are seldom productive of concrete results, but they do help crystallize opinion and develop policy. Occasionally some tangible result, like the creation of the Bureau of Mines, can be traced to the activities of such an organization, but in the main what the participants carry away from the annual conclaves are ideas and renewed friendships.

In recent years an engineering slant has been given to the activities of the Mining Congress. The enthusiasm and energy of two men, Colonel Warren R. Roberts and Charles A. Mitke—one in the coal industry, the other in metal mining—have built up under the wing of the Mining Congress a National Standardization Conference for the mining industry. This year will be the third of such meetings. Standardization, co-operation, co-ordination and stabilization have become abused words, but each has an important place in the lexicon of the mining man.

The work of the Standardization Conference has not progressed far enough to demonstrate how far it may go or in what direction it eventually will lead. Obviously enough the aim is better engineering and more of it as well as better machinery and more of it. If it were sought to accomplish this by reducing all machines and methods to common types, the idea would fail. Fortunately, this is not the purpose. Standardization is not the word to define the definite engineering conception that is behind this movement, which is something different than that at the foundation of such organizations as the Institute of Mining Engineers.

Every convention must have a slogan. That announced for the silver anniversary of the American Mining Congress is "Greater Prosperity Through Lower Production Costs." To assist through the eye the preaching of this theme there will be an exhibit of many kinds of machinery—an exposition of mines and mine equipment. Thus do the promoters of the Mining Congress provide incentive for attendance, for these exhibitions are worth while, gain added support from manufacturers and tie the engineering and operating contingents together with the business and political.

In these multifarious activities of this organization we find at once its weakness and its strength. Cosmopolitan, it embraces every aspect of mining from drainage to politics and draws support from many fields. But because it is so all-inclusive it can give to none the intensive advantages of a partisan association. Thus we find the separate organizations for gold and silver, for zinc, for copper, for coal, overlapping in membership with the larger group, but having distinct objects. The American Mining Congress gives to the coal industry a contact with the remainder of the mining industry and it is just as essential that the coal men bear their part in its support and deliberation in order that the country may have a true picture of mining as its greatest basic industry as that the coal men have their own association and organizations for promoting their peculiar and particular objectives.
Where the Mining Congress Will Meet,
And What It Is Doing for the Industry

It is easier to prevent bad legislation than it is to repeal it. It is less difficult to correct a false judgment before it is uttered than to recall it when once it has gone forth. The American Mining Congress, being stationed at Washington, can prevent wrong at the source, for legislators, like other mortals, sin more often from lack of knowledge than from Adamic perversity.

The American Mining Congress officials are frequently consulted because, it would appear, they are believed to represent the mind and heart of the industry rather than its will. The Mining Congress is a loosely organized body, not a symbol of the power of a dominating industry but an expression of the mind of individuals. At the yearly meetings the legislators and the members of governmental departments and bureaus mingle with the legislated; they learn to know its members as men like-minded with themselves. The program is not carefully staged beforehand; rather it brings together many contrary minds. The men who attend it from outside the industry regard its assembly as if it were one of "just home folks." It is not a trades council; it is rather an institute for gathering new ideas. It impresses the outside man not as a battering ram to enforce an unholy will but as a gathering of men having kindred inter-

Above—Public Hall, Cleveland, Ohio, where American Mining Congress will meet and Exposition will be held

ests seeking guidance. It is not a force to be met with force but an open hand to be grasped.

The legislators who consult it probably do not know why. They cannot tell perhaps wherein they find it different from better organized, more representative bodies. Those, however, who frequent it year by year know that its strength is in the open forum, where those without the industry and those within rub shoulders and learn fellow sympathy. No doorkeepers are at the gate, no tickets of admission are demanded, and for this reason it commands confidence and accomplishes results.

First among its good qualities is that it has never created antagonism. Blithe with optimism, the American Mining Congress has never seen even a black cloud in the Congress on Capitol Hill. It has always believed that with the word of reason and the warmth of a handshake every evil anticipated could be averted and that all that is needed is that the men in the halls of Congress should know that mining men were seeking treatment in no way different from that imposed on other men. From mine and farm come the essentials of life but that is no reason why they should be made victims of special and inimical legislation.

Note—The accompanying drawings and photographs herewith are from courtesy of J. M. MacLaughlin architect.

Left—Auditorium in Hall where will be celebrated the Twenty-Fifth Anniversary of the Mining Congress.
Program of American Mining Congress at Its Silver Anniversary, Oct. 9-14, Public Hall, Cleveland, Ohio

The Mine Taxation division will hold its third national conference on Oct. 9, 10, and 11, when the following papers will be presented:

Variations of Mining Property for Purposes of Federal Income Taxation, by H. C. Allen, Cleveland, Ohio, vice-president, Lake Superior Iron Ore Association; member of committee on state and federal taxation, American Mining Congress; formerly member Tax Advisory Board, Treasury Department.

Inverted Capital of Mining Corporations, by George E. Holmes, New York City, author "Holmes on Federal Taxes," chairman special committee on state taxation of mines and vice-chairman general committee on taxation, American Mining Congress.

Special Cases under Section 216 Revenue Act of 1917, and Sections 217 and 245, Revenue Acts of 1918 and 1922, by Robert N. Miller, Washington, D. C.; formerly Solicitor of Internal Revenue; member committee on state and federal taxation, American Mining Congress.

Depreciation Dividends, by Paul Armitage, New York City; chairman general committee on taxation; member special committee on state taxation, American Mining Congress.


Settlements and Compromises with the Commissioner of Internal Revenue, by M. K. W. Kreigh, Washington, D. C.; chief Tax Division, secretary committee on state and federal taxation, American Mining Congress.

Other speakers announced are: Dr. T. S. Adams, Yale University, formerly tax adviser, Treasury Department; C. P. Smith, Assistant Commissioner of Internal Revenue and member of the Tax Simplification Board; Albert H. Fay, Chief, Division of National Resources, Bureau of Internal Revenue; Walter R. Irwin, consulting engineer, New York City; L. O. Ewing, general counsel, Anaconda Copper Mining Co.; L. P. Barrett, mineral geologist, State of Michigan; H. H. Fernsli, certified accountant, New York City; R. V. Norris, consulting engineer, Wilkes-Barre, Pa., and Howard N. Evans, consulting engineer, Pittsburgh, Pa., member, special committee on state taxation, American Mining Congress.

The standardization committee of the American Mining Congress will hold its third annual national standardization conference throughout the week, the general addresses being:

What Standardization Has Done for the Coal Mining Industry, by Colonel Warren H. Roberts, president Roberts & Schaefer Manufacturing Co.

The Purpose of Standardization in Mining, by Charles A. Mitke, consulting engineer, Bisbee, Ariz.


Eliminating Waste in National Expenditure Through Standardization, by General Charles G. Dawes.


National and International Progress of Standardization, by Dr. P. G. Agnew, secretary, American Engineering Standards Committee.

The following recommendations for standards in mining practice will be presented for discussion:

Drilling Machines and Drill Steel, by Norman Braly, general manager, North Butte Mining Co.


Metal Mine Accounting, by T. O. McGrath, Shattuck-Arizona Mining Corporation.

Underground Transportation, by William B. Daly, general manager, Anaconda Copper Mining Co., and C. E. Watts, efficiency engineer, Berwind-White Coal Co.


Milling and Smelting Practices, by Forest Rutherford, consulting engineer, New York City.

Outside Coal-Handling Equipment, by Dr. Henry Mace Payne, consulting engineer, New York City.

Fire-Fighting Equipment, by William Conibear, department of safety, Cleveland-Cliffs Iron Co.

Mine Drainage, by E. D. Knight, formerly engineer, power and electrical department, Cabin Creek Consolidated Coal Co., and William H. Gallagher, engineer Pickands Mather & Co.

Methods of Mine Sampling, by Philip Wilson, chief geologist, Calumet & Arizona Mining Co.

Steam-Shovel Equipment, by H. C. Goodrich, chief engineer, Utah Copper Co.

Mechanical Loading Underground, by Lucien Eaton, superintendent Cleveland-Cliffs Iron Co.

Standardization Day will be celebrated on Oct. 11. Other features will be papers on the relation of government to industry, on industrial co-operation, on the widening of the market for metals, also on co-operative combinations and possible modifications of the Sherman law to make possible greater economy in operation, with protection to the interests of the public. There also will be a national coal conference. The annual banquet will be held at the Hollenden Hotel on Friday, Oct. 13. A National Exposition of Mines and Mine Equipment, at which it is expected two hundred exhibitors will display their wares, will be held throughout the week in the Public Hall, where the convention will meet. The slogan of this Congress is "Greater Prosperity Through Lower Production Costs."
Big-Scale Operation Effects Economies at Columbine, Northern Colorado’s Largest Lignite Mine

New Shaft Yields 1,800 Tons Daily and May Reach 3,000—Swift Work on Panels of Narrow Rooms and Wide Pillars Results in High Extraction Despite Quick Caves and Squeezes

BY CHARLES M. SCHLOSS and F. L. PEART

YESTERDAY a barren hillside plot inhabited only by prairie dogs and chipmunks, today a prosperous mining community teeming with life and action—that is the story of Columbine, the newest, largest and best equipped mine in northern Colorado. It is the achievement of a man with a hobby. The man is George T. Peart, assistant general manager of the Rocky Mountain Fuel Co., and the hobby is—Columbine. Peart's imagination pictured it beforehand and his initiative carried the project from the nebulous paper state to its completion. Though an old-timer at this game of mining coal, he has young ideas, all embodied in this operation.

To reach Columbine one drives twenty-four miles due north from Denver. The railroad serving the property is a two-and-a-half-mile spur from the Chicago, Burlington & Quincy branch between Lafayette and Longmont. Erie is the nearest town, two miles west. Columbine is in the middle of the northern fields, equidistant from the Frederick-Dacona group and the mines at Lafayette and Louisville.

An increasing demand for coal and the exhaustion in the near future of workable coal in some of the company’s other mines made imperative the opening of a new property. Concentration of effort to reduce overhead dictated a magnitude of operation never before attempted in this particular field. The ownership of 960 acres of coal land near Erie, its accessibility to the market and the quality of the coal under those acres made the site chosen for the Columbine mine unquestionably the ideal spot.

The isolation of the place did not deter the company when once a decision was reached. A gang of laborers removed the first shovelfuls of dirt from the

FIG. 1—ANOTHER VIEW OF TIPPLE AND HEADFRAME

The tipple works, like practically everything else at the mine, were designed and built by the mining company. The headframe is of the derrick type with the legs which spread at the bottom to act to relieve the shaft collar of all load.

FIG. 2

Location of Mine

Columbine, 14 24 miles due north of Denver and situated on a 960-acre mining district.
future shafts in the next summer of 1926. However, since after the coal was reached it became evident that rapid development must be the order of the day. Since that time the output has been increased step by step until the beginning of the great strike, when Columbine really began hitting the stride of 1,800 tons per day.

"Maximum capacity every day" has become the watchword to such an extent that two shifts are worked instead of one. It is confidently expected by the officials of the company that the opening of more territory and the operation of a larger number of loaders will soon bring the daily tonnage up to 3,000.

Though every effort is bent toward producing more coal, the building of the camp is being prosecuted with vigor and enthusiasm also. New houses are springing up, all supplied with cold water piped from an artesian well. An amusement hall is already functioning and a baseball club has been organized which on Independence Day crewned late with the club from a neighboring community. The same day the company built a dancing floor and brought a high-priced jazz orchestra from Denver to furnish the music. "A good time was had by all."

In opening the mine a 9x18-ft. shaft was sunk 300 ft. to reach the thickest coal bed in the district—a seam that varies from 11 to 16 ft. A stratum of sandy shale tops it. Shale and fireclay constitute the bed. An inch-thick parting of white rock characterizes the coal, ever present though varying in position from place to place. Little water is encountered. An approximate proximate analysis of the sub-bituminous coal reveals ash, 6 per cent; volatile matter, 34½ per cent; fixed carbon, 43½ per cent; moisture, 17 per cent; B.t.u. per pound, 10,000.

In the northern Colorado field pillar drawing in general has not been successful. It is the exception and not the rule, though in a few instances a large percentage of coal has been recovered. In some mines the practice of driving wide rooms with narrow pillars between is still prevalent. Rooms are completed as soon as possible, and all the piller coal that can be taken is recovered before the inevitable floor squeezes or roof falls occur or before the pillars are crushed by the overlying strata. About 60 per cent of the available pillar coal is extracted.

**Quick Work Alone Will Assure High Recovery**

Natural conditions are largely the cause of these losses. The overburden lies on the coal like a dead weight. The minute a place is cut, the coal settles. The narrow kerf cut by a chain machine is not spacious enough to prevent the pinching of the cutter bar, which, in consequence, has frequently to be dug out. In addition the bottom is soft and when the room coal is taken out the additional burden on the narrow pillars brings such pressure on the soft bottom that it can no longer resist and up it comes to the roof.

The operators of the Columbine mine are trying to overcome these obstacles. Assistant General Manager Peart says of his method:

"Frankly we are experimenting. A panel system is being used, six narrow rooms being turned on each side..."
of the panel entries and on 70-ft. centers. The rooms on each side are driven up concurrently as rapidly as possible, 8 to 10 ft. of coal being taken and the remainder left for a top. Pillar drawing is begun as soon as the maximum room length is reached, the top coal coming down at the same time chain machines undercut the coal. The pillars in each room are attacked simultaneously, keeping their faces in line. By rapidly prosecuting this work the pillars are pulled before squeezes become dangerous. No coal has been lost so far, and we are sanguine that the scheme will be successful.”

Illinois operators who are constantly harassed by the fear of surface subsidence would consider this “the promised land.” The company owns half of the surface but that and the other half are so nearly valueless that subsidence means nothing at Columbine.

AUXILIARY AIRWAYS PROVIDE AGAINST ACCIDENT

Reference to the mine plan will show that the arteries of the ventilation system are the triple entries which provide large air passages and consequently reduce the power required to keep the air moving, and also, and this is not less important, furnish auxiliary airways in case of accidental squeezes, falls of roof or fires. Naturally the same provisions augment the haulage facilities. A Sirocco fan 60 in. in diameter and with a 40-in. face blows 75,000 cu.ft. per minute down the airshaft. An 11-ft. Jeffrey disk fan is installed close by as an emergency unit. At the foot of the downcast the air is split three ways; thus as far as ventilation is concerned there are three separate and distinct mines, any one or any two of which can be operated in case of accident to the other one or two.

The availability of electric power from the Western Light & Power steam plant near Lafayette makes generation at the mine both unnecessary and uneconomical. Transformers just outside the hoist house step the high potential current from 2,300 volts to 440 for use by the two 250-volt motor-generator sets. The cutting machines and the locomotives, of course, use this direct current. Because of the short distance of the workings from the shaft bottom the voltage is good, even though the generators are above ground.

If variety is the spice of life, then as far as machines

FIG. 5—MINE PLANNED FOR RAPID PILLAR REMOVAL

...are concerned Columbine is spicy, for a variety of types are in daily use. The initial purchase was a Goodman shortwall of the standard type. Soon after its installation the Oldroyd made its début at a neighboring mine.

The idea of shearing the coal besides undercutting...
the company’s mines. After a year’s use the company found the repair bills of the Oldroyd large though it was freely admitted that they were eminently satisfactory in most other particulars. Four Goodman shortwalls of the new automatic-control type have lately been added to the equipment of the mine.

The shearing feature of the Oldroyd is of immense value in the lignite coal. The extra lease end on which is about unintentionally permits the use of less powder and the production of not only larger lumps but also a larger percentage of lump, but this has not been sufficient to overcome the high upkeep costs and expense delays for repairs. The shortwall will cut on the bottom but this larger machine can cut no lower than the top of the rail, with a resulting bunch of coal which must be picked up or shot up at an additional cost. This cost, however, does not assume large proportions when the coal separates easily from the bottom.

Besides these two types, a Jeffrey shearing, idle at another property, was brought here and has given a good account of itself. Each machine has a territory to itself and does all the cutting in that territory. Only the shortwalls are used for pillar drawing.

In the initial stages of the mine, when it was decided to rush development, two Myers-Whaley shovels were placed in service in entry driving. These have done and are still doing good work. With a crew of four men—one operator, one man at the face and two car droppers—as much as 100 tons has been loaded and two or three entries cleaned up per shift. The output of the machine is limited by nothing inherent in the machine itself but only by the delay incident to keeping empty cars ready for it to load.

All gathering is done by ten mules—the work is not concentrated enough to justify the installation of gathering locomotives just yet; however, they are a future probability. Main haulage from partings to shaft bottom is accomplished by one four-ton and two six-ton trolley locomotives. One or two of these will be superseded by a 13-ton machine just ordered. The heavy grades down which the locomotives must retard the trips make this heavy weight necessary. At the shaft bottom mechanical brawn in the shape of Nolan automatic cagers supplant human labor in feeding loads onto the cages. The crew on the load side of the bot-

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**FIG 8—LOADERS WHICH ADD TO PRODUCTION SPEED**

One operator, one man at the face and two car droppers can clean up two or three entries and load up as much as 100 tons per shift. It has been found difficult to deliver cars nearly fast enough to develop the full capacity of the shovel. This handicap, it is hoped, will be overcome later.

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**FIG 9—AUTOMATIC CAGERS EASE LABOR AT BOTTOM**

Two men with the aid of an automatic cager deliver all loads to the bottom. Empties, pushed off the cages, run by gravity to a car line which raises them high enough to "kick back" to the empty line, where a third man couples them.
A model village planted incongruously in the midst of a vast gopher- and rattlesnake-infested prairie, within sight of the Rockies. This mine, which has broken many precedents, East and West, is being closely watched, as it is believed that many methods worthy of adoption have been inaugurated.

The Columbine hoist is a Denver-made Dewco, using a cylindro-conical drum 5 ft. in diameter at the small ends and 7 ft. at the center; its maximum hoisting speed is 1,400 ft. per minute. A 300-hp. 440-volt variable-speed Ideal induction motor supplies power to the drum through the medium of a double-reduction of Link-Belt silent and roller chains, all running in dust-proof and oil-retaining casings. A short countershaft supported by two bearings is driven from the motor by the silent chain and in turn drives the drum by a quadruple-strength roller chain, four heavy single-strands built integral. The layout is shown in photographic and diagrammatic form accompanying this article. A Cutler-Hammer master controller and magnetic contactor panel provide automatic acceleration for the motor.

The Columbine tipple, as well as the bath house, club house and all other buildings, was designed and erected by the company. The tipple machinery itself was made by them according to their own details and specifications, much of the material coming from other properties of the company. The screen is unusual in that it is supported on flexible boards and in that its perforations are all square instead of round or slotted. Furthermore, its speed is higher than is commonly found—130 vibrations per minute. The company has found from experience, however, that Columbine sub-

**FIG. 11—A VIEW OF COLUMBINE CONTIGUOUS TO THAT OF THE HEADPIECE**
A model village planted incongruously in the midst of a vast gopher- and rattlesnake-infested prairie, within sight of the Rockies. This mine, which has broken many precedents, East and West, is being closely watched, as it is believed that many methods worthy of adoption have been inaugurated.

**FIG. 12—AN UNUSUAL WAY OF LOADING COAL**
Frequently coal is loaded so that the larger coal is at the top, so as to put, as it were, the best foot foremost. But sub-bituminous lump slack so readily that it is well to place them up with the finer coal. For this reason the coal is dumped so that the lump seek always the bottom of the pile and the slack remains in full view.
Trolley Clamp Needs but Two-Inch Headway

The mines of the country always have been desirous of obtaining a trolley clamp that would take up the minimum headroom. To meet this demand the device shown in the accompanying illustration has been developed. This trolley car, which is extremely simple in design, possesses certain improvements over its predecessors. It is composed of only four parts, namely, a machined steel center, two malleable-iron jaws and a locking nut. All of these are permanently assembled and sherardized.

The total height of the assembly is only 2 in., yet a positive grip on the wire is provided and the ear offers the least possible obstruction to the trolley wheel. In installation the upper hexagon nut is screwed up tightly against the suspension, after which the jaws are aligned with the trolley wire and locked in position by means of the lower hexagon nut. This is fitted with a left-hand thread, and the entire assembly is readily brought up tight and snug.

This new clamp is designed in two styles, one for 2, 0.3, 0 or 4/0 grooved trolley wire, and the other for 2, 0, 3/0 or 4/0 figure-eight wire. Consequently in mines where either grooved or figure-eight wire is standard, one style or two styles at the very outside need be stocked. This device is being manufactured and placed on the market by the Electric Service Supplies Co., of Philadelphia, Pa. Its great simplicity and small headroom will recommend it to the consideration of operators.

Measures for Prevention of Ignition of Gas

By Electric Detonators

Several ignitions of gas and at least one mine fire having been attributed to heated leg wires of electric detonators at mines in which outside firing was practiced, certain tests were conducted by the U. S. Bureau of Mines to determine, if possible, the cause of these ignitions. The results are set forth in reports of the Bureau Serial No. 2222.

Three series of trials were made, as follows: Tests in air to show the behavior of iron and copper leg wires when various values of current were passed through them, tests in mixtures of natural gas and air to determine the length of time required for various currents when passed through iron and copper leg wires to cause an explosion, and tests to determine the possibility of gas ignition from the re-establishment of the circuit after firing of the detonator.

As a result of this investigation the following preventive measures are suggested: (1) Detonators should be connected in parallel-series: series-parallel or in straight series. (2) The time during which the firing connection is made should be limited to 0.15 to 0.2 second. (3) Electric detonators with copper leg wires should be used. (4) A firing supply current having the lowest standard voltage that will fire all the detonators connected should be used. (5) An ungrounded firing circuit should be employed.

Testing Contact of Knife-Switch Blades

By J. P. Ruttin

It is important, especially in the case of big switches, that the blades make good contact with the jaws, for if they do not the switch will fail. It is sometimes difficult to determine whether the blade does or does not make a good fit if one does not know just how to go about it. The following suggestions therefore may simplify the matter:

A "feeler" can be used for finding when knife-switch blades make good contacts in the jaws. Any thin, hard material may be used for this purpose. A piece of nickei, say 1 in. wide and 2 in. long, is satisfactory, or a very thin piece of sheet steel will answer the purpose. The feeler should be about 0.001 in. thick.

To use this tool, try to insert it between the jaws and the blades at different points. At locations where it can be passed in readily the contact is poor. This may be corrected by light hammer blows on the jaws. The blades should always be "grounded" to insure good contact between them and the brass jaws.

Testing Contact of Knife-Switch Blades

By J. P. Ruttin

It is important, especially in the case of big switches, that the blades make good contact with the jaws, for if they do not the switch will fail. It is sometimes difficult to determine whether the blade does or does not make a good fit if one does not know just how to go about it. The following suggestions therefore may simplify the matter:

A "feeler" can be used for finding when knife-switch blades make good contacts in the jaws. Any thin, hard material may be used for this purpose. A piece of nickei, say 1 in. wide and 2 in. long, is satisfactory, or a very thin piece of sheet steel will answer the purpose. The feeler should be about 0.001 in. thick.

To use this tool, try to insert it between the jaws and the blades at different points. At locations where it can be passed in readily the contact is poor. This may be corrected by light hammer blows on the jaws. The blades should always be "grounded" to insure good contact between them and the brass jaws.

Measures for Prevention of Ignition of Gas

By Electric Detonators

Several ignitions of gas and at least one mine fire having been attributed to heated leg wires of electric detonators at mines in which outside firing was practiced, certain tests were conducted by the U. S. Bureau of Mines to determine, if possible, the cause of these ignitions. The results are set forth in reports of the Bureau Serial No. 2222.

Three series of trials were made, as follows: Tests in air to show the behavior of iron and copper leg wires when various values of current were passed through them, tests in mixtures of natural gas and air to determine the length of time required for various currents when passed through iron and copper leg wires to cause an explosion, and tests to determine the possibility of gas ignition from the re-establishment of the circuit after firing of the detonator.

As a result of this investigation the following preventive measures are suggested: (1) Detonators should be connected in parallel-series: series-parallel or in straight series. (2) The time during which the firing connection is made should be limited to 0.15 to 0.2 second. (3) Electric detonators with copper leg wires should be used. (4) A firing supply current having the lowest standard voltage that will fire all the detonators connected should be used. (5) An ungrounded firing circuit should be employed.

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The Coal Operator’s Blind Spot

Fails to See Duty to General Public—Rights of Individual Must Yield to Public Necessity—Can Simplify Problems by Improving Reputation

BY GEORGE OTIS SMITH
Director U. S. Geological Survey

SIX years ago, at a meeting of the American Mining Congress, the present editor of Coal Age and I began a discussion of the cost of coal with the obvious premise that “the price of coal is a matter of vital concern to the average citizen.” Since that time more than 3½ billion tons of coal has gone up in smoke here in the United States, and the price of coal has repeatedly become a national issue. Yet in these same six years, I fear, we have not been willing learners from experience; the consumer still fails to assume any responsibility in bettering the conditions of coal distribution, the public official still fails to distinguish between the essential and unessential in governmental “interference” with the coal business, and both the coal operator and the mine worker still utterly fail to appreciate that society is larger than any business and that the common weal is superior to any private privilege.

Were I writing for other columns I might well discuss another phase of the subject and appeal to coal consumers for help in reducing the burdens of those who mine and sell coal. The readers of Coal Age, however, are at the opposite end of the business, and I shall therefore better achieve my purpose by describing what I may perhaps be allowed to term the blind spot of the coal producer. It would be unfair to charge the leaders in any American industry with utter lack of vision, for we Americans like to consider ourselves forward-looking, yet the recollection of recent events forces me to the conclusion that far too many bituminous coal operators, however wide their angle of vision, have been blind in one particular—they have failed to see their duty to the general public; and, moreover, those leaders who at times have urged the recognition of the public interest have not had the following they deserved.

The Blinding Effect of Coal Dust

Possibly the miner, the operator, and the dealer are all too near to coal to see it in its larger aspects—the coal dust blinds their eyes to the truly beneficent part that coal plays in this world of ours. It is not merely a figure of speech but an evident fact that our social and industrial structure is built on a coal foundation. The labor leaders and the big operators realize this fact to the extent that it is the major premise in all their strategy, but neither the union executive nor the operators’ spokesman appears to appreciate the full social value of coal or see that a strike or lockout at the coal mines can bring-unmeasured distress to millions of fellow-citizens, and that even the partial stoppage of the country’s fuel supply for five months threatened widespread disaster all out of proportion to the wrongs that the disputants were trying to right. It is because he sees clearly the dangers of industrial paralysis that Governor Miller recently characterized as tyranny “the effort of any group of men to control on a nation-wide scale the production of any essential article,” and he applied to employers as well as to employees this rule of conduct: “When public necessity intervenes, the right of the individual to do as he will must yield.” All this is simply a fresh expression of the democratic principle of the rule of the majority, and as applied to coal it simply means that consumers outrank producers 100 to 1.

The lack of functioning in the coal operator’s blind spot is evident from the unfortunate fact that in failing to see beyond the few score or few hundred stockholder-owners of the mine he skillfully manages, or even the 500 miners he employs, he fails to realize that nearly 100,000 of his fellow citizens are dependent upon the product of his mine. In these days “dependent” is not too strong a term, for coal enters into every industry and forms an essential part of every commodity; the importance of coal even on the farm was brought to mind last summer, when a priority was requested for coal to run the threshers whose uninterrupted operation was essential to the saving of the world’s bread. It is not simply the steel works and the automobile plant and the gas works that are dependent upon a supply of coal, but every industry, large or small, in which mechanical power strengthens the arm of the workman and increases his ability to produce what his fellow men eat, or wear, or use in any way. The world lives on coal.

Property for Use vs. Property for Power

So it is that the distinction emphasized by an English professor between property “for use” and property “for power” may well be applied to the coal mine. The owner of coal in the ground has no inherent property right based on anything else than the use of that coal, and any neglect of the consumer’s right to have that coal as he needs it only incites such suggestive references to a bygone feudal system as are contained in the obnoxious term “robber barron.” That idea of property as a source of benefit to the owner alone is out of date here in the United States. The contention of a coal-mine owner that the only point of contact between his private property and the Constitution is the constitutional guarantee of protection is based upon a mistaken idea that coal is the only private property to be considered. Such an advocate of the constitutional rights of the coal operator is himself blind to the obvious existence of other citizens whose property rights and indeed whose health and happiness are dependent upon a supply of coal. It is this social value of coal for use that gives the operator and the mine worker their opportunity for profit and earnings, but even that ever-present friend in time of exigency, the Constitution, can hardly be summoned to destroy or injure the property rights of the majority in order to protect a monopolistic property right of the minority.

It was a representative coal man speaking to coal men who named the problems they continually face—
in unworthy prose, a distressing public, and the threat of malicious legislation. This statement certainly suggests a demand from which the coal operator must seek relief—a situation that calls for action. Whether he attributes this unhappy condition to prejudice or suspects that it is founded on vicious practices, the coal company, as well as the coal merchant, as a matter of sound business, must seek to better his reputation.

Fortunately, those who are engaged in the coal trade realize this, but between the parties they forget it, and I fear that the fairer reputation will not be won for the coal business until these crimes come into the whole industry, from the mine-room to the consumer's bin, a year-in and year-out sense of the great public service to be rendered to those who mine, transport, and deliver coal. It is not enough for a few to realize this; the great majority of mine workers, operators and dealers must fully realize their relations to the public.

It may be that the case of the coal operators has sometimes been presented so pleasantly that they themselves have come to believe it to be stronger than it really is. As an example of too many lawyers on the job, I cite some long-continued hearings before Congressional committees, where among the array of able attorneys came the confidence of the committee members and presented the passing of the relief legislation as effectively by a certain oil operator who made little claim to his rights but candidly told all the facts—so candidly that he was at the time accused by his enemies of "spilling the beans." But his frank presentation of the facts, regardless of whether or not they favored his case, saved the day, and it is interesting to note that, so far as the presidency of a national organization signifies priority, he is today the leader of the oil industry. Might not the coal industry profit by similar tactics?

In the six years since Mr. Leisher and I first wrote on the cost of coal I have more and more regretted the lack of the facts that are needed to clarify the issues raised by widespread criticism, and more and more do I believe that those facts, when found, will help the coal industry as a whole—not hurt it. My own view of the coal business in its relation to the public is that what will help the consumer will help the producer—that the true interests of operator, miner, and general public are not antagonistic. The respective equities cannot be determined, however, under any policy of withholding facts or of conducting the industry's case before the public by claiming everything and admitting nothing. The "strong front" presented by the attorneys for the coal operators—their uncompromising denunciation of others, their vehement claim of rights above those of the public—has had the temporary effect of shaking somewhat my faith in the integrity and good-will of the industry. The spokesmen of the coal operators have overplayed their hand.

The opportunity is now here to reverse that policy and to join in whole-hearted co-operation with a public agency whose purpose is to find facts and present them for public consideration. The United States Coal Commission has been authorized by Congress to study the whole subject for the sole purpose of advising Congress. The end in view is an adequate supply of coal for industrial and domestic use and the maintenance of uninterrupted commerce between the states. No one can render greater assistance in that study than the coal operator, and no one will receive greater benefit from a wise solution of this urgent problem.

I offer the opinion that the coal operator has too long been blind to his own interests in not seeing clearly his large and peculiar function in the service of the public. The failure of the industry as a whole to obtain a fair deal has been due in part to this blindness and to the unfair practices of the few. The facts may injure this minority, but in the long run they will help the fair-minded and fair-acting operators, who, I like to believe, from personal observation, constitute the large majority.
Hoists That Accelerate, Slow Themselves Down or Work Unattended and Substations Needing No Attendant*

Nokomis Hoist with Different Speeds for Coal, Supplies and Men, Speeds Up, Reduces Speed and Stops Automatically—Two Inspiration Hoists Work Continuously with Man to Oil and Watch

BY C. E. H. VON SOTHEN†
Schenectady, N. Y.

WHEN weighing ways and means for decreasing the operating expenses of a coal mine, two classes of apparatus should be given careful consideration. These are the automatic mine hoist and the automatic substation.

In many large mine hoists today some features have been made automatic in operation, particularly those devices intended for protection against overwinding, and in some electric machines devices for preventing excessive acceleration or retardation have been added. Thus a 1,350-hp. hoist of the Valier Coal Co. at Valier, Ill., is arranged for automatic acceleration, automatic slow down and stop. It is necessary only for the operator to close the control switch in order to start the hoisting cycle. A pilot motor then turns the controller to the full-speed position, whereupon this motor is cut off and unclutched. Near the end of the travel of the hoist cams turn the controller to the off position, and when this is reached the brakes are automatically applied.

Another hoist of this type is the 1,050-hp. machine of the Peabody Coal Co. installed at Nokomis, Ill. This hoist is provided with cams so arranged that the operator may obtain three definite speeds for hoisting—for coal, for men and for material. Automatic retardation and stop are provided at each speed. These hoists, of course, require the presence of an operator on the platform at all times. The automatic features simply permit higher hoisting speeds and more rapid retardation than could be obtained normally with manual control.

There are some large hoists in operation, however, that are completely automatic—that is, capable of performing their functions without an operator being present at the control levers. Where the rope speed is low, no slow down is required before the skip or cage enters the dump. In such cases a direct-current shunt motor or an induction motor may be employed. For speeds above 400 ft. per minute it is necessary to retard before entering the dumping apparatus. A reasonably accurate stop also is required for reliable operation. It is nearly always imperative, furthermore, that the automatic-control system act in the same manner irrespective of the load—that is, that the rate of retardation and the position of stop be nearly the same whether the skip comes up loaded or empty.

The direct-current shunt-wound motor with voltage

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*Article entitled "Automatic Electric Apparatus Applied to Coal Mining" read before the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers, at Huntington, W. Va., Sept. 22.
†Power and mining engineering department, General Electric Co.
counted is the only type inherently suitable for automatic hoisting at high speed. This system of control has such characteristics that if the controller is moved back at a certain rate the hoist will be retarded at a proportionate rate and to nearly the same speed irrespective of the load being hoisted.

When the officials of the Inspiration Consolidated Copper Co. planned the layout of their main shaft several concurrent conditions indicated the possibility of effecting considerable savings in hoisting by the use of automatic hoists. Two three-compartment vertical shafts were sunk for two independent balanced hoists, either of which can in an emergency keep the upper works running at full capacity. The third compartment of one shaft contains a double-deck main cage and the third compartment of the other carries a counterweight for this cage together with air lines, electric cables and the like.

The hoists proper were built by the Nordberg Manufacturing Co., and the electrical equipment was furnished by the General Electric Co. Fig. 1 gives a general view of the two machines and the electrical equipment. Each hoist is driven by a 550-hp., 575-volt 2,840-r.p.m. shunt-wound motor through a flexible coupling and Furr-geary. Power is supplied to the hoist motors by a brushless motor-generator set. This consists of one 900-hp. induction motor, two 560-kw. generators and one 25-kw. exciter, also a 19,700-lb. 112-in. steel-plate shaft. Each hoist motor is connected separately to one of the generators and is controlled by varying the generator field.

From the dumping point to the chairs at the loading pockets underground is 1,020 ft. in each shaft. The rope speed is approximately 600 ft. per minute. A manway connects the two shafts, which are about 162 ft. apart, so that the same attendant without difficulty can take the entire care of the automatic weighting and loading apparatus of both the hoists.

To introduce automatic control at the beginning of a shift the operator closes two small control switches and leaves to two levers. To start automatic operation a master controller in then thrown to the automatic running position. One hoist or the other will then start, depending upon the position in which the skips have been resting. Suppose that closing the master controller energizes one pilot motor on the controller of No. 1 hoist, which starts, lifting its south skip; then as No. 1 controller moves away from the off position it simultaneously energizes No. 1 generator field and operates a pilot device which releases the brakes on the No. 1 hoist. This machine is accelerated by the controller building up the generator voltage.

Toward the end of skip travel the movement of No. 1 hoist actuates a pilot motor which moves the No. 2 hoist control gradually to the full-speed position in one direction, thereby accelerating No. 2 hoist to lift its north skip. Shortly before this skip enters the dumping horns the travel of No. 1 hoist, by means of cams, one of which is geared to each drum, gradually moves the No. 1 controller toward the off position. This decreases No. 1 generator voltage, thereby retarding the No. 1 hoist. Just as the north skip is about to land on the chairs No. 1 controller comes into the off position. This completes retardation and automatically applies the brakes. No. 1 hoist remains at rest while No. 2 is raising its north skip. In like manner No. 1 then hoists its north skip and then No. 2 its south skip. This sequence continues until it is interrupted or stopped by the operator.

In order that the transition from hand to automatic control and vice versa may be effected easily and quickly the levers on the operating platform are not disconnected from their controllers or brake engines when running automatically. During automatic operation, therefore, these levers move back and forth as if manually operated and are always in the correct position and in proper engagement for hand control.

Under all conditions, except when making adjustments, the cabs for effecting automatic retardation and stop remain mechanically fastened to the hoist drum. Limit and emergency switches also are provided.

**EMPTY OR FULL, SKIP ARRIVED SAFELY AT TOP**

After installation these hoists were started without difficulty, and on the second morning hoisted forty-four skips. After a few weeks of operation observations were made on the accuracy of stop. In twenty consecutive trips (ten each way) the total variation between maximum and minimum was only 1 1/2 in. of rope travel. During this time the ore "hung back" in the loading pockets on one side, so that six of the trips included in the above figures were made with an empty skip.

To operate two hand-controlled hoists, either steam or electric, of the size of those here described would require at least two operators per shift. Following the practice found in some localities an oiler also would be employed. For the functioning of the automatic hoist only one operator is required and he is able to attend to all the oiling as well as whatever hand manipulation of either hoist may be necessary on his shift. The saving thus attained is readily apparent.

Taking up the second type of equipment mentioned in this article, in order to understand thoroughly what is meant by an automatic substation the following definition may be submitted: An automatic substation is one which at the indication of a master circuit goes into operation through automatic sequence, maintains by automatic means the required character of service, shuts down and clears itself automatically at the opposite indication of the master circuit and protects itself while starting, running and shutting down. The master element may be a contact-making ammeter, a contact-making meter, a remote-control switch, a time
switch, or the station may be started and stopped by switching the alternating-current supply.

For mining service it is usually recommended that the station be started by some means other than a contact-making ammeter or voltmeter and that it run continuously until shut down by the opening of the master element. The reason for this will be apparent when the character of the load supplied is considered in connection with the low cost of electrical energy per ton of coal mined. The peak of a mining load develops so suddenly that a machine usually is unable to get on to the line soon enough after being started on load demand to be of any assistance. This together with the fact that the cost of electrical energy usually is not more than a few per cent of the value of the coal loaded for shipment makes it desirable to operate the station continuously during the hours when power may be needed suddenly. In certain mining installations, however, such as the double-unit synchronous motor-generator equipment of the Star Coal & Coke Co., the starting by load demand of the second set is now being used to great advantage.

That the advantages of automatic operation are being investigated and appreciated by the mining industry is well demonstrated by the remarkable increase in the use of the automatic substation within the past year. Both motor generators and synchronous converters are being automatically controlled with complete success, and it is only fair to assume that the practice will rapidly gain in favor as those engaged in the coal industry become more familiar with the advantages to be gained.

In the past, when labor costs were much lower than they are at present, it was possible to place the substations at or near the working faces and have each cared for by an operator or at least by a man who had little else to do. The time has now been reached, however, when this is uneconomical, yet grouping the substations so that one man can attend to several does not solve the difficulty because of the excessive amount of feeder copper that is required.

**Mechanism Proves the Better Attendant**

Not only this, but it is evident that the quality of service afforded by several substations cared for by one man cannot possibly equal that of a station in charge of an attendant whose sole duty is that of caring for that particular station. Making substations automatic permits their location near the working faces, thus avoiding long runs of feeder copper and simultaneously saving the wages of one or more operators. The reduction in the quantity of feeder copper necessary often amounts to enough to cover the extra investment entailed in making the station automatic, leaving the operator's wages as a net saving.

The automatic synchronous converter substation of the Lehigh Valley Coal Co. at Drifton, Pa., is located on the surface about 3,000 ft. from the nearest point where an engineer could be found during each hour of the day. This location was chosen in order to place the station at the approximate load center. During last winter this station was snowed under to such an extent that it could not be reached for five days. Throughout this period, however, the service rendered was entirely satisfactory.

It has been found that the quality of service afforded by the automatic substation is superior to that rendered by the ordinary manually operated station and is at least equal to the best. The number and length of interruptions to service ordinarily dependent upon an operator for correction are reduced, as already has been stated, and the voltage regulation is improved without excessive installation of feeder lines and without the addition of any attendants. With better voltage regulation all operations in the mine are speeded up, which in itself is of economic value. Wear and tear on substation apparatus is reduced through the elimination of unskillful handling.

When several manually operated substations feed into the same direct-current trolley system the loads may, of course, shift about to such an extent as to overload one substation and trip its direct-current breaker. This throws the entire load on the remaining stations and may, in an extreme case, so heavily overload them that their direct-current breakers may open successively. If these breakers do not trip, the stations will continue to supply the load, but through such a length of feeder and trolley that the voltage drop will become excessive. A form of automatic control has been perfected which permits a substation to limit its own load to its mo-
In England, as Here, Coal Miner Lives Long

NOT only in the United States but in England and Wales the mine workers and their political friends represent mining as disastrous to health and life. The table is not truer there than here, as the Registrar-General's Table of Mortality among Various Occupations in England and Wales, 1910-1912, conclusively proves. Of course the death rate at the higher ages is not important though motor-car and motor-tram drivers, who were probably not numerous in the period indicated, show a consistently low death rate at all ages. Mine accidents are included in the case of miners.

ANNUAL DEATH RATE PER THOUSAND AGE REPORTED FOR VARIOUS OCCUPATIONS IN ENGLAND AND WALES, 1910-1912

<table>
<thead>
<tr>
<th>Age</th>
<th>25</th>
<th>35</th>
<th>45</th>
<th>55</th>
<th>65</th>
<th>75  &amp; up</th>
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</thead>
<tbody>
<tr>
<td>Men, etc. (merchant navvies)</td>
<td>12.21</td>
<td>16.19</td>
<td>22.01</td>
<td>45.08</td>
<td>84.09</td>
<td>172.14</td>
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<tr>
<td>Harmsworth, lightermen, etc.</td>
<td>6.26</td>
<td>11.84</td>
<td>20.53</td>
<td>39.54</td>
<td>77.84</td>
<td>225.35</td>
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<tr>
<td>Fishermen</td>
<td>7.22</td>
<td>10.21</td>
<td>14.35</td>
<td>26.06</td>
<td>59.01</td>
<td>175.91</td>
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<td>Chalkminers, etc.</td>
<td>3.01</td>
<td>5.56</td>
<td>11.19</td>
<td>19.72</td>
<td>44.86</td>
<td>204.48</td>
</tr>
<tr>
<td>General shipkeepers</td>
<td>5.85</td>
<td>8.49</td>
<td>14.61</td>
<td>25.56</td>
<td>57.59</td>
<td>159.48</td>
</tr>
<tr>
<td>Engine drivers (coal railway)</td>
<td>3.87</td>
<td>6.22</td>
<td>11.84</td>
<td>30.85</td>
<td>75.27</td>
<td>209.22</td>
</tr>
<tr>
<td>Miners</td>
<td>3.78</td>
<td>6.22</td>
<td>11.84</td>
<td>27.73</td>
<td>55.85</td>
<td>173.93</td>
</tr>
<tr>
<td>l</td>
<td>4.75</td>
<td>7.05</td>
<td>12.54</td>
<td>20.49</td>
<td>46.44</td>
<td>158.88</td>
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<td>Colliers, etc., (private)</td>
<td>5.14</td>
<td>8.69</td>
<td>14.85</td>
<td>29.64</td>
<td>66.13</td>
<td>183.14</td>
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<td>Copper manufacturers</td>
<td>6.90</td>
<td>11.47</td>
<td>25.10</td>
<td>37.89</td>
<td>64.38</td>
<td>164.22</td>
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<tr>
<td>Bricklayers</td>
<td>4.29</td>
<td>7.19</td>
<td>12.62</td>
<td>25.19</td>
<td>51.78</td>
<td>159.62</td>
</tr>
<tr>
<td>Stone cutters, etc.</td>
<td>3.54</td>
<td>5.84</td>
<td>15.84</td>
<td>29.57</td>
<td>67.03</td>
<td>188.75</td>
</tr>
<tr>
<td>Tile makers</td>
<td>8.03</td>
<td>15.02</td>
<td>34.24</td>
<td>50.38</td>
<td>102.23</td>
<td>339.08</td>
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<tr>
<td>Miners, etc.</td>
<td>6.99</td>
<td>15.58</td>
<td>24.32</td>
<td>39.02</td>
<td>70.76</td>
<td>192.00</td>
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<td>Stove grate, etc., makers</td>
<td>2.83</td>
<td>4.62</td>
<td>9.82</td>
<td>24.05</td>
<td>47.26</td>
<td>106.67</td>
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<td>Lumbermen</td>
<td>7.03</td>
<td>12.41</td>
<td>21.99</td>
<td>36.44</td>
<td>66.20</td>
<td>182.47</td>
</tr>
<tr>
<td>Carpenters, etc., manufacturers</td>
<td>5.07</td>
<td>9.44</td>
<td>16.62</td>
<td>24.33</td>
<td>83.21</td>
<td>237.07</td>
</tr>
<tr>
<td>Coal heavers</td>
<td>3.58</td>
<td>10.31</td>
<td>19.20</td>
<td>33.64</td>
<td>70.27</td>
<td>219.05</td>
</tr>
<tr>
<td>Coal heavers</td>
<td>9.08</td>
<td>13.39</td>
<td>17.19</td>
<td>21.10</td>
<td>45.16</td>
<td>174.90</td>
</tr>
<tr>
<td>Engine drivers, locomotive</td>
<td>4.31</td>
<td>7.22</td>
<td>13.63</td>
<td>30.00</td>
<td>75.69</td>
<td>164.02</td>
</tr>
</tbody>
</table>

| Artisans, engravers, architects | 3.93 | 7.00 | 13.27 | 25.56 | 71.24 | 181.94 |
| Railway guards, etc. | 3.99 | 7.56 | 10.64 | 23.70 | 53.06 | 131.45 |
| Bricklayers, etc., etc., etc. | 4.15 | 5.51 | 11.17 | 24.52 | 73.29 | 235.01 |
| Woodworkers | 6.20 | 11.31 | 17.16 | 32.36 | 86.78 | 227.02 |
| Coachmen, omnibus drivers, | 4.89 | 6.62 | 12.72 | 34.57 | 72.74 | 202.83 |
| Woodworkers | 3.39 | 6.31 | 13.02 | 22.76 | 69.20 | 206.43 |
| Stone masons, dressers | 4.96 | 9.24 | 18.85 | 36.94 | 73.67 | 205.13 |
| Coal, coke merchants, | 3.09 | 5.49 | 11.44 | 25.17 | 60.12 | 201.99 |
| Patentee, machinery manufacturers | 4.27 | 9.19 | 15.98 | 40.40 | 66.67 | 222.22 |
| Mechanics | 4.67 | 10.20 | 22.31 | 40.00 | 66.67 | 222.22 |
| Tin miners | 8.07 | 22.31 | 32.37 | 45.80 | 109.56 | 255.71 |
| Lead miners | 7.17 | 18.31 | 33.17 | 45.80 | 109.56 | 255.71 |
| Coal heavers | 6.05 | 12.63 | 20.67 | 30.67 | 62.28 | 223.71 |
| Coal heavers | 3.37 | 5.25 | 10.37 | 19.23 | 43.28 | 247.23 |
| Coal heavers | 3.99 | 6.31 | 12.73 | 23.40 | 68.28 | 256.03 |
| Coal heavers | 4.26 | 7.09 | 13.63 | 33.28 | 84.52 | 188.65 |
| Coal heavers | 2.64 | 4.75 | 7.80 | 12.24 | 28.57 | 135.33 |

CADAVEROMETRIC TESTS to determine the losses in calories of coal heated in the air for various lengths of time are being made at the Pittsburgh (Pa.) experiment station of the U.S. Bureau of Mines by J. F. Byrne. At 125 deg. C. the following heat losses were obtained:

<table>
<thead>
<tr>
<th>Time of Heating</th>
<th>Per Cent Loss of Heat</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 min.</td>
<td>1.01</td>
</tr>
<tr>
<td>1 hour</td>
<td>3.1</td>
</tr>
<tr>
<td>2 hours</td>
<td>5.27</td>
</tr>
</tbody>
</table>

Samples were heated for various periods of time ranging from a half hour to 100 hours, and the B.t.u. run by the coal lasted. The results show a regularly increasing loss in heating value as the time of heating increases. The coal samples show a change of weight on heating—at first a decrease in weight due to the loss of moisture. The decrease is generally less up to 24 hours, when there is an increase in weight of 0.64 per cent. After heating 100 hours at 125 deg. C. there is an increase in weight of 1.35 per cent and a loss in heating value of 3.02 per cent.
Mounting Power Costs, Tire Wear, Circuit Losses and Bonding Problems Well Discussed at Huntington


DEMAND charges, like taxes long established, seem to have lost their first sting. When he first realized that he had to pay them the operator could see no justification for their existence and could not understand why they should be imposed so relentlessly when he was running short time. True, the power company had provided a power plant for the operator’s advantage, but so had the coal company opened a mine and equipped it for the benefit of the consumer. Noting this parity of conditions, the operator could but wonder why the power company could make him pay for power when he was not using it, whereas he could not make the consumer pay him a ready-to-serve charge whenever he had an idle mine and consumers who were little disposed to buy.

The first day’s session of the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers, which took place Sept. 19, seemed to show by its tone that the severity of the demand charge, the unfairness of its fairness, if it may be so stated, is less felt than of yore, but perhaps it should be remembered that most of those present came from non-union fields and had merely felt the burden of the demand charge during the irregular runs due to car shortage and not the greater onus that arises from a complete shutdown or from the infrequent runs that are occasioned by lack of orders.

However that may be, the electrical engineers showed more interest in the locomotive wheel and tire question as introduced by J. J. Fluck, chief engineer of the Elkpborn Piney Coal Mining Co., Huntington, W. Va., than in the methods of checking power costs as presented in M. A. Maxwell’s report, excellent as it proved to be. Mr. Maxwell’s report appeared in Coal Age Sept. 28.

INSTITUTE MEETS ELECTRICIAN’S SPECIFIC NEED

TIt was nearly 10 a.m. when the meeting opened in the City Hall, the visitors most fortunately being unwelcomed by any of Huntington’s many spellbinders. The president, J. H. Edwards, electrical engineer, Elkpborn Piney Coal Mining Co., Huntington, W. Va., opened by reading a Coal Age editorial on the association’s reason for being, showing that no other organization was doing, or would care to take on, the important work that the present institute was undertaking. The association has its own special needs and cannot expect other societies which have theirs to surrender enough time for the discussion and the recital of the needs of the mine electrical engineer.

The first report read was that of the committee on “Methods of Checking Power Costs.” In the absence of Mr. Maxwell, C. E. Rogers, electrical engineer, Logan Mining Co., Logan, W. Va., ranking member of the committee, read the report. In the discussion which followed, W. H. Bennett, of the Buffalo-Weather Coal Co., Ottawa, W. Va., wanted to know what relation the demand charge should bear to the energy charge in a mine producing 10,000 tons a month.

J. H. Edwards, the president, stated that at one mine having about that production the demand charge was $990 per month and the total power bill, demand plus energy charge, was $8,700, showing that the demand charge was only about 25 per cent. However, as everyone hastened to explain, the relation depends on many factors.

J. Louis Dawson, of the Ironon Engine Co., said it depended on whether trolley or storage batteries were being used. Mr. Edwards declared it depended somewhat on the time of peak on which the demand factor was based, remembering, however, that if rates were fair a short peak-time rate would be made somewhat lower than a longer peak-time rate, thus tending to give an equal result.

DEMAND CHARGE IS OFTEN INEVITABLY HIGH

Mr. Edwards said it depended largely also on the track grades and the hardness of the coal; the demand charge would be high in relation to the energy charge with locomotives traveling on heavy grades and coal cutters working in hard or dirty coal. Though the ratio might be made more favorable by the use of judgment and skill there were inexorable conditions which would afford always a high demand charge regardless of professional ability and faithful attempts to better the ratio.

F. L. Stone, of the General Electric Co., remarked that the ratio depended on the load factor. An electrical engineer with a powerful hoist could not hope to keep his demand charge down to a low figure compared to his energy charge, especially if the main use of power was for hoisting.

H. M. McFarland, of the Simplex Wire & Cable Co., wanted to know the probable electrical cost per ton for a mine producing 2,000 tons per day, and A. Fred Phelps, of the Post-Glover Electric Co., declared that one company was getting power for 3c. per ton produced before the strike and during the suspension for 65c., so great was the effect of inactivity on its electrical costs. A. F. Brosky, of Coal Age, remarked that 3c. was a remarkably low figure. Inquiries in Pennsylvania had led him to believe that the cost lies between 7c. and 8c. per ton produced.

Mr. Edwards remarked that the costs of power per ton were estimated in so many ways that they were not comparable. Some overlooked entirely the cost of upkeep and some took no consideration of the losses derived from current which was sold for lighting in residences, stores, motion-picture shows and other places. His company charged against the electrical department all the costs of electrification, deducting income from electricity sold to employees and others, and then, having thus found the net cost of electrification, divided...
How Long May a Tire Be Safely Used?

The report of the committee on "Mine-Locomotive Wheels and Tires" was then presented by J. J. Fluck, its chairman. This report appeared in the issue of Coal Age of Sept. 14. R. E. Webster, of the Elkhorn Piney Coal Mining Co., Wilkesboro, Ky., in the discussion that followed, asked: "How long may a tire be safely worn before it, is discarded?" J. L. Butcher, of the Amherst Coal Co., Ashlanddale, W. Va., said that he believed in allowing a tire to continue in use so long as it "stays in center" and does not become loose. Another declared that with the larger wheels, such as those which were 20 in. in diameter, the tire could be allowed to wear till the tire when turned smooth would not be less than 1/8 in. thick. The tires on 12- or 14-in. wheels can be allowed to wear down thinner than 11 in. Mr. Butcher said that tires rarely become loose, but he admitted that he had observed wheels on mine locomotives with loose tires.

Mr. Butcher in reply to Mr. Edwards qualified his previous statement as to the safety of tires when worn almost away by saying that when the tire on a 30-in. wheel wore down so as to be only 3 in. thick after limbining it could not be regarded as safe. He said that he had built up the tires of small wheels electrically and got good results. He would not fill cast-iron wheels. It would not pay to weld on such a wheel either electrically or with acetylene, for by this time a new tire would have been annealed and turned it would have been cheaper to have bought a new wheel.

He thought that the manner of welding by small increments around the wheel, starting from four points equally disposed about the circumference, as described in the report of the committee, was the right method, as thereby warping was prevented. Asked why he welded only small wheels he said that large wheels could be welded with equal ease and with just as satisfactory results but that if the wheel was so large that there were no facilities at the mine shop to turn it it would not pay to do the welding.

He said that every mine shop should have an electric and an acetylene welding outfit. Mr. Rogers remarked that whether wheels are built up or not at the mine shop a welding outfit should be provided, for it pays to have one.

Mr. Butcher, of the Elkhorn Piney Coal Mining Co., turned wheels up to 30 in. in diameter.

The discussion revolved around dynamic braking and some one mentioned that where this practice was followed it was almost sure to start when a locomotive went down a grade to get a car which was on the pitch. Mr. Butcher, in reply, remarked that he was not greatly in favor of dynamic braking and said that the theory was good, but, unfortunately, in gathering the men will "goose" or reverse their motors instead of braking them. He did not think dynamic braking suited to main-line haulage.

The motors were supposed to start in series but the men would not make use of that method of starting, switching immediately instead to the parallel position. J. L. Dawson said that most of the "goosing" was done when gathering. The men did not wait to set brakes.

A. Fred. Phelps, of the Post Glover Electric Co., said that though he was strongly in favor of dynamic braking he could not "bring himself to see it" in the larger locomotives. He added that most of the companies were not using dynamic braking on locomotives weighing more than 8 tons, but Mr. Fluck said that the Goodman Manufacturing Co. was using it on locomotives in excess of that weight. One company had tried to equip a 14-ton locomotive for dynamic braking and had found that the result was not satisfactory.

J. W. Tierney, of the Electric Storage Battery Co., said he did not see how braking down a hill would heat up a motor if it did not heat going up, but Mr. Phelps replied that on going downhill the speed may and probably will exceed that pulling uphill and the heating is from the speed with which the armature turns. Going up the speed is about 6 miles per hour and going down it may be 10 or even 15 miles. Reuben Lee, of the Elkhorn Piney Coal Mining Co., of Stanhope, W. Va., said that he found that soft cast-iron brakes were preferable to ferrous. No one volunteered any indorsement of this declaration.

Fifty Automatic Substations Already Running

The attendance on Wednesday, Sept. 20, was larger than at any of the other meetings and the interest was considerable, though regarding the first paper and the close of the second there was little discussion. The automatic substation excites much interest but is so little understood by the average mine electrical engineer that he is not ready to discuss it. The first paper, "Automatic Electrical Apparatus as Applied to Coal Mining," was delivered by C. E. H. von Sothen instead of by M. A. Whiting, who was unable to attend. The paper was well illustrated by slides, among which were several showing an installation at the Inspiration Consolidated Copper Co.'s mine.

The marked trend in the industry toward automatically controlled equipment was voiced by Mr. Edwards. Three years ago his company considered installing a 300-kw. automatic substation, but the electric companies discouraged the project. He asked how many automatic substations were in this country, and the answer developed that about fifty of them were in operation.

Mr. von Sothen, in answer to an inquiry, declared that he knew of only one truly automatic hoist in the world and that was the one he had described. It was installed six years ago and consisted of two 580-hp. units. Asked as to the type of motor best adapted to an entirely automatic high-speed hoist, von Sothen said that the torque of the direct-current shunt motor with voltage control varied but little with the load, and therefore was best suited for that purpose.

Mr. Edwards expressed his belief that the time was not far distant when every modern mine, whether equipped with converters or motor-generator sets, will
have one or more automatic substations. His company, as well as many others, is beginning to realize more and more the importance of automatic devices, and he even went so far as to say that he believed that automatic starters would be used even for the operation of small squirrel-cage motors. Mr. Suiter added that the Winding Gulf Coal Co. has an automatic slow-down and stop at one of its mines. For the five or six years that it has been running the installation has been giving satisfactory service.

The second paper of the morning, on "Underground Transmission and Distribution," was read by J. C. Fuetter, chairman of the committee appointed to report on that subject. His paper was reproduced in full in the issues of Coal Age of Sept. 14 and 21. Mr. Edwards opened the discussion by asking whether substations close to the shops should be automatic or manual. Mr. Fuetter recommended that the automatic substation be used under all conditions, as it is far superior to one that is manually operated, being more reliable, less expensive to operate and more desirable in every way.

Squirrel-Cage Motors Suited to Mine Work

A. M. Lupton, of the Lincoln Electric Co., said that squirrel-cage motors of modern design should find more extensive use about the coal mines, where the torque rapidly falls off after a maximum torque is reached. E. D. Knight said that this type of motor is used extensively for raising and lowering loading booms on the tipples. He then asked what provisions were made for brush raising and lowering at the Van Lear installation, to which Mr. Fuetter responded that the substation was equipped with a motor-generator set.

The subject of electric-weld bonding having been mentioned in the paper, J. L. Dawson asked if the association would go on record as recommending electric-weld bonding in preference to all others. A decision was made to delay such positive action until a later date. According to Roscoe Woltz, the electrically welded bond is difficult to make on old rails. Mr. Lupton declared that successful arc-welding can be accomplished only with a motor-generator arc-welding set. Though its initial cost is several times that of the resistance type of welder, it should be used nevertheless, as only by its use can good work be expected.

C. E. Rogers then presented the report of his committee on the "Relative Merits of Storage-Battery, Combination and Conductor-Cable-Reel Locomotives." This report appeared in Coal Age in the issue of Sept. 14. L. W. Scott desired to know something regarding the length of haul and the territory negotiated by the battery locomotives mentioned in the paper and whether they were shifted from place to place. Mr. Rogers replied that a locomotive in most circumstances should be allotted to a particular territory, from which it seldom should be removed. The locomotives under discussion worked in a mine laid out in a panel system. 15 rooms on an entry, placed on 60-ft. centers and 300 ft. deep.

It was learned through Mr. Edwards that R. L. Kingsland, of the Consolidation Coal Co., recommends the straight storage-battery locomotive in places with grades up to 5 per cent, the combination locomotive in places with grades up to 10 per cent, and the cable reef for steeper grades. H. E. Carlton asked whether machine-wire costs should be credited to reel-type locomotives and debited to the straight-battery locomotive. Mr. Rogers said no; that haulage costs must be kept apart from other operation costs.

R. W. Whetstone said he believed that battery depreciation has a direct bearing on the compilation of costs, and that the charging apparatus should be made entirely automatic if depreciation charges are to be lowered and the life of batteries is to be increased. Mr. Edwards said that the depreciation of batteries will be lowered, as the men learn more regarding their care and maintenance for locomotive duty. He called attention to Mr. Rogers' figures showing that the cost of depreciation was being lowered each year even though the age of the batteries steadily increased.

In the afternoon a group of the men were the guests of the West Virginia Rail Co., whose rolling mill lies on the outskirts of Huntington. The party was shown through the plant by the superintendent, H. H. Diehl, who explained the processes involved in the evolution of a steel mine rail, whether made from scrap railroad rails or from billets.

Mr. Diehl said the manufacturer of steel rail was frequently blamed for defects that arose from the careless use of the electric-weld bonding machine. The burning of the rail frequently weakened the steel, and for defects thus caused the manufacturer could not be held responsible. He laid successively several lengths of rail over two supports spaced at an interval of 2 ft. and struck them with a steam hammer after first making a slight impression with a cutter on the flange of the rail. He showed thereby that a single blow of the hammer would make a clean shear. A similar rail without that slight nick would bend without breaking, which proved his contention that a slight weakness at any section will concentrate the strain at that point. He recommended the placing of the bond on the web of the rail instead of at the base or flange.

None of the Fractures Touched the Weld

The following afternoon several bond contacts were made by means of an electric welding apparatus in the exhibition hall, and these were taken to the mill to be broken. The results showed that it really makes little difference where the bond is made on the rail, provided care is taken not to burn the steel. Those who witnessed the tests were of accord in pronouncing the base of flange the most logical position for a bond because this is the place where it can be most easily applied. The samples broken had been bonded in different positions, but the fractures showed that the rail did not break through the bonding contact but rather around it, provided the weld had been made with due care.

Oxygen and Air in Monoxide Poisoning

R. R. SAYERS, chief surgeon of the U. S. Bureau of Mines, calls attention to page 412 of Coal Age of Sept. 14 and says that he should have been quoted as saying that ordinary air is a long time removing carbon monoxide from the system, but pure oxygen, if breathed normally, will remove the monoxide in about one-fourth the time and that oxygen mixed with 10 per cent of carbon dioxide requires one-fifth to one-sixth as long. Dr. Sayers adds that 5 per cent of carbon dioxide apparently works very nearly as efficiently as 8 to 10 per cent. Pure oxygen is often available at the mines and should be used as early as possible in the treatment of carbon-monoxide poisoning.
Grading and Making Height in Mine Entries

In mines where heavy gradings are to be used, where the roadways have been given low in headings or rooms, where creep has blocked the roadways or where gridding has to be done to promote natural drainage the illustrations of the work of the Illustrations in the mines of the Oil Iron Coal Corporation, Illinois, will be of interest. The purpose in this

FIG. 1—LOADING COAL FROM A STOCKPILE AT BELLINGHAM, WASH.

This is from a photograph taken at the Olive Iron Mining Co.'s iron mines at Chisholm, Minn. The shovel is in the starting position and, as will be noted, it has buried its nose deep in the pile.

operation about 50 cars were removed. It is much used by contractors for tunneling and, of course, would be available for similar work in mines where it would do the "mucking" far more rapidly and cheaply than men.

Production of Coal from leased lands on the public domain of the United States approximated 240,000 tons during the first six months of 1922. The production would have been considerably greater than this had it not been for the general coal strike which began April 1. Technical supervision of the operation of coal mines on leased public lands rests with the U. S. Bureau of Mines.
French Colliery Association Taxes Buyers of Low-Price Coal to Reimburse Those Charged High Rates

Price Controlling Body Thus Maintains Standard Price Established—Reparation Deliveries of Coal Decreased, Coke Increased—Suspension of Eight-Hour Law Proposed—Movement on Foot for University of Labor

BY C. H. S. TUPHOLME
London, England

In investigating the French coal industry that which first strikes the foreign observer is the power of the French Colliery Association or Comité des Houillères. The function of this organization in France is to dispense with all competition between the various industries in the matter of coal supply and to act as a permanent price-controlling body.

At regular intervals the Colliery Association takes inventory of all the coal sold in France, whether it comes from Great Britain, America, Belgium, German reparation deliveries or from the French mines themselves. When this is done what is known as a standard price is established based on the various prices paid for the coal obtained from the different sources and the conditions then obtaining both at the place of delivery and in the French coal-consuming industries. Then those concerns which paid less than this standard figure are taxed to the extent of the difference, and the revenue collected in this way is paid over to those who paid more than the standard. In this fashion conditions are evened up and the man who buys British coal pays no more for it in the long run than the employer who is located near the German frontier and buys German reparation coal. For instance, reparation coal from Germany, which has to be delivered to France at German home prices, was costing the association around 50 fr. a ton. This coal was sold to French industrial concerns at 90-100 fr., leaving a profit of 40-50 fr. on every ton of German coal. This margin was then paid over to those who had bought in the more costly markets.

Eliminates Competition for Cheap Coal

Naturally this method involves some very complicated and delicate accounting, and I have not yet met anyone who could tell me just how it was done, but it works out all right, since French coal operators are paid more for their coal than it is sold for to industrial concerns and the method obviates competition for cheap coal. The manufacturer is happy in consequence.

The French Coal Association is not in the nature of a state bureaucracy but it is a powerful organization, exerting great influence with the government and the press. It has also played a large part in the restoration of the devastated areas.

In connection with the reconstruction of the French coal fields in the devastated areas, it is of interest to note the progress made in the important Lens and Courrières fields. The output of the Lens mines for the first six months of 1921 was 107,500 tons against 205,600 tons in the same period of 1912. In the Courrières area the output was only 597,800 tons during the whole of 1921 against 556,700 tons in the first half of 1912.

Of mines which were not damaged during the war, the output of the colliery at Bruay (Pas-de-Calais) is now the largest in France. In 1920-1921 it produced 2,465,000 tons, but I am told these figures could easily be improved upon if need arose. During the war the annual output exceeded 4,500,000 tons. The possibility of expansion is due to the extreme regularity of the Bruay field, which renders it easy to extract the coal. Bruay coal is especially suited for boilers, as it gives very little dust and burns clean. The net profits of this colliery for the year 1920-1921, after payment for all plant and allocation to reserve, amounted to nineteen million francs.

After the European trade boom France found herself with a gradually accumulating stock of coal for which no market could be found. To remedy this situation the Colliery Association got busy with foreign sales bureaus, so that now coal mined in the Saar area is actually being sold in Germany at several francs less per ton than in France. Thus the curious situation has arisen of Germany delivering coal to France to recompense her for the French collieries destroyed by Germany during the war, while France sells the same coal back to Germany at a discount.

Lately, however, this system has not worked so satisfactorily. In order to increase revenue as a result of the demands of the reparation commission Germany has raised the home price of her coal—and thus the price of delivery to France, for it will be remembered that coal must be delivered to France at German home prices—and increased her freight rates. As a direct result the French Colliery Association has had to increase its standard price. Again, Great Britain has been selling coal at 6s. less than British home prices in order to
THE FRENCH MINING INDUSTRY

The French mining industry is viewed as one of the major coal producers. A recent announcement of the government regarding the abolition of the coal tax has brought attention to the industry's challenges.

The French Coal Congress, which met recently in Paris, supported the demand for the enactment of legislation suspending temporarily the application of the eight-hour day law in France. A bill has now been introduced in the Chamber of Deputies providing for the suspension of the act until the restoration of normal industrial conditions. Another measure before the Chamber proposes that coal miners be permitted to work more hours while importations of coal exceed 5,000,000 tons per annum.

The seriousness with which the outlook in the French mining industry is viewed is seen also in the recent announcement of the abolition of the coal tax.

There is a movement on foot in France to create a National University of Labor. This movement has the support of the majority of the large industrialists, and committees are working in the principal industrial centers with a view to founding in each area a university where the working classes of every age and type will be enabled to improve the selling value of their labor. It is proposed that a directing board be formed composed of state officials, technicians and employers and employed in the more important trades and that tuition be given by professors and lecturers from the neighboring universities and technical colleges.

Issue Bulletins Describing Geology and Coal Resources of Pennsylvania

The Bureau of Topographic and Geological Survey of Pennsylvania has put out in the form of bulletins much valuable information concerning the geology and coal resources of the state. Thus in bulletins Nos. 26, 32, 34, 38, 41, 42, and 46, J. D. Sisler describes the coal beds in Washington, Fayette, Westmoreland, Armstrong, Elk, Jefferson and Butler counties, respectively.

These bulletins in each case briefly take up existing conditions so far as commercial coal mining is concerned, following this with a description of the geology structure of the area under consideration. This is succeeded by a description of the stratigraphy and lastly by an enumeration of the coal beds present. This section of the bulletins contains much valuable information concerning the thickness and quality of the various coal measures.

Bulletins of this kind are of much value to those contemplating the opening of a mine or mines in the region treated or to those seeking detailed information concerning any one or all of the coal beds of the state. Monument copies of these bulletins may be secured from the Bureau of Topographic and Geological Survey.
Price the Connellsville Coke Region Will Have to Pay for Present Strike

By John L. Gans

Unearned Wages, Profits and Overhead More Than Offset by Other Losses That Are Irrecoverable—Permanent Diversion of Business to Other Fields and to Byproduct Ovens Constitutes Greatest Injury

The Connellsville coke region will pay a heavier price as the cost of the present sympathetic strike of its workers than for any previous interruption in its history as a fuel-producing center. The total will not be found by multiplying the number of weeks the strike lasts by $850,000, the estimated weekly loss in wages of the 28,000 men who have been idle since early in April, nor yet by adding thereto the calculated loss to the operators of the profits on 200,000 to 300,000 tons of coke which could have been made and sold at a fair price to furnaces and foundries had not the coal and railroad strikes laid their withering blight on transportation and industry.

Neither will the aggregate be found by adding to the combined wage and profit loss the extraordinary expenses incurred by reason of the measures necessary to safeguard the mining and coking properties, keep them in a workable condition, protect the men who are willing to work and preserve order in the strike-affected districts. What these costs are, or what they will amount to before the emergency requiring defensive and protective precautions shall have passed, cannot be approximated. They will vary greatly with the conditions, size and number of operations and other circumstances.

In the case of the H. C. Frick Coke Co., owning fifty-five mining and coking plants, the burden is plainly very much heavier than on any other single interest. The problems this and all operators who are striving to restore or maintain plant activity, if no more than on a small scale, will have to meet until the walkout is over and done, involve heavy expenditures. These are not limited to overhead at mines representing investments of millions of dollars in equipment and development where handfuls of foremen, mechanics and a few diggers of boiler coal who keep the mines in ship shape are the only employees on the job. Special watchmen and guards are on duty throughout the region. Transportation, commissary and other incidental expenses which their employment entails, and a wide variety and large number of miscellaneous items which do not come up in the normal operation of mines and coke ovens call for a prodigious outlay.

There are other and indirect costs, such as the inefficiency of untrained men who have taken the places of the strikers; the destruction or damage of miners' houses, mine buildings, tipples and other structures by fire or explosives, and the complete or partial wrecking of machinery and equipment.

But numerous and diverse in character as are the direct and indirect monetary losses which are being sustained by employers and employees because of the strike, and staggering as would be the grand total if it were possible to reduce it to figures, it is the deliberate judgment of persons who have given serious thought to the ultimate effects of the strike in the Connellsville region that the current losses are in part recoverable and in a sense inconsequential as compared with the losses that are likely to be irrecoverable.

May Suffer Permanent Diversion of Business

Much of the greater part of the price the historic and famous producer of the standard metallurgical fuel of the world will have to pay for having had the temerity to resist the demands of an oligarchy of mine labor is the permanent diversion of business to other fields and to the byproduct coke oven—the only formidable competitor of the beehive oven as the latter has been developed in the Connellsville region.

This development has been of comparatively slow growth, the rate of which has been measured by the expansion of those industries dependent upon coke for their manufacturing processes. Beginning in the early 80's to assume importance as a fuel source, the region grew gradually in productive capacity until the maximum of 21,654,000 tons was reached in 1912. Since that date each recurring interruption in industrial peace and progress, such as railroad and steel strikes, has been instrumental in further restricting the markets for Connellsville coke and has sent buyers to other fields or set them to building byproduct plants.

Competitive regions like West Virginia have taken a share of the trade previously believed to have been vouched for the Connellsville region for its natural life.
CONNELSVILLE DERIVED COKE HAS NOT YET PASSED INTO HISTORY

The man on the left has just been drawn, the lad in the middle is being charged with coal from the barrel above and the oven on the right is fired and making coke.

But the contemporaneous expansion of the byproduct industry has been the more direct cause of the reduction in the volume of demand for Connellsville coke. This is definitely shown by the fact that production in 1920 was barely 50 per cent of that in 1913, and last year, a lean one in industry, it was only about 16 per cent of that in the busiest year. The significance of these declines became more striking in view of the coagulated fact that until 1921 coke consumption had grown by a rate of geometrical progression.

Notwithstanding the sympathetic strike, which still persists with great obstinacy, at no time during the shutdown has production been as close to a point as in July, 1921, when the industrial depression restricted output to 20,000 tons and less per week. In view of the grimmess of the struggle to reduce the region to inactivity it is noteworthy that the average rate of coke production since April 1 has been considerably in excess of the average for 1921. The independent producers and merchant customers have not benefited therefrom, however, because 80 per cent of the production has been at plants of the coke subsidiary of the United States Steel Corporation, hence not available to the general market.

In consequence, coke consumers who have heretofore been dependent upon the Connellsville region have been forced to make other connections in order to obtain a supply of fuel. Some have gone to the Southern making fields and others have become buyers of the excess production of byproduct plants operated in connection with furnaces. Others have bought from merchant byproduct operators, which, so long as they have been able to obtain a supply of raw coal, have been running at maximum capacity. True, the railroad strike has made reliance upon these sources even less secure than upon the Connellsville region, but with production in the old mine fields again resumed the chances favor a resumption of relations established outside rather than a return of some former customers to the Connellsville region.

Contemplation of these things is what causes thoughtful observers of the situation to arrive at the conclusions they have with respect to the ultimate cost of the strike in the Connellsville region. Even when the natural order is again restored, as it will be in due course, there will be, it is feared, disinclination on the part of some coke consumers who have made other trade connections, to return to their first love. Especially will this be true if the strike settlement is of such character that the coke region will not be insured against periodic interruptions similar to those which have prevailed in the strongly unionized districts.

It may appear to some persons that even if the Connellsville region loses coke trade it will still remain a large producer of coal as the raw material in byproduct coke manufacture, and thus be compensated. This is quite true, but the mine operators of the region are essentially coke makers and to that product they very properly attribute the success they have achieved. Many of them have already adapted themselves and their plants to the simpler process of mining and shipping raw coal, but there is a lure and some sentimental association attaching to coke making, not to speak of the business advantage which is derived from the larger measure of profit obtained from coke when the market price is several times greater than the price of the coal equivalent. The present market, with coke $15 and up, compared with the Hoover price of $4.50 a ton for coal, is a pertinent case in point.

Such market conditions do not prevail except at more or less infrequent intervals, but there is a natural desire on the part of the operators to be in position to enjoy the benefits when they are obtainable. That a lessening in the number of such opportunities will be one of the costs to the Connellsville region in consequence of the sympathetic strike counts quite as much as part of the cost as does the disruption to selling connections established after a number of years of patient effort.
Robbing Pillars in Undersea Operations

Submarine Mine of the Dominion Coal Company—Drawing Pillars in Lower Seam—Work in Upper Seam Stopped While So Doing—Working Out Upper Coal First Is Suggested as Safer Plan

REFERENCE was made some time ago in Coal Age to the undersea mining of the Dominion Coal Co. at Cape Breton, N. S. It occurs to me that the following paragraphs quoted from the Canadian Mining Journal, May 12, 1928, will be of interest to readers of Coal Age.

The Dominion Coal Co., Cape Breton, has begun drawing pillars for the first time, in their largest undersea colliery, No. 2. As another seam overlying this one is being worked by a separate shaft, it was found necessary to stop mining above, until the pillar work below is well advanced.

"It is reasoned out that if work is concentrated on pillar sections and these are rapidly extracted the subsidence will be gradual and the strata will settle without danger of fractures running to the surface, which would not only be dangerous under heavy mountains of water but would affect the workings of the upper seam.

"The mining of undersea coal requires great care. So far it has been costly, as thick pillars had to be left while entering the submarine field. Heavy barrier pillars must be left between sections to provide against accidents from inrush of water. Now that the collieries are reaching the stage where pillars can be drawn, the necessity for continuous development will not be so great.

"There is 1,600 ft. of cover over the pillars of this colliery, at the point of pillar attack. Between the upper and lower seams now being worked there is 450 ft.

VIEWPOINT OF AN OUTSIDER ON THE ORDER OF WORKING SEAMS

In commenting on the above method, it is not my desire to do so in a critical way. The officials of the company in charge of the mine are thoroughly conversant with the local conditions and behavior of the strata forming the overburden. It is probable that they have determined their course of action after mature deliberation and careful study of these conditions in the light of their experience.

However, judging by the information given in the article to which I refer, it appears that they are proceeding in exactly the reverse order from what is the general custom and practice. From the viewpoint of an outsider not having the same intimate contact with the work, it would seem that the upper bed should be worked out first.

IRREGULAR SUBLINEMENT CAUSED WHEN LOWER PILLARS ARE DRAWN

Unless the strata lying between the two seams of coal are unusually strong and well knit, the drawing of the pillars in the lower seam will undoubtedly cause an irregular subsidence that will produce annoying faults and rolls in the upper seam.

On the other hand, should the drawing of the pillars in the upper seam, on its completion, cause fissures to develop that would permit water to enter the mine, there would still remain the 450-ft. of strata that separates these two seams.

In the later working of the lower seam, with 1,150 ft. of solid strata remaining undisturbed, there would be little doubt that the strata would overarch and be self-supporting. In that case, the work of extraction could cause no settlement that would entail danger by reason of water breaking into the mine from the upper seam. It will be interesting to learn the opinions and experience of others in this regard.

CHARLES M. SCHLOSS,
Denver, Colo.

Conditions Determine When It Is Advisable to Seal

Practice in regard to sealing abandoned areas varies with conditions in the mine—Experience in southern Illinois—Method of working the chief factor.

In reading the several letters that have dealt with the subject of sealing off abandoned areas, one is impressed with the thought that conditions alone can determine the safest method of proceeding in this respect. While my own custom has favored sealing off places that are finished, I must admit that many good reasons both for and against the practice have been advanced.

With Otto Ballock, who writes under the caption "Success of Any Plan Depends on How Carried Out," Coal Age, June 8, p. 263, I believe the conditions existing in the mine must be the only sure guide. The records show that practice varies with the conditions. What is a safe plan to follow in one locality would be a dangerous proceeding in another.

My own experience, in the mines of southern Illinois, has convinced me that the sealing off of old workings is the safest thing to do in that district where the mines are generally gassy. At any rate, this is true as long as the present method of working in those mines is followed.

An instance comes to my mind where we sealed off a pair of cross-entries that were worked out and finished. The section was generating much gas and, though the seals were well built, I have often found gas oozing out through the stoppings onto the main haulage road. This was more noticeable at times when the barometer was falling.

Owing to the fact that there was a good current of air traveling the roadway, the condition was not dangerous, as the gas was quickly diluted and passed out of the mine. Had there been no seals closing the mouths of these entries, however, I believe the volume of gas coming from them would have produced a dangerous condition at that point on the road.

GREATER PROTECTION AFFORDED BY MULTIPLE-ENTRY SYSTEM

In my opinion, the main point, in respect to sealing off abandoned areas to make the mine safer, is the method of working adopted in the general plan of the mine. I refer particularly to the use of the triple-entry system of working, in preference to the double-entry system so commonly employed. These two systems have been explained and illustrated so frequently in Coal Age that it is unnecessary to dwell on their points of difference.

It is well known that the double-entry system provides but single main intake and return airways; and the haulage road, even when this is made the intake, is not protected from conditions that may arise in the workings, on that side of the mine, by reason of a serious or a heavy fall of roof recurring in worked-out portions that have been sealed.

On the other hand, the triple-entry system provides a separate haulage road, which is made the intake for the entire mine and is flanked on either side by a main return adit. This separation is from the very outset, on the respective sides of the mine. In this arrangement the haulage road is protected from any dangerous conditions that may arise in the old workings.
Reducing Ventilation in a Mine

When Firing Shots

Results of the remarkable McAllister experiment, in Kansas mines—Experimental requirement in present exploders—Can the theory of black smoke be considered practical?

The event of a recent mine explosion and the result of black smoke, or a mine whose 66 minutes fired through, as given by a Kentucky newspaper (July 5, 1887), 29, raises the very remarkable experiment of Alexander McAllister, a Kansas miner, who strongly advocated the theory of reducing the smoke in the conclusion of his work, and when fires are shotted.

McAllister stated the experiments were published in an early volume of Coal Age (Vol. 10, 1886, p. 235), and Vol. 24 gave rise to a lengthy discussion on the conclusion of the condition of ventilation, at the time of incident.

Experiments Advancing Favor in Ventilating Mines

It was agreed, on the opinion of the theory that the introduction of more air fans, or a large ventilation of smoke was needed, an increase in ventilation, decreasing the development of the condition of the mine, as to be shown by the conclusion of the incident of the mine.

For this reason, it was claimed that when such conditions, as explained by McAllister, could not occur. In support of the

The inventor described an experiment that he performed in a mine to prove the correctness of his theory. The wonder is that the man survived to tell the story.

**Remarkable Experiment to Prove Theory Correct**

McAllister states (Vol. 3, p. 25) that for the purpose of this experiment, he arranged a series of 27 shots, or a mine, and placed a 25-lb. keg of blasting powder, with fuse attached and covered over with fine coal dust, at the face of the workings.

Having ignited the keg at the top of the shaft, so as to completely shut off the ventilation in the mine, with the aid of two others as intrepid as himself, the experimenter and his assistants lighted all the shots and the fuse attached to the keg of powder and retired to a safety hole they had prepared beforehand.

The account states that no explosion occurred save for a slight one following the firing of the fourth shot. That, however, was only local, not being propagated, though conditions were unfavorable for its extension could the mine atmosphere have supported the combustion.

**Experiment Supports Claim of Reducing Circulation**

The argument and the evidence corroborating it appear plausible could not be assured of one essential feature; it is curious, that there will always prevail a deficiency of the explosive gases to render the mine atmosphere incapable of originating and supporting an explosion.

Just here it must be remembered that the point of high explosibility must be contained and passed, before the resultant explosion can be insured. The practicability of this theory is 1 fear, still entertained by many mining men. To such an extent, a few years ago, did the theory gain ground that the late H. M. Wilson, then chief of the Associated Companies, wrote an article disparaging the idea.

**The Weak Point Exposed**

As I have already intimated, the weak point of the theory is the assumption that the mine atmosphere will always be non-supporting of explosive conditions, whereas the shafts are being fired. Little consideration seems to have been given, also, to the relatively larger air volume of the mine, in comparison to the shotting area.

Nothing more seems to have been regarded that an explosive condition in the mine air is cumulative, and similarly passed after passing through an extremely explosive condition. If I am not mistaken there is far greater danger in a succession of shots than when the same shots are fired simultaneously.

For example, when shafts are fired simultaneously the condition presented is analogous to that of firing a single shot. The occurrence of an explosion assumes both an explosive atmosphere and sufficient heat for its ignition. In the firing of a single shot the gaseous products and the heat appear simultaneously; but, after the dilution of the gases with air can form an explosive mixture, the heat required for its explosion has disappeared.

On the other hand, when successive shots are fired, the flame and heat of a following shot are projected into an explosive mixture formed by the dilution of the gases of preceding shots and an explosion results.

In closing, let me say that, while modern ventilation does not make mines free from explosions, it must be admitted that such occurrences are less frequent and less devastating than in years past. Inadequate ventilation in the early history of coal mining did not prevent explosions, which were often more widespread and devastating than those of recent occurrence.

Washington, D.C.

I. C. Parfitt.

**Misapplication of Principles in Mine Timbering**

Systematic timbering an innovation—Often followed blindly—Its object—Purpose of setting posts in mines.

I was deeply interested in reading the excellent letter of our friend, John Rose, who writes on "Safety in Timbering at the Working Face" in Coal Age, July 6, p. 18. He has very ably enunciated and emphasized a practical principle in this most important phase of coal mining.

Mr. Rose has drawn attention to the fact that the method of timbering each working face must necessarily depend on the particular conditions of roof and floor, in that place, and that no fixed rule will apply to all the conditions that so frequently occur, even in different sections of the same mine.

**Roof and Floor Conditions Never Found Uniform**

Others may have had a different experience from mine; but I have never yet seen or worked in a mine, either drift, slope or shaft, where the conditions of roof and floor were uniform throughout. I am reminded of this, particularly by the amusing way in which Mr. Rose narrated one incident that showed clearly the need of adapting the method of timbering employed to the conditions in hand.

The anecdote illustrated in a forcible manner the point that has impressed itself on my mind and is the chief point that I wish to emphasize here. In coal mining, as in any other industry, any new method that may be proposed as the result of study and experiment, be an innovation that must be demonstrated, in order to prove its effectiveness in a particular case.

**Innovation in Coal Mining**

Now, systematic posting may be regarded as such an innovation in the mining of coal. As generally understood, it means the standing of posts at regular intervals, in prescribed loca-
tions, and has little regard to the ever changing conditions in the roof, which every practical miner knows must be considered.

**FOREMEN OFTEN FOLLOW BLINDLY A METHOD PROPOSED**

As in the case cited, an innovation of this kind is often blindly followed by mine officials who fail to give a thought as to its adaptation to the particular conditions with which they have to contend. In their minds, the systematic setting of posts at the working face is a plan of universal application that they are eager to adopt.

Not to be misunderstood, let me say here that systematic timbering, under uniform conditions of roof and floor, has many good points. It eliminates any bad judgment, or lack of experience, on the part of the miner and, more particularly, his proneness to postpone the setting of needed posts at the working face.

The main object of systematic timbering in rooms is to distribute and equalize the roof pressure and thereby strengthen the roof in a miner's working place. By way of illustration, I have prepared two sketches, each of which is an example of systematic timbering in a breast.

**The More Effective System**

In the figure, the section shown above represents three lines of posts set 4 ft. apart in the center of the breast, which is the weakest spot in the span across the opening, assuming a uniform roof condition. This is analogous to setting a center post under a collar that shows signs of taking the weight. In the lower half of the figure, the three posts are set at equal distances apart and a like distance from the rib, on the gob side of the breast.

Although in each case the timbering is systematic, the second arrangement is not as effective as the first, since there is a greater width of unsupported roof over the roadway when the timbering is set to one side of the center of the breast. This second arrangement has a tendency to divert pressure from the supporting pillars to the unsupported span of roof above the road.

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**Flow of Water in Pipes Under Equal Heads**

With Like Velocity, Sixteen 3-in. Pipes Will Carry the Same Water as One 12-in. Pipe—Under Equal Head, Thirty-two of the Smaller Pipes Will Be Required

MAY I ask Coal Age to kindly settle a disputed question regarding the number of 3-in. pipes that will be required to carry away the same quantity of water as a single 12-in. pipe. Where the question originated I do not know; but it has been knocking around hereabouts some time and has caused difference of opinion among those who are studying to fit themselves for examination.

It is argued by some that a pipe will carry an amount of water in proportion to its sectional area, which varies as the square of its diameter. On this basis, or in other words, that since the diameter of a 12-in. pipe is four times that of a 3-in. pipe, the former will carry 16 times the amount of water carried by the latter. In other words, it will require sixteen 3-in. pipes to carry the same amount of water as one 12-in. pipe.

On the other hand, a few claim that such is not the case. Although they have not been able to give a satisfactory explanation, they say that this question was asked a long time ago in a mining examination and, to the best of their recollection, a different answer was given. It would seem that the only way to settle this dispute is to appeal to Coal Age to answer the question again and explain the reason why more than sixteen 3-in. pipes will be required to discharge the same amount of water as a single 12-in. pipe.

**Inquiries Of General Interest**

**Flow of Water in Pipes Under Equal Heads**

We recall that this question was asked in a Pennsylvania examination, a few years ago. Very probably it was answered in Coal Age, at that time. While it is true that a pipe will carry water in proportion to its sectional area, that condition assumes that the velocity of the flowing water is constant. In other words, for a constant velocity, the flow of water in a pipe varies as the square of its diameter and sixteen 3-in. pipes would then be equivalent to one 12-in. pipe.

A more practical view of the question, however, is to consider the flow of water in pipes of different diameter. When the pipe is constant the pressure is always the same. Therefore we write the formula for the pressure, which if the units are consistent, will equalize the section of a larger pipe. (12 in. = 144 sq. in., 6 in. = 36 sq. in.)

Steubenville, Ohio. **STUDENT.**
EXAMINATION QUESTIONS ANSWERED

Illiinois Mine Managers' Examination, Springfield, July 17, 18, 1922

Question—Taking the weight of a cubic foot of air as 1.25 lb., what will be the weight of air in a shaft 25 ft. in diameter and 1,000 ft. deep?

Answer—The cubic content of this shaft is 21,825 (0.7854 x 125) = 17,187 ft. cubed. The weight of air filling this shaft and having a density of 1.25 lb. per cu. ft. is therefore 21,825 x 1.25 = 27,281 lb. or 13.6 tons.

Question—If 3,000 cu. ft. of air is passing through a circular shaft 15 ft. in diameter, what is the velocity of the current in feet per second?

Answer—The sectional area of this shaft is 78.54 x 102 sq. ft.

\[
\text{Flowing speed} = \frac{3,000}{\pi \times 78.54} = 120 \text{ ft. per sec.}
\]

Question—There are 18,000 cu. ft. of air passing through a water gauge having a rubbing surface of 24 sq. ft. and a sectional area of 30 sq. ft. What is the water gauge pressure, this calculation being based on a normal atmospheric pressure of 14.7 lbs. per sq. in.?

Answer—The area of the water gauge is 30 sq. ft.

\[
\text{Gauge pressure} = \frac{18,000}{30} - 14.7 = 507.7 \text{ lbs. per sq. in.}
\]

Question—How many sq. ft. of air will pass through a circular shaft 10 ft. in diameter, when the air enters with a velocity of 30 ft. per sec. through the shaft opening?

Answer—The sectional area of this shaft is 78.54 sq. ft.

\[
\text{Number of sq. ft. of air} = \frac{30 \times 78.54}{30} = 78.54 \text{ sq. ft.}
\]

Question—What is the horse power of the air when 70,000 cu. ft. per min. is exhausting at a water gauge of 1.7 in.?

Answer—The pressure corresponding to a 1.7-in. water gage is 5.2 \(\times\) 6.84 lb. per sq. ft. The horse power of the air is, therefore,

\[
H = \frac{70,000 \times 5.2 \times 6.84}{38,000} = 18.75 \text{ hp.}
\]

Question—What is the horse power of a 2.64-in. diameter water gage when 97,000 cu. ft. per min. is exhausting at a water gauge of 1.7 in.?

Answer—The pressure corresponding to a 1.7-in. water gage is 5.2 \(\times\) 6.84 lb. per sq. ft. The horse power of the air is, therefore,

\[
H = \frac{97,000 \times 5.2 \times 6.84}{38,000} = 22.67 \text{ hp.}
\]

Question—A 3-in. air pipe is 6 times larger in diameter than a 1-in. pipe. How much larger is the volume of water flowing in the former, under a constant head, in 1 ft. of each pipe? Thus, if 6.75 cu. ft. of water will flow in a 3-in. pipe, what volume will flow in a 1-in. pipe? Therefore, in this case, the head remaining constant, it will require twenty-three 3-in. pipes to discharge the same quantity of water as one 15-in. pipe.

\[
H = \frac{6.75}{15} = 0.45 \text{ sq. ft.}
\]

\[
H = \frac{6.75}{23} = 0.30 \text{ sq. ft.}
\]

Question—What is the breaking strain of a good steel hoisting rope 1 in. in diameter? (b) How will you find the safe working load for this rope?

Answer—(a) The breaking strain of a 1-in. cast-steel, 6-strand, 19-wire, hoisting rope is 32 tons. This is used as the basis for calculating the breaking strain of similar ropes of different diameters, since the strength of similar ropes varies as the square of their diameters. Thus, the breaking strain of a 1-ft. rope of this kind is 32 \(\times\) 1.25 = 53.125 tons.

(b) The safe working load of a rope must be determined by the conditions under which the rope is used. For example, when hoisting in a vertical shaft it is common practice to use a factor of safety varying from 5 to 10, depending on the depth and diameter of the shaft. If the weight of 75 or 80 yds. of the factor of safety of 5 may be used, making the safe working load then 53.125 \(\div\) 5 = 10.6 tons. At a depth of 1,000 ft., a factor of safety of 8 may be used, making the safe working load, in that case, 53.125 \(\div\) 8 = 6.6 tons. In each case, however, the working load should include the weight of the rope itself, hanging in the shaft.

Question—Explain how you would arrive at the cost for hauling the coal, in a mine of which you might be manager.

Answer—The cost of hauling coal in the mine, from the working face to the shaft or slope bottom, must be based on the output or daily tonnage and the number of men required on the mine road and for gathering the cars at the working face. This will determine the expense for wages of motormen and trip riders, to which must be added the wages of any trappers, trackmen and timbermen employed on the haulage roads. An estimate must also be made of the cost of maintenance, including all supplies and labor required in the upkeep of the machines and power line.

In addition to this, there must be added the cost of power, if purchased; or the wages of the men employed in the power plant together with the cost of supplies and maintenance of the boilers, engines, generators and machinery forming the equipment of the power plant, making due allowance for the power consumed for other purposes, in the same period.

Finally, dividing the total cost of labor, supplies and maintenance, by the total tonnage consumed during the period, will give the average cost of haulage, per ton of coal mined. This assumes that the overhead charges include depreciation, interest and insurance and are not included in the cost of haulage.
Production of bituminous coal in the United States in 1921, according to final statistics issued by the Geological Survey, totaled 415,921,000 net tons. The Survey's preliminary estimate, published Jan. 7, 1922, or nine months ago, was 407,000,000 tons, which was an error of 2.2 per cent. Several interesting features of these statistics, pointed out by the Survey, are given here in full.

The mines included in these figures, the Survey states, do not embrace the output of country banks and of some wagon mines. They include, however, many small operations that fall within the definition of wagon mines but that operate steadily year after year. The tonnage not included, it will be agreed, would amount to little in a year of acute depression such as 1921. Were statistics available for the small mines not included, the total output would be raised by not much over 1,000,000 tons.

The value of the bituminous coal produced in 1921 was reported to be $1,139,000,000, as against $1,160,000,000 in 1920. The average value per ton f.o.b. mines declined from $3.75 in 1920 to $2.89.

Contrary to what might have been expected, the number of men employed increased in 1921. There was less work but more men to share it. The total employed at bituminous mines was 663,754, an increase of 24,000 men. This figure is not the average number of men at work at any one time, including the weeks in which mines may have been shut down; it is rather the number of men on the working force of the mine when it was in operation. Since the effect of the business depression upon the demand for coal did not become acute until February or March, the great majority of commercial mines got at least a few weeks' operation during the year, and their working forces were thus counted in the total number of employees. By August, 1921, so many mines had closed down that the total number of men drawing wages in one week had fallen to somewhat between 500,000 and 520,000.

The increase in number of employed was confined to the tonnage workers. The number of daymen decreased in almost every state. The total number of surface employees dropped from 110,000 to 96,000, and of underground daymen from 174,000 to 158,000.

This reduction in number of day workers was one cause of a remarkable increase in the output per man per day. In 1920 the average production per man employed per day worked was 4 net tons, a new record for the bituminous industry. Yet in 1921 the average rose to 4.20 tons, an increase of 5 per cent. Other factors contributing to this increase, in addition to the change in proportion of day workers, were the natural tendency to restrict development work in a time of depression, an apparent tendency of the miners to work harder when running time is poor and, most important, a remarkable increase in the percentage of machine-mined coal. Average productivity in a machine mine ranges from 20 to 30 per cent above that in a mine where coal is undercut by hand or shot from the solid. Now in 1921 the proportion of coal mined by machines was 65.6 per cent against 59.8 per cent in 1920 and 55.9 in 1918.

Higher productivity per day tended to reduce the number of days worked. The average time worked by all bituminous miners in 1921 was 144 days, 4 days lower than the history of the bituminous industry. In the calculation of this average, as in earlier publications of the Geological Survey, the size of each mine is taken into account, and each affects the average in proportion to the number of men it employs. The days reported are tippie days, the best single measure of productive time. The use of tippie days gives rise to a tendency to understate the time when repair work or development is being done on underground work and when the tippie is not working. As this condition was more prevalent in Utah and some other districts during 1921 than formerly, the average for the year is not strictly comparable with earlier years, although the form of question used was exactly the same.

Examination of the figures by states shows that the business depression was felt in every important coal-producing region. Omitting the states of insignificant tonnage, such as California, Georgia and North Carolina, the lowest number of days worked was 112, in Arkansas, and the highest, 196, in Michigan. No important producing state reached the 200-day mark. In Illinois the average was 152 days; in Kentucky, 152; in Pennsylvania, 151; in West Virginia, 149; and in Alabama, 166.

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**STATISTICS OF PRODUCTION OF COAL IN THE UNITED STATES IN 1921**

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**Total bituminous**

|        | 132,065,718| 16,132,671|

**Pennsylvania rankine**

|        | 77,981,170|

**Grand total**

|        | 415,921,000| 8,949,112| 15,862,681| 3,579,476|

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(c) Includes also shatterers. Statistics compiled by M. C. Geological Survey, Sept. 23, 1922.
Coal Consumption by Utilities at Peak in December, May Is Low Month

Coal consumed by public utilities during 1928, 1929 and 1930 averaged 3,450,000,000 tons per month. Using also an 189 per cent, the average consumption rate fluctuated from a high of 4,327,758 per cent in December (January 1.16 per cent to a low of 28.49 per cent in May. The spring and summer months falling below the average, and the autumn and winter period exceeding it, as shown in the accompanying diagram. The April-September average consumption was 46.85 per cent of the total. October-March consumption averaging 53.05 per cent. Some of this variation, of course, is due to the seasonal dullness in general industry during this spring and summer.

More Mine Fatalities in August, 1922, Than A Year Ago but Fewer Than in July

Accidents at coal mines during August, according to reports received by the U. S. Bureau of Mines from state mine inspectors, resulted in the death of 98 men, of whom 96 were killed at bituminous mines and 2 at anthracite operations. The total output of coal, including a small amount of steam sizes of anthracite, mostly from river dredges, was 25,776,000 tons. Thus the fatality rate for August was 3.80 per million tons as against 3.69 for the corresponding month last year. The average fatality rate for August over a nine-year period (1913-1921) is 4.15. For bituminous mines alone the August rate was 3.75, as compared with 3.39 for August one year ago and an average rate of 3.78 for the nine years 1913-1921. Thus for bituminous mines alone and for bituminous and anthracite mines combined, the August, 1922, rate is slightly higher than for the corresponding month last year but lower than the nine-year average rate for the same month. In July last there were 74 fatalities, or 4.31 per million tons produced.

During the first eight months of the current year accidents at coal mines have killed 1,025 men, 159 at anthracite mines and 866 at bituminous mines. During the corresponding period last year there were 1,318 fatalities, of which 366 were at anthracite mines and 953 at bituminous mines. For each million tons of coal mined the current fatality rate is 4.07 as against 4.09 for the eight-month period last year. For bituminous mines alone this year's rate is 3.77 as against 3.66 last year; for anthracite mines alone the 1922 rate is 7.16 as compared with 5.90 one year ago.
New Coal Legislation Presents Opportunity to Air Causes of Instability in the Industry

BY PAUL WOOTON
Washington Correspondent of Coal Age

The coal industry is waiting in suspense to see what the new Federal Fuel Distributor will do and what policies may be adopted by the Fact-Finding Commission. The feeling in official circles is that the predominant sentiment within the coal industry is hostile to both of these agencies. There are many evidences of a tendency to hold back and oppose, although there are many coal operators who are waiting with open minds and some who see in these agencies new opportunities to improve the industry.

The consensus of opinion in Washington is that, everything considered, the coal trade is getting off easy with the dose of legislation it is receiving after such a major disturbance. Some operators think the industry is particularly fortunate in that the spoon is in the hands of Secretary Hoover and Fuel Distributor Spens. When it is considered that the trouble within the industry practically wiped out the nation's coal reserves and nothing more serious than this legislation has followed, there is reason for the coal trade to be thankful, some think.

The public was forced to suffer inconveniences and real annoyance and was forced to play the galling role of bystander. Despite all that there was no great demand for even this legislation. Many are surprised that the public did not receive something more drastic. The feeling in official circles is that the coal industry should accept this legislation in good grace and do all it can to cooperate fully with each of the agencies set up by the new legislation. In this connection it may be said that officials have had striking evidence of friendliness from the smokeless operators. If all groups would do as much, there would be every reason to believe, it is said, that the situation could be met and all industries allowed to obtain the fuel requirements of the increasing tide of prosperity.

Obstructive Tactics May Prove Disastrous

If, on the other hand, the coal industry starts to fight those agencies with injunctions or suits to test the constitutionality of the laws, it is believed nothing constructive will have been accomplished. It is felt that the industry probably will bring down upon itself a form of regulation which will soon place it in the public utility class. It is contended that the purpose of this legislation is a legitimate function of the government, and if by any chance Congress may have exceeded its power, there is every reason to believe that the strength could be mustered to increase its power.

It is certain that Secretary Hoover and Mr. Spens will not use the powers which have been vested in them any more than they have to. If all will pull together, at least until the lake program has been filled, it is believed that the situation will be left largely to the good sense and the self-restraint of the coal producers. An evidence that Mr. Hoover does not want to use any more power than necessary to handle the situation is the fact that he recommended for the post of Fuel Distributor a man who was connected with the Food Administration. The Food Administrator had almost unlimited authority. Very little of that authority had to be exercised. Mr. Spens was one of the principal officials who helped carry out that policy. With that training Mr. Hoover undoubtedly selected him as a man who would react in the same way in the matter of coal distribution.

While fact-finding commissions have a reputation of being possessed with an immense amount of inertia and of being distinguished principally by their ability to compile dry reports of great length, there is reason to think that this commission may be an exception. At least the commission gives the coal industry a chance to obtain some of the constructive things it long has been striving to get. Has there ever been a better opportunity to place an entering wedge to effect the amendments to the Sherman law which the coal industry needs so badly?

If coal operators think something should be done in the matter of assigned cars, an opportunity now is presented to obtain a recommendation in line with their views. If anyone has an idea as to improvements in reaching wage agreements or for meeting the waggon mine problem, here is the chance of a lifetime to convince a body vested with all authority to handle a formal act of Congress. A plan is offered to air the thousand and one causes for instability in the industry. A chance is presented to cooperate with the consumers and with the carriers on such things as the promotion of storage. The government has created an open forum. Many friends of the coal industry believe it should be thronged for the next several months by men within the coal industry who have constructive ideas. An unprecedented opportunity is given to procure a friendly hearing.

Purchasing Agents Adopt Coal Policy to Facilitate Equitable Distribution

Following the conference on coal held by Secretary Hoover on Sept. 15 at Washington, which was attended by Mark Kuehn, chairman of the Fuel Committee of the National Association of Purchasing Agents; E. H. Hawkins, former chairman of that committee, and H. R. Heydon, secretary of the association, the members of that organization were requested to adopt as the coal policy of the association the following:

1. Buy only for current consumption.
2. Adjust deliveries on contract, so that they will not exceed current consumption.
3. Play the game according to our respective actual requirements and not try to beat our neighbor to it.

It was stated that much could be accomplished through the cooperation of the part of all purchasing agents. Every member was mailed a declaration of the coal policy of the association and asked to buy only in sufficient quantities to meet current consumption and "thus voluntarily to assist in ameliorating the coal situation by preventing a fictitious demand that will increase prices and prolong the period of coal shortage, thereby affording an opportunity, in the hope of normal days, to obtain supplies of coal which are so desperately needed."

Should this voluntary method fail to accomplish its purpose, the declaration says, it is probable that industry generally will be asked to cease production or operation for a period of two weeks. It therefore seems essential that all industry should immediately co-operate in this present coal policy.

Bethlehem Corporation Gets Permanent Injunction Against District Union

In a lengthy decision handed down by Judge John N. Langham at Indianapolis, the temporary restraining order obtained by the Bethlehem Mines Corporation against District No. 2, United Mine Workers of America, John Bragg, its president, and others, is made permanent and absolute. The plaintiff coal mining company employees are not named. Apparently they were satisfied to remain at work during the strike period when other companies went into the district and, it is alleged, attempted to coerce the miners into joining the strike. An order restraining the union was obtained and Judge Langham now makes it imperative that the same organizers remain out of the field and permanently refrain from the defendants.
Miners Win First Skirmish in Herrin Case

Every year at the United Mine Workers of America have won a point in the court room in the case the great interest in the Herrin, Ill., coalfield for the treatment of the injured be they become acquainted
with each other and the members of other teams. A bond of common sympathy is thus fostered. Even the physician.

After Many Years' Rest Coal Is Being Mined
Within the City Limits of St. Louis

By E. J. WALLACE

A coal mine has been opened within the city limits of St. Louis. This is the first coal mine in many years to be operated commercially within the city limits. It is in the Clifton Heights district, off Southwest Avenue, where a 4-ft. seam has been opened up with extensive acreage. The coal is soft and is of fairly

First-Aid Contest at Norton, Va., Shows
High Proficiency of Contestants

Some remarkably high scores were made at the fourth annual skilled and unskilled coal operators' contest held at the ball park in Norton, Va., Sept. 18, 1922. Ten teams took part in the contest, which was

HOW COAL MINING IN ST. LOUIS LOOKS TODAY

by the southeastern part of the city this 4-ft. bed under an

good quality. It is estimated that there is a considerable acreage

This is one of the few acreages that were not mined out

in the years 1850 to 1860 prior to the building of the East Bridge in St. Louis. All the coal used in the city at that time was mined in the southwestern parts of the city. One of the miners of that period is still living today. He is

The two companies in existence today that mined coal at that time in St. Louis are the Garber Coal Co. and the Pepper-Russell Mining & Manufacturing Co.
Spens Orders Daily Reports on Kind, Amount and Price Of Soft Coal Shipped and to Whom Sent

Federal Fuel Distributor Spens' first official act is Order No. 1, issued on Sept. 27. This order divides the soft-coal fields into 17 districts and directs every producer and shipper to make detailed, signed daily reports showing with respect to each car of coal the kind or grade, tonnage, consignee and price, and whether shipped on a contract. Until offices in the field have been designated to which these reports can be mailed they are to be sent to Washington.

In making the order it is pointed out that the Fuel Control Act requires the Federal Fuel Distributor to ascertain many things with regard to production, distribution, prices, shortages and character of consumption. Accordingly, Mr. Spens for administrative purposes has divided the coal fields into 17 units and calls for daily reports from all shippers.

Paragraph 2 of the order thus sets forth the requirements as to reporting:

1. The total number of carloads of each class or grade and size.
2. Names and addresses of consignees, with car numbers and initials, destinations and amount of each class or grade and size of coal shipped to each consignee.
3. All to each shipment, the prices or prices f.o.b. mine as contracted for, charged and (or) received for each grade of coal shipped. In the case of coal sold at a delivered price at destination the destination price less transportation cost shall be used as the mine basis.
4. A designation of such of said shipments as shall have been made under time (or period) contracts for periods of more than one month's duration.

The 17 "producing districts" each to be under the management and direction of a district representative, yet to be appointed, are described as follows:

**PRODUCING DISTRICTS DESIGNATED BY MR. SPENS**

1. Alabama; headquarters, Birmingham.
2. Tennessee; headquarters, Knoxville.
3. Virginia; headquarters, Richmond.
4. All of Kentucky east of the 85th meridian; headquarters, Cincinnati.
5. All of Kentucky west of the 85th meridian; headquarters, Louisville.
8. Fairmont, Coal and Coke, and Upper Potomac districts in West Virginia, with all other districts in said state not otherwise included, and Maryland; headquarters, Fairmont.
9. Central Pennsylvania, including the Somerset district; headquarters, Altoona.
11. Pittsburgh district, and all other districts in the State of Pennsylvania not otherwise included; headquarters, Pittsburgh.
12. Ohio; headquarters, Columbus.
13. Indiana; headquarters, Evansville.
15. Franklin, Williamson and Saline counties, the Bellefonte and Mt. Olive districts and all other districts in Illinois not otherwise included; headquarters, St. Louis, Mo.
17. The United States west of the Mississippi River, except the States of Iowa, Montana and North Dakota, reporting directly to the Federal Fuel Distributor at Washington, D.C.

Assurances of cordial co-operation in the execution of measures deemed necessary to insure an equitable distribution of coal in the present emergency are being received by Mr. Spens from the governors and fuel administrators of the various states. Governor F. E. Morgan, of Virginia; Hugh J. M. Jones, State Fuel Distributor of Vermont; William J. Grier, chairman of the New Jersey Fuel Commission; Major Alex. Forward, Fuel Administrator of Virginia; J. W. McCardle, chairman of the emergency fuel commission of Indiana; Ivan Bowen, Fuel Director of Minnesota; Governor Len Small of Illinois, the Pennsylvania Fuel Commission, and W. H. Woodin, head of the New York State Fuel Commission, are among those heard from.

**NORTH CAROLINA PUBLIC UTILITIES FACE SHUTDOWN**

R. O. Self, director of the North Carolina State Coal Distribution Committee, reports that a number of public-utility gas companies are facing a shutdown unless gas coal supplies can be furnished at an early date. The difficulties of these companies are due to the inadequacy of the car supply in the Southern Appalachian coal-producing districts.

Foreign-owned vessels are urged to take on all coal supplies possible at foreign ports. Fuel Distributor Spens has declared that, in his opinion, the existing reconsignment rules should be permitted to stand without revision for the present. "It is true that at about the time the coal strike was ended there was at certain terminals quite a quantity of coal on hand awaiting disposition, but this was due largely, I think, to the fact that this coal had been purchased at high prices with the result that the breaking of the strike made it difficult for the operators or shippers to find customers," said Mr. Spens in a letter to the interstate commerce commission. "Today there appears to be approximately one-third of 1 per cent of the total loading of cars held for reconsignment, and I am inclined to the opinion that, with the big demand for coal that now exists and with the instructions that you have extant that consignees must unload within twenty-four hours or be embargowed, we need not, just at this time, have much apprehension that the privilege will be dangerously abused."

An urgent appeal to concentrate on a drive to expedite coal movements, especially during the month of October, has been addressed by Fuel Distributor Spens to the executives of the various coal-carrying railways.

"I appreciate fully the current conditions on the railroads; the ravages of the strike, the fact that today the offerings of tonnage of all character are large, and the further fact that, in spite of those circumstances like carriers, in the aggregate, are making a splendid showing in the transportation of coal," says Mr. Spens. "In these circumstances I am loath to suggest the possibility of even better performance."

"Due to the dual strikes there is, of course, a dearth of coal. Consumers, domestic as well as industrial, have been urged only to purchase coal for immediate requirements. Current transportation is adequate for current needs, but not sufficient to permit of reserves. An early cold snap
Ohio Begins Regulation of Coal

Production, transportation and distribution of coal in Ohio from the time it is loaded at the mines until it is dumped into consumers' bins, must be reported to the Ohio Fuel Administrator, including prices received by producers, wholesalers, jobbers and retailers, according to a statement issued at Columbus. A comprehensive system of reports from all dealers, jobbers and shippers of all the coal shipped, received or sold in any quantity and form must be made direct to the fuel administrator.

This event that any violations or apparent violations are found, civic organizations are at once to make a report to the administrator so that an immediate investigation of the case may be made and the violators subjected to the penalties provided for in the emergency act," reads the announcement. "Producers will be required to report the quality of coal mined, loaded and shipped, with the prices obtained for it. Wholesalers and jobbers must report shipments received, from whom they came and the prices received. This class of dealers will not be required to make a report of each separate transaction, but will lump their sales. All these reports are to be made daily, and are mandatory under the act. Thus Administrator Neal and his staff will have a hand on the pulse of the situation at all times."

Output of Smokeless Coal Fell Sharpily in July. When Rail Strike Began

West Virginia produced and shipped 2,630,565 net tons of smokeless coal during July, 1922. This is approximately 500,000 tons higher than for July last year, but is the lowest of any month since the strike began and a sharp decline from the June output of 3,777,588 tons.

The total for the first seven months of 1922 is 22,018,974 tons, as compared with 16,170,355 tons during the corresponding period last year.

JULY OUTPUT OF SMOKELESS COALS OF WEST VIRGINIA

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<th>1921</th>
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<td>District</td>
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<tr>
<td>locomotive</td>
<td>1,377,971</td>
<td>Church Valley</td>
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<td>Pennsylvania</td>
<td>399,030</td>
<td>Knox</td>
<td>137,685</td>
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<td>1,777,001</td>
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<td>313,575</td>
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<tr>
<td>Total</td>
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The Norfolk & Western hauled 1,586,095 tons of the July output; the Virginian 469,590 tons and the C. & O. 584,880 tons. Total coal movement in net tons of these roads during that month is shown in the following table:

HAULED BY NORFOLK & WESTERN

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<tr>
<th>Location</th>
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<td>Knox</td>
<td>137,685</td>
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<tr>
<td>Total</td>
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HAULED BY CHESAPEAKE & OHIO

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<td>Total</td>
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HAULED BY VIRGINIAN RY.

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The output from open-shop mines in the Connellsville coal region continues to increase steadily. Many men are coming into the region from other sections and a number of old men are returning to work. Two additional plants of the H. C. Frick Coke Co., the Shamrock Coke Co., Grindale No. 2 plant of the Halman Coal & Coke Co. and the Connellsville Coke Co. have resumed operations on an open-shop basis during the past week. This means that all the Frick plants and all the Halman plants are mining.
Peace Between Operators and Mine Workers in Sight: District Committees to Work Out Wage Contracts

By E. W. Davidson

Cleveland, Ohio, Oct. 3—Peace appears to have made its entry at last into the long conflict between miners and bituminous operators. Tuesday night, after two days of the mine-operators' conference looking toward the next wage agreement, fighting points between men and employers seemed to have been partly removed, and a plan for adjustment of future controversies was under way and operators from fifteen mining districts, representing about two hundred and seventy-five million tons production, had almost ceased showing their teeth at each other. It was expected by both sides that the conference could end Wednesday afternoon.

It was practically decided Tuesday after considerable sparring that the operators of the two sides and among operators themselves that the method of making future contracts between operators and miners would be worked out by a committee made up of miners and operators from each district, that no joint fact-finding commission should be appointed by that conference and that the request of Washington for a suggested panel of names from which the federal fact-finding commission might be appointed would be answered in the negative.

All this developed during Tuesday following a notable peace speech by John L. Lewis, president of the miners' union. This speech, along with a parallel one by T. H. Watkins, president of the Pennsylvania Coal & Coke Corporation, appeared to pave the way for real accomplishment by the operators, who up to that time had shown not the slightest sign of unity on any subject.

Lewis Bids Both Sides "Bury the Hatchet"

It was apparent when the conference started Monday that no harmony prevailed anywhere among the operators. Part of Ohio and a scattered few operators from Pennsylvania were regarded as ready to "play the miners' game" as they did at the August Cleveland conference which ended the strike. Many operators present were divided about taking part in the conference, notably Illinois and the Pittsburgh and Central District men of Pennsylvania, who did not agree in the pacts they signed in August to join this conference. Many of the operators from elsewhere also were of doubtful status. It seemed necessary for them to unite on some common ground, but they couldn't do it until after Lewis' speech in which he bade both sides "bury the hatchet; bear in mind that it is essential for them to put their own house in order" and that the miners were ready to meet their employers half way.

"That sounds mighty good; if the miners only will live up to that, things will smooth out," declared more than one operator. Then they proceeded to compose some of their differences. It was made distinctly understood at the outset of this process that neither Illinois nor the two Pennsylvania regions would proceed unless it was distinctly understood that no decisions were to be dictated by any minority and that in the matter of creating a joint wage committee nobody was to be bound by the recommendations it might make Jan. 3.

When this understanding was finally reached the operators had taken their highest hurdle. They then proceeded to do business among themselves. The two main objects of this conference were to create a joint fact-finding committee and to set up another joint committee to recommend wage scales, and then for future agreement.

The request from Washington for a panel of twenty names for the new federal coal commission was a new element. At first it appeared important, especially when the operators decided Monday to answer it with a message signed only by themselves, but later it was lost when it became known around that Lewis might not insist upon helping to make up such a panel, though he would insist that the reply to Washington be signed by both sides.

The joint fact-finding committee also appeared a less important issue as the conference wore on, for the operators got the impression that Lewis was willing to cancel that part of the program on the ground that the Federal Coal Commission would do just as well or better.

By Tuesday night the operators agreed among themselves that the federal commission should be left the entire field of coal investigation, so that it could not be said that the coal industry was hampering the people in their effort to correct coal evils.

This left the creation of the wage committee as the principal business to be done at the conference. Some were for organizing it by regions but it was finally concluded that it should be by miners' presidential districts. It was distinctly understood, however, that this committee if created should make no recommendations until after the new federal fact-finding commission has brought in some results. On Tuesday night Phil. Penna., chairman for the operators' separate sessions, and W. D. McKinney, secretary of the Southern Ohio Coal Exchange, declared that the operators had reached a common ground and that if the miners were as reasonable as they sounded the conference would succeed easily.

Expect to Heal Many Schisms in the Industry

John Lewis said the war was over. Thus it appeared on Tuesday night that the operators and miners of the fifteen principal districts of the land had only a day of calm deliberation before them to finish the conference and that possibly many a schism in the coal industry might eventually be healed.

It was undecided whether the joint wage committee should contain one man or two from each side for each district, and it was not definitely decided what the conference reply to Washington would be, but most of the conflict is over.

Practically every producing district in the country was represented when the conference assembled Monday afternoon. T. K. Maher was named temporary chairman and William Green, of the Miners' International Union, temporary secretary. Adjournment was taken almost as once until 10 o'clock Tuesday upon motion of Phil Penna, secretary of the Indiana Coal Operators' Association. He said the operators needed time to "get acquainted" and to review the situation. They remained in session all afternoon, deeming the next time the President Harding's wire asking for a panel of names of men suggested for the federal fact-finding board. It seemed obvious that the operators will not favor sending such a list, since many names have already been proposed by coal men. The discussion the rest of the afternoon indicated that the leaders among the operators' faction which led the settlement in Cleveland in August were going to stand pat.

Tuesday morning the committee which the operators had appointed to draft a diplomatic reply to Secretaries Hoover and Davis declining to suggest names for the President's fact-finding commission did their job of drafting, but they did not send it. The message was held because "developments of Tuesday made it seem futile" to wait, even though Washington expected a reply by Tuesday at the latest. The "developments" of Tuesday were that President Harding's wire asking for a panel of names of men for the fact-finding board had collapsed. The miners held that the request which was received by T. K. Maher was addressed to him not as an operator but as temporary chairman of the joint conference.

As first drafted the message set forth that the operators, "having full confidence in the wisdom and fairness of the President of the United States" and suggesting willingness to abide by whatever choices he should make, were ready to pledge "harmful co-operation" with such a federal commission. Herman C. Perry, of the 8th and 9th Districts of
Jobbers’ Executive Board Meets at Buffalo; Many New Members Elected

G. H. Mergyweather, secretary-treasurer, of the American Wholesale Coal Association, announced the following: The Executive Committee of the American Wholesale Coal Association held a very successful and constructive meeting at Buffalo on Sept. 28 and 29, 1922. At this meeting many new members were elected and the activities of the association were discussed at length. The members of the association were entertained at luncheon by the Buffalo District Wholesale Coal Association. It was presided over by John T. Roberts, of Buffalo. Address were made by Seth W. Morton, president; J. W. John, vice president; G. H. Mergyweather, secretary-treasurer; and J. A. Fisch, of the Cleveland, Ohio. Charles L. Dering, of Chicago, H. J. Huydend, of Toledo, and Ira C. Cochran, who was at this meeting appointed acting commission. As well as trade manager, which latter position he has occupied for some time. The association is making excellent progress in solving the problems which confront the industry from day to day.

Western Fuel Corporation and Coal Miners Sign Two-Year Agreement

A 2-year agreement has been entered into between the management and the employees of the Western Fuel Corporation of Canada, Narrows, Ca., effective Oct. 1, 1922. A minimum daily wage of $1.42 is set. The superintendent of mines is to be the judge as to the ability of each man to do the minimum. The company agrees to pay all employed a bonus of $1 per day worked. It is mutually agreed to have a company and its employees that any decrease in the district wages as set down shall be governed by competitive conditions. The agreement states: Moreover the bonus has been 25¢ per day worked. The price of coal to employees is set at $1.40 per ton.

Fundamental Business Conditions Sound

No clearer demonstration could be asked to indicate the soundness of the fundamental conditions underlying the present business revival, the Department of Commerce reports, than the persistence with which commerce and industry have progressed in the face of recent serious obstacles. The extremely serious labor difficulties through which we are now passing would, under many conditions, have completely demoralized business; instead, real progress continues to be made. There is reason to suppose that the economic losses occasioned by the coal and railroad strike will make themselves felt for some months to come. Disturbances of this character affecting basic industries cannot take place without having to be paid for in the long run. It is possible that the full force of these losses will be felt more severely in future months.

Figures now available on business movements during July show that the rate of progress was materially slackened in that month. In the majority of industries production and sales were less than in June. A part of this is to be attributed to the usual midsummer seasonal slump and a part either to approaching over-production or to increased prices and increased production costs.

The extent of the real progress of industry on the road back to normal is seen when current figures are compared with those for a year ago. In almost every instance production is on a much higher level than in 1921. Perhaps the most favorable feature of the present situation is the prospect for a bountiful harvest this fall. This will do much to offset the other less favorable factors.

Under the appended schedules mining and yardage pay is given as follows:

MINEING
Wakesiah and Reserve Mines and No. 1 Upper Seam—91¢ per ton.
No. 1 Lower Seam—61¢ per ton.
No. 2 Upper Seam—Coal under 4 ft. in thickness, $1.68 per ton.
No. 2 Lower Seam—$1.05 per ton.

YARDAGE—UPPER SEAM
Leaves—$3.37 per yard and coal.
$2.70 per yard and coal.

Leaves—When less than one-half of height is in white rock.
$2.13 per yard; coal to company.
$1.70 when more than one-half of height is in white rock.
$10.50 per yard; coal to company.

Tumbling Stalls—Five yards long by 4 yards wide, $13.50 per yard.
Brashin; rock—One foot thick, $1.35 per linear yard.

The day rates range from $3.714 for muckers to $4.994 for machine foremen, plus the bonus.

Trading Loss of £550,000 Shown in British Coal Mining Industry in June

Collation of the proceeds and costs of the working of the coal-mining industry of the United Kingdom for June, for the purpose of determination of wages in August, shows a gross trading loss of about £500,000 in that month for the whole of the coal-mining industry throughout the country, equivalent to about 9d. per ton of coal. The average earnings per shift worked in June, taking into account all persons in the industry,—men, women and boys,—were 9s. 84d., or about 50 per cent more than the 1915 figure of 6s. 5d.

Fuel Distributor Spence’s order requiring daily reports from coal producers, printed on page 537 of this issue of Coal Age, is now being served on operating companies by mail.

The Geological Survey and the Department of Commerce are sending out questionnaires requesting information on stocks of coal as of Sept. 1 and Oct. 1. The report of the canvass, which will be the first since March 1 of this year, is expected to be available by Nov. 1, 1922.
Coal Strikes Unknown in Near East, but It Has Fuel Problem

Cold weather does not spell "coal" to the American relief worker in the Caucasus district of Armenia; it spells "candles," for the fuel question is just as vital in the Near East as it is here, but the answer is different. In the chilly Caucasus area, where the mercury often creeps down to 16 deg. below zero and there are more than 30,000 shivering youngsters to be kept warm in the orphanages of the Near East Relief, wood is the fuel on which relief workers must depend, according to the Near East Relief.

The accompanying illustration shows a caravan of camels carrying wood fifty miles overland to keep these people warm this winter. That is how the answer to cold in Armenia comes to be camels. Camel ox teams, for the latter do just as well, carry the fuel over many miles. A caravan of seven hundred ox teams was organized last year by an enterprising worker, and rendered remarkably good service.

The Ending of the Coal Miners' Strike

It is some time since the August conference at Cleveland wound up its proceedings with a great victory—for whom? At this time of writing it would appear that honors are fairly well divided; the miners can still claim their seven and a half a day and the operators are getting a good price for their coal to enable them to pay it.

When work was sent out to start work at once did the miner rush down to the mine with the same smile on his face he had when he brought his tools out on the last day of March? If anyone who was not around the mines at that time thinks he did, he is very much mistaken. He took the news very calmly. Many of them still sit with their feet on the front porch rail, pulling at their old pipe, praising Mr. Lewis for the glorious victory.

After our mines had been running a week I noticed that the coal did not rush up the slope (as we fondly anticipated), and found on inquiry that the men were not going to work and those who were going were not loading much coal. At this information I ventured among the miners' houses and, seeing several of the men, I began timidly to ask them if they knew the strike was finished. Most of them somehow thought there was some change, but they would talk about anything but work. Another superintendent came to me in a great state of mind, saying they were not loading one tenth of the coal they were before the strike.

The miner foreman spends most of his time showing them places with the result that 99 per cent try another mine the next day and every boss (they know) is standing with open arms to meet them. This strike has made men more dissatisfied and less inclined to work than ever they were before. They have gone five months without work and it seems a lot of them feel they can go on indefinitely without work, and if a superintendent or boss ventures to remind them that those big wages will not always prevail and tells them to make hay while the sun shines, they tell him he does not know what he is talking about.

I cannot help but wonder what is going to be the end of all this. It seems to me that we shall have to have a five months' strike every year to keep production down and prices up on purpose to pay the miner the big wages he is receiving. Mr. Lewis knew what he was doing when he refused the arbitration clause, but it seems to me he either will not or cannot see that it is a mistaken kindness to keep the miners' wages inflated above the rest of the workingmen.

INDIANA, PA., Sept. 5, 1922.

T. HOGARTH,
Superintendent.

Independent Anthracite Prices Give Concern: 1920 Level Allowed Temporarily

Independent producers' prices on anthracite are still giving the official bodies of Pennsylvania and Washington some concern. Governor Sproul of Pennsylvania on Sept. 20, 1922, issued a proclamation establishing $8.50 as the maximum price on prepared sizes of anthracite, conferred executive authority on the Pennsylvania Fuel Commission, of which Wm. D. B. Ainey, is chairman, and announced that a Fair Practice Committee would be appointed to deal with prices of coal.

Independent operators at once let it be known that they could not produce and sell at the $8.50 maximum, and on Sept. 22 they were informally advised by Mr. Ainey's office that pending the decision of the new Fair Practice Committee they would be allowed to charge prices that were considered fair by the Fair Practice Committee of 1920.

Edgar F. Felton has been appointed chairman of the Fair Practice Committee and has been engaged in the last few days in a study of costs of production of anthracite. A meeting was held on Oct. 2 but no conclusions were reached and no announcement was made other than that everyone concerned with the distribution of coal would be called in an effort to lower the price to the consumer.

It is understood that one large independent held to the $8.50 maximum for a short time, but has now advanced his price to $9.15. Little independent coal is quoted in Philadelphia over $9.50. Quotations in New York, however, are more general at $10.50@12.50.

At an executive session held Sept. 22 at Harrisburg the Pennsylvania Fuel Commission spent considerable time discussing the appointment of a fair-practice committee, to be established as provided for in the proclamation of Governor Sproul, and the methods to be followed in determining promptly and fairly the cases coming before it.

The commission also met representatives of some of the independent anthracite coal companies and it is understood that the base price some of the companies originally asked for was considerably lowered during the discussion. No decision relative to prices of independent companies' coal was reached, except that it was agreed that the new committee would have to deal with each company individually.

A statement issued by the commission follows:

"The handling of the situation between the present and the time when this committee can function so as to hold up production was likewise discussed. The commission arranged to have representatives visit immediately some of the larger cities to make plans for local distribution."

No meeting of coal operators was called, but representatives of three companies who desired to discuss informally the situation of their particular companies and the methods to be used under the Governor's proclamation were heard. "The personnel of the Fair-Practice Committee is being canvassed and will soon be announced."

"Several of the companies which have announced selling prices higher than the $8.50 basis are prepared to withdraw these and make some reductions in their base rates until the Fair Practice Committee can hear their cases."

"Chairman Ainey stated that there was no confirmation of the commission's purpose to keep a semblance of coal price to the lowest point consistent with a fair margin of profit in output. In this respect the commission stands unwaveringly on its former utterance and the policy of the Governor that there shall be no strike bonus or bonus from mine Idleness carried into the present coal prices."

The new "no to coal" has some interesting form, among which we notice "shall we call it? 'We will call it.' It all ends, however, with 'we may be sold.'—New York Sun."
Production and the Market

Weekly Review

From hopes on the recovery of demand, steam coal prices have receded but domestic fuels are advancing with the advent of cool weather and the usual seasonal household demand. This demand is not yet in full swing, but today’s domestic situations have all the earmarks of further increases, as the short supply will be accentuated by orders placed as a substitute for hard coal. This demand will fail largely in producing districts not so much called upon to furnish coal for domestic use, but will doubtless also lead to emergency shipments outward of high-grade domestic from fields west of the Alleghenies.

Coal Age Index of spot bituminous coal prices declined to 109 on Oct. 2, as compared with 118 the week before. This represents an average spot price of $4.89 at the mines. The decreases were spread over nearly every district, only the Hocking field showing an increase. Cherryfield (Pa.) and Springfield (Ill.) coals holding firm.

STEAM CONSUMERS CONSIDERABLY “BACKWARD”

The steam consumer is purposefully staying out of the market and is taking little coal aside from current needs. In the Middle West he is able to obtain this tonnage by picking up bargain bids which are still sent in on consignment, often being sold under pressure of heavy demurrage. Screenings have been selling on a par with mine-run, but with the sympathetic steam market, and the better domestic call more operators are increasing their output, and this is fast softening the resultant price.

Recent press notices, “is Ford,” have advised buyers “to delay purchases as prices must drop further.” The coals traders generally fail to see how deferred demand can spell anything but higher prices, especially with transportation conditions as they are and will be this winter. An argument advanced by buyers in the Lake coal-producing zone is that it is unwise to enter stocking orders at a time when they must compete for tonnage with deck buyers.

With 25 per cent of their motive power out of commission, the railroads of the country are now attempting to handle the peak of the year’s business. There are no signs that the crest has been reached. Traffic men generally believe that business will be offered the railroads in increasing amounts more rapidly than its loco-motives can be restored to the service.

The effect of the Lake sailors’ strike which began Sunday at midnight was still doubtful Monday night. Coal laden vessels continued to load and clear for upper ports. The Lake Carriers’ Association asserted that no boats are tied up and that few men have struck. On the other hand E. J. Sullivan, secretary of the Cleveland local of the union, said most union men had quit and that boats that cleared from there went out with “cruelly short crews.” The Lake Carriers’ Association states it is going to handle all the coal that can be dumped at the docks and that it will be moved for the special benefit of the Northwest. Railroads originating coal for the Lakes have issued temporary embargoes, until congestion is cleared or the effect of the strike determined.

Estimates of Production

<table>
<thead>
<tr>
<th>(Net Tons)</th>
<th>1921</th>
<th>1922</th>
</tr>
</thead>
<tbody>
<tr>
<td>BITUMINOUS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week ended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sept. 9</td>
<td>7,083</td>
<td>8,771</td>
</tr>
<tr>
<td>Sept. 16</td>
<td>8,187</td>
<td>9,537</td>
</tr>
<tr>
<td>Sept. 23</td>
<td>8,527</td>
<td>9,702</td>
</tr>
<tr>
<td>Daily average</td>
<td>1,421</td>
<td>1,617</td>
</tr>
<tr>
<td>Calendar year</td>
<td>286,530</td>
<td>261,149</td>
</tr>
<tr>
<td>Daily av cal ye</td>
<td>1,280</td>
<td>1,162</td>
</tr>
<tr>
<td>ANTHRACITE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sept. 9</td>
<td>1,483</td>
<td>50,000</td>
</tr>
<tr>
<td>Sept. 16</td>
<td>1,749</td>
<td>1,107</td>
</tr>
<tr>
<td>Sept. 23</td>
<td>1,722</td>
<td>1,836</td>
</tr>
<tr>
<td>Calendar year</td>
<td>47,739</td>
<td>25,224</td>
</tr>
<tr>
<td>COKE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sept. 16</td>
<td>84.0</td>
<td>120,0</td>
</tr>
<tr>
<td>Sept. 23</td>
<td>70.0</td>
<td>115,0</td>
</tr>
<tr>
<td>Calendar year</td>
<td>4,634</td>
<td>4,635</td>
</tr>
</tbody>
</table>

All subject to revision. (1) Revised from last report.
Normal production of anthracite is being retarded by the same conditions that hamper the soft-coal industry—lack of cars and poor transportation. There also is a dearth of labor. The effect of the car shortage is only just now beginning to show. During the last four days of September the supply began to be "spotty," incurring delays at collieries located on the Lehigh Valley, Erie and D. L. & W. lines.

The anthracite price situation is confusing. Retailers have received independent quotations ranging from $9.15 to $13 and even higher and are loath to pass this on to their trade. The $8.50 price recommended by the Pennsylvania governor has not been effective and the commission now urges that, pending further investigation and adjustment, operators refrain from charging prices exceeding those established in 1920 by the Fair Practice Committee, which prices ranged up to $12.50, averaging around $10.50.

BITUMINOUS

"Production of both bituminous coal and anthracite appears to have found a temporary level, bituminous at around 9,750,000 net tons, and anthracite at 1,850,000 tons a week," says the Geological Survey. The total of all coal raised is therefore about 11,600,000 net tons, still somewhat less than the amount required to meet current consumption and the heavy movement up the Lakes, and at the same time to rebuild coal company stocks.

"The output of bituminous coal for last week is estimated at from 9,600,000 to 9,900,000 tons. Heavy loadings in the early part of the week—35,804 cars on Monday and 33,396 on Tuesday—were largely offset by a decline later in the week. By Thursday loadings had dropped to 28,862 cars as against 29,036 on the preceding Thursday."

The all-rail movement of soft coal to New England increased to 3,255 cars during the week ended Sept. 23.
From L. C. C. reports for the preceding week. That market, however, is said to have industry has sufficient coal on hand to last well through the year.

On the West Coast, figures show there were 6,786 tons of anthracite and 209,551 tons of bituminous coal on hand Sept. 16, compared with last year's figures of 88,081 tons of anthracite and 828,335 tons of bituminous; on the Ashland-Washington docks 871 tons of anthracite and 44,417 tons of bituminous were on hand, as against 21,616 tons of anthracite and 238,625 tons of bituminous a year ago. On upper Lake Michigan docks there were on hand Sept. 2, of this year 49,162 tons of anthracite and 156,535 tons of bituminous, compared with stocks of 56,323 tons of anthracite and 218,014 tons of bituminous on those docks on Oct. 1, of last year.

Favorable orders for the movement of coal are being received only rarely. The Federal Fuel Distributor is unable the L. C. C. to issue such orders only in cases of real necessity where it is impossible to relieve an acute fuel situation by any other means.

<table>
<thead>
<tr>
<th>Car Loadings and Surplusages</th>
</tr>
</thead>
<tbody>
<tr>
<td>From L. C. C. reports for the preceding week. That market, however, is said to have</td>
</tr>
<tr>
<td>Industry has sufficient coal on hand to last well through the year.</td>
</tr>
</tbody>
</table>

### Coal Age Index 104, Week of Oct. 2, 1922
Average spot price for same period $4.83. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 99 percent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of stock, 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, 1913-1915," published by the Geological Survey and the War Industries Board.

The total dumped for the year to date is 10,185,210 tons, as compared with 18,843,148 tons in the corresponding period of last year.

Numerous complaints are reaching Washington from coal operators who are not being given assigned cars. It is asserted that railroads generally are misinterpreting the L. C. C. service order and are assigning cars for railroad fuel. These complaints point out that it is flagrant discrimination when a few operators are allowed to absorb all the transportation in a coal-producing district. Several instances were cited where certain mines are receiving 100 per cent car supply whereas the complainant is being given only 29 per cent of the cars he requires.

### Anthracite
Production of hard coal was 1,856,000 net tons during the week ended Sept. 23. Preliminary reports for last week indicate an output of 1,500,000 to 1,500,000 tons. The approach to normal production, however, was checked in the last few days of September by a growing car shortage. Movement of loads is also slow and deliveries uncertain.

### Coke
With hectarite production increasing—135,000 net tons during the week ended Sept. 23—the car shortage has overshadowed the strike. It is now apparent that the strike will no longer be the dominant factor in curtailing the production of coke. The market is stiffer, furnace coke being in demand for domestic purposes, while foundry coke is steadily higher.
European Coal Markets
Show Signs of Revival

France Feels Effect of Withdrawal of British Fuel for American Emergency
—With Unfilled American Orders, British Prices Hold—Coal Shortage in Germany and Buying Power Crippled.

Foreign coal markets show some improvement. The emergency American demand removed an embarrassing volume of British offerings from Continental markets, stimulating prices and production. The French industry felt the effect of this immediately. British exports to France were stopped or greatly reduced and French mines cleared away their heavy pithead stocks with the disappearance of these competitive offerings.

Great Britain still has many unfilled orders for North America and producers are not inclined to reduce prices to attract Continental buyers. They feel that these orders, having been delayed for many weeks, will soon be forthcoming.

Germany is suffering from a coal shortage. Her buying power is reduced by the exchange rates and she must take steps to increase her production.

Prices Firm on Best British Coals; Dock Congestion Still Acute

There is more activity in the superlative Admiralty coals and the best drays. Canada is still in the market and is now inquiring for 60,000 tons for Montreal delivery before the end of November. Continental demands are also good. With the exception of these quality coals, other descriptions show an easier tendency. The output during the week ended Sept. 16 dropped to 4,955,000 tons, according to a cable to Coal Age. This is the first week since Aug. 12 that production has been below 5,000,000 tons.

The position in the Welsh fields now is that the pits have an abundance of contracts to carry them into October. Leading operators are not inclined to make any cut in prices. On the other hand, Continental and South American buyers are holding back orders because they believe that now the heaviest American demand is over operators will have to reduce prices to get rid of their coal. The demand for the lower grades of coal is extremely poor and stocks are accumulating.

In the north of England, American inquiry is still heard, although there is not much actual business. Here again the chief operators are well sold up and have little to offer. The coke market is strong. Among the contracts recently fixed are 4,000 tons of high-grade Durham gas coals for Malmesbury at 21s. 6d. f. o. b., 2,000 tons of gas coal for Esbjerg and 90,000 tons of Durham coking coal for Oxlund at 20s. 6d. f. o. b. An inquiry was made for 30,000 tons of Durham coking coals for immediate shipment, but the quotations were too high and the inquiry was withdrawn.

The new arrangements for the loading of coals cargoes at the Northeastern ports, under which two hours' overtime are worked at the end of the second shift, is proving a success. Congestion of the docks has undergone no appreciable relief; in fact, the conditions are so unsatisfactory that a considerable amount of trade is being diverted from these to other ports.

Under the circumstances, it is likely that a further attempt will be made to induce dockers' representatives to agree to a reduction to the three-shift system. When the two-shift system was introduced during the war, it was provided that there should be a return to the old arrangement if the volume of trade justified such a move. It is undeniable that the time has arrived for the change. Thousands of tons of ships are being held up, thereby incurring heavy losses in demurrage, and sidings are crowded with loads.

The result of this congestion has already been felt at some of the collieries, which have been forced to close down temporarily owing to wagon shortage. The aggregate loss to the miners in wages is very considerable, and their resentment against the attitude of the dock workers' officials can be well understood.

French Coal Is in Good Demand: Miners Deliver Ultimatum

French coal is finding a ready market, with the exception of the Saint-Etienne field and other minor districts of the Center of France. The National Congress of French Miners, which met recently at Angers, voted a resolution declaring that should the French government or the French Parliament make the action of modifying any of the fundamental provisions of the Act of June 24, 1919, on the eight-hour working day possible, a general strike of French miners would be the immediate response. The possibility for intensifying the present conflict between operators and men in such a resolution is quite evident.

FRENCH PRODUCTION IN JULY

<table>
<thead>
<tr>
<th>District</th>
<th>Output in Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern</td>
<td>1,885,424</td>
</tr>
<tr>
<td>Southern</td>
<td>1,991,316</td>
</tr>
<tr>
<td>Total</td>
<td>3,876,740</td>
</tr>
</tbody>
</table>

During July France also produced 355,244 tons of coke and 226,544 tons of coal. The output was 985,242 tons of coal and 22,049 tons of coke. Her pit-head stocks were 593,810 tons of coal on July 31, as compared with 619,285 tons on June 30.

FRENCH IMPORTS AND EXPORTS IN JULY AND YEAR TO DATE

<table>
<thead>
<tr>
<th>Description</th>
<th>Imports (in Thousands of Tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>208,153</td>
</tr>
<tr>
<td>Coke</td>
<td>104,207</td>
</tr>
<tr>
<td>Total</td>
<td>312,360</td>
</tr>
<tr>
<td>British</td>
<td>185,826</td>
</tr>
<tr>
<td>United States</td>
<td>104,207</td>
</tr>
<tr>
<td>Germany</td>
<td>2,661</td>
</tr>
<tr>
<td>Total</td>
<td>302,754</td>
</tr>
</tbody>
</table>

The comparatively heavy shipments to Spain in July followed the strike of the American miners.

The quantities of coal to be exported by Germany on special contracts in July and August have been reduced, as follows: France, 3,170,000 tons; Luxemburg, 111,000 tons; Belgium, 257,000 tons; and Italy, 216,000 tons.
Coal Paragraphs from Foreign Lands

ITALY.—The market continues dull. Coke supply is somewhat better. There is no demand from the mills and railroads. Stocks have increased to about 30,000 tons and more steamers are expected soon. The prices are: Bengal coke, 35s. L. Bengal good 2s. 6d. Rs. 27; British Rs. 35; African, Rs. 275.

SPAIN.—The first deliveries of Asturian coal for Barcelona after the miners’ strike have put an appearance. Orders have been large in consequence of the low level of stocks and the rise in quotations for foreign coal. In a certain number of mines the return of the workers has not yet resulted in a full output, owing to the necessity of restoring workings.

BRITISH COLUMBIA.—The market is improving every day. Coke is very firm, especially metallurgical coke. Briquettes are also strong. The state has laid in large stocks and the partial revival of the mining industry has led to an improvement in demand.

Hampton Roads Pier Situation

Week Ending—Sept. 21, 1922

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Tons</th>
<th>Days Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coke</td>
<td>143</td>
<td>152</td>
</tr>
<tr>
<td>Coal</td>
<td>17122</td>
<td>113.58</td>
</tr>
<tr>
<td>Wood</td>
<td>68.65</td>
<td>27.40</td>
</tr>
</tbody>
</table>

Unusual Dullness at Hampton Roads

Circular dullness featured the situation last week. Dumperings fell off to a point far below the minimum in the last twelve months, and demand, particularly in the coastwise trade, receded rapidly.

Spot prices have returned almost to the level which existed before the railroad strike. Steamers engaged for the coastwise trade are being laid up.

Dealer expect very little more business from New York, because of the closing of the Pennsylvania trade which makes competition from this market unfavorable. Some revival in the export trade is being predicted, as indicated by the sailing of several foreign ships with coal, made possible by declining prices.

Export Clearances, Week Ended Sept. 28, 1922

<table>
<thead>
<tr>
<th>Port</th>
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Pier and Bunker Prices, Gross Tons

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<td>40 60/80</td>
</tr>
<tr>
<td>Pool 10, Baltimore</td>
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<td>Pool 10, New York</td>
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<tr>
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RUNKERS

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

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<td>London</td>
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Advances over previous week shown in heavy type; declines in light type.

A. G. W. JEROME, Secretary of the International Miners’ Union.
North Atlantic

Consumers Apparently Set

On Depressing Prices

Market Continues to Reflect Indifference of Users—Car Shortage Such
That Lower Prices Are Unlikely, save Temporarily—Fuel Comes from
Divers Sources.

The consumer is close to a buyers’ strike in his determination to
depress prices. The market so far has retained its indifferent aspect, from
the consumers’ standpoint at least. There is, however, a growing feeling that
the car shortage has reached such proportions that lower prices
cannot be expected except as a temporary measure. Coal men realize that
a slight return to buying would quickly wipe out spot offerings and
they are extremely cautious about quoting futures.

Coal from all sources can be had at lower figures than last week.
British cargoes have sold off, Southern coals are not so easily salable
and Tidewater piers have a good supply at hand.

CENTRAL PENNSYLVANIA

Car shortage is seriously curtailing production. Figures show a loss in
output of 700 to 800 cars daily.

The situation is fairly good so far as the Pennsylvania is concerned, par-
ticularly in the eastern part of the district, but farther west where other
resource points are located, it is exceedingly bad, not only due to the scarcity of
cars but also to the lack of motive power.

Spot prices are as follows: Pool 11, $3.60; members Pool 10, 11, $4.10@$4.25; Pools 9
and 71, $4.25@$4.50, and Pool 1, $4.50@$5.

BALTIMORE

Prices here are well maintained, especially as to the better grades, as the
continued car shortage is holding down production and delivery. While industries
have been running on the hand-to-mouth basis, or at least have made no
attempt to stock up at the high prices prevailing, the near approach of colder
weather is making some of them consider this necessary. Purchasing agents
are showing greater desire to get under cover, and this has meant that little
coal of the better grade is to be had below $5.25.

Heavy importations of British coal continue to be received, and in fact
there was one diversion of a cargo to New York City after it had been re-
ported as reaching this port. During September fourteen steamers arrived
here with a total of 79,836 tons of Bri-
tish coal. The steamer diverted to New
York City after arriving in Baltimore
was an American ship, with a total of
8,232 tons cargo.

FARIMONT

Transportation conditions are somewhat better here than before the B. & O. will be able
to handle anything like normal quantities and congestion is still so general that
the margin to the West is badly upset, and embargoes have been con-
tinued. Much of the output is moving to Eastern markets. Mine run is
quoted $4@$4 a ton.

PHILADELPHIA

It is an indifferent market, at least from the consumer’s standpoint, as
many concerns needing coal are simply holding off, insisting that their
gues as to much lower coal is bound to come true. These have so far do seem to have
the best of it.

All houses are extremely cautious about promising delivery, as they fully
realize how serious is the coal situation. Naturally the consumer reasons that if
the operator urges him to take coal it must be plentiful, but the actual truth
is that the small floating supply that is available for all is market is extremely
small, and would be wiped out almost in an instant with but only a slight in-
crease in ordering.

On the Pennsylvania, the mines east of Altoona were reported receiving the
best service this week, while the New York Central was quoted as in trouble.
The B. & O. out of the Fairmont region, has not improved, and shipment via
Connellsville from Somerset County is now in almost the same condition.

There has been some decline in prices, and in some instances there have been
dead stops due to the necessity to move a limited tonnage for some reason or
another. Producers predict that the competition has been keen, and that
there is much of a moot question, with some consumers close to a buyer’s
strike in their anxiety to depress the market.

UPPER POTOMAC

Injunction proceedings in the Georges Creek field have been dropped under an
agreement with striking miners who have promised not to molest the miners
who desire to return to work and the feeling exists that this will go far to
break the strike. Considerable progress has been made in getting back to
normal in the Upper Potomac, where
there is no prospect that the labor
status will be changed.

NEW YORK

Coal is becoming so plentiful that contracts are being talked of and in
some instances have been closed at $3.60
$4.50, the latter figure having to play
with Pool lung coal.

Quotations show no improvement. Buyers are apparently willing to take
their chances with the poor car supply and the approaching winter months
before they believe prices are going
to be lower.

The showing up in the receipt of British coal is noteworthy. During last
week about 8,000 tons of this were
reported. At the office of the

Fuel Administrator it was announced
there was a cargo in the harbor which
could be bought to sell at about $10. At
about the same time it was announced by dealers there was a cargo of
foreign coal in the Red Hook dock which was being offered at $10.50 per
ton on wagons. Local houses were offered coal anchored off Boston on a basis
of $7 per ton. It being stated there were in the neighborhood of sixteen
cargoes awaiting buyers.

Southern coals are not causing much competition however, being sold
at the same as for coals usually found at
this Tidewater.

Activity along the line prevents high coal prices from Tidewater. How-
ever, coal is coming forward in suffi-
cient quantities to take care of the
local demand. On Sept. 29 there were
1,583 cars reported at the local docks, a
gain of 200 cars over the day previous.

West

DENVER

The labor situation is much improved with the readjustment of the wage
scale. Cars are still scarce and there is a great lack of power to move the coal.

Denver is not suffering from a coal
shortage, as it is close enough to the
mines to get a fair supply of both bitu-
minous and lignite coal. Prices are the
same at the mines as previously when
the same wage scale was in effect. Re-
tail prices in Denver are 75c, lower than
a year ago on account of lower freight
rates.

SALT LAKE CITY

There is very little domestic demand. People are waiting to see what the
grand jury, now in session, will decide about alleged price fixing by operators
and dealers. A prominent dealer, who is also interested in the wholesale end
of the business, states that the retailer,
in spite of the contention that the raise
from $9 to $10 for lump coal has per-
mitted him to draw an abnormal profit,

in getting 50c to 70c on domestic
sizes and 25c, a ton less on slack than
he did a year ago.

Canada

TORONTO

A little anthracite is now coming forward and is being sold in small lots
as low as $15.30, the old price. The
market has a limited supply of
coal obtainable and it is being freely bought by
domestic consumers in small quantities until anthracite becomes generally
available. Quotations for June are
$10.50 for 3-4. lump and $9.50
for slack, wholesale. Coal is

The city on Sept. 27 announced the
distribution of coal certificates to
residents, who had a rush of orders and during the day
1,100 tons were disposed of in car lots at $16.50 per.
The only anthracite to be procured in Pennsylvania was
found in Sullivan County.
Anthracite

Diverse Independent Prices Disturb Retail Dealers

Little Coal Offered at $4.25—Range from $7.15 to $7.50 on Family Size—Packing Adjustment on Canadian Bovine Tub Shovels Available at High Distinction to Producers.

Retailers are quoted by the variety of independent quotations being made. Very little of this coal was offered at the $5.50 price which had been established in the Pennsylvania anthracite region and prices now range from $3.15 to $4 on the family sizes, following the commission's recommendation that prices be kept within the limits fixed by the Fair Practice Committee in 1929, pending further consideration and adjustment. Canadian buyers are appearing in large numbers, taking any coal available at the high end of the range.

Production is being slowed by scanty car supply and some labor shortage. Loads are moving slowly and deliveries are hampered by unsatisfactory transportation conditions. Shovel roads are rolling off.

BOSTON

Practically all the large Tidewater retailers have received their first cargoes and all-rail shipments have been scattered around about as well as could be managed under the various unmeasurable complications that prevail. Retail distributors are working overtime to fill orders and making deliveries as soon as possible. On the old orders, Boston dealers are charging $15 for all cars down to peat, much as they did in the spring. We are interested to watch sales of independent coal during the next month or so. Quotations range from $8.50 to $11.25, f.a.b. mines, but it is not easy for these retailers to pay those prices without undergoing serious losses before the season ends.

ANTHRACITE FIELDS

Production would have almost reached normal this week if it had not been for the instance of a coal shortage seems to have hit the mines on the D. & H. and the D. L. & W. more than on any of the other roads. In several cases, the miners had not enough of striking strain. An outlaw strike was called at the Pettibone Colliery of the Glen Alden Coal Co., because some of the men had not paid their assessments to the union and because some of the firemen were not members of the union. It seems strange after a long idleness and only sixteen men of work the men would be in a position to strike or that they would want to strike. The miners are asking of backing the railroad shops and it is estimated that a sympathetic strike might be called.

NEW YORK

Independent producers as well as some of the larger companies have difficulty in disposing of the steam carbon coal. Many instances of the larger coal concerns are being asked to include some of the smaller coal in their orders. Many smaller independent operators are selling their product over the counter, buyers from various sections of the country and Canada spending most money this week at the mines. Business is being done mostly on a cash basis, the coal being paid for before shipment.

Many stocks of bituminous coal in the Netherlands and in other industrial countries and in some other places where the anthracite steam coal has been purchased as well as the installation of coal basins in the Bahamas as is given as one reason, for the lack of demand for the small coal at this time.

Retailers are getting a fair supply of the small coal and are careful to follow the orders of the State Fuel Administrator regarding distribution. While mines are quoting $1.50, recorded as a fair price by the Fuel Ad-

PHILADELPHIA

While the matter of price is still much of an annoyances to the coal dealer, nevertheless his chief concern is to get sufficient coal to meet the orders he has on his hands. Consumers are becoming insistent that they be given prompt service, and at the same time complain of the price charged.

Larger retailers are for the most part asking $1.50 for egg, stove and nut, but a considerable number who quote $14 for the large sizes and $11.25 for peat. Perhaps a few dealers did charge $15 for prepared coal during the past week they had coal, but it is doubtful if any one is charging this price now.

At this time it seems to be much more than a rumor of coal shortage at this time in the mines in the southern field have not been affected, but to the north there has been some last time on this account. All roads have been asked against loading line equipment to foreign roads, and have requested shippers to take some box cars.

All companies have an active market in buckwheat, rice and barley, and of the former size there is very little to be had on the spot market, with a fair amount going into the domestic trade.

South

BIRMINGHAM

Demand for steam coal is only moderate, consumers appearing not concerned except in regard to movement and car supply, which continues a principal factor. Any shortage in coal supply is attributable to these hindrances which are holding production down to a figure which closely approximates the demand. However, there is a strong demand for lumps and other sizes. The supply of lump is necessarily depleted largely by the casing off in the steam requirements. When prices were at top notch during the recent heavy demand from Western and other foreign territory little domestic coal was produced at the steam coal operations, hence this served to curtail the movement.

Quotations are practically stable at the maximum fixed schedules, although limited amounts of steam fuel have been sold during the past week somewhat under the figures above referred to, though it is not thought there will be any serious depletion against these prices. Open market will prevail on domestic coal in many instances where contracts with dealers do not extend beyond September.

VIRGINIA

The pendulum has begun to swing in the direction of a somewhat larger production, bringing the output up to 144,000 tons. Cars are beginning to get more plentiful, with C., C. & O. mines producing 42 per cent of capacity and with production on the Southern also on a larger scale. N. & W. supply, however, is not quite as adequate.
Chicago and Midwest

Steam Market Remains Weak in Middle States

Gluts Here and There Force Screenings Prices Lower—Domestic Demand Fair—Rail Service Improves Slightly in Certain Regions.

Steam coals continued in no demand during the past week, everywhere except in Kentucky and even there the call was not heavy. It weakened enough in St. Louis to send heavy shipments of screenings up to be dumped on Chicago where that class of coal got into demurrage difficulties by the hundreds of cars and sold down to $2. Domestic demand continues fair in all regions, although there is so much protest against high prices that nobody is buying heavily.

Some fields have been getting better railroad service. The L. & N., in Kentucky, has raised its average car service from about 15 to 30 per cent. Northern and central Illinois service is at least 50 per cent and even in the Carterville region of southern Illinois there is some improvement, but most of the southern Illinois mines are complaining of discrimination against them in favor of other fields.

SOUTHERN ILLINOIS

A slightly improved car supply is the most interesting development of the week in the Carterville field. The efforts of the roads to give the coal the preference in movement is getting some results. There are orders on hand for domestic sizes that will take 90 days to clean up. The steam sizes are giving some worry. This has even affected the minerun market. Steam users are not stockpiling. Somehow, somewhere, they have a hunch that "coal is coming down." Motive power is not far from normal, but the Illinois Central has shown rapid strides in getting back to nearer normal than any other midwest coal carriers.

Miners who have been away since last summer are beginning to drift back and the mines are filling up. Very few minor disputes are reported that cause loss of time. Somewhat similar conditions prevail in the Duquoin and Jackson fields that depend on the Illinois Central alone for cars. The Mt. Olive field shows up with better car supply on the trunk lines, but short on the local coal roads, due to congestion in the St. Louis terminals. A good movement is noted to Chicago and Omaha markets, with some to Kansas City, although the bulk is going to St. Louis. All mines show a steady increase in daily tonnage. The Standard field is as usual afflicted with the thought that "coal is coal" and that anything goes. A better coal carry may bring normality and save operators there from being the first "objects" of federal investigation.

INDIANAPOLIS

Prices continue about the same, though there has been some easing off on some grades of foreign mined coal. Indiana coal seems to be as strong as ever and the prices range $4.50@ $5 and more. Because of rail conditions the Indiana mines have been able to work only about half time. The East is buying coal, generally the biggest buyers, are purchasing spot coal in just as small quantities as possible. The utilities are making a determined fight to eliminate brokerage fees. Coolers are better and the retailer demand is a little more active. One retailer in Indianapolis has announced he will sell no more than three tons to any one customer and officials of the retailers' organization are urging purchases in small quantities.

CHICAGO

Few changes are noticeable in the Chicago market since last week. Steam sizes continue a drug with the heaviest consignments still making a success of their policy of holding out and picking up coal that gets into trouble. The heavy consignment shipments that have been coming in this city have amply filled their needs. The prices paid have varied from $3 on good Illinois and Indiana stuff down to as low as $2 on some northern Illinois and Standard screenings and the effect of this has been to compel a softening of the circular price list on screenings, for circular no longer can be maintained on steam coals. Buyers have been hammering so hard on steam prices for so long that coal men are now charging many of them are refusing contract shipments in order to further embarrass the producers.

Demand for domestic sizes continues fairly strong and likely to burst upward at the first cold snap, carrying prices with it. To date it is difficult to get $5.50 for good 6-in. lump from both the Fourth vein field of Indiana and the southern Illinois counties. Sizes of domestic coal are strong and bring $5@ $5.50. Very little mine run is shipped except on contract. Screening plants are fully justifying their investment and operations. They recently ran out the amount of coal that must either be stored on the ground at the mine or be sold at a loss.

LOUISVILLE

As a result of better production of steam coal in all producing sections the shortage is being rapidly relieved, and the big question now is in supplying retail dealers.

Most operators are handling the domestics freely but in Louisville, however, it looks as if the retail business will be late and heavy. Operators are producing very little prepared size coal. However, with the let-up of steam demand there should be better production, especially with a better coal carry, but until Lake demand is filled prepared production is not promising.

Retailers are asking a margin of about $2 a ton between eastern Kentucky and mine run, which is causing retailers to do a lot of biding. Eastern Kentucky coals start at $5 for mine run and sell down to a low of $8 for lump. Western Kentucky starts at $3.50 for screenings and goes as high as $6 for lump.

Locally retail prices are $10.50 for eastern Kentucky or West Virginia lump, $10 for mine run or screenings, $9@$9.50 for western Kentucky lump, and $8.50 for mine run or screenings. Eastern Kentucky, this week reports about 30 per cent car supply—the best for some weeks—and there is a chance of three days operation. Western Kentucky exports 15 to 30 per cent, the L. & N. doing better, and averaging close to 30 per cent.

ST. LOUIS

Reasonable weather is helping up the domestic demand. This, however, is not as pronounced as was expected. Dealers complain about too much rain, "weathering out of stock like Ford" from sources ignorant of coal conditions. This has resulted in delayed buying and small orders.

Carterville tonnage is small. Plenty of substitution of other make by jobbers is reported. Mt. Olive is best, with poor call for Standard, whose price is high. Small town domestic buying is delayed. Low priced croakers and generally the recent labor troubles, make high-priced coal a luxury. Steam locally is slow. Buying is light and is forcing prices down, and aside from the phenomenon of storage is not marked. Country steam is somewhat similar. Oil retail is held locally and pretty well throughout the St. Louis outlying territory.

Chicago market is bumping ground for steam sizes that won't sell here. Coke is scarce and hard to get and there is no promise of West Virginia or South Carolina coke here. A few cars of anthracite have been shipped, but the tonnage will be small and not a factor. Retail prices in St. Louis are: Carterville lump, $8.50, net; $9@$9.50; Mt. Olive, $7.50, Standard, $6.75.

WESTERN KENTUCKY

It is reported that retailers are demanding prepared sizes all the way from Michigan and Wisconsin to Mississippi, and that prices are stronger there being very thin. $3@$3.50 this week, with the price going as high as $6 in western Kentucky. Steam coal is shipped, however, demand is a little off and screenings have been reported at $5.50, $6.50, $7.75 in clays to the miner. Miners are weaker and prices are quoted at $3.50, with some here as low as $3.25. Coal that was far too expensive is not likely to bring such fancy prices, as they will be largely for lump to the domestic custom. The improved shipment of some standard and weaker grades in these is causing a heavy outside and for runs for railroad use, and many industrial uses screenings and "Slippery Downs."
Eastern Inland

Consumer Waits, Placing

Orders at Receding Prices

Coal Shortage Is Controlling Factor—Continuing at Free Coal Prevents Further Decline—Lead Jam Causes Temporary Embargoes to Lakes—Sears' Service Feared.

The consumer continues to play a waiting game and each order placed last week went at a lower price. Car shortage now controls production and the curtailed amount of free coal is falling in all that holds spot prices from a further decline. The only market strength is shown in domestic coal. Steam buying is hand to mouth, industry refusing to compete with Lake buyers for current offerings, in the belief that with the close of navigation the release of this tonnage will bring about an easier market.

A jam of loads has caused temporary embargoes to the Lakes. Dealers are still the highest in the history of the traffic and while the casualty strike is not yet felt the trade fears its possible effect at the peak point of the season.

COLUMBUS

Buying is limited to present needs only. With few exceptions the National Chamber of Commerce and other agencies advising the people to hold off orders are placed for west is necessary. They are particular to the eastern trades and dealers are buying in limited quantities. Retail prices are being quoted from $4.50 up, and $4.00-$4.75 for lumps. Hocking Valley coal West Virginia, and southern coal are selling around $4.75-$5.00, while Pocomoke when available is quoted at $4.75.

There is a setback in the Lake trade due to the embargo announced as the result of the threatened wage strife. These men are in a fair accumulation of coal around lower ports and with the larger a good supply will be available.

Pittsburgh

Prospects are substantially the same as formerly. Car supplies are limited all around, but are much more plentiful on some divisions than on others. The Pennsylvania has developed an embargo, Oct. 21 to 11, on receipts from connecting roads, to go coal, and all coal products, etc. Thus the supply is checked, but apparently the trade continues. In a few cases supplies are with all the cars they can handle.

Cleveland

Prices are higher. Coal supplies are limited all around, but are much more plentiful on some divisions than on others. The Pittsburgh had been in an embargo, Oct. 21 to 11, on receipts from connecting roads, to go coal, and all coal products, etc. Thus the supply is checked, but apparently the trade continues. In a few cases supplies are with all the cars they can handle.

Exports continue to be the ruling price. For 2,000 tons or more, 1.026 is the stated standard for the grade of coal, and prices are quoted accordingly.

The coal market is one of whole sales. Coal supplies are limited all around, but are much more plentiful on some divisions than on others. The Pennsylvania had been in an embargo, Oct. 21 to 11, on receipts from connecting roads, to go coal, and all coal products, etc. Thus the supply is checked, but apparently the trade continues. In a few cases supplies are with all the cars they can handle.
Heavy Volume of Coal Reaches Northern Docks

September Cargoes Exceed Best Previous Month of 1922—Some Rail Anthracite Is Welcomed—Looming Lake Strike Is Cause for Worry

The upper ports are jubilant for the time being. Soft coal receipts are heavier than at any time during the present shipping season which means that enough bituminous coal is arriving to remove all danger of immediate distress. This region is counting on—and getting, to a certain extent—a good deal of rail coal from Illinois and Indiana. So the principal thing that worries it now is a strike of boat crews. Only sixty days of the shipping season remain.

The first hard coal of the fall has reached Milwaukee—by rail, not by boat. This coal is selling at the old retail prices while cities further north are talking about $22 rail hard coal—if it ever reaches them. The coal men at the ports are struggling to make up their minds whether to sign long contracts at present prices.

MINNEAPOLIS

After prolonged travel over the coal supply for the Northwest, there appears to be some real action. The month of September sees around 1,000,000 tons of coal delivered at the Lake Superior docks—all soft coal. But some hard coal is now reported en route. The dumpings at the Lake Erie ports for the Northwest promise the equal or better showing for October, if the lake seamen's strike does not block things. Altogether, the coal supply situation looks the best that it has this season.

It is well established that barring transportation troubles the Northwest can get all the coal—at least soft coal—that it is willing to pay for. To get it, the current price at the mines must be paid. If the market or going price is above the "fair price" figure, it is a certainty that the coal will go to those who will pay the ruling price.

So dock men and jobbers generally are working to determine how much coal they will be safe in buying at the price now ruling, for it is felt that just as soon as the rush is over for the immediate needs for coal, there will be an easing of prices. But the dock season ends in less than eight weeks. If, in the course of five or six weeks, the use of coal stored on the docks, bought at higher prices, will have to absorb the decrease. Much less than the usual amount of hard coal is expected by Lake. It is possible that there may be some brought up all-rail, but it might have to retail for $22@23 as against the old price of $17.50@18.

MILWAUKEE

The arrival by rail of the first anthracite of the season was the outstanding feature of the coal market last week. The consignment consisted of about 1,000 tons of chestnut. It is being charged at $16, with an extra charge of 75c. for carrying in. Another shipment of 119 cars is in transit.

No anthracite has been received by Lake as yet though an allotment of 2,100,000 tons has been made to Great Lakes ports. A conference is being held in Washington to determine Wisconsin's share, which is expected to be about 1,000,000 tons.

The general coal situation has been considerably brightened by liberal receipts of coal, forty-eight cargoes aggregating 377,000 tons having docked in September up to the 26th. It is safe to predict that September receipts will aggregate at least 425,000 tons. Up to this time June has held the record for receipts for the season, with 303,401 tons. Illinois and Indiana coal is coming in freely by rail.

The City of Milwaukee has absorbed all coal contractors from the thermal unit requirement of their contracts so long as a federal pooling order remains in effect. The city contemplates buying its own coal in the Eastern market in future.

New England

Well Stocked in Advance.

Consumers Not Buying Now

Price Trend Confirms Disinclination to Buy Now for January Use—Congestion at Railroad Wharves Fails to Strengthen Spot Market—Oversupply at Roads and British Receipts Softening Factors.

There continues no improvement in the current market. Buyers have so generally anticipated their wants during the summer that with few exceptions they are well stocked for months to come. They are still disinclined to make purchases that will not be needed until after Jan. 1, and price development from week to week only confirms their attitude.

High-grade Pocahontas and New River have been offered down to $9.50 per gross ton, on cars Boston, and notwithstanding congestion at railroad wharves there is no sign of firmness in the spot market. Hampton Roads shippers now have an oversupply; the all-rail carriers are actively seeking business, and continued receipts of British coal are further softening market factors.

At Hampton Roads the deficit of a month ago has been changed into a surplus of upward of 100,000 tons, coal in excess of boats waiting, and while the situation just as such would be but it is feared there will be little storage. The volume via the Philadelphia and New York ports is still light, and the northern engineers report that there are only a few masts of bituminous coal in the State that are expected to be needed during the week of the Holiday.

The demand for coal is reported good through the week, with shippers' receipts to the east running about an average daily of 250,000 tons. Over 400,000 tons are expected to move this week.
Cincinnati Gateway

Situation Made Obscure by Railfing Cross Currents

Several firms of Prizes for Nowadays—Weekends on Streets Shown by Horse—Lake Halting Cause of Sooner's Strike Improves—Barge Movement on Ohio Grows.

Cross currents without leaving any indication of their significances have been noticeable here for the past week. The sudden situation is hardly identified. Three or four dissimilar signs of present prevalentSteam has shown a greater tendency toward flood conditions and has dropped the coal price a few cents, while following a slight decline, is still in demand. Late buying practically caused with the business forcing the trend to a strike. Railroads are badly operated. A further volume in coming down the Ohio by large than has been handled for months. The supply of supplies on the mines has decreased. Coal on the water is estimated to amount to more than the large number of loads going into all the surrounding coal fields and will result to movement to the gateway.

CINCINNATI

More retail buyers are on the market than usual. They are pre-occupied with the early demand for large for shipments, which are being called for. In mid-week, four railroads were making calls for transportation. Other railroads have been on the water, the number has increased. Lines have been on the water and one railroad has been on the water and has been on the water. The market is of the average.

There are three reasons which are making for volume on the Market. October prices are changing, and the shorter than will be handled. Others hope for the price reduction. It is the theory that the price will be $4.50 for prepared grades. Coal has been handled at the following price, $5.00.$50 for prepared grades, but little coal is on the market to be had.

LOW-VOLATILE FIELDS

New River and the Gulf

Although an agreement has been reached between the C. & O. and its striking shippers, not enough men are available to materially change conditions. Mines in the New River region are struggling along with a very slender supply, not averaging over 300 tons. Western prices are holding, but there is little equipment available for those shipments. With so much coal going to Tidewater, the price is softer there. There is a strong demand for prepared grades.

Pocahontas and Tug River

Although more coal is being produced in the Pocahontas field yet the output is not over 20,000 tons. The trouble is due to accomplishments of lands on the N. & W. Tidewater and other Eastern operators. There is a paralyzing effect on demand for prepared grades. Western shipments are partly suspended. Coal will supply not exceeding 30 per cent of capacity. The river mines are not prepared west of the 48th parallel. Under existing conditions it being to be expected that matters will get coal through to Western markets. There is a strong demand, however, for all grades. Most companies are making themselves to the production of mine run, which ranges $4.50-$5.50 a ton.

Coke

CONNELSVILLE

Complaint of car shortages is louder and more widespread. Apparently the places are fully as large as formerly, probably somewhat smaller, but with greater working forces the operators find the restrictive influence more keenly. The supplies are also very irregular, causing irregular drawing of ovens.

There are still thousands of "strikers" in the region but the strike as a general industrial factor was eliminated some time ago, the region's production being entirely a matter of car supply. Many plants are still closed on account of strike, but if these plants were to attempt resuming that would not increase the total car supply of the region.

The market is stiffer, with prices on the whole a shade higher. Demand of retail dealers for furnace coke is widespread and mounts up to quite a tonnage. Small lots are taken, such as would hardly interest a blast furnace, but in the aggregate this competition is a matter of making it still more difficult for any furnace to pick up enough coke to base an operation upon. Foundry coke is in somewhat wider demand, with refinements quite limited. The market is quotable at $11.50@$12.50 for furnace coke and $13.50@$14.50 for foundry.

The Courier reports production during the week ended Sept. 23 at 80,950 tons by the furnace ovens, and 24,900 by the merchant ovens, making a total of 105,340 tons, an increase of 5,550 tons.

UNIONTOWN

Inability of railroads to provide cars is now the only factor curtailing production. The H. C. Frick Coke Co., largest employer of labor in the region, has increased production to 80 per cent of capacity and could further add to the output were more cars made available.

Strange as it may seem with the known coal shortage the market softened last week and operators and brokers are not finding it too easy to obtain quotations. The situation is declared especially soft on so-called "line shipments" and operators report that the Great Lakes, destination of much tonnage in the last few weeks, is jammed and cancellations are in order. Most sales were closed this week upon a basis of $3.75@$4.

Deficiencies are occurring daily in the ranks of the strikers but the drift back to the mines is yet lacking substantial proportions. Operators announce that practically all strikers have been evicted and that production is re-organized upon a permanent basis.

BUFFALO

The supply is very light and demand is only moderate. Jobbers quote 72-hr. Connelsville at $12.50@$13; 48-hr. furnace, $11.50@$12. Add to this $3.28 to cover freight.
News Items From Field and Trade

ALABAMA
Announcement has been made of the appointment of Joseph Youmans as general manager of the Warrior River Service of the Alabama Coal & Coke Co. Youmans will have complete jurisdiction of all operations of the company west of Decatur. Youmans will have complete jurisdiction of all operations of the company west of Decatur. He assumed his duties Oct. 1st, succeeding Henry T. Doolard, who resigned some time ago.

The Alabama Fuel & Iron Co. has provided electric safety lamps for its mine families, west of Decatur, St. Clair County, in order to minimize the danger of gas explosions at these operations.

COLORADO
The Rocky Mountain News reports that Capt. James J. Smith, its mining editor, and Harry F. Nash, general manager of the Colorado Fuel & Iron Co., have been appointed by Gov. Oliver H. Shoup and Mayor Dewey Co., officials of the state, to assemble at Denver to the meeting of the American Mining Congress to be held in Cleveland early in October.

The Turner mine, near Walsenburg, until recently under lease to the Turner Coal Co., has been taken over by the lessees, the Calumet Fuel Co., and will henceforth be operated under the name of Calumet mine, the Calumet company is a part of the Utah Fuel & Coke Co., and will operate the mine as a branch of the company.

I. T. Robinson has resigned his position with the Danson & White interests in Rount County, and has returned to Billings, Mont.

ILLINOIS
R. W. Arms, of the department of mining engineering of the University of Illinois, Urbana, will leave the university Nov. 1st and join the staff of Robert & Shaefer, contractors engineers. He will have charge of the design of the new year's crop of Southern Illinois, and Davenport, Iowa, is the president. Hugh Shuler, of Des Moines, and Jacob Schelb, of Rock City, Iowa, are the other stockholders.

Five men were killed and two injured Friday, Oct. 5th, when an explosion occurred in the Lake Creek mine of the Consolidated Coal & Coke Co. of Collierville, Ill., and Davenport, Iowa, is the president. Hugh Shuler, of Des Moines, and Jacob Schelb, of Rock City, Iowa, are the other stockholders.

NEW YORK
Bids were received by the board of purchase of the city of New York on Sept. 27th for 1.5 million tons of coal for the year 1922. The rebates for each ton of delivered coal are $0.03 for each ton above 6,000 pounds, and $0.05 for each ton below 6,000 pounds. The bids were received from fifteen concerns, and the rebates were not granted for coal delivered under the range of 0.03 to 0.05 per cent. per ton. The bids were delivered at the harbor between July 1st and September 1st.

NEW MEXICO
The miner's strike in the Gallup-American River coal field has been recently completely destroyed by fire. The company has not yet decided on future plans.

The Grenko Coal Co. has just installed the first low-volt shaft in the Gallup-American River coal field. The installation is successfully cutting in a 20-in. vein.

OHIO
The Atzinger Coal Co. has been chartered with a capital of $10,000. Incorporators are Robert Petz, John P. Prentes, and Charles T. Craig.

The Uhlig Coal Co., Niles, has been chartered with a capital of $10,000 to mine coal near Youngstown. The incorporators are Harry H. Armstrong, A. B. Schudy, R. W. Maugh, C. O. Arman, and E. H. Davis.

Pennsylvania
The Lehigh Valley Coal Co. has filed an appeal in the Pennsylvania Supreme Court against the tax levied against it under the mining tax act.

The company has also filed an appeal against the order of the Pennsylvania Supreme Court which held that the company was not entitled to the tax exemption for coal sold to individuals.

The company claims the valuation of $5,000,000 for the purpose of the sale of a considerable portion of the property to other companies.

WASHINGTON, D. C.
Donahue R. Cong of Pennsylvania has been appointed manager of the President's Club of the American Railway Association for the year 1922. The resignation of A. G. Dutriaux, who has been the manager for the past year, has been accepted.

The Dominion Fuel Corporation of Montana has been organized for the purpose of engaging in the coal business. The company has an authorized capital stock of $50,000, which will be organized by Frank E. Brown, Frank L. Brown, and Anna M. Trost.

Washington, D. C., Sept. 27th—The interest of the Dominion Fuel Corporation of Montana has been organized for the purpose of engaging in the coal business. The company has an authorized capital stock of $50,000, which will be organized by Frank E. Brown, Frank L. Brown, and Anna M. Trost.
Association Activities

National Coal Association


C. F. C. & E. O. Committee

The C. F. C. & E. O. Committee of the National Coal Association is composed of the following members: C. F. C.

Publications Received


Coaling and Mining Resources of the United States and Canada. 1922, by C. E. M. Hovland. Circulars and Pamphlets.


Recent Patents


Coming Meetings

Kentucky Mining Institute will hold its annual meeting Nov. 3 and 4 at Seabright Hotel, Lexington, Ky., under the chairmanship of C. Rogers, Secretary, Elizabeth C. Rogers, Lexington, Ky.

The National Industrial Traffic League will hold its annual meeting Nov. 15 and 16 at the Hotel Commodore, New York City, Secretary, J. H. Brice, Chicago.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa., under the chairmanship of J. H. Brice, Secretary, J. H. Brice, Chicago.

American Mining Congress will hold its fifty-sixth annual convention and exposition of mines and mining equipment will be held at Public Hall, Cleveland, Ohio, Oct. 9-15. In addition to convention offices, the Hollenden Hotel, E. C. Porter, will serve as headquarters.

National Exhibition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 11-17. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Gas Association will hold its annual meeting Oct. 24-27 at the Hotel Commodore, New York City, Secretary-Manager Oscar H. Fogg, 130 East 101st Street, New York City.

Canadian Institute of Mining and Metallurgy, annual Western meeting Nov. 13-17, at Vancouver, B. C., Secretary-Treasurer, G. C. MacEwen, Montreal, Quebec, Can.
The Railroads and Coal

Adequate coal for this winter in this country depends on the railroads. The deficiency in anthracite cannot be made up by calling on the mines for extraordinary production, for these mines have no surplus capacity and are short of mine labor. But soft coal can and must be substituted for hard coal. The soft coal that will be required for this purpose and to fill empty bins and stockpiles, supply the Northwest and meet current requirements may be had and still more if the railroads are able to supply the empty cars, haul them to market when loaded and return the empties.

The President, Secretary Hoover and Federal Fuel Distributor Spens have joined in saying that transportation is the key to the coal situation this winter. The shortage, whatever it may be, is due to the coal strike, for which the railroads were in no way responsible, and to the rail strike, for which the coal miner may have had a degree of responsibility. The fact remains that, whoever may be at fault for the present lack of coal, the limitation of transportation is the only bar to recovery of that lack.

What right has the public or the coal industry to ask that the railroads give coal preference, to set aside other and more profitable freight in favor of coal? If the question be turned only on the basis of a fair proportion of annual transportation, the coal industry is warranted in demanding unusual preference at this time. In the first nine months of this year the total loading of freight was some 2,000,000 cars in excess of the same period of last year. Grain and grain products, live stock, coke, forest products and ore all show small increases, and loadings of merchandise and miscellaneous freight were nearly three million cars in excess of last year. The only commodity shown by the figures of the American Railway Association to have declined is coal, which stands a million cars below 1921.

While portions of the coal industry were at a standoff with other industries at work. In the first nine months of 1920 and 1921 coal cars represented 20.3 and 21.7 per cent respectively of the total; this year but 15 per cent. The ratios for 1920 and 1921 may be taken to show the relative proportions of total business sustained by coal when things are in balance. When one-fifth of the cars of freight loaded contain coal, then industry is marching ahead, four abreast. Coal stumbled this year; it is not in step with the rest of the country. Business cannot proceed normally until coal catches up in the procession.

One way to make up the arrears is to let the railroad business proceed as usual, coal getting what transportation it can and coal-consuming industry bidding for the available supply, shutting down when it cannot pay the price—a disorderly and unnecessary method. Or the railroads can hold back the other marchers, giving to coal the preference that will bring its percentage of the whole from the present 15 to the needed and normal 20.

This is the sensible, orderly process—the one that President Harding has urged on the railway managers. If the carriers will conscientiously divert motive power and cars to the movement of coal they can raise the level of production to 12,000,000 tons per week of bituminous coal and possibly 2,000,000 tons of anthracite. Then, if the commercial interests will call off their buyers’ strike and take the extra tonnage into storage, the situation can be tranquilized.

Unsatisfied demand can be impounded for a time, but eventually the dam will break. The machinery of the Fuel Control Act will be found insufficient to handle the flood when the dam breaks. From now forward the responsibility is the railroads'.

Ohio Tries Price Fixing

Price fixing by law is a doubtful enterprise at best and full of possibilities for failure; but Ohio is attempting it. The ambition is laudable enough, but there is an insurmountable difficulty. The state can fix mine prices on Ohio coal but it cannot interfere if Ohio producers choose to sell all their coal outside the state, or in whatever available market pays best, leaving Ohio dealers to buy outside coal wherever they can at whatever prices prevail. The fixing of retail prices within the state would be no material protection of the public in a case such as this, for if they do not allow a fair margin above mine price plus freight and cost of handling, then the dealer simply withdraws, leaving the Ohio public without coal.

Naturally there are substantial and conscientious producers in Ohio who will consider it good business to look after the most urgent needs of their old reliable trade in Ohio, whatever the prices, but this will not be meeting the coal demands of Ohio. That state may suffer more by its own weapon of protection than it would have suffered had it not armed. Indiana made a fruitless effort of the same sort in 1920.

Encouraging Signs at Cleveland

No one need be surprised that immediately after concluding arrangements at Cleveland for negotiations for a new wage contract next year, the United Mine Workers let it be known that they would demand a continuation of the present scale for two years from next April, the six-hour day, and five-day week. To maintain their prestige it is essential for the officers of the union to convey to their constituents that their interests have not been forgotten, that there is something to look forward to next time.

The union that met the operators in Cleveland last week is the same that won the strike this summer; it has had no change of heart. The provisions in its constitution demanding the "full social value" of its labor and the six-hour day and five-day week have not been
How Shall the Public Be Protected?

IN THE current issue of the Atlantic Monthly, Director Smith of the Geological Survey, writing to the thinking consumer on "What Coal Means to Us," says: "It is society that gives value to coal and opportunity to the coal industry." At our invitation he expanded that thought in an article in Coal Age last week (Oct. 5, page 225), in which he charged that the coal operators have been blind in one particular—"They have failed to see their duty to the general public." In large measure this is the burden of thought of present-day critics of the coal industry.

The production and distribution of coal is still private enterprise. Management, whose voice is the expression of the industry, owes certain obvious duties to stockholders, to customers and to labor. If in the sale of its product the coal company charges only such price as will return a reasonable wage to labor and a reasonable profit to stockholder, then that company is most assuredly a desirable member of society. Transgression of any of these duties brings its own measure of censure. For the industry as a whole the part of the consumer is taken by the general public.

The majority of coal producers and distributors so conduct their business that they maintain the good will of their customers, if for no other reason than that this good will is their cheapest asset in business. Every stable coal company has its back log of steady, dependable trade, served year after year, leisurely guarded, protected and satisfied. In these individual relations of seller and buyer there is a minimum of violation of the terms of good citizenship. But the relations of the coal industry to the public in the sum of all relationships and to this whole there are many variations from the general rule. It is largely the advantage taken by the intermittent producer, and by the regular producer with his tenant trade, during disturbed market conditions that has given rise to the charge that the coal industry has failed in its duty to the general public. The many are called on to account for the transgressions of the few.

Price and supply are the two points of contact of the public with the coal industry. In the last 25 years there have been four marked peaks in the price curve, corresponding to shortages in supply, excluding, of course, the periods of war control of both. Two of these have attended protracted strikes of coal-mine labor in 1902 and 1922; one was an after-effect of a coal strike negotiated by a railroad strike, in 1920; and the other was the development of extraordinary demand when stocks were low in 1917. In the intervening periods the bituminous-coal industry has served the general public with ample coal at the lowest prices in the world. Three of these upheavals have been in the past 6 years, a part of the war turmoil that has, and is yet, shaking the world.

If the production and distribution of coal were public business the peaks of high prices and corresponding profits would be leveled off and the more frequent hollos of low prices and corresponding losses filled up, at public expense. Can it be that the duty of the coal industry to the general public is to wipe out its best profits and continue to absorb its major losses? That certainly is not in the public interest in the long run. It is plainly of far more advantage to the coal producer than to the coal consumer to maintain steady operation at moderate price and profit than to "vibrate between bankruptcy and high profits." What Mr. Smith and others charge as the duty of the coal industry to the general public is first of all of the duty of the coal men to their own industry.

We cannot but conclude that it is not the blindness of the coal operator but his impotence that prevents him from making his industry function in a more ideal manner. There is no such thing as majority rule in either the soft- or the hard-coal industry. The Sherman law, which regulates the coal industry, is more stringent than any proposed by modern reform legislators. It says that no two in the business shall get together in any way to regulate the trade, either for or against the interests of the public. There is no method, either direct or devious, by which the "good" operator or wholesaler can control the "bad." There have been occasions, not without notable results, when the organized voice of the coal industry has been raised to stop the rising price of coal.

Summed up, Director Smith's indictment of the coal industry rests on the assumption that coal is a public utility and that without being so declared by law it should function as such. We submit that it is too much to expect that some ten thousand individuals engaged in the private business of mining and distributing coal should march up to the counter every time the price of their product passes a certain profitable point, and voluntarily rebate to the public the increment of profit, large or small, as it may be, that is offered by circumstances not of their making. Considered as a whole the reputation of the industry in profit taking has not always been creditable, but if one will but examine individual records he will find that many—the majority as respects tonnage if not numbers—have a definite sense of responsibility toward that part of the general public with which they have contact—their customers—and that they have lived up to that responsibility even as Director Smith would have them do.

Coal operators are fast developing a national consciousness of their collective relationship to society; they are learning self-government. For four years they have been on the defensive against "an unfriendly press, a distrustful public, and the threat of socialistic legislation." We have no doubt that every honest-minded coal man will agree with Herbert Hoover in his New York address of Sept. 12, that "When these various rights [to strike, to lockout, to work or not to work, etc.] infringe upon the public right, then the dominant right is the public right." The points yet to be decided concern the methods by which the public right shall be protected without socializing a basic industry.
Calculation of Horsepower Required for Unbalanced Uncounterweighted Hoist in Shallow Shaft

Radius of Gyration and Radius of Drum and Their Relations—Average Moments—Frictional Resistance—Acceleration and Retardation Moments and Horsepowers—Horsepower Torque—Energy in Hoist and Check on Result

By F. L. Stone†

Schenectady, N. Y.

In this article will be elaborated the main calculations for the selection of the machinery for hoisting in a shallow shaft unbalanced and without counterweight. Under the classification of "shallow shaft" may be included all those which have hoists the total travel of which is 300 ft. or less. The hoist thus to be considered is what would ordinarily be termed a "supply" or "man-and-material" hoist.

The capacity of this machine will be based on its ability to raise rock, and, as stated, the assumption will be that it is to be operated unbalanced and without a counterweight. A later article will deal with the same hoist using a counterweight and when serving a double-compartment shaft with cages in balance. The following conditions are assumed:

<table>
<thead>
<tr>
<th>Total lift</th>
<th>210 ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight of cage</td>
<td>9,000 lb.</td>
</tr>
<tr>
<td>Weight of ore</td>
<td>2,100 lb.</td>
</tr>
<tr>
<td>Weight of rock</td>
<td>2,000 lb.</td>
</tr>
<tr>
<td>Trips per hour</td>
<td>60</td>
</tr>
<tr>
<td>Best, top and bottom ends, 7 sec.</td>
<td></td>
</tr>
<tr>
<td>Drum, cylindrical</td>
<td>11 in. diameter, weight 2 lb. per ft.</td>
</tr>
<tr>
<td>Rope</td>
<td>2 in. diameter, with 2 ft. face</td>
</tr>
<tr>
<td>Weight of rotating parts at rope center</td>
<td>17,000 lb.</td>
</tr>
</tbody>
</table>

It might be well at this point to discuss some detail in the various ways in which the weight of a rotating mass may be manipulated. The radius of gyration is such a radius that if the entire weight as recorded by the scales could be located at its extremity this weight multiplied by the square of its velocity (2πn)^2 when rotating about its axis, and divided by 2g would represent the stored energy in foot pounds.

The formulas for determining the radius of gyration of bodies of most ordinary shapes may be found in almost any standard engineering handbook. For example, consider a plate wheel weighing 10,000 lb. and 8 ft. in diameter. The radius of gyration of such a wheel is

\[ r = \sqrt{\frac{I^2}{2}} = 0.707r \]

where \( r \) is the outside or extreme radius. In the example the radius of gyration would be \( 4 \times 0.707 = 2.828 \) ft. This means that a ring of no thickness could be made 5.656 ft. in diameter and weighing 10,000 lb. It would have the same stored energy when rotating as has the plate wheel.

The \( \text{tor} \) of such a wheel would be

\[ 10,000 \times 2.828^2 = 9,600 \text{ ft.-lb.} \]

†Other articles on hoist design by F. L. Stone may be found in Coal Age, Vol. 8, p. 216, and Vol. 9, p. 921.

†Power and mining engineering department, General Electric Co., Schenectady, N. Y.
The \( w^2 \) is of great value when considering rotating masses, for, having this quantity, the effective weight at any radius may be determined by dividing the \( w^2 \) by the square of the radius at which the effective weight is required. Thus, in the drum under consideration in the above problem, the effective weight is given as 17,000 lb. at the rope radius. The \( w^2 \) of this drum is 17,000 \( \times 3^2 \) or 153,000 ft.-lb.

This, incidentally includes the gear.

The radius of gyration of a cylindrical hoist drum, break tread and gear is about 20 per cent of the outside radius, and 80 per cent at 3 ft. 2.4, therefore the actual weight of the drum and its attached parts as registered by the scale would be about:

\[
\frac{153,000}{2.4} = 63,750 \text{ lb.}
\]

As an indication of the accuracy of the above calculation, it is noted that the drum and parts are turning at 160 r.p.m. or 1,666 r.p.s. The stored energy then will be:

\[
\frac{w^2}{2} = \frac{1,666^2}{2} = 13,260 \text{ ft}-\text{lb.}
\]

\[
\frac{17,000 \times 3^2 \times \frac{1,666^2}{2}}{32.1 \times 2} = 17,000 \times 31.4 \times \frac{1,666^2}{2} = 290,500 \text{ ft.-lb.}
\]

Using the actual weight and the radius of gyration above found:

\[
290,500 \times \frac{1,666^2}{2} = 260,500 \text{ ft.-lb.}
\]

The above is, of course, elementary and intended only for refresh the memories of those who have not used these fundamental formulas for years. It shows, however, that the \( w^2 \) the effective weight can be found for any radius within knowing the actual radius of gyration.

To proceed with the calculation:

The time required for one round trip = 16 sec.

Half, top and bottom = 7 sec. + 7 sec. = 14 sec.

Total running time up and down = 50 sec. - 14 sec. = 36 sec.

Running time one way = 36 sec. / 2 = 18 sec.

Assume 6 sec. acceleration and 6 sec. retardation.

\[
\frac{t}{2} + \frac{t}{6} = 13.26 \text{ revolutions per second or } v \text{ at full speed}.
\]

\[
D - \frac{v^2}{2} + \frac{v^2}{2} = \text{ space passed over during retardation.}
\]

\[
T = t_a + t_r = \text{ time of full-speed running.}
\]

\[
D - \frac{v^2}{2} = \text{ space passed over during acceleration.}
\]

\[
\frac{v}{2} - \frac{v}{2} = \frac{T - (t_a + t_r)}{2} = \frac{v}{2} = \frac{D}{t_a + t_r} = \frac{t_a + t_r}{2} = \frac{t}{2}
\]

In the present case as \( D = 13.26 \) turns

\[
\frac{13.26}{6} = 2.2 = 0.78 \text{ r.p.s.}
\]

The number of turns passed over during retardation

\[
\frac{v}{2} = \frac{2.2}{2} = 2.34.
\]

Similarly the turns passed over during acceleration

\[
\frac{0.78 \times 6}{2} = 2.34.
\]

The moments will be determined as follows:

<table>
<thead>
<tr>
<th>Moment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rock. 8,000 lb.</td>
<td>2,300 lb.</td>
</tr>
<tr>
<td>Turn 0</td>
<td>19,300 ( \times 3 = 57,900 ) ft-lb.</td>
</tr>
<tr>
<td>Turn 13.26</td>
<td>19,300 ( \times 3 = 57,900 ) ft-lb.</td>
</tr>
<tr>
<td>Rope (11 in. at 2 lb. per linear foot)</td>
<td>250 ( \times 3 = 750 ) ft-lb.</td>
</tr>
<tr>
<td>Turn 0</td>
<td>250 ( \times 3 = 750 ) ft-lb.</td>
</tr>
<tr>
<td>Turn 13.26</td>
<td>0 ( \times 3 = 0 ) ft-lb.</td>
</tr>
<tr>
<td>Turns</td>
<td>0</td>
</tr>
<tr>
<td>Load</td>
<td>57,900 ft-lb.</td>
</tr>
<tr>
<td>Rope</td>
<td>1,500 ft-lb.</td>
</tr>
<tr>
<td>Total</td>
<td>59,400 ft-lb.</td>
</tr>
</tbody>
</table>

The value to be assigned to friction will have to be estimated, as there are no reliable test data available to the knowledge. Experience has shown that 50 per cent of the average net moment (for single gear reduction) is sufficient. In the case of an unbalanced hoist this efficiency probably is a little low but safe.

57,900 + 59,400 = 59,900 = average moment

57,900 + 0.8 = 73,300 = average moment including friction. Deducting the average moment, which is 57,900, leaves the friction, which is therefore 14,650. Net moments including friction then become:
October 12, 1922

Acceleration and retardation are calculated as follows:

Velocity in feet per second of moving parts at end of acceleration = 0.78 × 6 × π = 14.68 ft. per sec.

Force = mass × acceleration

Acceleration (a) = \( \frac{v}{\text{Time}} \);
Mass = \( \frac{w}{g} \);
\( a = 14.68 \)

2,446 ft. per sec. per sec.

As the drum is cylindrical and its weight is given as the effective weight at the rope center, all the moving parts may be considered as a whole and the acceleration force calculated at one operation.

Cage. Car. Rock. 9,000 lb. 2,300 lb. 8,000 lb.
Rope (250 ft. in shaft and 200 ft. between the cage and the drum when the cage is at the top of the shaft) 9,600 lb.
Total 20,200 lb.
Drum Head sheaves. 17,000 lb.
Heel sheaves. 7,000 lb.
Total 44,200 lb.

Accelerating force = \( \frac{44,200}{32.2} \times 2.446 = 3,360 \) lb.

As this force is applied at the drum surface, the moment will be

\( 3,360 \times 3 = 10,080 \) ft.-lb.

Retardation is to be accomplished in the same length of time and, as the v of all parts is the same, the retardation force and moment will be the same as that of acceleration, except that, as energy is being given up, the value will have a minus sign.

**FINAL MOMENTS**

<table>
<thead>
<tr>
<th>Turns</th>
<th>0</th>
<th>2.34</th>
<th>6</th>
<th>10.92</th>
<th>17</th>
<th>13.26</th>
</tr>
</thead>
<tbody>
<tr>
<td>74,050</td>
<td>77,290x</td>
<td>73,900x</td>
<td>72,800x</td>
<td>72,800x</td>
<td>72,550</td>
<td></td>
</tr>
<tr>
<td>10,980</td>
<td>10,980</td>
<td>10,980</td>
<td>10,980</td>
<td>10,980</td>
<td>10,980</td>
<td></td>
</tr>
<tr>
<td>Total moment</td>
<td>84,130</td>
<td>83,870</td>
<td>73,900</td>
<td>72,800</td>
<td>72,550</td>
<td></td>
</tr>
</tbody>
</table>

\( \text{Time, sec.} = 0, 6, 6, 17, 17, 23 \)

* From plotted curve.

Having determined the moments and plotted their values it is necessary only to change the moments to horsepower and plot against time.

The horsepower may be determined by substituting in the equation

\[ HP = \frac{2\pi \times \text{r.p.s.} \times M}{550} \]

This formula is derived as follows:

\[ HP = \frac{\text{Force} \times \text{velocity in feet per sec.}}{550} = \frac{\text{Force} \times 2\pi \times \text{r.p.s.}}{550} \]

\[ \text{Force} \times \pi \times 2\pi \times \text{r.p.s.} \]

\[ M \times 2\pi \times \text{r.p.s.} \]

\[ \frac{550}{550} \]

\[ \frac{550}{550} \]

<table>
<thead>
<tr>
<th>Turns</th>
<th>Time, sec.</th>
<th>Horsepower</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>750†</td>
</tr>
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<td>2.34</td>
<td>6</td>
<td>767</td>
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<td>6</td>
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<td>650</td>
</tr>
<tr>
<td>10.92</td>
<td>17</td>
<td>650</td>
</tr>
<tr>
<td>17</td>
<td>17</td>
<td>553</td>
</tr>
<tr>
<td>23</td>
<td>23</td>
<td>550†</td>
</tr>
</tbody>
</table>

† These values are not actual horsepower, as the speed is 0 at these points, but they indicate values proportional to the torque. This value is, therefore, called horsepower torque. In other words, the motor must develop such a torque that if it were running at full speed it would produce this horsepower.

HORSEPOWER-TIME CURVE OF DUTY CYCLE.
HOIST NOT BALANCED

The horsepower used and the horsepower demanded are different quantities, for at the start the horsepower used is zero, but the hoist must be designed with that point in mind, for the horsepower torque at that point is at a maximum.

Having plotted the curves of moments and horsepowers it might be well to consider what they mean. The moment curves are self-explanatory and mean that at each turn of the drum an indicated torque must be applied to the shaft. The horsepower curves, however, mean a little more when analyzed. As a help in discussing the duty cycle the following definition of terms used may be in order.

Force is pressure, pull or resistance to motion in the line of motion and its unit is the pound. Velocity is the rate of motion and its unit is one foot per second. Work is the product of force in pounds, resisting motion, multiplied by the distance traveled in feet, the unit being the foot-pound. Energy is the ability to do work. It may be potential, that is, the energy stored in a body due to its position, such as a weight carried to an elevation; or it may be kinetic, or that due to the motion of the body. The unit is foot-pounds as in the case of work. The formula for the stored energy in a moving body is \( \frac{mv^2}{2} = \frac{mv^2}{2} \). Power is the rate at which work is done. The most common unit is the horsepower, which is equal to 550 ft.-lb. per second. Thus, if 10,000 ft.-lb. of work is to be done in, say, 5 seconds at a constant rate, this rate will be 2,000 ft.-lb. per second or 2,000 \( \times \frac{1}{2} = 3.64 \) hp. If the same work is done in 2 seconds it will have to be done at the rate of 5,000 ft.-lb. per second or 5,000 \( \times \frac{1}{2} = 9.1 \) hp.

In the problem just solved we have made a duty cycle, plotting horsepower against time.

In lifting the cage, car, rock and rope, we have expended much energy; that is we have raised a weight.
Eight-Ton Cars Will Be Built for Mines

For many years past, the railroads of the United States have continually increased the size of their rolling stock. They have built larger and larger locomotives and cars. Back in 1870, only about fifty years ago, coal was not infrequently shipped in small four-wheeled cars, each holding about five tons. Today steel hoppers of 140,000 lb. capacity are not uncommon. This increase has been made necessary by the larger and ever larger tonnage that must be carried over one set of rails.

To a lesser extent the same tendency is manifest in the mines. The output of individual operations has been continually increased. Almost every mine is now producing more coal than in the past. To meet this increased output, mine locomotives of various types have been designed, each succeeding model being capable of pulling a greater number of cars at a higher speed than its predecessors, thus adding capacity to the haulage roads already existing. Mine cars likewise have increased in size. With a larger car it is unnecessary for the mining company to furnish each man with as many wagers as were formerly required, thus reducing the number to be gathered and hauled in any one mine in order to maintain a given capacity and reducing the number of times during any one day when the miner must wait for cars.

SIZE OF EQUIPMENT DEPENDENT ON CONDITIONS

Certain considerations, however, limit the size of equipment that can be used in any particular mine. With railroad equipment the size is not so definitely fixed, but in mining, as most of the haulage roads are underground, and as many of them were laid out years ago, when the equipment was small, the limitations to the size of cars are sometimes unavoidable.

Many, if not most, mine roads have been driven within the coal bed itself, the height of the bed thus dictating the height of the car. It is, of course, not possible to use a car that is the full height of the bed unless the bottom is to be lifted or the top braced. Consequently a car must be so designed that room for the miner to load it with ease is readily available. It is well to make this space between the top of the car and the roof as large as is conveniently possible.

In addition to the height of the car, its length and width also are limited. The length and wheelbase are fixed by the degree of curvature of the tracks that must be traversed. The width is limited by the width of the heading and the requirements of the state mining laws. As a result, any device or arrangement of car that will permit a greater carrying capacity in a given size of coal bed is of more than passing interest to the whole mining profession.

The Chicago, Wilmington & Franklin Coal Co., of Illinois, recently desired to use, in one of its mines, larger mine cars than any hitherto designed. It accordingly requested Allen & Garcia, of Chicago, to prepare plans for a new mine car that would have a capacity of 8 tons of coal, and about 10 to 12 tons of rock. The great weight of the material to be carried necessitated a specially designed truck. This truck, furthermore, must be provided with springs in order to reduce the shock on the axle as the car passes over inequalities in the roadbed. The introduction of such
springs, however, must not increase the height of the car when it is loaded. To meet the conditions imposed, J. R. Fleming & Sons Co., Inc., of Scranton, Pa., have designed a special truck.

This is being tested out at the coal company's mine. It is designed to carry a load on each axle of 4 tons in addition to the weight of the car itself. The axles are 3 in. in diameter and the journals are 3x7-in. Hyatt roller bearings. The spring pedestal is so arranged as not to increase the height of the car. Two springs are employed at each journal box, one on either side of the axle. When the car contains its maximum load, the springs will be so compressed that the load will just miss the stop on the top of the bearing.

**AXLES ARE MADE OF HEAT-TREATED STEEL**

Wheels of 14 to 16 in. in diameter are employed. It being advantageous to use as small an axle as possible on these cars, the diameter of the axle has been made only 3 in. The steel is of 30 to 40 points of carbon, heat-treated to a hardness of 240 to 250 Brinell. Heat treating in this manner raises the tensile strength to from 135,000 to 140,000 lb. per square inch.

Aside from the special arrangement of the truck and bearings, these journals are similar to the regular Fleming-Hyatt self-aligning roller-bearing journal boxes. Use of these bearings eliminates all bending and cutting of the axle.

With the use of springs the load can be handled with greater ease. Shocks to a certain extent will be removed from the drawbars or drawheads, and these will not be pulled out as frequently as sometimes happens around the mines or on railroad equipment. The roadbed also will be relieved of shock, and a decrease in low joints and bent rails should result. The springs in like manner relieve the axle and wheels from shock, and, consequently, there should be fewer bent axles and broken wheels.

These advantages will permit higher hauling speeds, while the cars will take curves easier and derailments will be fewer. This should reduce appreciably the frequency of wrecks on the haulage road, thus saving much valuable time as well as permitting a freer movement of traffic. Higher speed, larger car capacity, and a decreased liability to wrecking will mean greater mine output with less rolling stock.

Much interest attaches to the actual use of spring journal boxes of this kind in the mines. If they are successful, it is probable that similar equipment will be employed in the future, and much of the present rolling stock may be subject to overhauling. In installing such equipment the mines are merely taking a step that the railroads found it advisable to take many years ago.

**France Makes Much Use of Compressed-Air Locomotives in Coal Mines**

BY FRANCIS P. MANN

Paris, France

FRENCH regulations forbid the use of electric or gasoline locomotives in all mines or underground work where firedamp would cause explosions, so that compressed-air locomotives have been much used in France. For other reasons also they are often preferred for certain classes of work. For instance the Paris subway, which is always under extension, is now making use of an up-to-date locomotive of the Renault type. The latter has been designed in general for all classes of tunnel or mining work, and runs upon a 24-in. track. It is made in three principal parts, vehicle frame, air tanks and back cab, and these can be dismounted so as to be let down separately into a mine. The engine is of a new type which is claimed to be quite an improvement over those which have preceded it.

A high-pressure cylinder is disposed on one side of the vehicle and a low-pressure cylinder on the other side, the wheels being driven as shown in the illustration. Above the cylinder is the slide valve, which in
How to Make Portable Electric Cable Last

By H. M. McEORLAND

Vol. 22, No. 15

COAL AGE

THE replacement of broken and worn-out low voltage and portable electric cables can be greatly aided by attention to five vital factors, which are as follows:

(1) Use of conductors of proper size.
(2) Proper working voltage; all proper uses of operating reels of current size for the speading of cables.
(3) Proper stranding of the copper conductor.
(4) Care in the handling of cables.

Let us consider first why it is important that all conductors should be of proper size. Practically all underground cables have Para rubber of varying percentages of vulcanizing next to the copper. This rubber starts to deteriorate when the vulcanizing temperature is reached. For this reason the temperature of the proper melt be kept at less than 220 deg. F. This cannot be done unless the conductor is of the proper size.

From actual tests made by the manufacturers of all rubber cables having a high percentage of Para rubber the operating temperature of such cables is less by about 25 per cent than the same size of braided cable carrying the same current. This is because of the greater heat conductivity of the high-grade rubber. Table 1 shows the size of conductors recommended for various mine locomotives and mining machines operating at both 200 and 550 volts direct current. The recommendations are based on the maximum allowable copper temperatures.

**TABLE 1.—SIZE OF CABLE FOR LOCOMOTIVES AND CABLE CUTTERS**

| Voltage | Size of Cable | Size of Rubber
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>110 Volts</td>
<td>No. 4</td>
<td>No. 4</td>
</tr>
<tr>
<td>150 Volts</td>
<td>No. 4</td>
<td>No. 4</td>
</tr>
<tr>
<td>200 Volts</td>
<td>No. 6</td>
<td>No. 6</td>
</tr>
<tr>
<td>550 Volts</td>
<td>No. 8</td>
<td>No. 8</td>
</tr>
</tbody>
</table>

The difference in cost between any two sizes of cables is only 8 to 12 per cent and the larger size of cable has 25 per cent more copper than the smaller size and will last it from 30 to 50 per cent, so that an actual saving in dollars and cents is made by using the proper size. This is particularly true on the all-rubber cable, as the rubber is hard to cut while cool, but cuts more readily when the temperature rises.

As to the proper working voltage, attention may be called to the fact that the work done by any direct-current electric motor is the product of volts and amperes. When the voltage goes down the amperage goes up—not in exactly the same ratio but depending on the way in which the motors on the various kinds of equipment are wound. This tendency to draw increased current from the line at low voltage is greater on series-wound motors, as the entire current is carried around the field of the motor. Practically all mine locomotives have motors of this kind and over 50 per cent of the winding on the compound-wound motors of the mining machines in general is in series. Therefore the cables may be expected to heat up when, owing to low voltage, they have to carry an excess of current.

Now as to the size and method of operating reels for spreading cable, the larger the diameter of the reel, the less the copper conductor is bent and the less likelihood there is, therefore, of breaking the component wires. Of course, there is a practical limit to the size of reel to be used, but the manufacturers could greatly improve their reels in this respect.

The method of operating the reel is even more important than its size, for a mine locomotive while gathering frequently reels and unreels its cable one hundred times per day. When doing such work it is easy for the cable to get foul of any of the many obstructions in the mine. If there is no protective device on the reel to slip and protect the cable from excessive tension when it thus becomes entangled, the copper wires are likely to be stretched and reduced in diameter, thereby decreasing their conductivity, if not actually breaking some of them. Soft-drawn copper will stretch about one-quarter of its length before it will part.

As to the correct stranding of copper conductors, nearly all manufacturers regard the three-strand cable as standard. Now the number of wires in each strand should be sufficient to give the cable enough flexibility for the service intended. As locomotives reel and unreeil their cable three to four times as often as mining machines the cable used on mine locomotives must necessarily be much more flexible if it is to have long life. The standard practice now with reliable manufacturers is to put at least 19 wires to each strand for locomotive cables, giving a 7x19 cable or 133 wires all told, and on the mining machines a 7x7 or 49-wire cable is found to give good results. A 49-wire cable will not have as long a life on a locomotive as would a 133-wire cable, yet the difference in cost is only 5 per cent.

**LIFE OF CABLE Depends on CAREFUL HANDLING**

Another important factor in the life of cable is the manner in which it is handled. This is a problem for each individual operator and in the main depends on the experience of the motorman or machine runner who handles the cable. Green men invariably abuse the equipment they handle, but with proper supervision they can be made to take care of their cables; some really remarkable records in fact have come to my notice.

For your information and also a mark to shoot at I will give you herewith a record of an all-rubber-covered cable in use at No. 2 mine of the Clinchfield Coal Corporation at Dante, Va. Mr. Booker, chief electrician of this company advises that he put a No. 3 all-rubber cable on a 5-ton locomotive Sept. 8, 1921. This locomotive gathered coal in the daytime and handled a mining machine at night. The current for this machine was fed through the same locomotive cable, giving a day-and-night service.

Up to Sept. 15, or in a little over one year, this locomotive has hauled 42,500 tons of coal and the machine has cut 47,000 tons of coal, giving a total hauled and cut of 89,500 tons of coal. The first cost of the cable was $70 and 7 splices in that time will add $3.50, or a total cable cost of $73.50.

Dividing this sum by 89,300 tons gives a cost per ton of $0.0008 or $ of one mill. This is about 1 of 3 mills, which was the cost per ton of braided cables given by C. E. Rogers in the excellent paper of his committee on gathering locomotives.

*Part of a discussion at a meeting of the Committee on "Standard Codes for Portable Electric Locomotive Cables," presented at the West Virginia Conference on Electrical Engineering. This report was used as the basis of a report of the Committee on Cable Age.

**"Wire & Cable Co.**
Rubber-Covered Vs. Braided Cable for Mine Work

Beware of Short Cotton Fiber in Braid—Kink Test—Though Rubber Covered Cable Lasts 75 to 100 Per Cent Longer, Mines Getting Ten Months’ Service Out of Braided Cable Should Not Abandon It

ONLY such cables will be considered in this article as are used for connecting conductor-cable-reel gathering locomotives, coal-cutting machines, loading machines, portable lamp cords and other mining equipment to trolley wires. Until recently rubber-covered cotton-braided cable was in general use. Approximately two years ago all-rubber-insulated cable made its appearance, and for mining service it quite largely has replaced cotton-braided cable.

For a long time the question as to the kind of cable to be employed usually was left to the discretion of the salesman. The order called merely for No. 3 or No. 4 locomotive or mining-machine cable, as the case might be, and the conductor thus loosely specified often gave unsatisfactory service. In some cases the cable lasted only two or three months and sometimes an even shorter period, whereas the average life should be from six to eight months.

All cables of the braided type have a rubber insulation and a woven covering of cotton, either single, double or triple braided. This braiding is saturated with an insulating compound, the purpose of which is to keep water out of the cotton, thus preventing the fiber from loosening or rotting. It also gives to the cable a certain degree of slickness which helps it to resist abrasion. The chairman of this committee has made extensive tests on different forms of this type of cable and has found that some manufacturers use an inferior grade of cotton in their braid. The fibers are short and hard, and the life of cable of this kind is, of course, not as long as it should be.

BEWARE OF CABLE COMPOUNDS THAT PEEL OFF

The braid in some cable is not fully saturated with compound. Other cables show a beautiful glossy surface, giving the appearance of having plenty of impregnating materials, but the compound will chip off when the cable is bent. Consequently the braid becomes bare and presents a dull and ragged appearance. When this type of cable is used on gathering motors or mining machines the cotton braiding soon breaks and unravels and much tape is necessary to keep the conductor in service until at last so many splices have been used that renewal becomes necessary.

The chairman of this committee has had manufacturers submit samples of different makes of cables to which he has applied various tests in order to ascertain the strength of the cotton braid and rubber insulation. Among others he has used a “kink” test, in which the cable is bent into a short loop and then pulled out straight again.

None of the cables with ordinary woven braid would resist this test, as the insulation would tear under the stress. Most of the cables where the covering of cord construction would come through the test in good condition. Some of the manufacturers are insulating their cables with heavier rubber than is found on ordinary braided cable, and when they do so the cable gives better service than any of the other cotton-covered cables.

In making a choice between all-rubber-covered cable and braided cable, attention should be paid to the fact that all-rubber-covered cable costs from 75 to 150 per cent more than cotton-braided cables with the braiding of either weave or cord construction. Therefore, a cable with all-rubber insulation should have at least twice the life of ordinary braided cable.

For any mine which is getting from 8 to 10 months of service out of ordinary cotton-covered cables a change to all-rubber-covered cable is not advisable. The life of a cable as used on gathering reels on mine locomotives or loading machines, etc., usually ends when an excessive number of splices has been made, and it has been observed that a cable which with very careful handling would have only three splices after 8 months in service, would require, after that time with the same careful handling, to be spliced not less than once a week. After 10 months’ service it would need splicing so frequently that to avoid loss of time it would be advisable to install new cable.

NUMBER OF REELINGS DETERMINES LIFE

It is apparent, therefore, that the life of the insulation and of the copper itself is limited by the number of times the cable has been reeled, especially if it is subjected to long hauls and is bent around sharp corners. Another factor which enters into the life of the cable is the voltage which is maintained at the entries on which the equipment is working. If the voltage is not kept within a reasonable range of the normal rating of the machine the cables are subjected to heavy currents and consequently to heating. This is likely to make the copper brittle. Furthermore, if the cable gets too hot so that the insulation warms up, the rubber separates from the copper strands, and on braided cable the insulating compound also melts out.

The life of cables subject to such treatment is very short, but under such conditions life proportionate to value cannot be obtained from either type of cable. Another factor entering into the life of such conductors, especially on gathering locomotives, is the type of reel in use. At this point I would call the attention of manufacturers of gathering locomotives to the fact that...
while they have made wonderful progress in the development of the new type of gathering locomotives, the development of the real task has not kept step, and the cable reel is a subject which should have further consideration from the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers.

On some locomotives the spooling device will not accommodate No. 2 cables even when properly spooled, and in consequence toward the end of the spooling the cable is wedged and pressed on the reel. This injures the insulation and the stranding of the cables just as it injures the strands of a hemp rope when it is not wound properly or evenly.

The manner in which the cable is handled by the miners when gathering has much to do with the length of its life, as the man often gets too much slack and then runs over the cable and sear or whip it. This is done when the men are either not familiar with the type of reel to use or are not taught as to the proper operation of the reels. It also occurs on some types of reels if the clutch has not been set at the proper interval.

The mains look in the type of all-rubber-covered cable now in general use is that the insulation stands up well. After the cable has been run over or kinked severely the copper strands will part when subjected to strain, yet the rubber insulation will show almost no signs of injury. To find such a place in a 500-ft. cable will consume from one to three hours of a man’s time. If he found it in less time he would be fortunate enough.

When such gathering locomotives is required to haul a certain weight of coal every day, the minerman cannot reach this quota if he is obliged by an inefficient search for hazards in his cable. The man at the Stowega plant for this reason took such a dislike to all-rubber-covered cable that at one time a brand new one was found all dropped to pieces. For this reason the claim that all-rubber-covered cable resists frequent and expensive interruptions cannot be substantiated. It will seldom take a man more than 30 minutes to find and repair a break in braided cable. For this reason the Stowega Coal & Coke Co. has hesitated to accept all-rubber-covered cable as standard in its various operations. Another reason for not standardizing on this cable is that the Stowega Coal & Coke Co. is getting an average life of 6 to 9 months out of all-rubber-covered cables.

At the last convention and industrial mining exposition the chairman of this committee told some of the representatives of the cable manufacturers that cable of No. 3 conductivity and cord was wanted with the cable strength of No. 2, and cords of No. 4 conductivity and cord was wanted with the tensile strength of No. 3. To obtain these I recommended the use of a steel or similar reinforcement of high tensile strength.

Some of the manufacturers of all-rubber-covered cable are following this suggestion and have brought out during the last two months different types of reinforced locomotive cable. At the present time a cable of this type has been in service approximately two months and the results obtained are quite satisfactory. The Stowega Coal & Coke Co. will receive in the near future cables of various kinds all thus reinforced and will continue its experiments on this type of cable.

For extension cords around mines and mine shops all-rubber-covered cable should be used. The wire should be of not less than No. 14 gage, for the majority of electricians break or injure the fine strands when skinning the wires and thus reduce the carrying capacity of the cable and its ability to withstand the pulls and strains to which extension cords are subjected.

The committee would suggest to the manufacturers rubber-insulated cable from No. 4 to No. 1 gage should have 133 wires. For ordinary braided cable up to No. 3 size the limit should be set at 49 wires, as the danger of puncturing the rubber insulation with the finer sizes of stranding would be too great. For the larger sizes No. 2 and No. 1, 133-wire cable is necessary to insure flexibility. On the cables where the brailing is of cord, the strands for No. 3 can contain either 133 or 49 wires. Not more than 49 wires should be used, however, in No. 4 cable.

The committee would suggest to the manufacturers of all-rubber-covered cable that they reduce the cost of their cables so that they will come closer in line with the cotton-braided cables, as it believes that in many cases the additional service obtained from the all-rubber-covered cable over the braided cable does not warrant the 80 to 150 per cent high cost.

It believes that all-rubber-covered cable is a step forward to a better insulated and more serviceable cable and would like to see wires and cables of this and similar construction manufactured for installation work, as it believes that it will give excellent service in conduit, where the cable is subjected to much vibration, as in tipples and breakers. It also thinks that fire hazards will be greatly reduced by the use of this type of cable, as rubber is not as easily ignited as a cotton weave saturated with compound which is at present used to insulate wires and cables for installation work.

Though this paper does not mention the multiple-conductor mining-machine cables, attention is called to the fact that all that has been said in regard to the insulating and wearing properties of the cable as used...
by gathering locomotives applies also to this cable. There remains the question whether to use concentric or twin cables, but the opinion of all who use cable for this purpose is so greatly divided that no conclusive arguments can be brought forward to decide the question, because, after all has been said, each one uses the type of cable, concentric or twin, that meets his own peculiar conditions best.

Engineers Detail Experience with Machine Cable, Resistors and Insulating Oils*

As at the third session of the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers, on Thursday, Sept. 21, F. M. Reigher, of the American Coal Co. of Alleghany County, Bluefield, W. Va., made the report for the committee on cables. Mr. Reigher proved a firm advocate of braid-covered cables, not so much on the ground that they were better than rubber-covered cables, which he did not claim, but because the latter were more expensive and would have to be cheaper to receive his indorsement. He asserted that the wires inside a rubber-covered cable were likely to break, and when they did it was sometimes extremely difficult to ascertain just where the defect occurred.

Reuben Lee, of the Elkorn Piney Coal Mining Co., Stanaford, W. Va., said that cars could be run over rubber-covered cable without any trouble of the kind described. He himself would use nothing else. His company had used that type of cable for seven or eight years. N. A. Johnson, of the Buffalo-Eagle Coal Co., Braeholm, W. Va., declared that he had no trouble with concealed broken wires. At his mine he had never been able to get, like Mr. Reigher, seven or eight months of service out of braid-covered cable. He preferred an all-rubber coating. He found difficulty in holding enough cable of adequate size on certain types of reels.

C. E. Rogers was afraid that the rubber of rubber-covered cable would deteriorate before he would get sufficient life out of it to justify its greater expense. He found that foremen and superintendents were quite willing to pay the greater cost if thereby they could get better service out of the cable, certainty in operation being in their belief more important than ultimate length of life. Mr. Johnson said that the saving in splicing reduced delay and justified the higher cost.

Deterioration Vs. Wear Factor in Cable Life

Mr. Reigher stated that in estimating the life of a cable consideration should be given not merely to days of life but to the number of reelings and unreeelings during that period. Some men reeled out the cable twice as many times a day as other men, thus inevitably shortening the life by increasing the daily service. A. Fred Phelps, of the Post Glover Electric Co., said that rubber-covered cable would last two or three times as long as cable covered with braid, but nevertheless it might not last ten months where the conditions of service were peculiarly trying.

Mr. Reigher urged that 133-wire cable was made up of excessively small wires and said that such wires punctured the covering. He believed that rubber-covered cables with steel reinforcement in the rubber could be guaranteed for twelve months. He could not see that rubber-covered cable could be expected to last long enough to make the investment profitable. Mr. Phelps said that no guarantee of the life of a cable should ever be given because a "short" might at any time overhear the wires and insulation. Furthermore at some places cables would last eighteen months and at others not more than thirty days.

H. M. McFarland, of the Simplex Wire & Cable Co., said that much depended on how the strands were disposed. He found seven and nineteen strands better than thirteen and seven. Mr. Reigher remarked that he was opposed to the use of such fine stranded for a No. 4 cable, whatever might be used in those that were larger. Mr. Phelps amplified his previous statement by saying that the compensation rules in Pennsylvania made favorable insurance provisions wherever fuses were provided in the cable. One objected, however, that fuses were useless, as machine men would take ample care that the fuse was provided with a conductor that would not fuse at any lower current than that which would melt the wire in the cable. For this reason fuses would be little or no protection.

Cable Larger Than No. 4 to Have 133 Wires

E. S. Simkins, of the Standard Underground Cable Co., declared that the whole matter had been discussed at a hearing held by the Bureau of Mines and it had been decided that 133-wire cable should be used for the larger cables but that No. 4 and smaller should have only 49 wires.

Mr. Lee said that the grades at Stanaford were so heavy that the cables heated and the rubber came off on the braid-covered cable. Someone remarked that the insulation in braid cable varied greatly and some specification should be made as to the amount of rubber used. Mr. Simkins said that every kind of insulation was used by unscrupulous manufacturers. Some of it, he jokingly asserted, was a mixture of Jersey mud and molasses.

He said that when reeled in three layers cables had only about one-half their unreeled capacity. The mine locomotive builders admitted that their reels were too small for an adequate size and length of cable, but with that admission they rested. They had done nothing to increase the size of their reels.

Roscoe Woltz, for the committee on the use on mine locomotives of resistance grids made of rolled steel plate as compared with cast grids, made a report on that subject, as published in the issue of Coal Age of Sept. 11. Mr. Reigher declared himself a believer in the steel grid. Nevertheless he said he had cast grids in use that had lasted six years.

Mr. Phelps said that the steel grids would occupy no more space than cast grids and that standard grids
R. R. Webster, chairman of the committee on the Proper Handling and Care of Insulating Oils, read the report on that subject. This report appeared in Coal Age in the issue of Sept. 28. The chairman said that the subject was one of considerable importance, as many transformers had been in use now for quite a few years and the oil had not been changed or filtered. He also read the following statement:

"The following are tests on the oil of three General Electric 65-kva. 2,300 206-volt single-phase transformers, used inside a mine substation to supply a synchronous converter. The two tests are about two years apart, the oil not being filtered or renewed in the meantime. The day load on these transformers has been averaging approximately 60 per cent of full load. However, the short-time peak loads often exceed 175 per cent of full load. A temperature test taken during the summer, when these transformers were reported to be running warm, showed the oil to be 114 deg. F. Note that the decrease in the dielectric strength of the oil during the two years is considerable:

<table>
<thead>
<tr>
<th>Test Aug 28, 1922</th>
<th>Dielectric Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transformer Oil From</td>
<td>Oil From</td>
</tr>
<tr>
<td>Sample 1</td>
<td>Sample 2</td>
</tr>
<tr>
<td>150</td>
<td>14.25</td>
</tr>
<tr>
<td>151</td>
<td>15.00</td>
</tr>
<tr>
<td>152</td>
<td>15.300</td>
</tr>
</tbody>
</table>

NOTES: The laboratory which made the test of Aug. 28, 1922, reported no samples in oil, described the color as "lemon" and recommended "filtering for insulators."

"The following is quoted from an article by J. L. R. Hayden and W. N. Eddy which appeared in the July, 1922, issue of the Journal of the American Institute of Electrical Engineers. It is a tabulation of the average per cent error that might be expected for (1) a single test, (2) three tests, or (3) six tests on oil if the mean of 500 successive breakdowns is taken as the correct dielectric strength and any variation from that as the error:

<table>
<thead>
<tr>
<th></th>
<th>Long Sphere</th>
<th>Short Sphere</th>
<th>Needle Sphere</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average error</td>
<td>1.1</td>
<td>7.8</td>
<td>2.8</td>
</tr>
<tr>
<td>Maximum error</td>
<td>6.7</td>
<td>46.5</td>
<td>34.1</td>
</tr>
<tr>
<td>Time breakdown tests</td>
<td>0.8</td>
<td>3.2</td>
<td>1.9</td>
</tr>
<tr>
<td>Minimum error</td>
<td>4.0</td>
<td>22.4</td>
<td>19.7</td>
</tr>
<tr>
<td>Six breakdown tests</td>
<td>0.6</td>
<td>2.7</td>
<td>3.5</td>
</tr>
<tr>
<td>Average error</td>
<td>2.9</td>
<td>17.5</td>
<td>15.0</td>
</tr>
</tbody>
</table>

Mr. Crenshaw wanted to know how the "sweating" properties of a steel transformer differed from those of one made of cast iron. He was told that a transformer case if properly prepared by drying for the reception of the oil would not permit of an accumulation of sweat, providing the oil itself was free from moisture.

It being learned that the Coal and Industrial Exposition would not be held in Huntington next year, the association concluded not to set any place for the next meeting until it was ascertained where the exposition would be held.

THE U.S. BUREAU OF MINES does not make life tests of batteries used on electric lamps, but the performance of the batteries is studied during a short period while the lamp bulbs are being tested for life and uniformity. Also, field inspections are made by the bureau's electrical engineers, and reports are obtained from both users and lamp manufacturers. As a result of this general information the bureau believes that lead cells will give 300 shifts of 12 hours each, and alkaline cells 600 such shifts, without failure.\n
Ventilation of Mines with Flexible Conduits

Brattice Cloth, Sollars, Windboxes, Metal and Flexible Pipe as Means of Ventilating Blind Entries—Method of Suspending and Coupling Pipe and Erecting Ventilating Machinery

EVERY coal mine requires some sort of ventilation. As a rule the circulation of air through the various headings and rooms of ordinary workings is not difficult, as every mine is, or should be, laid out with this end in view. When it becomes necessary, however, to ventilate long stretches of single heading or various other dead-end operations a more serious problem is introduced.

Common means of carrying air to dead-end faces include the brattice, the sollar, the windbox, and various kinds of pipe, either rigid or flexible. The brattice is well known to all coal miners. It consists of a partition built up of boards or canvas, or both, extending through-out the length of the place to be ventilated, dividing it longitudinally into two sections or compartments. In one of these the air travels inward and in the other outward.

A large volume of air may be handled by the brattice. It is nevertheless subject to many shortcomings. In the first place it is always liable to more or less leakage. The brattice itself as well as the joints at floor and roof seldom can be made tight. If carried to a point near the face it is subject to injury from shooting. This is particularly true if the passage to be ventilated is in rock which must be blasted from the solid, this of course necessitating heavy loading. It also reduces the width of the roadway unless the place driven is specially widened for that purpose.

DIVIDING THE AIRWAY BY HORIZONTAL BRATTICE

Sollaring air to the face as a rule is more expensive and less satisfactory than bratticing. Whereas the brattice divides the heading or driven passage vertically the sollar divides it horizontally. Thus a bratticed heading contains two compartments side by side, while the sollarhed heading has two passages one above the other. The sollar has all the shortcomings of the brattice so far as leakage is concerned with the added disadvantage that it is applicable ordinarily only where timber framing such as post sets are used.

The windbox is a modification of the sollar. Here air is carried into a working by means of a wooden box laid, usually, on the floor at the side of the driven passage. Such a box, even though effective, is difficult to make airtight and requires much lumber, as a rule being made of tongued-and-grooved flooring. It also adds appreciably to the fire hazard and is not an efficient means of carrying air, as the frictional resistance is considerable.

Sheet-iron pipe often is used to convey air to the remote faces of headings and rooms. This may be either black or galvanized and usually ranges from 8 to 24 in. in diameter. Though fairly tight and losing much less air from leakage than any of the devices previously mentioned, it is somewhat difficult to handle, as it cannot be collapsed in any way. The maximum length that can be transported conveniently is about 10 ft., so that many joints have to be made in its erection. In addition to all this the sheets from which such pipe is made are thin and subject to rapid corrosion. Galvanizing will protect them from water but not from acid, which many, if not most, mine waters carry in solution. Consequently such pipes, though affording excellent results for a time, are as a rule short-lived.

Another disadvantage of such pipe is that it becomes dented, causing a loss in carrying capacity, and if this occurs near the joints the leakage is considerable.

During recent years another form of piping that possesses many advantages over the devices previously mentioned has come into more or less extensive use. This is a tube of canvas or fabric that is marketed under various trade names. Such tubing is manufactured by at least three makers—two in this country and one in England. Thus the Bemis Bro. Bag Co., of St. Louis, Mo., manufactures a canvas tube known as Flexoid; E. I. du Pont de Nemours & Co., Inc., of Wilmington, Del., makes a fabric tube similar in many respects to the product just mentioned but known as Ventube; and the Telephones Co., Ltd., of Vaughan Road, West Harrow, Middlesex, England, manufactures a canvas pipe known as Ventwal.

All the tubes manufactured by the above firms are circular or elliptical in cross-section. An Australian device of similar nature is made with a rectangular section. Inasmuch, however, as this shape does not lend itself readily to manufacture at low cost and as a conduit of this section must be supported by a framework of light wood or metal this device has not met with extensive application. The circular forms also oppose less resistance to the air current.

In ventilation by means of flexible conduit the joint between sections has always presented difficulties. In the Flexoid and Ventube pipes this has been overcome by fastening a light spring-steel slightly collapsible ring at either end of each section of tubing. In joining two sections together one of the end rings is slightly
TUBE CAN BE PATCHED LIKE A RUBBER TIRE

A special cement is used for patching, the part to be patched being deflated and the torn section to be covered being carefully cleaned with gasoline. Two coats of cement are placed on the pipe and on the patch and left to dry. When completely dry the cemented portions are hammered together on a flat surface, giving instant adhesion. For temporary repair underground a small patch can be sewed on, and this usually will give entire satisfaction.

“Fittings” for this kind of tubing are exactly analogous to those available for wrought-iron or steel pipe. They include elbows, tees, wyes, reducers and the like as well as a connection to join the tube to the rectangular discharge nozzle of a fan or blower. A blasting piece also is sometimes used next to the face if heavy charges are to be fired. This is drawn back before the shots are detonated, and pulled forward again after the blast, thus avoiding the injury to the fabric which frequent removal and dragging over the ground would inevitably cause should the end tube be unhooked every time before a shot was fired.

As a rule a fan or blower will be used to furnish the air current. Where compressed air is available, however, a small jet may be led within the outbye opening of the pipe and a ventilating current induced on the principle of the injector. Tests made in South Africa some years ago showed that 5 cu.ft. of free air per minute escaping under pressure from a 6-in. nozzle opening induced a current of 210 cu.ft. per minute; 80 cu.ft. of free air escaping under pressure from a 9-in. opening actuated a current which delivered 1,080 cu.ft. of air. These experiments were conducted on a 538-ft. length of 9-in. pipe, and the figures on the resulting current just given were the discharges measured at the outlet opening and included, of course, the input of compressed air.

In most cases, however, as above stated, a fan or blower will be employed. This may be mounted either permanently or temporarily. For a permanent foundation no material, all things considered, appears to equal concrete. Brick or stone masonry may, however, be employed to advantage. In emergencies or in cases where the fan and tubing are to be used for only a short time a wooden foundation may be employed. This can be built up of mud sills and cross-pieces, bolted, drift-bolted or spiked together. Any timber that is
convenient, such as posts, ties, chock lumber and the like may be used, provided an even foundation surface is secured. Sawd lumber, of course, is preferable. If properly made a fan may be operated on a foundation of this kind for a long time.

In work of this nature the motor and fan, if possible, should be direct-connected. If this is done both elements may be bolted on a common base, which in turn is bolted to the foundation as a unit. For large volumes of air, however, belt or chain drives have their advantages, as the motor and fan may then be readily separated and moved into place with greater ease than if joined rigidly together. This arrangement, however, necessitates two foundations. Many companies manufacture fans suitable for this kind of work. Many motors also are available.

Although ventilation by this means will hardly be used in the ordinary operation of a well-regulated coal mine it may advantageously be resorted to for special work or in time of emergency. Thus it will find application in driving long passages, such as drifts or slopes from one bed to another, under streams and the like. The accompanying illustration shows some of the dead-end faces that can be ventilated by this means.

So far as coal mining is concerned it is in time of emergency that this type of ventilating equipment will be found most valuable. Its light weight—one man can carry 100 ft. of 16-in. tubing without serious inconvenience—and the rapidity and ease with which it may be erected are considerations of high value after a disaster, such, for instance, as an explosion. Furthermore, in fighting mine fires it may in many cases be used to good effect. This will be particularly true in those instances where the exact location of the fire is unknown and where it is desired to attack it from above. Under such circumstances sometimes thousands of feet of narrow passages must be driven. As every mining man knows, these are extremely difficult, if not impossible, to ventilate by ordinary means.

In such emergencies also time is, or may be, an all-important element. No man can do his best in an atmosphere depleted of its oxygen or vitiated by smoke or explosive fumes. Pure air in adequate volume delivered at or close to the working face will not only promptly clear away powder smoke and the like but will assure a maximum of effort from the workmen employed. With an outfit of this kind such an emergency can be met without delay.

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Reports and Investigations 
State Geological Surveys 
and Mining Bureaus

Coal Reserves of Cambria County, Pa.

By John F. Reese

Cambria County, Pennsylvania, has six coal beds that are now of economic interest. In order of their present importance as shipping coals these are the Lower Kittanning, Upper Kittanning, Lower Freeport, Upper Freeport, Clarion and Brookville.

The many mines working the Lower Kittanning bed and exposures of its outcrop have furnished many measurements of its thickness, thus making possible an accurate and reliable computation of the quantity of coal contained. The "B-Rider" coal of the Bens Creek area has been computed along with the Lower Kittanning coal in this report.

The Lower Kittanning is the most persistent bed, contains the greatest coal reserve and is the largest producer within the county, yielding more than 8,100,000 tons annually.

A fair amount of information as to the thickness and persistency of the Upper Kittanning bed is available. This measure is best suited for mining in the Patton, Portage, South Fork and Johnstown areas.

A fairly accurate estimate of the quantity of coal in the Lower Freeport bed is made possible by many measurements at mines and outcrop. This measure attains its best development for mining in the Barnesboro-Spangler area.

The extensive outcrop of the Upper Freeport bed throughout the county, and its mine development in various localities, furnish a fair number of measurements for an accurate estimate of its quantity. It is

mined most extensively in the Barnesboro, Hastings, Gallitzin and Cresson areas, where it attains its best thickness.

The Clarion or A coal has been computed as of economic interest in Reade and Richland townships, where it has been mined. Little is known of its thickness and extent, and only areas surrounding mining developments or proven ground have been computed.

The Brookville or A coal has been considered as of interest in five townships, namely, Adams, Cresson, Dean, Gallitzin and Richland. Only areas surrounding operations or proven ground have been computed, as little is known of the extent and persistency of this coal.

Cambria County has a total area of 697.4 square miles. The result of computing the coal reserves in this county based on the latest maps, engineering data, and methods is shown in the accompanying table. The figures are here given as computed. It should, however, be distinctly understood that while the acreage of each of the beds has been accurately calculated, the reliability of the average thickness of the coals employed in the computation of tonnage decreases for the various beds in the order following: Lower Kittanning, Upper Freeport, Lower Freeport, Upper Kittanning, Brookville and Clarion. Thus, while the figures for the Lower Kittanning bed are conservative and probably reliable, those for the Clarion coal may be much too small or many times too large.

Detailed tables of the coal reserves in each township have been prepared and will appear in printed form in a report now being written on the bituminous-coal fields of the state. They can be consulted in the office of the Topographic and Geological Survey; or figures for a single township will be mailed from this office on request.

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Coal Reserves in Cambria County

<table>
<thead>
<tr>
<th>Bed</th>
<th>Original Quantity</th>
<th>Million Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Freeport</td>
<td>1,014,000</td>
<td>51.4</td>
</tr>
<tr>
<td>Lower Freeport</td>
<td>1,537,000</td>
<td>73.4</td>
</tr>
<tr>
<td>Upper Kittanning</td>
<td>2,850,000</td>
<td>137.6</td>
</tr>
<tr>
<td>Lower Kittanning</td>
<td>2,030,000</td>
<td>99.9</td>
</tr>
<tr>
<td>Brookville</td>
<td>1,630,000</td>
<td>76.5</td>
</tr>
<tr>
<td>Total</td>
<td>5,813,000</td>
<td>271.8</td>
</tr>
</tbody>
</table>

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October 12, 1922  COAL AGE  589
Valuation of Coal Land Leaseholds
In Tax Returns

BY W. B. REED
Washington, D. C.

In every coal field there are operations on leased land. Many companies make both from leaseholds and from land owned in the field, but not all of those who work under leaseholds appreciate the value of the lease or consider that they are entitled to establish on their books and before the Internal Revenue Bureau a recoverable value for this form of property. In particular, the operators who had substantial earnings prior to March 1, 1913, or who have preferential royalty rates or favorable conditions are in position to profit by taking advantage of this failure of the tax law and regulations.

Under the revenue acts of 1918 and subsequent years the value of a lease may be amortized. The procedure is comparatively simple. The Treasury Department has a Form 7, rather formidable it is true, but one that most companies find it necessary to file. The facts necessary for a lease to establish the value of a leasehold are assembled when Form 7 is issued. But the Treasury Department does not make the deduction in tax that corresponds—the lessee must make it himself.

Whenever a lease was vested in the ownership of any property on March 1, 1913, prior in the event of a subsequent sale of that property be regarded as capital, and is assessed to the lessee from income tax, regardless of the fact that that value may have increased during the term of its contract. Consequently revenue legislation has provided that profit in the sale of such assets shall be apportioned by taking the fair market value as of March 1, 1913, or as the basis of value. Therefore, it has always been recognized that the taxable profit from the sale of a mining lease shall be in excess of the March 1, 1913, value. This being the case, the importance of establishing such values in the case of such property is obvious.

SUPREME COURT DECISION WITH INTEREST

It would have seemed natural for Congress to provide for deduction of depletion, or, more strictly speaking, for the amortization of such leasehold values as allowable deductions in ascertaining taxable income under the revenue laws, but it was not until the passage of the act of 1918 that proper consideration was given to this situation and an allowance provided for the same. The Supreme Court has decided that, since the 1918 law the lessor is not entitled to such a deduction. Nothing before has ever been paid in such a case. If such a lease would be amortized, but the amortization in value was not therefore recognized.

The Bureau of Internal Revenue has issued voluminous regulations as to how values may be established. They may be summarized as: cost, sales or transfers of similar properties, royalties and rentals, values for capital stock or local taxation, records of litigation, probable court inventories, and disinterested appraisals, and present value of eventual earnings.

Because comparatively few representative transfers of operating coal-mining property took place around the basic date of valuation, March 1, 1913, and because the other methods offer little for comparative value, most valuations in this field are determined by the present-value method. This method is one generally recommended by the engineering profession and is equitable in that it gives recognition to the value of management as a factor. Two properties may be or apparently similar nature, yet one be a failure and the other a success. As a former official of the Internal Revenue Bureau put it: "A dollar of capital which will earn a quarter is worth more than a dollar which will earn a nickel."

R. V. Norris Defines "Present Value"

A leasehold is a property right and to appraise its present value requires first a knowledge of the proper method and second certain basic facts. R. V. Norris' defines present value as follows: "The total value of a property at any date is the value of the future earnings of such property discounted to that date. The value of the mineral in the ground at any date is the total value of the property as above, less the value of the present and prospective expenditure for plant, development and equipment necessary to recover such mineral discounted to the same date."

The Treasury Department has held that taking into consideration the hazards of mining and marketing, a fair basis of valuation in the bituminous coal industry is obtained by using a discount factor of 8 per cent with a sinking fund provision of 4 per cent. Many engineers, however, will not agree with this basis.

Let us illustrate the theory of the valuation of a leasehold on the basis of earnings in the period prior to March 1, 1913. Assume that in the period prior to 1913 the average earnings were 30c per ton, that the life of the reserves after the date of valuation was twenty years and that the average annual production is 100,000 tons. This would give an annual profit of $30,000 and prospective profits in twenty years of $600,000. The present worth of the eventual earnings, $600,000, discounted on the basis of 8 per cent and invested in a sinking fund at 4 per cent is found, by using Hoskold's formula, to be $264,126. If from this is deducted the cost of plant, present and prospective, assumed here to be $125,000, we find the present value of the leasehold to be $139,126. On the basis of the 2,000,000 tons unmined at date of valuation, this gives 6.956c per ton, which may be deducted as depletion. If the annual production is 100,000 tons we have $6,956 allowable depletion and therefore a decrease of that amount in the taxable income.

Using the 1918 income tax rate for corporations of 12 per cent, plus 65 per cent, the highest bracket of the
excess profits tax into which many of the coal companies rates ran, we have possible a 77 per cent tax. Taking 77 per cent of our $6,956 we have $5,556 as the maximum saving through proper valuation of leasehold. Of course if the earnings in the period before 1913 were higher than the assumed average of 30c. or if the life of the coal is less than twenty years the per ton value would be correspondingly higher and the saving greater; if lower, the reverse would be true.

If the lease have a preferential rate of royalty as compared with neighboring properties made under similar conditions and at approximately the same date, values may be assigned upon the basis of such preferential values, without the necessity of proving on the basis of earnings.

It is possible that at times a value may exist in a leasehold for the purpose of invested capital. These cases are the most difficult to establish, but if the lease was a proven tract and was turned over to a corporation in exchange for capital stock of the corporation, the value of the lease may be "paid in surplus" within the meaning of the law and be capitalized as such at its value at date of acquisition, subject to the limitations, for the year 1917, of the par value of the stock or shares specifically issued therefor.

Recloses Instantly Circuits Temporarily Short-Circuited or Overloaded

AUTOMATIC reclosing equipment for use on direct-current circuits of 300 and 500 volts has recently been designed and constructed. Its function is to protect apparatus in case feeders become short-circuited or overloaded, and at the same time to insure a continuity of service when the trouble is only temporary.

This equipment, which is constructed by the General Electric Co., is designed for use on circuits supplying stub-end feed, a combination of stub-end and multiple feed, or in combination with a sectionalizing switch or sectionalized feeder.

The manner of its operation on a stub-end field—that is, one where the load is supplied by current from a single source—is so typical that once described the reader will have a clear idea of the manner in which the apparatus functions under other circumstances. The various devices that go to make up the equipment are a shunt contactor, an instantaneous overload relay, a reclosing relay, a control power switch and a load-indicating resistor. These devices are connected in accordance with the accompanying wiring diagram.

The sequence of operation of the equipment in case of a short-circuit or heavy overload on the feeder is as follows: The overload relay opens its contacts, thus de-energizing the coil of the contactor, which opens instantaneously, disconnecting the load from the power supply. When the contactor opens it closes the auxiliary switch (b; see diagram) which energizes the coil of the time-delay circuit-closing relay, which starts to close. The time delay is inserted at this point in the sequence in order to allow conditions on the feeder line to become stable. Closure of this relay completes the circuit through the lower coil of the reclosing relay.

OPERATES SOMewhat LIKE A VOLTMETER

The reclosing relay has two coils, both of which must be energized before the device will function. Its operation somewhat resembles that of a voltmeter, the lower coil being analogous to the permanent magnet of the meter while the upper one furnishes excitation to the movable element on which the contacts are mounted. The relay contacts will close only when the voltage drop across the load, with which the upper coil is in parallel, is enough to cause that coil to excite the movable elements sufficiently to close them. When the load resistance is zero, as in case of a short-circuit, there is no voltage across the upper coil, but when the load resistance is infinite or when open-circuit conditions exist, practically full voltage is impressed across the upper coil, because its resistance is much greater than that of the load-indicating resistor. Consequently it is possible to obtain an intermediate point and calibrate the reclosing relay so that, with a definite value of resistance in the load-indicating resistor, the equipment will not close on a load in excess of a predetermined value.

As long as the trouble on the feeder continues the reclosing relay will remain open, even after the time-delay relay has closed, because the voltage across the load is not enough to close the contacts. As soon as the trouble has cleared, however, and the load resistance has passed the predetermined point, the relay will close, energizing the coil of the feeder contactor which then closes, in turn closing the auxiliary switch (a) which seals it in. Closure of the contactor reconnects the load and de-energizes the time-delay relay which opens its contacts.

The equipment for circuits having a combination of stub-end and multiple feed makes use of a contact-making voltmeter to indicate when the potential difference between the feeder and the source of supply has fallen to a safe reclosing value. When the voltage has so decreased, the feeder contactor recloses in the same sequence as in the former instance. A relay connected in parallel with the contact-making voltmeter determines whether the equipment is to operate on multiple or a stub-end feed.
Examples of Successful Gravity Planes

Three Rail System, Top to Bottom of Plane, with Four-Rail Passing Tracks - Arrangement Wholly Eliminates Switches—Tipple Set on One Side of Incline as a Safeguard Against Runaway Cars

Referring to the inquiry of C. W. Shaffner, regarding the proposed installation of a gravity plane, Coal Age, Aug, 10, p. 211, kindly permit me to give a brief description of an incline that has been in successful operation for some time, and of any mines.

In using Table I, I will refer only to a few of the general features that have a particular bearing on the successful operation of the plane. Without knowing the exact conditions that brought the situation to which reference was made, it is clear that any plan proposed would have to be modified in detail to fit the case in hand.

Three-Rail System Assures Many Practical Advantages

With one reservation, not one of which I would hesitantly recommend a three-rail system extending the full length of the mine, except for the passing tracks midway of the plane, where there must naturally be four rails provided.

The important advantage of a three-rail system is that such an arrangement, when used as the normal arrangement of the incline, eliminates the need of switching at any point on the incline. It provides separate loading and empty tracks to be used exclusively by the loaded and empty cars, respectively.

This is accomplished by the installation of a vertical type of incline, formed in the drumhouse, which is located from 5 to 7 ft. above the head of the incline, as indicated in the accompanying figure.

Equipment, Guard and Track Arrangements

There are different types of three-rail machine, adapted to very different conditions, and a machine should be selected, not only from the standpoint of equipment, but also in regard to the weight of cars to be handled, and the service intended. It is important to consider the cost of handling of cars and the maintenance required. These factors will determine the efficiency and economy of the three-rail machine, and a careful study of the conditions will be necessary.

Referring to the figure, a portion of the track is shown at A. For a short distance from A to B, the grade is such that the incline, as shown in the figure, is 40 ft. above the plane, which is to be level. The portion of the track is shown at B and C, and at C to D, the grade is much steeper than the surrounding grade of the incline, reaching from B to C. These, from C to D, the grade is much shallower. This is an important feature, as the leading cars descending the steeper grade add force to overcome the friction and accelerate the incline.

At the same time, the descending empty cars are passing over the lesser grade from D to C.

Evidently, both tracks, at B and C, must be on the same level. Above the knuckle at A and below the knuckle at D, the tracks are graded to favor the movement of the loaded and empty cars respectively. At the various points marked x in the figure, there are provided short lengths of 2 x 4-in. oak pieces, for the purpose of lifting the rope over the rails.

The movement of the cars on the incline is controlled by a brake, as shown in the drumhouse. This brake is operated by a man stationed at the knuckle. A wire-rope cable reaches from that point to the brake in the drumhouse.

Further information regarding the operation of this incline will be gladly given if desired. One important point re-

Another Letter

In connection with the suggestion offered by D. S. Allison, Coal Age, Sept. 14, p. 415, regarding the use of three rails to replace the single track, above the passing point, on a self-acting incline, it may be of interest to state that such a system has been installed by the American Manganese Mfg. Co. of this place, at one of their mines.

At the head of the incline is located a set of tandem wheels, or gravity sheaves, of the type commonly known as "Figure 8." The machine is placed directly under the tracks leading into the mine. As has been stated the three-rail system is only used above the point where the cars pass each other halfway up the incline. Below this point a single track is used.

Plane Equipped with Permanent Cars and Automatic Switch

The automatic switch, at the lower end of the passing tracks, in this case, is operated by a weighted lever that keeps the switch set for the empty track, except as it is forced open by the loaded cars passing down the plane.

On this incline, there are but two permanent cars used, which are attached to the two ends of the rope, respectively. These cars are equipped with drop doors, at their lower ends. As a car reaches the foot of the incline the door is automatically raised by the movement of the car and the dump its load, after which the door again closes, locking with a spring catch.

At the upper end of the incline each car passes under a bin, located at the entrance of the mine, where it is loaded and then is ready for another trip. While only a small car is used at the present time, this arrangement is capable of handling an output of 500 tons in 8-hr. Its operation has given complete satisfaction.

Dunbar, Pa.

John Stannis.

Room Timbering

Cantilever action of roof follows extraction of coal—Permanent posts should not be carried too close to the face—Temporary posts there will often avoid breaking of timbers—Systematic timbering advised.

Referring to the question asked by "Timberman," Coal Age, July 27, p. 136, asking the best method of timbering rooms in a 6-ft. seam under 250 or 300 ft. of cover, with a good roof and bottom, I would like to make the following suggestions:
It is important, of course, to use timbers of a suitable size. In this 6-ft. seam the small diameter of the posts should not be less than 6 in. Good cap pieces from 3 to 4 in. should be used over the posts, but it will not be necessary to use foot boards.

Assuming that these conditions have been complied with and that the rooms are driven systematically, the continued breaking of the posts under this cover would seem to indicate that there is a greater pressure operating than that due to the weight of the overburden alone.

CANTILEVER ACTION OF ROOF FOLLOWS EXTRACTION OF COAL

The extraction of the coal always develops a cantilever action in the roof. In my sketch I have tried to illustrate the effect of this action. The gradual settlement of the roof on the timbers causes the strata to break a short distance back from the face of the coal. In the figure the portion A represents the area of complete settlement, while that marked B indicates where settlement is in progress.

As explained in the reply to this inquiry, the unbroken strata above overarches the opening, causing the weight of the overburden to rest on the ribs, and the weight of the loosened portion A above rests on the permanent timbers beneath it.

POSTS AT THE COAL FACE MUST NOT BE SET TOO TIGHT

The point I wish to emphasize is that temporary posts should be set under the solid portion B close to the face. If these posts are set tight between the hard roof and floor they will be broken by the weight coming on them, being subjected to a much greater pressure than the permanent posts farther back from the face.

If the breaking of the posts is more pronounced and continuous within a limited distance of the face it would seem that the posts have been set too tight under that portion of the roof. On the other hand, if the breaking of the posts extends further back from the face we must look elsewhere for the cause.

It is a good plan to drive several rooms abreast of each other and at a uniform width and distance center to center and watch the effect in producing a more uniform distribution of pressure. It might be well to use a line of light pegs up the center of the room instead of the middle line of posts. This would be expensive, however, and can only be advised as a last resort.

CAPS BEING CRUSHED SHOW POSTS ARE SET TOO SOLID

From the statement that the caps do not appear to serve their purpose when the posts take the weight, I infer that the trouble occurs at the face rather than down the length of the roof. I naturally conclude that the compression of the caps is not sufficient to allow for the settlement that must take place.

That being the case, it is not strange that the posts are broken since, as stated in the reply to the inquiry, the weight of the overburden is far in excess of the strength of the timber. Since this settlement is irresistible, the most practical course to pursue is to make the posting at the face temporary and not drive them tight.

The conditions described would also suggest the advisability of adopting a systematic method of posting by which the roof pressure will be more equally distributed.

I. C. PARFIT.

Washington, D. C.

Testing of Safety Lamps

Every lamp must be tested—Opinions differ in regard to character of test—Use of lamps approved by the Federal Bureau—Blowing test effective if properly made.

In his letter regarding the testing of safety lamps, Coal Age, July 13, p. 60, Joseph Cain raises the question as to whether the method of testing a lamp by blowing against it, as he has described, should not be adopted at all mines where such lamps are in use. Mr. Cain also asks whether it is possible to tighten a lamp to such an extent as to endanger the bleaching of the glass through an excess of air blown upon it due to the heating of the lamp.

It requires no argument to prove that a safety lamp should be tested for any defects, either of construction or assembly, before being entrusted to a miner. However, the manner in which this testing should be done is a question on which all may not agree. Before the lamp is assembled, it must be carefully examined in every part to ascertain if they are in perfect condition and there are no defects that would render the lamp dangerous.

PURPOSE OF FEDERAL BUREAU OF MINES TESTING OF SAFETY LAMPS

When a lamp has been assembled its further testing is for a twofold purpose: 1. To demonstrate that it will not pass the flame in a current of high velocity. 2. That it will not pass the flame by an internal explosion, under any conditions that may reasonably be expected to arise in the daily operation of the mine.

As far as I have been able to observe, very few mines have facilities for making a test to demonstrate the first of the two conditions mentioned. In fact, such a demonstration is not necessary, inasmuch as all approved lamps have been subjected to such tests at the Federal Testing Station. The fact that they have been approved by the Bureau of Mines is evidence that they have stood those tests successfully.

My point is that no mine should be worked with any other than approved safety lamps, if safeties are required at all. Then, if these lamps are maintained properly, there will be no necessity of their being subjected to a further test to ascertain if they will pass flame in a current of high velocity.

TESTING FOR INTERNAL EXPLOSION MORE IMPORTANT

Personally, I consider the testing of a lamp, for the second purpose named, of far more importance in determining its safe condition. As a matter of fact, there are few mines in which the velocity of the air current is as great as that to which the lamp has been subjected in the Federal Bureau test. Such velocities, if they occur at all, would only be found on the main intake and return airways of a mine.

Now, regarding the blowing test mentioned by Mr. Cain, it might be said that custom has sanctioned this practice, which has been in use a long time, in most localities, chiefly owing to its thoroughness and reliability, which is apparent to everyone. My experience is that when a lamp has been properly examined and assembled there is little danger of its being unsafe, except that it may leak air against the asbestos washers and these gaskets should receive careful inspection.

HARDENING OF GASKETS

At times, the gaskets become hard from long use and continued compression, which gives them a glazed surface and makes them ineffective, particularly if they are dirty. To remedy such a condition, the washer should be scraped to remove the compressed dirt and produce a soft surface that will form a better contact with the glass; or new gaskets must be used in place of the old ones.

In regard to the flame of a safety lamp being extinguished by the carbon dioxide contained in the breath, as suggested by one writer, it should be remembered that the purpose of the blowing test is to ascertain if the flame is at all deflected by reason of the air blown against it as it enters the combustion chamber. If the flame is at all disturbed or deflected, the lamp is unsafe. It seems to me that the distinctive effect of the breath is immaterial, in respect to ascertaining the security of the lamp.

MAKING THE BLOWING TEST

In making this test, I have found that the lips should be placed in close contact with the lamp, at the suspected points. If the lamp is held even a short distance away from the lips, the air blown against it is deflected by the circular form of the lamp, and the extinguishing effect of the flame is destroyed. This may not seem material, but it makes
The lamp has not been put to practical use in any mine. It has always been my understanding that nothing is so right when a light can be contemplated by breathing only the lamp base, that, today, many safety lamps are not put in this manner. It appears doubtful that statement, let alone the nuisance of the lamp, just below the glass.

From Letters Abroad.

While it may not have a direct bearing on the subject matter of this discussion, I think it will be well to draw attention to two features that have not yet been mentioned regarding the construction of safety lamps. The first has reference to the air entering the lamp at a joint below the base, so that the circulation within the combustion chamber and the chimney of the lamp will be in opposition to the body of the lamp. It is well known that where the air enters a safety lamp through the lower part of the lamp chimney and above the base, it soon escapes in order to reach the flame. This is the trouble with the old type of chimney lamps. The air will not enter the lamp, even though there is a lamp base. Moreover, there is a risk when a lamp will cause the base to "pop" and give off fumes, which are very liable to happen when the lamp is in the hands of a careless miner.

Owing to the regulating devices, in many safety lamps in use today, a fire lamp is apt to be less careful in making note for gas. He will often run the risk of an explosion within his lamp. However, most of the lamps equipped with regulating devices enter the air below the flame, thus creating an upward circulation within the lamp and clearing the combustion chamber of explosive gas. The construction, I believe, reduces the liability to danger from internal explosion.

The second feature to which I want to refer relates to the size of the gauze chimney. To my notion, a small lamp is stronger and better able to stand hard usage. It occupies less space, is easier to handle and a thin layer of gas at the top is more readily reached when the height of the lamp is reduced. As a result, Davy, with a large number of his fireboxes, is to carry an electric lamp in their cap, which has a good light and helps to expedite their work. This is the custom that has given rise to a desire for small testing lamps.

Listed, Led. W. H. LUXTON.

The reference of this correspondent to the desire of some firebosses to use a small lamp recalls the attempt made years ago to introduce a minia-

true Davy lamp, for the purpose of testing for gas in mines. When the knowledge of this came to the late James E. Roderick, then chief of the Department of Mines, in Pennsylvania, it brought from him a prompt protest against the use of such lamps, as being dangerous for many reasons.

STANDARD SIZE OF LAMP DETERMINED.

First, the size of the lamp and the small space enclosed within the gauze chimney, it was claimed, made the little lamp a menace to safety when exposed to a body of gas in the mine. Again, its small size made it an object that would naturally be tucked away in the pocket of a fireboss or foreman, where it would accumulate dirt, be upset and leakage of oil would render it unsafe for testing.

As the result of protracted experiments, the eminent chemist Sir George Humphry Davy, found that the best results were obtained in the use of what has since become a standard gauge for safety lamps, containing 28 wires (No. 28 B.W.G.) to the inch, or 784 openings per square inch. Davy drew attention to the danger arising from the use of gauze chimneys of too large a caliber as in the old Scotch Davy; or a chimney that was too high, as in the Pielier safety lamp. Similar danger also exists in the use of too small a gauze chimney, by restricting the volume within the lamp.—EDIT.]
 הפרטים על צבע האיטלקי נלקחים ממקור ידוי. כלlarınızı בטוחיםijing. כותרת: "A large percentage of electric gathering reels are of the single-conductor type. In mines where the rails, on room entries and in the rooms turned off those entries, are laid with fair amounts of care and the fishplates bolted up so as to afford a good rail return for the electric current, there is no true reason why a single-conductor cable will not give satisfactory service. The double-conductor cable has been used largely, in the past, where wooden rails were laid in the rooms; or where iron rails were used but improperly laid and the fishplates loose or missing. Under these conditions, it is quite evident that a single cable could not be used to advantage, if at all. Today, most of the mines realize the importance of keeping their tracks in fair condition, as derailments are not only expensive but affect the output to a very considerable extent. There are two types of conductor cables; namely, the twin-conductor cable, consisting of two parallel wires bound together to form a single cable, and the concentric type of cable. I regard the latter as being much superior to the former. Most of the double-conductor cables manufactured have been of the twin-conductor type, which is very difficult to reel up evenly, and makes the operation even harder of accomplishment when it becomes necessary to use a cable that has been spliced. During the last few years, I have been recommending the concentric type of double-conductor cables, wherever it is necessary to use a double cable owing to poor track conditions. The concentric type has the advantage that it needs much more evenly than the twin-conductor cable. In the concentric type, the ground side being outermost, no particular damage is done if the outside layer of insulation becomes worn off in operation. Though, in the case of this type of cable, repairs may be a little more difficult, this disadvantage is more than counterbalanced by the advantages gained. Allow me to advise that wherever possible the single-conductor cable should be used, with a type of reel having a small inertia in the drum, which will insure easy winding and prevent the heavy stresses caused by a type of drum having a large inertia. It is my belief that money spent in providing a fair rail return, on side entries and in the rooms, will more than balance the extra cost of double-conductor cables and the consequent high cost of maintenance and additional delays.

Examination Questions

Answered

Indiana Mine Bosses' Examination
Indianapolis, 1922

(Selected Questions)

QUESTION—Discuss the subject of mine ventilation, setting forth the purposes; mechanical devices and their uses; quality of air required and how determined; quantity of gas and how determined; humidity and temperature, how determined; mine gases, how detected; their danger and how prevented; and give the law respecting mine ventilation.

ANSWER—Brieferly stated, the purpose of ventilation is to furnish pure air throughout the mine, by conducting it from the air shaft in one or more splits so that it will sweep the working faces, in quantity and velocity to dilute and carry away the noxious gases that accumulate in the workings.

Many small, non-gaseous mines are ventilated by a furnace constructed near the foot of the air shaft. In all the larger and up-to-date mines, however, either a centrifugal or a disk fan is used to force the air into the mine or exhaust it from the mine. In either case, a free circulation of air is produced in the airways and throughout the workings.

The Indiana Mine Law requires the circulation of 100 cuft. of air per minute, for each person, and 300 cuft. per minute, for each mule, employed in the mine. The air is measured by means of an anemometer, which shows the velocity of the current, and that multiplied by the sectional area of the airway gives the volume of air in circulation.

The percentage of gas in the return air current is first estimated by observing the height of the flame cap in a safety lamp exposed to the current. Taking this percentage of the total volume of air in circulation gives the quantity of gas generated in the mine.

The humidity and temperature of the mine air are ascertained by observing the readings of the wet-and-dry-bulb thermometer. This instrument is often called a hydrometer or psychrometer. The reading of the dry-bulb thermometer determines the temperature of the air.

Mine gases are detected mostly by observing the effect of the gas on the flame of a safety lamp. Methane or carbon monoxide causes a flame cap, while carbon dioxide makes the lamp burn low or puts it out entirely. Carbon monoxide is generally detected by observing its effect on small birds or mice confined in a cage. Hydrogen sulphide is detected by its smell.

Carbon dioxide is dangerous when accumulated in low and badly ventilated places. In mines, because the gas contains no available oxygen for the support of life, and its presence depletes the oxygen of the air, causing suffocation and death. The other three gases named are inflammable and form explosive mixtures with air.

These dangers are prevented, as far as possible, by providing adequate ventilating current to sweep them from their lurking places in the mine.

The Indiana Mine Law (Secs. 255, 261, § 265) requires that 100 cuft. of air, for each person, and 300 cuft. of air, for each mule, be kept in circulation, in all main and cross-entries and working places in the mine, to an extent to keep it free from standing gas and in a fit state for work. The law further provides for the examination of the mine by a competent fireboss using a safety lamp, the examination to be made before each shift.

QUESTION—Discuss the subject of mine warning devices with respect to gas, weight of rails, ties, nails, fishplates, curves, grades, switches, ballast, drainage; and give the legal respecting width and refuge holes.

ANSWER—All tracks on haulage roads must be well bedded and drained by a suitable ditch at the side of the road. Main roads should be well bedded with good material. Weight of each rail, weight of rails, ties, fishplates, and fishplates must be determined by the size and capacity of the mine cars used. This is largely modified by the height of the track as determined by the headroom on the roads. In general, in locomotive haulage, a 3 or 4 ft. track gauge is used, with rails weighing from 10 to 50 lb. per yard, fastened by spikes or rivets, bedded with ties and fishplates, and the fishplates, with the proper spikes and bolts, tightly fitted to the rails. The grades on the main roads, as far as possible, should favor the movement of the loaded cars, a 1 per cent grade being preferable. It is quite impossible to make tracks entirely without tracks where the track is to be avoided and all switchings must be carefully laid by competent trackmen.

The Indiana Mine Law (Chap. 197, § 11) provides for a clearance space, 8 ft. wide, for the passage of railroad cars, and 4 ft. wide, for the passage of hand cars. The space must be free from all obstructions, except proper fences and other material. This does not apply to mines in the Black-Creek field, working Sesquicetna, and other一律 known as the Low Carbon and Upper Sesquicetna in Indiana. Chap. 255, Sec. 12 provides for refuge holes, 4 ft. deep, measured from the side of the car, and 4 ft. wide, at distances not more than 20 yards apart, to be constructed on all single-track haulage lines not more than 600 ft. long, where the distance from the mine mouth to the head of the track is 1,000 ft. or more.
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<tr>
<td></td>
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<td>152,000,000</td>
<td>684,000,000</td>
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<tr>
<td></td>
<td>Ton</td>
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<td>$0.36</td>
<td>$2.08</td>
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<tr>
<td></td>
<td>Per Ton</td>
<td>422,914,000</td>
<td>372,000,000</td>
<td>50,914,000</td>
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<tr>
<td></td>
<td>Per Ton</td>
<td>$2.74</td>
<td>$0.38</td>
<td>$2.32</td>
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Peace Prevailed to the End at Cleveland; Reorganization Committee Starts Work Nov. 14 at Chicago

What the Conference Did

Enabled operators to compose many violent differences and to discover much "common ground," leaving them more nearly unified than at any time in years.

Created a "reorganization committee" of two miners (one a district president) and two operators from each of the 15 districts whose operators attended the conference, with a vague understanding that other districts can come in.

Instructed this "two-by-two" committee to suggest a method for negotiating future wage contracts. It is understood that the committee is not to report until the new United States Coal Commission does and that nobody is bound to accept its recommendations, though all parties hope to.

"Peace to the end!" was adhered to with determination in the wind-up of the joint miner-operator conference in Cleveland, Ohio, last week, as forecast in these columns. The bitterness among operators on Monday, Oct. 2, the opening day of the meeting, was smothered into the background on Tuesday, a day of give and take, and on Wednesday the partly settled program of conference decisions was put through calmly and with doors open to the public. The fighting was all over.

So the conference proceeded to set up its joint committee to work out and suggest a method for future negotiations; it agreed not to comply with the Washington request for twenty names for President Harding to consider in appointing the United States Coal Commission, and it simply "omitted" to set up any joint fact-finding commission of its own because it was the desire of the conference to do no act that would appear in the light of interference with the people's investigation of the coal industry. Since the miners wished to supply President Harding with a panel of names, they were permitted to do so after the conference adjourned. But the operators, many of whom have already submitted lists in response to requests from the administration, declined.

When the conference adjourned, about the middle of the afternoon on Wednesday, both sides agreed that no such display of harmony between miners and operators, and among operators' groups, had been seen in many years. They all declared that a new era of good feeling might easily be starting from this conference. There was some difference in tone in some of the after-conference statements, however.

WATKINS COMMENDS LEWIS' CONCILIATION SPEECH

T. H. Watkins, president of the Pennsylvania Coal & Coke Corporation, declared that the spirit displayed by both sides had been splendid and that he had never seen such harmony prevail in a joint meeting. He said the conciliatory speech of John L. Lewis, president of the miners, on Tuesday morning, was a fine declaration and went a long way toward harmonizing the whole conference. Mr. Watkins felt very optimistic for the future of relations between miners and operators.

T. K. Maher, of Ohio, who with Mr. Watkins and W. H. Haskins, of Ohio, was largely responsible for the settlement of Aug. 16 with the miners, agreed that a fine spirit pervaded the meeting and that the conference was entirely satisfactory.

"There was carried out here," said he, "not only the letter but the spirit of the Cleveland agreement. The first factor that contributed to produce harmony was the speech to the miners by Mr. Haskins, in which he made it plain that the little group which first signed the Cleveland agreement intended to stand by it here, even if they had to do so alone. The second factor was Mr. Lewis' speech and the third was Mr. Watkins' able analysis of the problems that confront us and what this conference ought to do."

In the test of strength between the "small group" of operators who broke the strike in August and the majority there was much belligerence. Mr. Maher, of the "little group," finally was conceded the temporary chairmanship of the joint conference, but Phil Penna, of Indiana, was made chairman of the operators' separate sessions, with W. D. McKinney as secretary, and also was chosen permanent chairman of the conference.

There was difference of opinion as to whether the letter and spirit of the Cleveland agreement had been carried out. Many operators and groups who went to the conference uniting for a strike, finally did so when it became apparent that no minority was to dictate policies as it did in the making of the Cleveland agreement and that therefore the spirit of this conference differed widely from that of the Cleveland meeting in August. They felt that the harmony of this conference was no result of bludgeoning by anybody but resulted from a realization by operators and miners alike that the only hope of doing business in the future lay in unity groups. Therefore the operators effected what chairman Penna called "a cohesion."

COMMON SENSE, NOT THREATS, DID IT

"Common sense, not threats, and Lewis' speech were responsible for our final harmony," said H. N. Taylor, president of the Central Coal & Coke Co., of Kansas City, a man who was an outstanding figure throughout the conference, and the outcome of it all was most satisfactory." When he was asked how permanent he felt the new harmony was, he replied: "I think it is as permanent as the harmony effected in 1898. Operators went into that meeting with such hatreds that they didn't know each other. They made peace. It lasted for twenty years or even longer." Said Phil Penna: "The operators never can be as united as the miners for they are competitors among themselves and have far more conflicting interests than any union groups have. However a real unity was accomplished among them here."

"Both sides saw the necessity for harmonious action," commented John L. Lewis, miners' president, and, "my heart is gladly heart that it was taken. The manner in which the business of the conference was dispatched augurs well for the future of the coal industry."

Peace at the conference was so infectious that it pervaded even the relationships between President Lewis and Frank Farrington, delegate president of the Illinois miners, whose bitterness against Lewis has been obvious for a long time. Farrington received committee appointments at the hands of Lewis and the two appeared to make it a point to meet several times and converse pleasantly in public.

The joint conference was called by President Lewis and T. K. Maher, chairman of the August Cleveland meeting, thus following out the terms of that meeting. Under the agreement which ended the strike, the two main purposes of the joint conference were to choose a joint committee to set up machinery for future wage agreements and to name a joint fact-finding commission within the industry. If the conference failed by Oct. 10 to agree upon this fact-finding commission, then President Harding was to be asked to
Operators on the committee are: District 6, Ohio, Michael Callaghern and James H. Pritchard; Iowa, E. C. Smith and A. E. Kilgore; Kansas, W. P. Bowne, W. A. Johnson and C. H. Jenne; Arkansas, Oklahoma and Texas, M. McWilliams and to be chosen; Wyoming, H. C. Marchant and one to be chosen; western Kentucky, C. W. Taylor and F. D. Rash; Michigan, R. M. Randall and Warren Pippen; Missouri, F. W. Lukens and H. N. Taylor; Indiana, Hugh Shirkie and M. L. Gould; Washington state, J. H. Campbell; Illinois, central Pennsylvania, Pittsburgh and Montana are yet to name their members.

On motion of President Lewis this "two-by-two" committee will have its first meeting at the Great Northern Hotel in Chicago at 11 a.m., Nov. 14.

Thus the main scheduled business of the joint conference was finished and the conference adjourned to be reconvened at the call of the "two-by-two" committee whenever that board is ready to report. It was the general understanding throughout the conference that that committee is to wait until the new United States Coal Commission produces some results before it completes its plan, for the whole feeling of the conference was that the federal investigation is to be given a clear field and that its recommendations are to be adopted as far as possible.

As Phil Penna put it: "Everybody in the coal industry has tried to put our own house in order in the past and failed. Now the people should be given a chance to do it for us."

It was also understood that whatever recommendations the "two-by-two" committee may make are not necessarily binding upon either miners or operators though everybody recognizes the value of any work which is being done and that the recommendations will stand. President Lewis of the miners said as a final word from his side that he "hoped" the committee would be successful in working out an acceptable plan.

Miners Stick to 1922 Demands; Lewis Almost Sure to Be Re-elected

Immediately after the "peace conference" of miners and operators in Cleveland, which ended Wednesday afternoon, Oct. 4, the policy committee of the miners' union assembled, conversed briefly and announced that the platform of demands for wages and conditions which was adopted at the Indianapolis convention in February, 1922, had been reaffirmed. Thus whenever the time comes for the presentation of demands for the next wage agreement the miners will demand a continuance of their present wages, as well as a six-hour day, five-day week, time and a half for overtime, double time for Sundays and a correcting of machine inefficiencics and certain other elements of the existing working agreement. While this program was adopted early this year the miners have never presented it. The reaffirming of this set of demands eliminates the necessity of another miners' convention to formulate new demands.

It became known at the end of the Cleveland conference that President Lewis' re-election as chief officer of the International United Mine Workers was assured. Nominations for the next election, which was now in, made Lewis the choice of between 1,600 and 1,700 union locals, while George Mercer, statistician in District 12, generally referred to as a "Farrington candidate" of the rebellious element in the union, won the nominating votes of only about 128 locals. The names of Lewis and Mercer are the only ones to go for the ballot for the election. While a number of locals attended to nominate their candidates in Texas, to run against Philip Murray, of Pittsburgh, for vice-president, it was officially stated that Howat's name would not be permitted on the ballot because he is not recognized as a member of the union, never having been reinstated after his ejection with his entire group of Kansas officers nearly two years ago. William Green is guaranteed the nomination and election to continue as secretary-treasurer.

F. R. WADLEIGH, who now is devoting most of his time to matters connected with the office of the Federal Fuel Distributor, has been looking into the anthracite situation during a visit to Pennsylvania fields.
Fact-Finding Commission Should Seek Improvement of Coal Industry, Not Act as Tribunal

By Paul Wooton

Washington, D.C., Oct. 9.—Developments of the last week have caused officials concerned with coal to take a much less encouraging view of the situation than at any time since the strike was settled. There is a general belief that the peak of production has been reached and that a decline in output may be expected. The public believes the shopmen's strike is over. As a matter of fact it is continuing on a number of roads and some of those roads are vital in effecting the maximum coal production. Even on those railroads where the strike is settled, unusual difficulty is being experienced apparently in effecting an equitable distribution of available cars. Car supply is spotty and uncertain. The non-union districts are suffering particularly. Their cars were sent broadcast over the country during the strike and great delays in their return are occurring. Incidentally as a result of that situation, Western mines have a proportionately better car supply. The fact that the surplus of empties has been exhausted and the increasing pressure of other freight along with the difficulties in obtaining compliance with service orders and car rules and regulations make for increasing difficulties in supplying mines with coal cars.

It is clear that the more critical part of the situation is to obtain the distribution of household fuel. Every effort is being made at the office of the Federal Fuel Distributor to meet that situation. It is known that there has been no extensive substitution of anthracite. It is recognized that that situation is one in which the operator can do little. It is entirely a problem of inducing the retailer to exert his influence with the consumer to induce him to lay in a supply of bituminous coal or coke.

While the coal strikes still in progress have only a small influence on coal production, they are having serious consequences in creating a shortage of gas coal and in their influence on beehive coke production. The strike in the Greensburg-Westmoreland district is chiefly responsible for the bad situation with regard to gas coal, while the strike in the Connellsville district is so limiting the output of beehive coke that there is no surplus, which was being counted on to substitute for anthracite.

There is general disappointment that production at its apparent peak fell short of the 10,000,000-ton mark. If no better showing was made in September under certain advantages that will not exist in October or again this year, there is little hope of producing enough coal to meet the full requirements of the winter. The entire September production was necessary to meet current requirements. It is believed that very little of it went into storage. If surpluses are not made available in October the dangers of the situation are increased, particularly if severe weather conditions should occur during the late autumn and early winter.

Officials generally are pleased by the developments at Cleveland. To have had another commission studying the coal situation would have been embarrassing in many ways and would have been a distinct burden on the industry. At the same time the decision to study the wage agreement problem meets general approval, as it is regarded as certain that the government's fact-finding commission will fail in bargaining within the industry rather than the setting up of a coal labor board.

As is evidenced by several provisions in the act creating the fact-finding commission, the framers of the law—for the most part lawyers—could not get away from the idea of a court. Those officials closest in touch with the coal situation hope that the commission is not going to devote too much of its time to the calling of witnesses and the taking of testimony under oath. They prefer seeing the problem approached in a student-like manner with emphasis on the desire to give sympathetic attention to any proposal which has as its object benefit of the coal industry.

The hope also is expressed that the commission will not divide itself into two parts, one to consider anthracite and the other the bituminous situation. It is believed that the two industries should be studied together since the problems of one have their counterpart in the other. Anthracite, for instance, would be a most instructive exhibit in considering the overdevelopment of bituminous mines. There would be much gained by viewing the industries side by side, so that full advantage could be taken of their contrasts. It is also hoped that the commission will possess a sufficient aggregate of courage to recommend whatever drastic policy may seem best to meet the situation. It is being called upon to provide a constructive program for two generations to come. The thought is that few problems on the horizon are as important as that of coal. Heat is essential to life. Power is essential to industrial civilization. Each must be had in quantities sufficient to meet all requirements and must be cheap if the nation's progress is to be maintained. There is much more before the commission than an effort to work out a plan whereby capital and labor may live in the same house without demolishing it as an incident to internecine strife.

Spens Simplifies Order on Daily Reports

Under date of Oct. 4, 1922, Fuel Distributor Spens modified his order No. 1 calling for daily reports of coal shipments. The modifications permit the omission of names and addresses of consignees and car numbers and initials by all who will keep such a record in their offices. Instead of being required to note the number of carloads of coal shipped to designated classes of consignees, as “steam railroad,” “public utility,” etc. Shipment to tidewater and the Lakes may be so designated. Shipments to other than consumer, as to tide, to wholesale, or to scales, must be reported as such and the producer is to be held responsible for the ultimate reports from the middleman as to the destination of the cars.

The order follows:

ORDER OF FEDERAL FUEL DISTRIBUTOR, Oct. 4, 1922

Paragraph IV

1. To facilitate reporting and assure the earliest possible reporting by the Federal Fuel Distributor of the latest and most complete information immediately required, compliance with the provisions of Regulation II requiring the daily report of names and addresses of all consignees, with car numbers and initials in问-place wanted as to all producers, who shall continue to keep and preserve full and detailed records showing all movements in each form so as to enable them promptly to furnish such information as to any shipment if and when required in any particular case, or as to any entry in the columns to be employed in answering the following questions:

"Consignee" and "Office Address" apply to consignees, "Car Nos. and Initials" authorize the number of carloads shipped and the names of consignees or shippers;

The "Nature of Consignee's Business" should be designated, where applicable, as "Steam Railroad," "Public Utility," "Wholesale," "Dealer for Domestic Use," "Industrial Use," "Farm and Stock," etc. and like designations.

In giving the "Destination of Shipment," state place of shipment or "Tidewater" or "Lakes" as the case may be.

1. In all cases where the coal is shipped from the mines to the middlemen, or to tidewater or lakes ports for transmission from there to the ultimate consumer, the producer shall keep daily account of all sales shipments upon the form required by Regulation XI; giving in all of the following information:"

Washington Correspondent of Coal Age
Pennsylvania's Estimated Coal Reserve Cut Almost in Half; Enough for 290 Years

According to a survey of the bituminous coal fields of Pennsylvania, just completed by the bureau of topographic and geological survey of the state department of internal affairs, there are 48,830,860,000 net tons of recoverable coal in the state. At the present rate of consumption this supply will last 290 years. The department has announced that prior to this survey it had generally been believed the bituminous fields held at least 75,990,000,000 tons of recoverable coal.

The report says: "The original bituminous coal deposits in Pennsylvania reached a total of 75,250,055,000 tons and thus far only 5,519,655,000 tons have been mined out. Waste and unrecoverable coal leaves a total of 45,830,860,000 tons which can be mined out and used.

"The largest original deposits were found in Washington and Greene counties. Washington originally held 10,526,003,000 tons and Greene 10,030,094,000 tons. Thus far only 42,490,000 tons have been mined in Greene and 557,765,000 tons have been mined in Washington County. The largest supply still recoverable is in Greene County where it is estimated that 7,011,400,000 tons of mineable coal still remain, a supply approximately 40 per cent more than the total mined in the entire bituminous coal field up to the present time.

"Westmoreland County thus far has furnished more coal than any of the other counties, a total of 1,218,141,000 tons having been mined to date. Allegheny County stands second with 969,200,000 tons and Fayette ranks third with 899,544,000 tons.

"The summary of the coal reserves was worked out from detailed county reports in which the area, thickness and quantity of coal in each bed was computed by townships. The work was done by Major John F. Reese, mining engineer, who has had wide experience in the bituminous coal fields of Pennsylvania."

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<th>Mined Out (in Thousands of Net Tons)</th>
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<td>Blair</td>
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<td>Brady</td>
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<td>Washington</td>
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<td>Total</td>
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Lake Coal Loadings During Season to End of September*

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<th>Year</th>
<th>Total</th>
<th>Cargo</th>
<th>Fuel</th>
<th>Total</th>
<th>Cargo</th>
<th>Fuel</th>
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<td>2,164,898</td>
<td>1,375,526</td>
<td>90,628</td>
<td>3,484,463</td>
<td>3,128,496</td>
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<td>2,019,600</td>
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<td>1,418,326</td>
<td>40,134</td>
<td>2,678,860</td>
<td>2,158,645</td>
<td>520,215</td>
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<td>1,768,313</td>
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<td>355,764</td>
<td>4,031</td>
<td>496,964</td>
<td>382,035</td>
<td>114,929</td>
<td>597,000</td>
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<td>684,981</td>
<td>659,835</td>
<td>4,201</td>
<td>1,349,017</td>
<td>868,035</td>
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<td>614,344</td>
<td>12,477</td>
<td>1,253,642</td>
<td>895,695</td>
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<td>971,672</td>
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<td>597,221</td>
<td>610,285</td>
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<td>685,071</td>
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<td>18,711</td>
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<td>1,975,930</td>
<td>257,722</td>
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Morrow and Callahan Resign as Officials of National Coal Association; to Form Selling Company

J. D. A. Morrow, vice-president of the National Coal Association, and John Callahan, its traffic manager, have resigned from these offices and will establish the Morrow-Callahan Coal Co., which will act as a selling agent for a few well-known coal producers who will be associated with the firm.

While it is believed that these officials of the National Association would have taken this step sooner or later, regardless of the situation within the National Coal Association, it is evident to the officers and members that there was no inducement to embark in business for themselves at this time by the lack of support being given that organization.

At the present time the National Coal Association represents less than 50 per cent of the country's bituminous production. Mr. Morrow frequently has urged upon bituminous operators the necessity of having within the organization the maximum possible amount of the country's production. It always has been recognized as impossible to have 100 per cent of the production represented in any organization of operators. This is due to the fact that many mines are owned and worked by manufacturing concerns or other consumers as a mere incident of their business. Such operators of coal mines as public utilities or steel makers, for instance, are not immediately concerned with the welfare of other producers of coal. In many instances they are particularly anxious not to align themselves with the operators whose principal business is the production of coal. Nevertheless there is at least 75 per cent of the country's production which reasonably might be expected to join in a national association.

One of the outstanding results of the study of trade associations which has been made since the Supreme Court's ruling in the Hardwood case is that industry must have a practical point of contact with the federal government. Coal is too essential to the public welfare for the government to have to turn to several thousand individuals in an effort to secure information. It is admitted almost unanimously that there must be someone in Washington authorized to represent the bituminous industry. Such a representative must be supported by a staff.

Unwilling to Occupy False Position

Mr. Morrow is believed to have felt that the association is such an obvious necessity that it should have the unanimous support of no less than 75 per cent of the country's bituminous production. When it became apparent that this measure of support could not be obtained, Mr. Morrow is thought to have been unwilling to pose as the representative of the industry when as a matter of fact he was representing only the minority portion of production.

While it is admitted that Mr. Morrow's resignation has precipitated something of a crisis in the affairs of the National Coal Association there is every indication that the organization will continue. It is known that certain coal operators are so convinced of the need of the association that they would be willing to finance it themselves in order to keep it in existence. It is certain that there never has been in the history of the coal industry at which so great a need for some organization exists as at present. What the government has done in the way of regulating distribution and in the creation of a commission, which within a year will recommend legislation and other action of great moment to the industry, well may be the entering wedge for drastic federal regulation unless there is evidence that the coal industry is competent to work out its own salvation. The coal industry confronted with such a situation it is apparent that a point of contact with the federal government will continue to be maintained. It is fully expected that the resignation of Messrs. Morrow and Callahan will emphasize the need for a wider measure of support for the association.

Mr. Morrow first came to the attention of the coal industry in a national way when he wrote the report on coal for the Bureau of the Census, based on the returns of the 1909 census. He was on the point of leaving Washington after the completion of that job when E. N. Hurley was made chairman of the Federal Trade Commission. Mr. Morrow had formerly worked with Mr. Hurley and at his earnest request Mr. Morrow consented to remain to serve as personal assistant to conduct the initial research, which resulted later in the Webb-Pomerene Act, making legal combinations for purposes of export trade. By the time the export investigation was out of the way the coal situation had come in for serious attention, with the result that Mr. Morrow stayed with the commission to make a study of the bituminous-coal industry.

Organized Pittsburgh Producers' Association

Mr. Morrow left the Federal Trade Commission to organize the Pittsburgh Coal Producers' Association. In 1917 he was called to Washington to organize the National Coal Association. In January, 1918, he accepted an invitation from the Federal Administration to reorganize the distribution division of that organization. He continued as head of that division until it was dissolved, when he resumed his position with the National Coal Association.

Mr. Callahan began his career in the train service of the Pennsylvania R.R. Promotions carried him into the traffic end of the work, where he specialized in the problems of coal transportation. His activities as traffic manager for the National Coal Association have brought him into the front rank of the country's traffic specialists.

Governor Davis Signs Order Fixing Coal Prices in Ohio at $3.56-$4.86 at Mine

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The prices as fixed are for mine-run and provisions are made for a charge of 25c per ton more for lump and 25c per ton less for 'light slack.' The Administrator Neal reports that the price list is to be considered only temporary and will be maintained until a study of the cost of producing and distributing coal now under way is completed, when it is proposed to issue a revised price list. Dealers' and jobbers' prices are likewise to be announced as soon as the necessary information has been compiled. The price list as announced follows:

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District No. 1—Meigs County and Cheshire and Addison townships, Gallia County, $3.66.
District No. 2—Vinton Jackson, Lawrence, Athens, Pike and all of Gallia County, except Cheshire and Addison townships, $3.94.
District No. 3—Butler and Athens mining districts, Coal and Morrow townships, in Perry County, and Homer townships, Morgan County, $3.72.
District No. 4—Wallington and Washington townships, Morgan County, except Homer township and Perry County, except Coal and Morrow townships, $4.24.
District No. 5—Muskingum County $3.94.
District No. 6—Holmes, Tuscarawas, Carroll and Columbiana counties, except Harrison and Harrison township in Harrison County; Washington and Youngstown townships, Columbiana County, and Brush Creek, in Jefferson County, $3.57.
District No. 7—Trumbull, Mahoning and Valley townships; Jefferson county, except the 4A coal in New Alexandria township, Jefferson County, $3.64.
District No. 8—Monroe County, Bolivar County except Warren townships and operations in the 4A coal, in Harrison Township, Jefferson County, $3.64.
District No. 9—Greenup and Warren townships, Jefferson County, except the 4A coal in Newton Township, Jefferson County, $3.57.
District No. 10—Greene County and Warren Township in Butler County, $3.64.
Special prices for coal mined by the Wayne Mining Co. $3.51.
Maryland Householders Bulk at Price of Bituminous Coal for Domestic Use

In a communication from the Maryland Fuel Distribution Committee, alluding to the Federal Fuel Distribution Act, it is stated that no really abundant coal is available for sale. The coal on the market is claimed as a weapon for the control of coal prices. The committee have urged the Government to impose a coal tariff, but the effects of the tariff are not likely to be felt for some months. The Government is urged to use its influence to keep the price of coal down.

State Fuel Administrator Depreciates Move To Enact Coal Legislation in Michigan

Governor A. J. Greenough, issuing the call Oct. 2, saying that his action was encouraged by information from the mines, states that it would be unwise to accept coal distributions after shipments leave the mines. Governor Greenough believes present conditions indicate a serious coal shortage during the winter and he wants to prevent excess-cost prices.

The Detroit Ex-Servicemen supports the position of Mr. Greenough. One of the senators says Detroit dealers have done a profitless trade but and would not seek to impose the same upon others. The Government, he is informed, has been asked to buy coal in order to keep the current price lower.

Willard Makes Suggestions to Railroads To Speed Up Distribution of Coal

At a conference held with Mr. Spens in Washington on Oct. 1, Governor Willard made a report of the distribution of coal throughout the country. The report was unanimous that the national coal companies are unable to meet the demands of the country, and a larger number of coal distributors would be needed to meet the demands of the mines. Governor Willard also gave a general statement of the importance of the coal situation, and he said that the railroads are unable to meet the demands of the mines.

Lake Strike Does Not Halt Flow of Coal

The second week of the strike of miners employed on the Great Lakes by the Lake Erie Steamship Company opened with practically all services still on the water, although the flow of coal over Lake Erie slowed down as the week wore on. The railroads are unable to meet the demands of the mines, and the coal companies are unable to meet the demands of the railroads.

Locals of District 26 Protest Against New Wage Agreement

Phalen local of the United Mine Workers has formally protested at the wage agreement between the U.M.W. for District 26 (New Brunswick, Nova Scotia and Prince Edward Island) and the soft-coal operators, principally the Dominion Coal Co. (British Empire Steel Corporation). This local was instrumental in starting the recent strike which ended in the agreement following the defeat for re-election of the old board of officers including Robert B. Van Cauwenbergh, president of the district. The new board is composed of twelve national board members for the district. The Springhill local also is in the field against the agreement.

The United Mine Workers for District 26 are leading in an attempt to found a labor college. If the college is opened it probably will be in either Glace Bay or Sydney. The officials of the district assert that such a college is a necessity. The labor college, say the union chiefs, would preserve democracy and instruct in coal mining and other occupations.

Due to the large volume of shipments by river, output of coal and coke in the Connellsville coke region is increasing in spite of the car shortage. All operating mines are increasing in man power and output. A couple of union mines on the river nearby in Washington County struck Oct. 4 — the Diamond mine of the Diamond Coal & Coke Co., because the men were ordered to load cars of the Mather Collieries Co., an open-shop operation, and the Lily mine of the Lily Coal & Coke Co., because they were asked to load barges for the Pittsburgh Steel Co., which operates open-shop mines. The miners tried also to get the Pike mine of the Diamond Coal & Coke Co. out, but failed, and the Diamond mine returned to work Oct. 5.

Loc's D. Tracy, of Edgewood, Pa., has been appointed superintendent of the central experiment station of the Bureau of Mines at Urbana, Ill. Mr. Tracy was educated at the Sheffield Scientific School and at Yale University. He holds degrees as both mining and civil engineer. He joined the staff of the Bureau of Mines on July 15, 1918. Since that date he has served the bureau continuously as a coal-mining engineer. Mr. Tracy takes the position made vacant by the recent resignation of J. J. Rutledge, who now is chief mining engineer of the Maryland Geological Survey. J. L. Lamson has been transferred from the Geological Survey's New England district to the New York district, with headquarters at Albany. Harry I. Granger was at the same time transferred from Albany to Boston.

Reports reaching Washington are to the effect that difficulties are being encountered in the burning of the British coal now being imported. The importers contend that this is due to lack of familiarity with the coal, but those who have purchased some of the British coal maintain that poor quality coal has been shipped to America. One of the British cargoes, 7,000 tons, was shipped to Norfolk, which is cited as the latest instance of carrying coal to Newcastle. As this is written, no determination has been reached as to what to do with the shipment.

Very few permits are being issued under Service Order 25. Outside of the Lake movement, only seven permits have been allowed. These cover less than 400 cars. Even these permits are limited to a comparatively small movement.
Mining Congress in Cleveland Is Laying Down National Program for Entire Mining Industry

The American Mining Congress, in session this week at Cleveland, is discussing problems vital to all branches of mining and its affiliated industries with the purpose of laying down a national or even international program for the coming year. The first general aim of the congress is to arouse a protest against "any further encroachment of governmental paternalism in supervising and restriction individual enterprise in the development of mining." The second is to inaugurate a national policy of industrial cooperation which will help to solve the problem of relations between capital and labor and further eliminate needless waste caused by industrial strife. The third is to advance the cause of standardization in methods, processes and equipment.

The congress opened Monday evening in Cleveland's magnificent Public Auditorium with much formality, including an address by Newton D. Baker, Secretary of War in the Wilson administration and now president of the Cleveland Chamber of Commerce. Tuesday's program provided for a discussion at the time that conditions of union and the operators Wednesday morning was devoted to coal. Thursday was to be national standardization day with parallel sessions on industrial co-operation. On Friday, the 13th, metal mining problems are to be foremost. The "silver anniversary banquet" of the congress Friday night is to be the final event of the convention.

All through the convention the program was shaped to eliminate "spread eagelism" and hold every session down to essential facts and matters of real importance to mining. As the convention opened it was predicted that more than 3,500 miners face mining's daily problems would attend and listen to the speakers. In all, there were about 300 meetings.

In all its 25 years the congress never met in more beautiful surroundings than in the new auditorium. The main arena or ground floor of the great building provides a floor 247 feet long and 120 feet wide without a post or obstruction of any kind and is illuminated largely through an 80-foot ceiling made mostly of glass. The permanent decorations are in a soft shade of gray with blue in the balcony trim and highlighted in gold. The same colors prevail in Machinery Hall, which is directly below and reached by a winding staircase and several ramps of easy grade.

The exhibits of machinery and equipment are shown artistically in this building. There are about 200 displays of one sort or another, including a demonstration by the Bureau of Mines of new breathing apparatus and other approved appliances, a working model of a Hudson Coal Company's anthracite mine by explosive plant, a state exhibit by Colorado, a small display by the Mexican government and row after row of booths showing the most modern types of mine equipment.

Highlights in the entertainment of the week were the smoker and carnival of Wednesday night, daily organ recitals throughout the convention and much singing by the famous "anthracite sextet" which so often has entertained visitors underground in the Pennsylvania hard-coal region.

Union May Abandon District 29 Because of Partiality of Miners to Open Shop

Abandonment by the United Mine Workers of District 29, which covers the New River field and a small part of the Winding Gulf field, understood to be contemplated by the union organization, is regarded as the logical sequence to developments within the district during the last two years. The proposed relinquishment is due to the fact that there are now so few union miners in the district that a district organization can no longer be supported financially. If District 29 loses its identity as such, it will either be combined with District 17, of which C. F. Keeley is president, or the territory will be looked after by the International Auxiliary in District 28, which the union now has the right of in District 29.

That it has not remained such is due to two factors. In the first place the check-off has never been popular among the miners. That was demonstrated by the opposition to that feature of the Sept. 1, 1919, contract when it was submitted to the miners in a referendum. It was freely stated at the time that a majority of the miners voted against ratification but that the votes were counted for ratification. The other factor which has led New River operators to adopt the open-shop plan is the frequent strikes and lawlessness displayed by an element among the miners.

When the 1919 contract was agreed to by most of the operators President William McKell and other operators representing about one-tenth of the tonnage of the field refused to become a party thereto and continued to operate on the open-shop plan. Some of the more radical union miners in the district sought to prevent such operation by attacks on McKell plants and did succeed in closing down the Willis Branch Coal Co.'s mine after almost two years of violence. A number of union miners were tried and convicted for such violence and are serving terms in the penitentiary.

No sooner had the operators of the New River field signed the new contract than the men went out on strike on Nov. 1, two months after the new contract became effective. The miners themselves started the move for open-shop operations, early in 1921 asking the operators to resume on a wage scale lower than that of the union. Many of the miners at that time returned to work without any union agreement. Although some of them responded to the strike call of April 1, 1922, mines in the New River field continued at work throughout the strike under the protection of a federal injunction. When an agreement was reached elsewhere by the union no move was made to force the New River field operators to sign an agreement, simply because no sentiment existed among the miners and because they were receiving wages as high as those paid union men without having any agreement or without having to pay money to the union through the check-off.

SEVERAL IGNITIONS OF MINE GAS which might have led to explosions and at least one mine fire attributed to heated leg wires of electric detonators have occurred at mines in which outside shotfiring is practiced. Photographs taken at one mine indicated that the wires became red hot during firing. These results having been called to the attention of the electrical section of the U. S. Bureau of Mines, a series of tests were made at the Pittsburgh (Pa.) experiment station to determine, if possible, the cause of the ignitions and to aid in preventing future trouble of this kind. The investigation, which is considered preliminary, included tests to determine the conditions that cause gas ignitions from heated leg wires of electric detonators, possible remedies for such heating, and the relative behavior of iron and copper leg wires. Details of these tests are given in Serial 2385, "Ignition of Gas by Electric Detonators," which may be obtained from the Bureau of Mines, Washington.

H. F. Bell, Foreign Freight Traffic Manager for the Erie Railroad Co., has been given a leave of absence at the request of Fuel Distributor Spens to assist his organization during the existing emergency. Mr. Bell was associated with Mr. Spens in his work for the Railroad Administration and also was one of the traffic staff of the War Industries Board during the war.
Weekly Review

Prices are on a continued movement to stay out of the market as coal prices seem slow. Industrial coal is being held on a hard-to-smooth basis, for immediate requirements only. Industries throughout the country have responded to the suggestion that business buy coal according to its current needs during the present emergency and the practice is now general.

The effect of the curtailed demand is read in the last two weeks’ decline in spot prices of bituminous coal, as shown by Coal Age, Index, which stands at 330 on Oct. 5, representing an average spot price at the mine of $4.00. This is a drop of 25c. as compared with the previous week and 46c. below the average price of $4.00 on Sept. 25.

Post transportation conditions and the growing car shortage tend to modify the price break. Were it not for these factors the present market would range lower all around until the so-called buyers’ strike had pro-

ized the price level which would tempt the consumer to order heavier orders.

IMPORTANT TO END INDUSTRIAL BUYERS’ STRIKE.

The coal industry has a very definite deficit to overcome before reserve stocks can be brought up to anything like normal. Right now current requirements are absorbing current production, but the approach of real-burning weather with its attendant transportation difficulties always spells increased demand. If industries call off their buyers’ strike and if the railroads give the preference to coal movement that the occasion demands this situation can be met without a reversion to the boom market of two years ago.

Worse weather has reduced the call for domestic coal. Dealers are now having trouble in moving supplies and are inclined to reduce their orders to the mines. Too many people are waiting for household coal to follow steam sizes down in price. The result is producers are feeling the pressure for a reduction on domestic mine prices.

New England is in the heaviest supply of any section of the country and the Northwest, of course, is the shortest. In the former market both all-rail and water-borne fuel is selling off and receipts are dropping. Lake business is very heavy, but the tremendous dock receipts of the past few weeks have so completely dispelled fears of a fuel famine that it has reduced consumer demand and threatens to affect the placing of additional orders at the mines.

The second week of the strike of sailors employed on the Great Lakes shows practically all vessels still on the move, although dumpings at the lower ports declined in the last week. The sailor’s union has protested to Secretary Hoover that vessels were leaving port undermanned.

Breaks in the price of steam sizes of anthracite are reported from several of the larger markets. This is due to oversupply and large producers are running this coal to mine storage. Warm October weather together with the great quantity of soft coal flooding the market has been responsible for a remarkable shrinkage in orders for the smaller coals.

Demand for the larger sizes of hard coal is, of course,
The market for coal, however, has been affected by the unseasonably warm weather and the inevitable rush to cover has been delayed at a time when dealers welcome every day's respite to enable them to get in more adequate supplies. Mines are handicapped by ear shortage and rail delivery is very slow.

**BITUMINOUS**

"A slight decrease marked production of soft coal during the first week of October," says the Geological Survey. "Over three weeks in succession the output had been slowing, reaching 9,776,000 net tons in the week of Sept. 30. During last week (Oct. 2-7) the returns so far received indicate a total of about 9,600,000 tons. Although the aggregate shipments of soft coal have increased gradually during September, the shipments from individual producing districts have fluctuated irregularly. In Pennsylvania there was a slight decrease each week since Sept. 15, and the week was begun with shipments a lower rate than the previous week. In Maryland and parts of northern West Virginia there has been a steady increase, but in southern West Virginia there has been a steady decline. In Kentucky there had been little or no change up to last week, for which, however, a decline is indicated. In Alabama daily shipments have been falling off since the close of the first week of September. In Ohio, Indiana and Illinois there have been gradual gains, which now appear to be checked. West of the Mississippi shipments have in the main steadily increased."

New England is the target for heavy tonnage. Western congestion is diverting much coal eastward, forcing it on an unwilling market, with softening quotations. All-rail shippers are pushing sales in an attempt to keep up their production. During the week ended Sept. 30 there were 3,541 cars of soft coal forwarded through the Hudson gateways, as compared with 3,255 in the preceding week.

**NEW ENGLAND COAL RECEIPTS**

(In Thousands of Net Tons)

<table>
<thead>
<tr>
<th>Month</th>
<th>Anthracite</th>
<th>Total Tons</th>
<th>Total Rail</th>
<th>Total Aggregate</th>
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<tr>
<td>January</td>
<td>114</td>
<td>361</td>
<td>705</td>
<td>1,067</td>
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<tr>
<td>February</td>
<td>206</td>
<td>551</td>
<td>757</td>
<td>1,207</td>
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<tr>
<td>March</td>
<td>337</td>
<td>1,094</td>
<td>1,434</td>
<td>2,521</td>
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<tr>
<td>April</td>
<td>201</td>
<td>677</td>
<td>936</td>
<td>1,258</td>
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<tr>
<td>May</td>
<td>34</td>
<td>111</td>
<td>145</td>
<td>197</td>
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<tr>
<td>June</td>
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<td>July</td>
<td>52</td>
<td>153</td>
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<tr>
<td>August</td>
<td>51</td>
<td>165</td>
<td>216</td>
<td>267</td>
</tr>
</tbody>
</table>

Total: 1,025 2,320 3,345 7,733 9,012 10,805 14,150

*Figures furnished by the Massachusetts Fuel Administrators subject to revision.

Westbound coal movement through the "Soo" during September was 2,364,550 net tons. Of this amount only 10,805 tons was hard coal.

Hampton Roads is in oversupply for the same reason and pier tonnage is increasing. Dumps during the week ended Oct. 6 were 262,945 net tons as compared with 288,053.

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

#### Low-Volatile, Eastern

<table>
<thead>
<tr>
<th>Market Quoted</th>
<th>Sept. 11</th>
<th>Sept. 25</th>
<th>Oct. 1</th>
<th>Oct. 9</th>
<th>(\times 1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smokeless lump.</td>
<td>$5.40</td>
<td>$5.85</td>
<td>$5.90</td>
<td>$5.90</td>
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<td>$6.65</td>
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<tr>
<td>Smokeless mine run.</td>
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<td>$6.85</td>
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<tr>
<td>Smokeless screenings.</td>
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<td>$7.50</td>
<td>$7.50</td>
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<tr>
<td>Smokeless coal.</td>
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<td>$7.50</td>
<td>$7.50</td>
<td>$7.50</td>
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<tr>
<td>Smokeless coal.</td>
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<td>$10.00</td>
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#### High-Volatile, Eastern

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<th>Oct. 1</th>
<th>Oct. 9</th>
<th>(\times 1000)</th>
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<td>Pool 54-44</td>
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<td>$5.75</td>
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<td>$5.00</td>
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<tr>
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<td>$4.75</td>
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<tr>
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<tr>
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<td>$5.75</td>
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<td>Hooking lump.</td>
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<td>$5.75</td>
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<tr>
<td>Hooking coal.</td>
<td>$6.15</td>
<td>$6.50</td>
<td>$6.50</td>
<td>$6.50</td>
<td>$6.50</td>
</tr>
<tr>
<td>Pittsburgh &amp; 0. lump mine.</td>
<td>$5.75</td>
<td>$5.75</td>
<td>$5.75</td>
<td>$5.75</td>
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### Current Quotations—Spot Prices, Anthracite—Net Tons, F. O. B. Mines

#### Includes Pennsylvania State Tax

<table>
<thead>
<tr>
<th>Market Quoted</th>
<th>Sept. 11</th>
<th>Sept. 25</th>
<th>Oct. 1</th>
<th>Oct. 9</th>
<th>(\times 1000)</th>
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<tbody>
<tr>
<td>Broken</td>
<td>$5.15</td>
<td>$5.75</td>
<td>$5.75</td>
<td>$5.75</td>
<td>$5.75</td>
</tr>
<tr>
<td>Broken</td>
<td>$5.15</td>
<td>$5.75</td>
<td>$5.75</td>
<td>$5.75</td>
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<tr>
<td>Pittsburgh &amp; 0. (Gas)</td>
<td>$4.60</td>
<td>$5.00</td>
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<tr>
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<td>Pittsburgh mine run (St.)</td>
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<tr>
<td>Kansas mine run.</td>
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<tr>
<td>Kansas screenings.</td>
<td>$5.75</td>
<td>$5.75</td>
<td>$5.75</td>
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<tr>
<td>Kansas coal.</td>
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<td>W. Va. lump mine.</td>
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<td>W. Va. gas lump.</td>
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<tr>
<td>W. Va. mine run.</td>
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</tr>
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</tr>
<tr>
<td>Hooking lump.</td>
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</tr>
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<td>Hooking coal.</td>
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<td>$6.50</td>
</tr>
<tr>
<td>Pittsburgh &amp; 0. lump mine.</td>
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<td>$5.75</td>
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<td>$5.75</td>
<td>$5.75</td>
</tr>
</tbody>
</table>

**NOTE:** Smokeless prices now include New River and southeastern.
HOW THE COAL FIELDS ARE WORKING

Popular demand has increased during the past weeks on account of the weather, which has been mild, and the increased demand for coal for home heating and cooking. The production of bituminous coal has been steady, with a slight increase in the past week. The price of coal has remained stable, with no significant change from the previous week.

Coal Age Index 289, Week of Oct. 9, 1922. Average spot price for same period, $1.68. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 50 per cent of the bituminous output of the U. S. weighted in accordance with the proportions of each ton of black, prepared coals, and non-coal tonnage normally shipped and received, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1921, as 100, after the manner adopted in the report on "Price of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

Independent prices show a wide range. The family sizes are going as high as $14 at $15 in the outlying districts and in Canada, while Eastern centers are paying around $10.50. This is especially true in Philadelphia where high-priced coal is being little quoted and rarely, if ever, taken. New York market prices have dropped from the high range quoted last week. The steam market has been extremely hard hit by the heavy tonnage and the strong competition of bituminous coal.

Unless coal reaches the bins shortly, the only place many Americans will be warm this winter will be under the collar. —Indianapolis Star.
Foreign Market And Export News

British Obtain Orders from Continental Markets; Prices Held Firm

Best British coals continue to strengthen. There is a good demand from Germany, Canada and Italy. The lower grades are more freely offered, however, and with less price firmness. A cable to Coal Age places the output during the week ended Sept. 23 at 5,144,000 gross tons as compared with 4,995,000 tons in the preceding week.

Much anxiety is felt over the threat of Welsh miners to give notice to terminate all contracts on Nov. 5, unless the non-union miners join the Miners' Federation.

The outlook in Durham and Northumberland is considerably brighter. The past few days have been marked by a revival of Continental inquiries and orders, which are more welcome than the American orders. The special feature of the European awakening is the interest taken by the Continental gasworks. The European railways are taking more British steam coals, and 150,000 tons have been sold on German account.

The same feature is found in the Yorkshire fields, where the export trade has picked up appreciably. Forward ordering has attained a level which leads the operators to believe that the Continental market is regaining the pre-war standard. Another feature of the Yorkshire area is better business in the home markets.

Coal Freight Rates Reduced in France

French coals from the Nord and Pas-de-Calais area have still a favorable market. There is now quite a rush for domestic. Industrial coals also are in a favorable situation. Gas coals are very scarce.

On the other hand, the situation of the minor fields of the center of France, which are feeling the pinch of the competition of Lorraine and Pas-de-Calais, is far from being satisfactory and more small mines are closing.

The various reductions on rail rates for coal from the Nord and Pas-de-Calais have been approved by the French Minister of Public Works for a provisional period of three months from Sept. 20. These are deemed insufficient by French collieries, all the more so as they are offset by a similar reduction granted on the transportation of Sarre and Lorraine coals.

No progress is to be reported in the conflict between operators and men, but a general strike of miners about the middle of October is not at all impossible. Mines of the Nord and Pas-de-Calais are said to be already preparing for it by shackling down their shipments.

Representatives of the Swiss Federal Railways are now negotiating with French reconstructed collieries for a briquet contract.

United States August Coal Imports

<table>
<thead>
<tr>
<th>Anthracite</th>
<th>Gross Tons</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>30,727</td>
<td>$165,657</td>
</tr>
<tr>
<td>Canada</td>
<td>802</td>
<td>6,334</td>
</tr>
<tr>
<td>Total</td>
<td>31,529</td>
<td>$171,991</td>
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</table>

<table>
<thead>
<tr>
<th>Bituminous</th>
<th>Gross Tons</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>665,030</td>
<td>$1,272,405</td>
</tr>
<tr>
<td>Canada</td>
<td>225,352</td>
<td>1,424,320</td>
</tr>
<tr>
<td>Australia</td>
<td>53,519</td>
<td>197,775</td>
</tr>
<tr>
<td>Denmark</td>
<td>2,692</td>
<td>13,073</td>
</tr>
<tr>
<td>Other countries</td>
<td>719</td>
<td>5,404</td>
</tr>
<tr>
<td>Total</td>
<td>870,312</td>
<td>$1,431,749</td>
</tr>
</tbody>
</table>

Hampton Roads Market is Weaker

The market was dull last week, a slight movement in export business providing the only redeeming feature. For the first time in many months the piers reported only about 10,000 tons of vessels waiting for cargo. Prospects for increased movement in the immediate future were very slight.

Prices continue downward, and shippers express the hope they might drop far enough to permit a stronger movement of export coal. Large stocks are on hand at the piers.

Coal Paragraphs from Foreign Lands

ITALY—The price of Cardiff steam first is quoted at 39s. 6d., according to a cable to Coal Age.

AUSTRIA—The output of coal and lignite during the first half of 1922 was 1,874,000 tons, a falling off in the second quarter ($10,000 against 86,000,000 tons in the first) due to serious labor troubles.

INDIA—The tendency of the coal market is weaker. Supplies are adequate. Mills and railways are out in the market and quotations are unchanged.

BELGIUM—The market is very firm, both in the domestic and industrial sections. Briquets are in great demand for home consumption and for export.

GERMANY—Production in the Ruhr region during the week ended Sept. 24 was 1,892,000 metric tons, according to a cable to Coal Age, as compared with 1,847,000 tons in the preceding week.

Export Clearances, Week Ended Oct. 5, 1922

<table>
<thead>
<tr>
<th>Country</th>
<th>Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Br. S.S.</td>
<td>8,841</td>
</tr>
<tr>
<td>Art.</td>
<td>8,841</td>
</tr>
<tr>
<td>Br. S.S.</td>
<td>8,841</td>
</tr>
<tr>
<td>Br. S.S.</td>
<td>8,841</td>
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</table>

Pier and Bunker Prices, Gross Tons

<table>
<thead>
<tr>
<th>Piers</th>
<th>Sept. 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pool 9, New York</td>
<td>$10.50</td>
</tr>
<tr>
<td>Pool 10, Philadelphia</td>
<td>$9.50</td>
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<tr>
<td>Pool 11, Philadelphia</td>
<td>$9.50</td>
</tr>
<tr>
<td>Pool 10, New York</td>
<td>$9.50</td>
</tr>
<tr>
<td>Pool 11, New York</td>
<td>$9.50</td>
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<tr>
<td>Pool 10, New York</td>
<td>$9.50</td>
</tr>
<tr>
<td>Pool 11, New York</td>
<td>$9.50</td>
</tr>
<tr>
<td>Pool 2, Hampton B.</td>
<td>$9.50</td>
</tr>
<tr>
<td>Pool 2, Hampton B.</td>
<td>$9.50</td>
</tr>
<tr>
<td>Pool 3, 5-7, Hampton B.</td>
<td>$9.50</td>
</tr>
<tr>
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<td>$9.50</td>
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Current Quotations British Coal Emb. Port. Gross Tons

<table>
<thead>
<tr>
<th>Quotations</th>
<th>Sept. 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiff</td>
<td>$10.50</td>
</tr>
<tr>
<td>Liverpool</td>
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<tr>
<td>London</td>
<td>$10.50</td>
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<tr>
<td>Manchester</td>
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<tr>
<td>Glasgow</td>
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<tr>
<td>Belfast</td>
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<td>Belfast</td>
<td>$10.50</td>
</tr>
<tr>
<td>Dublin</td>
<td>$10.50</td>
</tr>
</tbody>
</table>
Heavier Offerings in East

With Western Railway Jam

Lake Superior and Shipping Conditions—Average Central Still Water on Price Decline. Deal in Warning of Shortage—Railroads Buying Heavily.

Coal competition to the West and Greater overseas offerings overseas. The movement is very slow, as there are many shortages and shipping conditions are becoming more complicated each day. British coal suppliers are active, but in smaller volume.

Prices are dropping slowly and such decline measures the average assessment of the wisdom of his buying policy. He is due to warnings of a shortage in some and maintains his attitude of aloofness, covering only at current requirements. Railroads, however, are taking heavy tonnages, assuming so many pairs for this railroad that the supply for loading commercial coal is very heavy.

There is almost no loyalty at Timidwater. Long shipments are slow in getting through from the mines and sellers are devoting much of their attention to local cars to indication.

PHILADELPHIA

There is lack of market activity. Effect of the shipping house being promptly and directly in the way of prices. Price is not doing a broad deal of the business at present, and the bulk of the business in the local coal is very much lower in the local market.

There is no steady Scholars of various kinds to affect that shipping house is unable to keep track of these prices. The sale of the local coal is in the hands of the producer, and the dealers are too busy with other concerns to keep them in track so many pairs for this railroad that the supply for loading commercial coal is very heavy.

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Baltimore

A carload twist has arisen in the local situation for the reason that car supply is becoming more complicated. A check in the order of procuring has been reformed in evidence of this. The car shortage, particularly in the West, is becoming more and more evident. On the line of the Western Maryland in the Potomac field. The curtailed supply of reduced production at a time when the rate of output was about 60,000 tons a week, or not far from normal. The curtailed supply of empties, however, found mines with less of a demand to meet owing to the large tonnage in Eastern markets, the effect of which has been to reduce prices.

New York

There is practically no inquiry at Timidwater. Long shipments are slow in getting through from the mines and sellers are devoting much of their attention to local cars to indication.

South

Birmingham

The problem of the trade continues to be one of car supply. The quota furnished the past week ranged from 30 to 40 per cent of the number needed, and the market of speculation is in the near future not bright. Much of the equipment of local carriers found its way into foreign territory during the period of shortage and the strikers coal has never been returned to the owners.

There is a strong and urgent domestic demand from every direction. Dealers with contracts are not purchasing their quota by any means, due to car shortage. The easing off in the demand for steam coal is also affecting the supply. Quotations are remaining fairly stable on steam grades though some seams have been selling 25c. @ $35c, under the maximum schedule the past week.

The output is holding up well considering the acute car shortage, a total of 345,000 net tons being reported for the week ending Sept. 30, the last figures available. The week of Sept. 30 will probably show a decrease, as transportation conditions were not so favorable.

Virginia

So far mines have not been able to overcome the handicap of a car shortage which is curtailing production to the extent of 50 per cent. It is not so much the strike of shippers as it is the fact that few of the roads are able to put their hands on enough demand to keep the mines supplied. The demand for coal is weaker, and as a result, the price of coal has softened somewhat.
Anthracite

Rush in Domestic Business, Steam Sizes Drug on Market


New York harbor terminals are heavily congested with steam loads of anthracite. Railroad officials fear that the tying up of these cars will seriously affect the fuel situation at New York. Steam sizes quickly became a drug on the market following the resumption of mining, and those producers who have such facilities are now storing these grades.

Domestic business is, of course, rushing. Coal is being portioned out to consumers in small lots and the unseasonably warm weather has fortunately delayed the inevitable rush of householders. Independent quotation show a wide range but the extremely high-priced coal is going to small towns or Canadian points, as Eastern distributing factors are loath to pass on these premiums to their customers.

NEW YORK

Lack of demand has resulted in an accumulation of steam coals here. At the end of the week there were about 3,500 cars containing upward of 175,000 tons on the various railroad terminals adjacent to the New York harbor.

Because of the failure of consumers to take this size and the ever mining companies have reduced the output of these sizes by closing down various washeries and are again storing the present production. That there should be an oversupply at this time is attributed to the supply of bituminous.

Dealers predict that unless the weather becomes unusually colder during the next four weeks and with production continuing at or about the same basis as at present, the situation will be comparatively easy. In the West, however, users of anthracite will be forced to take soft coal.

Quotations for independent domestic coal cover a wide range starting at $9.25, most of the big operators going as high as $9.50.

PHILADELPHIA

Moderate shipments to retailers are coming in and as a result deliveries to consumers are going along quietly. The remarkable run of warm weather has temporarily held up this business.

There is much speculation as to the relative scarcity of peat, as most dealers had an idea it would be plentiful. Numerous dealers have put in requests urging prompt delivery of this size, probably not with the idea of moving it at once, but to get some stock ahead. Retail prices are unchanged. Wholesale quotations show no appreciable change in the last week. Independent prices higher than $9.50 are heard repeatedly, but sales are rare.

The State Fuel Commission is hearing the arguments of independent shippers to establish their right to get more than $8.50. It is likely the present prices will be approved in all cases, and in few instances even higher figures will be allowed later.

Steam sizes are moving along nicely, although there is just the slightest tendency for a slowing down on rice, but all shippers are easily able to get full prices. Some retailers are taking a small tonnage of buckwheat, generally at the urging of the shippers.

BUFFALO

Demand is rash. It would be impossible for a while to satisfy the consumers with five times the ordinary supply.

The independent mines are trying to ask $12 up, but jobbers are afraid to buy, because they have to report their sales to the fuel administrator and the prices they have to ask look bad. It will be a long time before the trade comes around.

The effort of the Lake seamen to tie up the fleet by a strike appears to have failed. The steamers move as usual. The west-bound coal movement is tight. Shippers have to date since the beginning on Sept. 23 have been only 91,500 tons, of which 46,600 tons cleared for Milwaukee, 31,300 tons for Duluth and Superior, 15,700 tons for Chicago and 7,700 tons for Sheboygan. Rates are 40c. to Duluth, 50c. to Milwaukee, Sheboygan and 50c. to 55c. to Chicago.

BOSTON

Shipments are coming forward steadily. There are large retail distributors who have not yet had cargoes of prepared sizes, but there seems less anxiety than a fortnight ago. Rainy weather has delayed the on-coming rush, but in another fortnight there will be heavy pressure on all the anthracite channels to provide increased supplies.

No change has yet been made in retail prices. What coal is being passed out is at figures that prevailed during the spring, except in peat sizes which is either sold mixed with other sizes or commands a price on an equal-

BALTIMORE

Receipts are light and dealers are sticking to their resolve to deliver not more than one or two tons to a customer. Additional receipts are expected as a result of the announcement of a new freight rate of $3.28 on coal from the Schuylkill field of Pennsylvania. This rate was arranged by agreement with the P. & R. and the Schuylkill schedules. The R. & O. will carry coal from the Schuylkill field at the same rate charged by the Pennsylvania for coal from the field which they tap.

The Maryland Distribution Committee has taken up with Pennsylvania producers the question of supplying peak and bushel men in this city who claim that they are unable to get any. The committee has planned to work out some measure by which the poor of the city who buy in bushel and peak lots will be able to get supplies.

Coke

CONNELSVILLE

Connelsville coke remains as scarce as ever and prices on an average are a shade above those of a week ago, with furnace at $12@$12.50 and foundry at $13.50@$14.

An additional furnace has resumed on coke bought in the open market, a second Shenango stack, while Struthers furnace blew in Oct. 7 on coke obtained through an old contract. In general there is not enough coke in the open market to enable any furnaces to resume by simply buying coke, while most furnaces would probably hesitate to pay present prices even if they were sure of getting a steady supply.

Consumers have shown such an inclination to pay present pig iron prices that furnaces are now getting into bush as might be supposed from a mere comparison of coke and pig iron prices.

There is a good bit of inquiry for foundry coke, but the majority of foundries seem unwilling to pay present prices. Enough are willing to buy to support the market at present level, with offerings relatively limited.

The Courrier reports production during the week ended Sept. 30, at 90,000 tons by the furnace ovens, and 28,430 tons by the merchant ovens, a total of 118,430 tons, an increase of 13,340 tons.

UNIONTOWN

Despite an acute car shortage, raw prices have slipped off several notches, with $5.25@$5.50 prevailing and probably sales made at lower figures. Business and orders are steady in finding destination for large shipments but encounter very little trouble in placing small lots. That would infer that buyers have placed their coal requirements upon a hands-to-mouth basis.

The union intends continuing its fight in the Connells ville region, seems indicated by the erection of barricades by the Lake furnaces against evicted miners who are now living in tents. At both Uniontown and Connells ville there are evicted families living with other families. At Uniontown with authority and shear families out of an old warehouse because of health conditions as well as the menace of fire. Many of the families are reported to be in straits and the drift back to the mine has increased.

BUFFALO

Demand is light, but the supply so small that high prices are generally maintained. But for the fact that we have a good line of supply in present prices of beet coke would still sell more.
Chicago and Midwest

Bottom Softens Under Midwest Coal Trade

Even Domestic Demand, Which Has Been Strong, is Weakening—Steam Prices Sag Lower—Rail Service Continues Harder—Cold Snap Desired.

The outlook Midwest is getting drier and deeper in the grip of the winter weather. Reports from Kentucky and Tennessee, however, show that rail tonnages remain steady. The eastern coal market continues active.

STEAM SCRAP RAPIDLY

Steam coal prices displayed a downward trend recently. A report stated that the price of steam coal in the eastern markets dropped to $2.75 per ton. The price is based on 6,000 tons per shipment. This price is $0.25 per ton lower than the price three days ago. The drop in steam coal prices is expected to continue.

WESTERN KENTUCKY

The demand for steam coal in Western Kentucky has recently increased. The demand is driven by the colder weather, which increases the need for coal to generate heating in homes and businesses. The supply of coal in the area is sufficient to meet the demand, and the prices for steam coal remain steady.

LOUISVILLE

The demand for coal in Louisville has been strong, with prices remaining stable. The market is expected to remain active due to the colder weather. The supply of coal in the area is sufficient to meet the demand.

ST. LOUIS

The demand for coal in St. Louis has been strong due to the colder weather. The market is expected to remain active due to the demand for heating in homes and businesses. The supply of coal in the area is sufficient to meet the demand.

INDIANAPOLIS

The demand for coal in Indianapolis has been strong due to the colder weather. The market is expected to remain active due to the demand for heating in homes and businesses. The supply of coal in the area is sufficient to meet the demand.

SOUTHERN ILLINOIS

The demand for coal in Southern Illinois has been strong due to the colder weather. The market is expected to remain active due to the demand for heating in homes and businesses. The supply of coal in the area is sufficient to meet the demand.

The demand for coal in the Carterville field has increased, and the supply is expected to increase in the near future. The demand is driven by the colder weather, which increases the need for coal to generate heating in homes and businesses. The supply of coal in the area is sufficient to meet the demand.
Eastern Inland

More Pressing Need of Coal Gives Market Better Tone


There is a slightly better market tone. Under pressure of growing coal needs and more firmly held prices industries are showing signs of interest. There is no snap to the market but it has lost some of its apathetic tone of the last few weeks. The general policy has been to buy for current needs only, but more of such takers are in the market.

Governor Davis’ announcement of the temporary Ohio fair price list has caused some operators to say that if it is enforced they must send their product out of the state, where higher figures can be obtained. The establishment of these prices is causing shippers to force the Lake market, which is paying $4.25 for good No. 8, as compared with Ohio’s list of $3.56.

Lake dumpings are still heavy, although rail congestion is reducing the movement somewhat. Vessels are clearing quickly and but little effect of the Lake seamens’ strike has been felt as yet. Dumpings at the lower ports during the week ended Oct. 9 were 1,087,265 net tons, as compared with 1,245,373 tons in the preceding week.

The Pittsburgh market is still distinctly dull. Consumer requirements seem to have been over-estimated. However, the sluggish market is not a factor in controlling the output as yet, as cars are far too scarce to permit prompt loading of the orders in hand.

PITTSBURGH

Demand has fallen off in marked fashion and the market is commonly described as being distinctly dull. Prices have declined 25c. to 50c., but are now practically stationary.

All told, consumptive requirements do not seem to be as heavy as was predicted. The average buyer is quite content to cover his immediate requirements, showing no disposition to buy even for a short time ahead. Demand from retail dealers is fair, but seems to be for current distribution only, the dealers being unwilling to put in any stocks. Truck mines are still doing considerable business in domestic fuel and in some cases are making prices well below what can be done on rail coal.

Production is not affected by the dull market as prices still show a wide margin. The limiting factor in production is car supply, which is hardly as good as 30 days ago and is of course far below mine capacity. The market is quoted at $3.50 to $3.75 for good grades of steam coal, $4.50 for byproduct, $4.50 to $4.75 for good gas, and mine run, and $5.25 to $5.50 for best grades of domestic 11-in. lump.

BUFFALO

Shippers are urging consumers to buy, pointing to the fast-growing shortage of cars, but the advice is not much heeded. The talk is called mere effort to work off coal. So the prices are high and the more the consumers refuse to buy the movement is declared to be less than consumption, but the consumer does not mind that, so long as he believes that $5 is pounding down the price. The decline is not likely to last. In fact, the shipper is unable to see how the opposite is not the case. One result is the general overlooked. The natural production is large and somebody is managing to get his coal to destination.

As to prices there is naturally a wide range. Some shippers manage to get as high as $4.50 at the mines for gas or Pittsburgh lump and some mines are offering good coal below $4. A fair average is $4.50 for Allegheny Valley run as being equal to No. 8, and $5.25 for Pittsburgh lump, with a little more for gas lump. The freight to be added for Buffalo delivery is $2.00 for Allegheny Valley and $2.25 for Pittsburgh.

CLEVELAND

A slightly better tone in the market is reported. There is nothing resembling activity, but operators and dealers are somewhat encouraged by what they believe is a growing disposition of buyers to come into the market at prevailing prices. For some weeks consumers have been holding out for lower levels.

Under the pressure of growing coal needs, and with the price showing no further evidence of important declines, industries are giving indications of buying. The state fuel commission has announced the usual scale of “fixed” prices. The level of $3.50 for No. 8 mine run is regarded by most operators as unreasonably low. Since there is a fairly good market in the Lake is $4.25, as much coal as possible will be sent out of the state. The shortage of cars is becoming more and more pronounced in this district. Current quotations are shown in the Weekly Review.

The Lake movement continues at high speed, apparently undisturbed by the walk-out of the union seamens. It is now believed that it will be possible to ship the Northwest more than 15,000,000 tons, which was regarded as the limit a month or so ago. Fears of shortage in the Northwest are greatly diminished and there is no panic of buyers apparent.

NORTHERN PANHANDLE

Accumulation at the Lakes constitutes the most serious interference with the movement and is having a tendency to check production. Although there is not quite so string a demand for steam coals, nevertheless more coal could be moved if the transportation situation permitted but terminals are congested with cars. There is more of a demand for lump than any other grade.

COLUMBUS

While the “buyers strike” is not over, still there is evidence of a disposition to buy. Lake shipments are going forward, many embargoes having been removed.

Householders are coming into the market more and more, but the continued warm weather is still delaying them. Retail prices are rather steady at average levels, with Hocking lump, $8.75 to $9.50, and semi-lumps grades up to $11.

The Pennsylvania has removed its Lake embargo and the same is true of the lake-carrying roads. The New York Central is still holding its own and little coal is going through on either the K. & M. or the T. & O. C. H. V. Rys., shipments are not interfered with.

DETROIT

Not very much interest is being manifested in the market. Summerlike temperatures during the week have soothed the household consumers into lethargic indifference. Detroit’s receipts are still far below the amount which dealers estimate as the city’s average daily consumption.

A theory advanced by some that the strike of the sailors’ union of the Great Lakes against the Lake Carriers’ Association effective since Oct. 1, would not handicap the shipping interests as to reduce coal loading and increase the quantity available for shipment to Detroit, has not developed into actuality, as the boets of the Lake Carriers’ Association are being maintained in operation, apparently unaffected by the strike, and the volume of loading of the last week approaches 1,000,000 tons.

The larger part of the present supply is coming from mines in Ohio. Hocking lump and run is quoted at $6.50 to $6.75, Allegheny Valley run, $7.25 to $7.44, Allegheny Valley and slab, $3.25 to $3.50. Pittsburgh No. 8, run, is $5 to $6, lump is $3, mine run, $4.10 to $4.33, slab, $3.75 to $4.75. Fairmount lump is $4.50, mine run, $4.25, $4.40, $4.55, slab, $4.25. West Virginia and Kentucky lump and run, $6.25 to $6.30, mine run, $4.75, slab, $5.50. The draft coal, arriving in small amount, Jardine, are receiving independent quotations of $3.75 to $4.10 at the mines. The freight charge is $4.95, making the retail price very high.
New England

Heavy Reserves Postpone
Big Buying Till January

Large Volume of British and Southern Coals Depresses Market—Receipts Ahead of Same Period Last Year—Consumption Lower—Prices Drop.

There is very little buying power left in the current market. The avalanche of British coal, together with heavier receipts of Southern coal, has increased reserves to so great an extent that there is hardly a chance of any comprehensive purchasing before January. Throughout this territory receipts have been much larger thus far this year than during the same period in 1921, while consumption has been notably less. It is very difficult to see, therefore, how there can be any improvement in trade conditions the next 30 to 60 days.

Prices are materially lower. Hampton Roads accumulations have reached 150,000 tons and receipts of Pennsylvania coal are declining with the market.

This week prices have slumped all along the line. From $9.15 asking price on cars Boston for Inland delivery the spot market has eased off already to $8.50 and less. At Hampton Roads 50c has been quoted as soft coal, the wholesale prices of both sorts have being $8. Other grades of soft coal remain unchanged. Hard coal is down to $7.50, the lowest it has been for some time. The danger of a fuel shortage is now rapidly dissipated by heavy receipts. It is evident, however, that many hard-coal consumers will have to turn to soft coal. There is some talk of rationing the anthracite as it arrives. Thus far in October, 20 cargoes have been docked, aggregating 50,000 tons of anthracite, and 150,353 tons of soft coal.

September cargo receipts aggregated 63,343 tons of soft coal, making the receipts of cargo coal for the season 720,561 tons of soft coal, and 1,250,955 tons of soft coal. During the same period car-ferries brought 20,794 tons of anthracite, and 77,633 tons of soft coal. Rail receipts aggregated 50 tons of anthracite, and 162,746 tons of soft coal, making the grand total of hard and soft coal from all sources since the season of navigation opened up to Oct. 1, 1,246,679 tons.

No Fear of Famine in Upper Lake States

Boston-Buffalo-Rocky Mountain traffic on the Great Lakes has been maintained at high rates. The Cleveland Electric Illuminating Co., which had a large number of units off the grid, has been busily working on the purchase of additional service, and will probably begin to reduce the current of units on the output. The amount of traffic in the region has been increasing at a rapid rate, and the coal companies are making every effort to keep up with the demand.

MINNEAPOLIS

The Northwest’s tone of a coal famine is about gone. It now appears evident that enough coal will have arrived early in the new year to meet all requirements, and that the situation is well in hand. The coal trade has learned that it could handle the situation if it would be accorded some time to get things right. The buying and selling done during September and the early part of October is to be expected. It will only be a short time, with the new year on the way, before the market will begin to recover. The demand for coal, both current and future, is expected to be sufficient to keep the market well supplied.

There has been a great number of coal dealers dealing for future coal, and the amount of business has been considerable. This has been due to the fact that the price of coal has been high and the expectation of a further rise has kept their prices high with their customers.
Cincinnati Gateway

Trade Watches Prices in Other Producing Fields

As Quotations Recede and Rejections Increase, Byproduct, Gas and Domestic Coals Are Market Bulwarks—Some Still Base Hopes on Car Shortage

With quotations slipping a bit more rapidly, rejections increasing in volume and reports piling up of Northern terminals being clogged with coal—the first time that such a situation has obtained since last April—it can well be said that by-product, gas and domestic coals are the mainstays of the market at this writing.

Lake buying has temporarily ceased and with this highly competitive feature playing little part in the bidding for coal and on top of this many buyers discriminating against shipments that will not come up to grade, the trade has been looking about and there has been a disposition to keep a weather eye on what other producing fields are doing in the way of naming prices. Those jobbers and wholesalers who believe that the cream can be skimmed forever are still holding tight to their estimates based upon a scant supply of empty cars, but this feature can no longer be taken as a barometer.

LOW-VOLATILE FIELDS

New River and the Gulf

Buyers are trying to maintain control of the market by declining to buy until prices reach a lower level but are unable to dominate the situation as much in the West as in the East, according to conditions reflected in the New River field. The continued shortage of cars is preventing more of a break in prices. Most of the coal has been moving to the coast, since it is difficult to get smokeless through to Western markets where there is a strong demand for prepared sizes. The car supply is not averaging over 30 per cent.

Winding Gulf mines were greatly hampered during the final week of September by the extremely poor car supply. It was not possible to produce more than 100,000 tons representing less than 40 per cent of capacity. Even under normal conditions little coal from this region moves westward and now that these lines are congested less tonnage than ever is going west. Tide water is soft owing to the large volume of receipts.

Pocahontas and Tug River

Pocahontas coal is being diverted to Tidewater and the East, the Pennsylvania

vania and the Hocking having imposed an embargo on coal originating in the Pocahontas region owing to conditions at Lake piers. The car supply is holding back production to a material extent. The greatest difficulty is in getting empties back from Western lines, much equipment being under load at the Lakes.

Tug River mines are not producing more than 75,000 tons a week, owing chiefly to a poor car supply. Buyers are showing a disposition to remain aloof from the market and to "bear" prices but a poor car supply is modifying the downward pressure.

CINCINNATI

So many mines are pouring out mine run with little or no attention to preparation that domestic business is still the keener feature of the Cincinnati gateway. Lump coal is scarce, but on the other hand the retail buyers are shying at taking any great amount. They are buying only a few in small deliveries until the price comes down to a lower range.

The smokeless situation is hardest to fathom. The situation is good even though $6@6.50 is the price on mine run and this in the face of the fact that Tidewater prices are $1.50 and more below. The rub of the situation seems to be that the Western embargoes are holding this back while the seaboard is getting more of this coal than it will absorb. Producers are still rolling at the Hoover price if you wait your turn in filling the order. Jobbers and wholesalers force the price to the limit when they have car numbers to offer.

There has been no change in the retail situation. A large tonnage is on its way down the Ohio in barges, but less water is being sent in ton per ton. It will take a couple of hundred thousand tons by water to make any visible effect on the present retail prices being charged here.

HIGH-VOLATILE FIELDS

KANSAS

Although buyers in general were showing an inclination during the closing days of September to stay out of the market in the hope of securing fuel at lower prices, yet the scarcity of coal due to a poor car supply and congestion at terminals was tending to keep up prices. For domestic coal there was a strong demand. Although striking shopmen of the C. & O. are all back at work, the improvement in the transportation situation is not marked owing to the heavier movement of general freight.

LOGAN AND THACKER

Logan mines are still confronted with such poor transportation facilities that the output is not as much now as in the earlier days. River mining has been almost a thing of the past and thus buyers were holding aloof there was more than enough demand to absorb the output. Although mines are supposed to ship a large tonnage to the Lakes, little headway was made in getting coal through owing to congestion at piers. Prices were softer on fuel for Eastern delivery and comparatively little tonnage was being consigned there, and especially to Tidewater.

More than half the full time output of the Kenova-Thacker district is being lost through a shortage of cars. The best demand is in the West but difficulty is experienced in getting fuel through owing to embargoes. Lump is not to be had although prospective buyers are willing to pay almost any price for it.

NORTHEASTERN KENTUCKY

In the face of a demand somewhat restricted owing to the effort of buyers to force prices downward, prices are not so far as yet are on a lower basis, the coal bringing a little more than steam. Inasmuch as operators are experiencing no difficulty in marketing mine run, no effort is being made to produce lump and egg. There has been little change for the better in the transportation situation.

West

SALT LAKE CITY

The coal price probe continues. Many operators and retailers have been examined. Sessions are behind closed doors and there is no indication as to whether or not they will be prosecuted.

Retail business is quiet as a result of the grand jury examinations and warm weather, but mines are still behind on orders. Cars are in crop sections in the local yards are low. A retailer declared that instead of coal coming down he looked for another reason, the weather sets in cold. This would be necessary to keep the coal from going out of the state.

KANSAS CITY

The coal situation here is anomalous. Dealers expected a strong demand for domestic grades and they are not having it. This is because oil has displaced coal in many plants and because people expect a price drop. Steam coal is in good demand, however, and prices have held up but those for domestic coal are lower than costs of production would justify.

One contract for Arkansas slack was closed recently at $1.50 f.o.b. mines and as Arkansas mines market at least 350,000 tons a year it will be readily seen that the operators must get a price for their lump to break even, as the cost of production is around $2.75.

Some operators do not think the coal will hold up at the present cost or below. This is hard to understand. Outside competition is not serious as railroads have embargoed most coal from Illinois, and when there is no coal here is not strong enough to draw that coal.

DENVER

The report of operators for the week ended Sept. 23 showed a loss of 40.2 per cent production or 53,751 tons, an account of the car shortage on railroads in Colorado and northern New Mexico. Coal tonnage came to 128,592 tons and "market" 77.7 per cent. During August, 1922, a total of 950,818 tons of coal was produced in Colorado compared with 777,638 tons in August, 1921.
News Items
From Field and Trade

ALABAMA

The Friedley Coke & Burden Co. of Jemison, Ala., announce that they will begin operations about the middle of this month at their new plant. The furnace has a capacity of 1,200 tons per month.

COLORADO

The Spring Valley Operations Co. said yesterday that it has received its first shipment of coal from its new mine at Marijuana. The mine is expected to produce 50,000 tons per month.

IOWA

The City Coal Co. at Jermynville, near Charles City, are completing the building of a tank to hold about 2,000 tons of coal. The tank is expected to be in operation within the next week.

ILLINOIS

The Freeman Fourth Vein Coal Co. has completed the lease of a new mine, the Dragon Coal, located near Beardstown. The mine is expected to produce about 50,000 tons per year.

INDIANA

The city of Evansville is planning to build a new coal plant to handle the increased coal production expected in the area.

MINNESOTA

Hibbing, Virginia and Eveleth, three iron range towns near Duluth have filed their initial coal claims for the Winter, according to reports. They purchased an aggregate of several tons of palomino ore claims at a cost of about $5,000 each.

F. W. R. Coleburn, formerly of the City Fuel Co. of Minneapolis, is reported to be in charge of the local office of the company.

A report to the fuel committee named by the mayor of Minneapolis stated that there would be no shortage of coal on the market and that the expected shortage of coal was largely due to the strike of the steel workers.

MISSOURI

"Gopher hole" mines are opening up all over Missouri, from St. Louis, in the east, to the Missouri River, and as far west as Joplin. These various new operations are opening up new fields and getting out from 5 to 100 tons per day. Some of these little mines have long been known but have not been developed until recently.

The old-time coal landlords are now resuming their activities, and the old-time coal buyers are now moving north where it is a present rumour that all of the activities are active. The Central Missouri Coal & Mining Co. of Jefferson City, G. H. Meeker and Herbert L. Hough, of St. Louis, in the Coal Co., have been operating the coal company for many years, and are known as the old Hubbard coal mine.

The coal company now plans to employ 300 men and to build a new plant at a cost of $500,000. The coal will be shipped from Taylor Bros. and will be a shift on the St. Louis and Illinois road.

The Jones Coal Co. of Rich Hill, has announced that it will go into the coal business and clean up the slack at the mine, south of the town, and get the coal on the market soon. About fifty men are employed.

The Leland Coal Co., of St. Louis, has been operated. The headquarters for F. Sullivan, an old-timer in the wholesale trade.

E. Bryan Tucker, connected with the power and mechanical department of the Consolidating Coal Co. of Pittsburgh, W. Va., has resigned, and is now connected with the Ohio Coal Co., of St. Louis, importers and manufacturers of engineering instruments and supplies.

NEW YORK

Two new coal concerns have recently set up business in Buffalo. Edward J. Proctor, formerly with E. T. Mclntire, now in the Manufacturers' Fuel Co.; and Henry E. Stokes, a former member of the city's leading coal trade, in the new Lafayette Coal Co., under the name of the Continental Oil & Supply Co.

OHIO

Columbus becomes an important center in coal distribution under the ruling of Federal Authorities, who designate Columbus as the headquarters for the Ohio district. Assistant Commander H. H. Boswell of Columbus has been appointed in charge of the Ohio district. Cincinnati, Columbus, and Cleveland, are the three important points in the distribution of coal.

Kentucky coal has increased in price from $35 to $40 per ton, while coal from the T. L. Young Mine is quoted at $35 per ton.

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COAL AGE

October 12, 1922

The Douglas Coal Mining Co., Nashville, Tenn., has also completed the planning and development of the mines at Island, Ky., which will mine both steam and coking coal,

some of the operators of northern West Virginia who signed an agreement with the United Mine Workers of America for an assurance of having unlawful strikes to deal with. Two of the first was that during the summer of September at the Morgan mine of the Virginia & Pittsburgh Coal Co., in Virginia, in which 140 miners participated after two cutters had been discharged. These cutters had failed to live up to their agreement. When a running was made it came out that the discharge was warranted.

At the Bees mine of the Buffalo Eagle Coal Co. in the Logan field, a deman-

ers had been made of the real landlord manufactured by the American Coal Leasing Machinery Corporation of Hunting-

ton, with operation on a southeast course of way for 400 feet.

Coming in the same direction is the Rolling Stony field, consisting of 1,000 acres of land with 60 operating shafts and the Santa Fe. Eight miles east of Rockdale, which owns 1,000 acres of land, the Colorado & South Fork mine, has a mine and is using the equipment of the Dallas mine.

OKLAHOMA

The Welch Coal Co. is removing dirt on the Etowah field, five miles west of Welch, which will arrive soon. A tractor and several scrapers are on the job. The company will employ 24 men and will have four machines.

W. H. Fugle has opened a new strip pit outfit of the Mill Creek Coal Co., Mingo county, W. Va., near Welch. Most of the coal from this mine will go to the Miami lead and zinc mining district.

WEST VIRGINIA

The Eagle Mine Coal Co. has been operating at Huntington, W. Va., with a view to operating in territory adjacent to Huntington, this company having a capital stock of $750,000. Offices for the time being will be at Huntington. The company is organized by E. B. Winters, W. E. Tomkins, R. C. Taylor, O. Bowers and N. P. Douglas.

The organization of the Stanley Coal Co., for the development of additional coal in Monongalia County, with a capital stock of $100,000, has been completed. The leading figures in this company are: Charles W. Ream, Stanley Askin, R. C. Sumner, M. R. Hoffman Jr., John W. Kendall, of Meyersdale, Pa., and I. Kendall, of Pittsburgh.

The officials of the union in sub-district 4 of district 15, claim that all but six of the companies in the district have entered into an agreement with the union. Five companies not parties to the agreement are in Monongalia County and one in Harrison, the one in Harrison being the Hubbell & Ream, the company which declined to sign when there was no assurance given by the union that men who had worked during the strike would be protected. In sub-dis-
tinctly the district where the union is not strong is the Charleston district, which has been acquired by the United Mine Workers of America and the Grand Coal Co., and numerous other companies are organized and are in conflict with the union. The officials of the union are not satisfied with the number of companies in the district and they are prepared to meet all companies that are not satisfied with the activities of the union.

There were a good many fatal accidents among the miners with the mining industry of West Virginia during August, twelve meet-
ing death in or around the mines, with thirteen deceased due to falling rock, timber, and state. Mine car accidents were responsible for five deaths, and one miner was killed by electrical shock. Two were killed in accidents outside the mines, one miner was killed in a mine car accident, and one mortality was caused by miscellaneous causes.

Governor Morgan named the following men to serve as members of the coal commission of West Virginia at the annual meeting of the American Railway Union: J. W. Chane, chief of the West Virginia Department of mines; Charles W. Chane, Everett Brecken, president; W. H. Steele, vice-president; C. C. S. Smith, secretary-treasurer; and R. H. E. K. Irvine, secretary-treasurer.

The commission is authorized to examine the coal companies, and to make reports to the legislature; and to make recommendations to the legislature with respect to the laws and regulations affecting the mining of coal in the state.

The United States Civil Service Commission has announced that the examination for the position of Assistant Paymaster has been opened. Those desiring to enter must be United States citizens, of good moral character, and have the ability to read and write English. The examination is to be held on November 22, 1922.
Traffic News

The Huntingdon, R.R.

Traffic News

Obituary

William Vanoni, New York C. E., died at his home in New York City on the 17th inst., at the age of 64 years. Mr. Vanoni was connected with the coal trade of this section for 40 years, in various capacities, and was an old friend of many of our readers. His death occurred while he was on the way to Chicago to attend the annual meeting of the National Coal Trade Association. Mr. Vanoni leaves a wife and two children. The remains will be brought to New York City for interment.

Recent Patents

Trade Literature

Electrically operated Pumps. General Electric Co., Schenectady, N. Y. Bulletin 392, 1922, 10 pages, illus.; illustrated. Describes the feasibility of using electric motors for driving pumps of all kinds and sizes. The writer has performed in selecting the best type and construction of motors and controls for different installations. -Advertiser.

Hand Book of the Electric Power Club of Engineers. G. E. Co., Schenectady, N. Y. Bulletin 393, 1922, 8 pages, illus.; illustrated. Contains definitions, symbols, and formulas for designing and purchasing of electric power apparatus and installations. This hand book will be of great value to consulting engineers, electric contractors, and electrical educators; otherwise the price per copy.

Jenn Portable Belt Conveyor. The J. A._properties, Columbus, Ohio. Bull. No. 40, 1922, 24 pages, illus.; described. The conveyor may be made to serve as an extension to storage pile in connection with a portable car unit. -Advertiser.


Association Activities

Fayette-Greene Coal Producers' Association

The annual meeting of the organization was held recently at the headquarters of the organization, held at the organization's headquarters, and the following officers were elected for the ensuing year:

President, John A. Smith; Vice-President, Robert W. Parshall; Secretary, William E. Ralston; Treasurer, John D. Brown.

The purpose of the organization is to promote the interests of the coal producers in this area, and to work for the betterment of the industry as a whole.

The National Coal Association

The annual meeting of the National Coal Association will be held on the 15th of this month in Chicago, Ill. The agenda for the meeting will include the following topics:

- Discussion of the current coal market
- Presentation of the annual report of the organization
- Discussion of the organization's plans for the coming year

The meeting will be attended by representatives from all parts of the country, and is expected to be a successful event.

Coming Meetings

Kentucky Mining Institute will hold its annual meeting on Nov. 3 and 4 at Seaboard. The meeting will be attended by representatives from all parts of the state. The keynote address will be given by C. Rogers, Lexington, Ky.

The National Industrial Coal League will hold its annual meeting on Nov. 15 and 16 at the Hotel Commodore, New York City. The meeting will be attended by representatives from all parts of the country. The keynote address will be given by J. H. Bickell, Chicago, Ill.

The Coal Mining Institute of America will hold its annual meeting on Nov. 13, 14 and 15 at Pittsburgh, Pa. The meeting will be attended by representatives from all parts of the country. The keynote address will be given by C. W. Bickell, Binghamton, Ala.

The American Gas Association will hold its annual meeting on Oct. 23-25 at Atlantic City, N. J. The meeting will be attended by representatives from all parts of the country. The keynote address will be given by H. F. Davis, New York City.

Canadian Institute of Mining and Metallurgy will hold its annual meeting on Nov. 17, 18 and 19 at Vancouver, B. C. The meeting will be attended by representatives from all parts of the country. The keynote address will be given by C. G. Mackenzie, Montreal, Quebec, Can.
More—or Less—Unionism

INTERESTINGLY written is James W. Cain's recital of facts in "The Battleground of Coal," in the current issue The Atlantic Monthly. But it is not with his facts but with his theories and his cures that the public is justified in taking issue. He shows that before the strike the union mines were idle for lack of orders and the non-union mines were working, their activity being due to lower wages. Then he adds:

From the foregoing it would seem that the solution of the problem lies in putting the whole country on a non-union basis. This is just what the operators are trying to prove. Not only the non-union operators but the union operators as well distribute this propaganda; newspapers are flooded with it. Yet it is clear that the argument of the operators is valid only in a superficial sense, even though present conditions lend it considerable plausibility. For obviously the prosperity of the non-union fields prevails not through any superiority of non-unionism per se but from the artificial advantage they have on account of their lower wage expense.

Mr. Cain is right; the enslavement of part of the industry to the United Mine Workers of America and the freedom of the other part from it is the cause of the wage differential and of the inequality of operation in the two districts which existed before the strike. But he has taken on himself to oppose the cure that many operators suggest, and the one which he himself admits is the more obvious outcome of the facts he has presented. Eliminating the cure of national non-unionism he says:

There is one plan left—short of a big government corporation to run all coal mines—which promises some sort of solution. This is to put the whole country on a union basis and give all operators an equal chance at the market and all mines an equal chance at regular work.

Miners are now reported as making, where they get sufficient railroad and mine cars and are willing to work, as much as $500 and $600 a month. Surely they would not be willing to pay as much as $20 or $25 a day to those who would work for them.

Are they no demanding by the power of their union that other men work in mills and factories, on the high roads and on the railroads and at the desk for less money than they are willing to accept for themselves? We do not put any figure as being a fair wage for any man. We do not condemn labor profiteering. Nor does the law condemn it. Doug Fairbanks, Fender Chaliapin and Babe Ruth may make their millions or hundreds of thousands or tens of thousands yearly so long as they do it without a combination in restraint of trade. We do condemn them, however, if they obtain high wages by deliberate conspiracy, by murder and other violence, by arson and violation of pledges, by the enactment of laws which while purporting to be for the public good are framed solely to sustain their monopoly and to give them an unfair advantage.

But mark this. The complete unionization of the mine worker would mean the complete unionization of his employer, legal or illegal. The union in fact demands a co-operative bargain between all the employees and all the employers. With all operators paying a scale fixed by a single conference, the employer could laugh at high wages. He would have no incentive to fight to keep wages down, for strikes would be extremely expensive to him as a capitalist. The higher the wages, the more men would flock to his mines. He would have no difficulty in filling the working places no matter how irregularly he worked.

Consequently complete unionization of the mine worker would do great injury to the public unless the government stepped in to prevent it. Mr. Cain does not want that, nor do the operators, but it would be the inevitable result of 100 per cent unionism.

Mr. Cain goes on to say that "it would be a step back to the Dark Ages to put the whole country on a non-union basis. The miner would be reduced almost to peonage." In this he is absolutely wrong. Just before the strike came to an end the non-union United States Steel Corporation, anxious to get men, had to raise wages. The Anaconda Copper Mining Co., at Butte, Mont., now a corporation employing non-union men, is paying $4.75 a day to miners and would, if it could afford it, raise the wage still higher to get men to operate its plants. The Cour d'Alenes are paying $5 a day.

The wage of non-union men is usually lower than the pay of union men, but that is because the profits of any trust are higher than those of a competitive industry. The profits of a trust, whether a commodity or a labor trust, are sure to be excessive unless the prices of the commodities or the wages of the laborer are set so high as to discourage industry.

It is an ill time to talk of giving Mr. Lewis and his men a firmer hold on the throat of the public when they are demanding a six-hour day and a five-day week in order to furnish men with excessive opportunity in the coal industry when they are needed more elsewhere.

A Maligned Industry's Opportunity

THE announcement of the personnel of the U. S. Coal Commission has been met with mingled cheers and jeers by the coal men. Few appear to evidence hope or anticipation that the commission will or can do much for the soft-coal industry. The public has been led to hope that this agency will lower the price of coal and stop strikes. It, of course, can do neither. The coal men are today in about as pessimistic a mood as they ever have been. Battered between the forms at Indianapol and Washington they entertain little hope of finding their way out of trouble.

Many there are who hold with Mr. C. M. Hager of the Cleveland address last week, that since the United Mine Workers will not arbitrate and will not take a reduction

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Progress at the Mining Congress

A LOOSE, unorganized write-up. The American Mining Congress is making progress in taking on some of the functions of earlier organizations. Not a few of those who attended the Cleveland meeting last week commented on the excellence of the programs and discussions on mine taxation and standardization of mine equipment and mining methods and did not hesitate to compare them with similar efforts conducted under the auspices of the American Institute of Mining and Metallurgical Engineers. In fact, the so-called standardization conferences are engineering discussions; while the everyday problems of mining are taken up by young men not afraid to be trite at times if they can talk about the things that concern them in the routine of their business.

The mine-taxation conference this year called together many of the country's authorities and the interest in the discussion proves that this subject is gaining in popularity every year. Such open discussion of the tax questions of the day as characterized the Wednesday morning session, when J. G. Bradly, of West Virginia, and C. E. Mature, of Ohio, had the floor, has never been heard at a meeting of real men—at least a public meeting.

As the advertising pages of a magazine are in the reading pages as the editor of mining machinery and equipment complemented the meetings and discussions. To none in attendance it appeared that the management of the day, and regarded necessary, to return a profit to its and legislative importance on the behalf of the miners, gave value to this belief. The exhibit, of course, added interest and value to the congress, but care should be taken not to add to the burden that these conventions are merely gatherings of salesmen.

A queer conglomeration of coal mining institute, coal operators' gathering, meeting of economists, Institute of Mining Engineers and county fair, at which no particular attention was paid to the advance slogan, "Greater Prosperity Through Lower Production Costs," the silver anniversary of the American Mining Congress was a success. To this success the coal men of Ohio in particular contributed no small share.

Efficiency vs. Reduced Wages

In 1921, when coal was in slack demand and prices falling, the operator of a coal mine was offered a railroad-fuel contract for a tonnage representing more than half full-time operation, but at a figure which would not return cost. Business was difficult to get and his men needed the work. He called them together, told them the situation, said that he was willing to take the contract if he could be assured of sufficient margin to cover interest, depreciation and depletion—that is, fixed charges, but no profit. He told the men he was not willing to ask them to take a reduction in wages, but he was asking them to increase their efficiency.

After some debate the proposal was made and accepted by the men that 10 per cent be deducted from each pay envelope and held in escrow, as it were, this amount representing approximately the difference between cost and price. It was put up to the men to increase their efficiency, thereby lowering costs, and it was agreed that if they did their part the 10 per cent held out would be returned.

Now, of course, to increase efficiency here meant the exercise of hearty co-operation between men and management, particularly with the daymen. It meant studious avoidance of preventable mine failures, derailments and mechanical breakdowns. It meant working with a will, getting cars to the diggers, shooting loads to the shaft bottom—for this was a shaft mine—it meant steady application to the daily task, whether track laying, dumping coal or any of the many jobs about the coal mine. On the part of management it meant keen appreciation of the value of the time of the tonnage man, giving him a proper place in which to work and such prompt service as his ability to load required.

By the end of the first pay the preliminary cost sheets indicated that it had been done—that costs had been lowered in sufficient amount without cutting wages. Every pay thereafter the men received two envelopes, one the full rate less 10 per cent and the other deducted 10 per cent in accordance with the agreement with the men.

It is needless to say that this was a non-union mine. It is also needless to say that this mine was an exception among the non-union mines in 1921. There was nothing particularly humanitarian about the course pursued by the management of this mine, for there were cogent reasons for the method followed, reasons found in union mines in close proximity on every side. The fact remains, however, that in the absence of a union it was possible to get close enough to the men to substitute efficiency for reduced wages.

With the coming of a coal peace there remains nothing to worry about except the delivery of coal and the arrival of the bill.—Brooklyn Eagle.

No system of government will work in a land where everybody tries to work the government.—Illinois State Register.
United States Coal Commission

United States Coal Commission Named

Judge Samuel Alscher, a noted labor arbitrator

Judge Samuel Alscher was born in Chicago and has practiced law in Aurora and Chicago. He has been active in Democratic politics throughout many years, having served in the Illinois Legislature, and has been his party's candidate for Congress and, in 1920, for Governor. In 1915 he was appointed by President Wilson to the circuit bench of the Seventh Circuit on which he still is serving. Judge Alscher in 1918 was named by the Secretary of Labor as arbitrator of the labor disputes between the Chicago printers and their employees, and his handling of the business has been recognized as one of the notable labor arbitrations in this country.

The Peabody Coal Company, a native of South Carolina, but has lived most of his life in Georgia. He joined the Constitution staff and became managing editor when Henry W. Grady died; later he succeeded him as editor in chief. He served in the Georgia Legislature and for many years as Democratic National Committeeman for Georgia.

George Orin Smith, Director of the U. S. Geological Survey, was named at Colby College and at Johns Hopkins. His interest in coal began in 1895 and 1896 when, as an assistant geologist of the U. S. Geological Survey, he was working in the vicinity of the coal fields of West Virginia. It was in the field season of 1895, 1896, and 1897 that he made the trip to the coal fields of West Virginia, and the results of these trips were the basis of his later work on the coal fields of the United States.

In the first complete treatment of the United States coal fields by the U. S. Geological Survey in 1903 Dr. Smith contributed a detailed chapter on the Pacific Coast coal fields. As Director of the U. S. Geological Survey since 1917 he has taken special interest in the development of the statistical laboratory, and since 1915 has been the University of Pennsylvania professor emeritus of the subject of coal geology. In 1917 Director Smith was a member of the Committee of Coal Policy, one of which the late Francis Peabody was chairman. In 1920-21 he prepared a "Survey of the United States Coal Commission."
Mining Brown Coal in Germany, Briquetting It and Extracting Its Byproducts

BY HUBERT HERMANNS
Berlin-Fankow, Germany

Growing Importance of Brown Coal—Mining and Stripping Methods—Large Percentage of Moisture—Drying with Exhaust Steam—Briquetting and Baking Coal for Byproducts—Producer Method of Utilization

In no country has the production and utilization of brown coal, or rather brown lignite, had more development than in Germany. This substance has of late years become of greater importance to the Republic by reason of the decreased output of coal due to the decreased efficiency of the miners and to the loss of the important coal fields in Upper Silesia and the Saar valley. Moreover, large quantities of coal have to be delivered regularly to France, Belgium and Italy.

Table I shows the development of the production of coal, brown coal and brown-coal briquets in Germany between 1913 and 1920 and 1921.

The character of the brown-coal deposits in Germany varies greatly. Faults, folds, thrust faults, ruptures and interstratified layers of sand and shale often make the mining of the deposit quite difficult. The thickness of the bed varies from a few inches to 300 ft. The method of mining, whether by strip pit or by underground mining, depends on the depth of the deposit over the coal, the overburden consisting chiefly of sand and clay. When underground mining is adopted the coal is reached by a shaft and less often by a drift. Before the war a miner working underground in coal mines could be relied upon to mine 260 short tons per year, whereas the yearly production of brown coal per miner was between 350 and 400 short tons.

By the use of the land dredger the production in strip pits has been raised to more than 1,500 tons per miner. Unfortunately the heat value of this lignite is only about one-third that of coal. However, even making due allowance for the lower calorific value of lignite, each man in a lignite operation will produce many more heat units than a man in a German coal mine. Whereas a coal miner would produce 2,000,000,000 calories per year, the yearly production for a miner working in brown coal is now 3,200,000,000 calories.

When brown coal is mined by underground methods an entry is driven through the deposit to the further property line with side entries on either side at regular distances and cross roadways between these; thus the coal is divided up into pillars measuring 4 meters (13 ft.) square. The coal obtained from these pillars is transported through the side entries to the main entry and up through the shaft.

The roof of the area thus excavated is allowed to

![Image of mining scene]

How the German Miner Avoids Use of Backbreaking Shovel

Another scene in a brown-coal strip pit. Note that the miners are forming a chute in the coal that will feed into the car without shovelling and have erected a chute with a gate so that the coal will be stored and the car will move away without delay. Thus the men will be able to work without cessation while cars are being placed.

TABLE I—PRODUCTION IN GERMANY OF COAL, LIGNITE AND LIGNITE BRUCETS

<table>
<thead>
<tr>
<th>Year</th>
<th>Coal (Steinkoh)</th>
<th>Lignite (Rohbraunkohl)</th>
<th>Lignite Briquets (Braunkohlenbriketts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1913</td>
<td>190,109,440</td>
<td>111,880,413</td>
<td>24,373,450</td>
</tr>
<tr>
<td>1920</td>
<td>131,340,767</td>
<td>123,911,358</td>
<td>28,245,817</td>
</tr>
</tbody>
</table>

*1 Metric ton equals 2,240 lb., or 1,013 short tons.
*2 Lignite, including Saar District and Pfalz. Though from 1913 to 1921 the coal production declined from 196,000,000 metric tons to 136,000,000, the brown-coal production increased from 37,000,000 to 123,000,000 and the brown-coal briquet production from 21,000,000 to 25,000,000.
the mineral by underground mining methods. The difficulty in daylight mining is in disposing of the impurities mixed with the lignite. These are thrown into the areas already mined.

When the coal is mined by hand in these strip pits it is directed into cars by chutes laid close to the coal, or holes are dug in the face of the coal in the shape of a semi-funnel, and by these the coal is chuted into the car. (See headpiece.) This method is known as rolllochbetrieb. The narrow end of the "rolloch" is closed by boards and is placed so high above the level of the top of the car to be loaded that the latter can be run under it and filled by gravity, the loose coal in the funnel being released as desired. Usually the sides of the rolloch are made so steep that the loosened lignite will run down them without any assistance from the miner.

As Table I shows, most of the coal is burned without being briquetted. The use of this coal in its natural condition is limited because it contains from 25 to 50 per cent of moisture. The freight rates, figured on the basis of its heat value, are too high to encourage the use of such fuel. The heat value sometimes falls as low as 2,000 calories, or 3,600 B.t.u.

The difficulties encountered in burning this wet coal have been overcome in course of time by the construction of special furnaces in which the coal is dried before reaching the grate, but the principal way in which the economic value of brown coal can be increased is by its use in the manufacture of briquets. The cars are mostly conveyed by continuous chain haulage from the mine to the briquet plant. Three separate operations have to be performed. The lignite must be prepared, dried, and briquetted.

First the coal is discharged from the car by a rotary dump. It falls into a funnel-shaped bunker, from which it goes to the crushers. The broken coal from these drops on an inclined shaking screen 13 to 20 ft. long and about 4 ft. wide. This allows particles less than 1 in. in diameter to fall through, the larger pieces going to rollers or a centrifugal mill. The finer coal is screened again, and the lumps coming from the screen are guided to a belt conveyor by which the coal is transported to the boiler house. The wet coal is dried either in tubular driers or on shelves heated by exhaust steam, this process usually being continued until the water content falls to 15 per cent. For tubular driers the pressure of the exhaust steam should be from 2 to 3
PLANT FOR CRUSHING, SIZING, RECRUSHING, RESIZING, DRYING, COOLING AND BRIQUETTING BROWN COAL

(a) Endless chain, (b) coal car, (c) drive for endless chain, (d) revolving dump, (e) crusher, (f) shaking screen, (g) centrifugal crusher, (h) shaking screen, (i) bucket conveyor, (k) coal pocket, (i) tubular drier, (m) screening trommel, (n) fine crusher, (o) belt conveyor leading to cooler, (p) cooling apparatus.

atmospheres absolute. When shelves are used the pressure should range between 1.5 and 2 atmospheres.

The tubular driers consist of a sheet-iron shell 8 ft. 2 1/2 in. to 9 ft. 10 in. in diameter and 23 ft. to 26 ft. long and two strong ends in which are inserted tubes of 3 1/2 in. diameter such as are used in tubular boilers. The coal slides through the tubes, which are surrounded by exhaust steam. The center line of the drier is at an angle of 6 deg. with the horizontal.

The shelf drier (teilertrockner) consists of twenty-five to thirty-six circular shelves of 16 ft. 4 in. diameter placed vertically above each other at regular distances. These shelves are each made of two circular iron sheets riveted to a frame, the space between them forming a chamber for the exhaust steam. By means of rotary shovels the lignite is constantly turned over and pushed alternately toward openings in the middle and on the outside which connect the separate shelves.

The dry coal goes to a trommel, or revolving screen, and is separated into fine coal and coal dust. It is then cooled in a jalousiwerk. You have seen the small shutters on a Venetian blind; in Germany the latter is known as a jalousie (or jealousy) because it allows one to look out without being seen. In the cooler just named the coal falls on shutters similar to those in a Venetian blind, and between them cool air circulates. The lignite is cooled because it can be better pressed in briquets when its temperature has been lowered. Conveyors bring the dried and cold lignite to a bunker placed over the briquet presses.

Brown-coal briquets were manufactured as early as 1858, the coal briquetted being from the Von der Heydt mine. Many technical difficulties were encountered, however. In particular the pulverizing and drying apparatus both proved inefficient. All equipment and methods have been so greatly improved since that date that no more technical questions remain for solution.

Today plunger presses driven by steam are used almost exclusively for briquetting. Electrically driven presses are seldom seen; not because the drive is unsuited to that purpose but because exhaust steam is needed for the drying apparatus. The steam engine and press are combined in one heavy frame with a heavy crankshaft, common to both, in between. On this fly-wheels are mounted.

The stroke varies from 61 in. to almost 11 in., depend-

ing on the condition of the coal and the desired density of the briquet. A rod transfers the crank movement to a heavy slide to the other end of which the plunger of the press is attached. The principal part of the press is the head in which is placed the mold consisting of a passageway 3 ft. 3 in. long open at both ends. The sides of the mold are of interchangeable steel plates so that the free opening is of the desired dimensions for the briquet being manufactured. The plates are so formed that the opening on the press side is a few millimeters wider than the rest of the passageway.

BRIQUETTING PRESSURE MANY TONS PER SQUARE INCH

The difference in width depends on the nature of the coal and the desired firmness of the briquet. The opening can be regulated while the press is in operation. The plunger, fitting closely in the widest end of the channel, pushes a quantity of dry coal into the mold and forms a briquet with every forward movement.

On the return stroke the space left by the retreating plunger is filled again with another measured quantity of coal, which is formed into a briquet at the next stroke. Each briquet is pushed forward in the mold by the one that succeeds it. On passing the narrowed part, the briquet is again subjected to pressure, causing much friction and consequently back pressure on the plunger. Leaving the passageway the briquets land in a trough, through which they are pushed in a continuous string by the action of the plunger. The trough can be adjusted horizontally and vertically. The briquets usually fall directly into the railroad cars by which they are

STEAM PRESS FOR MANUFACTURE OF BRIQUETS

So much exhaust steam is passed for the driving of the machinery in the brown coal that steam engines are produced to generate it. The briquetting presses run from 3 to 4 times per square inch and the revolutions per second from 30 to 35.

October 19, 1922  COAL AGE  623
taken to market. An illustration shows the pressroom of a briquet plant with eight presses. The construction of the press and the trough can be clearly seen.

Not only the length of the stroke but the speed of the press depends greatly on the condition of the coal; the speed is from 80 to 125 r.p.m. The pressure required for the forming of a briquet is from 1,200 to 2,600 atmospheres, 17,640 to 23,000 lb. per square inch. The presses must be built so that the flywheels are capable of exerting such a pressure.

The dry coal is held together without any added binder, partly as the result of the high pressure exerted on it, and partly through the heat generated in the press which softens the coal and the substances it contains, such as paraffin and resins.

Naturally the capacity of a press depends on the number of revolutions per minute and the weight of the briquets. In about twenty-four hours one machine will make from 90 to 100 long tons. The shape of the briquet varies greatly for industrial purposes, preference being shown for small cube or flat-shaped briquets.

**Some Bruine Coal Cokes Quite Readily**

Although brown coal is used mostly in the form of briquets, it can be utilized in other ways. Where it will coke, like the brown coal from Halls, Zeltz and Weissenfeld, it may be used in that form. The lignite, having baking qualities, can be readily distinguished from ordinary brown coal. The best baking lignite has a bright yellow, almost white, appearance. When burned it melts like sealing wax and cannot be used at all in grates, as the molten coal would fall between the bars.

This pure and rich baking coal, however, has all been mined. What remains, though more like brown coal, has a lighter color than the non-baking lignite. One of the illustrations shows a pit in a deposit of this character. The lignite is caked slowly so that the water is first separated from it, and later, at a higher temperature, the gases and tar. As a residue a porous and brittle coke remains, which is mostly used for domestic purposes.

The oven in which the brown coal is baked are vertical shafts lined with firebrick, heated on the outside and provided with rings arranged like shutters, over which the coal slides, losing its moisture gradually. In the hotter part of the shaft the brown coal is decomposed into tar and gas. The coal is taken out at the bottom. The tar is drawn off with the gas and precipitated in a condenser. The gas from which the tar vapors have been extracted serves as fuel for the ovens.

Of the tar, the paraffin, which is extracted by distillation in iron retorts, is the most valuable constituent. By distillation also the oils are freed from the paraffin; those of lower boiling point, forming “solar oil,” are freed first. The heavier oils, containing paraffin, are then collected and cooled rapidly, and the paraffin is separated thereby. This is pressed and purified. The oils from which the paraffin has been extracted form cheap lubricating oils and oils for driving Diesel motors.

For some time, especially during the war, experiments were made to increase the production of oils and fuels of high heat value by the distillation of brown coal in producers. The tar in that case is not obtained by a baking process but by distillation. No coke remains but all the combustible materials are transformed into gas. Large quantities of tar were produced by this method during the closing months of the war.
Calculation of Power Required for a Counterweighted Hoist and One in Balance, Shallow Shaft

Moments Required for Lifting Load Reduced by Moments of Falling Counterweight or Descending Load—Acceleration Moment Must Be Large Enough to Increase Speed of Descending as Well as Ascending Bodies

By F. L. Stone
Schenectady, N. Y.

In last week's issue shaft calculations were made for an unbalanced, uncounterweighted hoist. In this article will be developed the calculations for a counterweighted hoist and one operated in balance. The counterweight that will give the best motor rating is one the weight of which is equal to that of the cage plus half the weight of the load. In the example given the following conditions were specified:

- Total lift, ft.
- Weight of cage, lb.
- Weight of car, lb.
- Weight of rock, lb.
- Trips per hour
- Drum, cylindrical
- Weight of rotating parts at rope center, lb.

From these figures it can be deduced that the counterweight for this hoist should weigh 15,300 lb. in all. The closer this condition is approximated, the closer will the two cycles, hoisting the load and hoisting the counterweight, coincide.

As 60 trips per hour are required and all other data are the same, the moments of the up load will be exactly the same as in the first case, except for acceleration and retardation moments, which will be increased by reason of the fact that the counterweight has also to be accelerated or retarded.

We will, however, proceed as if this were an entirely new problem as far as moments are concerned.

<table>
<thead>
<tr>
<th>Up Load</th>
<th>Counterweight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cage</td>
<td>9,000 lb.</td>
</tr>
<tr>
<td>Car</td>
<td>2,300 lb.</td>
</tr>
<tr>
<td>Rock</td>
<td>8,000 lb.</td>
</tr>
<tr>
<td>Total</td>
<td>19,300 lb.</td>
</tr>
</tbody>
</table>

Assuming 80 per cent efficiency as before, 12,000 — 0.8 = 15,000 ft.-lb. Substracting the average moment from 15,000 (that is, 15,000 — 12,000) we get 3,000 ft.-lb., which is the frictional moment. The acceleration and retardation may be calculated as follows:

<table>
<thead>
<tr>
<th>Tums</th>
<th>9</th>
<th>11.26</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load</td>
<td>57,900 ft.-lb.</td>
<td>57,900 ft.-lb.</td>
</tr>
<tr>
<td>Hold</td>
<td>1,300 ft.-lb.</td>
<td>1,300 ft.-lb.</td>
</tr>
<tr>
<td>Darum</td>
<td>45,500 ft.-lb.</td>
<td>45,500 ft.-lb.</td>
</tr>
<tr>
<td>Total</td>
<td>59,400 ft.-lb.</td>
<td>59,400 ft.-lb.</td>
</tr>
<tr>
<td>Down</td>
<td>47,400 ft.-lb.</td>
<td>47,400 ft.-lb.</td>
</tr>
<tr>
<td>Net</td>
<td>12,000 ft.-lb.</td>
<td>12,000 ft.-lb.</td>
</tr>
</tbody>
</table>

Average moment = 12,000 ft.-lb. / 2 = 6,000 ft.-lb.
The sumation of moments in lifting the counterweight will be as follows:

**SUMMATION OF MOMENTS (LIFTING COUNTERWEIGHT) IN FT-LB**

<table>
<thead>
<tr>
<th></th>
<th>Turn</th>
<th>Counterweight and rope moment</th>
<th>13,100</th>
<th>12,200</th>
<th>13,100</th>
<th>10,800</th>
<th>10,800</th>
<th>10,800</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Trans.</td>
<td>3,000</td>
<td>3,000</td>
<td>3,000</td>
<td>3,000</td>
<td>3,000</td>
<td>3,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moment of accelerating force</td>
<td>11,940</td>
<td>11,940</td>
<td>11,940</td>
<td>11,940</td>
<td>11,940</td>
<td>11,940</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total moment</td>
<td>28,440</td>
<td>28,140</td>
<td>16,200</td>
<td>13,800</td>
<td>1,860</td>
<td>1,560</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time</td>
<td>0</td>
<td>6</td>
<td>17</td>
<td>17</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Horsepower</td>
<td>213</td>
<td>245</td>
<td>141</td>
<td>123</td>
<td>16</td>
<td>13.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Horsepower required</td>
<td>0.0059</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**To the lifting of the counterweight and the lowering of the cage and cars the following computations can be applied:**

<table>
<thead>
<tr>
<th></th>
<th>Turn</th>
<th>Moment of up cable</th>
<th>12,200</th>
<th>12,200</th>
<th>12,200</th>
<th>12,200</th>
<th>12,200</th>
<th>12,200</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Trans.</td>
<td>3,000</td>
<td>3,000</td>
<td>3,000</td>
<td>3,000</td>
<td>3,000</td>
<td>3,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moment of accelerating force</td>
<td>11,940</td>
<td>11,940</td>
<td>11,940</td>
<td>11,940</td>
<td>11,940</td>
<td>11,940</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total moment</td>
<td>28,440</td>
<td>28,140</td>
<td>16,200</td>
<td>13,800</td>
<td>1,860</td>
<td>1,560</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time</td>
<td>0</td>
<td>6</td>
<td>17</td>
<td>17</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Horsepower</td>
<td>213</td>
<td>245</td>
<td>141</td>
<td>123</td>
<td>16</td>
<td>13.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Horsepower required</td>
<td>0.0059</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As the counterweight moment is reduced by the moment of the cage and car the total moment is less than the counterweight moment. The net moment equals the difference between the sum of the up-counterweight and up-rope moments and the sum of the down-cage, down-car, down-load and down-rope moments.
October 19, 1922

Glancing at the duty cycle it will be seen that the motor required for this work is much smaller than that necessary for hoisting a totally unbalanced load. The actual work done is that of hoisting the active load, rock or coal.

We have lifted 8,000 lb. of material through 250 ft., the work being done at an assumed efficiency of 80 per cent.

\[
\text{Work done} = 8,000 \times 250 = 2,000,000 \text{ ft.lb. or} 2,000,000 \text{ ft.-lb.}
\]

\[
\text{Horsepower-seconds} = \frac{2,000,000}{0.8} = 2,500,000 \\
\]

3,636

Then \( \frac{3,636}{4,545} \) hp. sec., which should equal the area of the total duty cycle. Thus:

\[
\begin{align*}
\text{Loaded Car Up} & = 269 + 266 \\
\text{Accelerating} & = \frac{6}{2} \times 2 = 802.50 \\
\text{At full speed} & = \frac{1,07-1.83}{2} = 1,467.95 \\
\text{Retarding} & = \frac{6}{2} = 1.14 \\
\text{Total horsepower-seconds} & = 2,269.31
\end{align*}
\]

Adding the horsepower seconds of work performed in the two cycles—namely 2,269.31 and 2,271.39—the result is 4,540.21, thus checking with the result previously obtained.

We will now consider the last case for this set of conditions—namely, hoist in complete balance. That is to say, we will assume a double-compartment shaft, cages and cars in balance and the same output, a trip per minute, as in the first two cases, that just calculated and that considered in Coal Age on pages 577 et seq. of this volume.

The up moments of the cage, car, rock and rope will be the same as before, that is, Turns 0 = 59,400 ft.-lb.; Turns 13.26 = 57,900 ft.-lb.

The down cage and car have the following weights: Cage 9,000 lb.; car, 2,300 lb.; total 11,300 lb.

\[
\begin{align*}
\text{DOWM MOMENTS} & = 11,300 \times 3 = 33,900 \text{ ft.-lb.} \\
\text{Turns 0} & = 11,300 \times 3 = 33,900 \text{ ft.-lb.} \\
\text{Turns 13.26} & = 11,300 \times 3 = 33,900 \text{ ft.-lb.}
\end{align*}
\]

\[
\begin{align*}
\text{MOMENTS OF DOWN ROPE} & = 10,600 \times 2 = 1,060 \text{ ft.-lb.} \\
\text{Turns 0} & = 10,600 \times 2 = 1,060 \text{ ft.-lb.} \\
\text{Turns 13.26} & = 10,600 \times 2 = 1,060 \text{ ft.-lb.}
\end{align*}
\]

\[
\begin{align*}
\text{SUM OF MOMENTS DOWN} & = 33,900 + 1,060 \times 2 = 35,900 \text{ ft.-lb.} \\
\text{Turns 0} & = 33,900 + 0 \times 2 = 33,900 \text{ ft.-lb.} \\
\text{Turns 13.26} & = 33,900 + 1,060 \times 2 = 35,900 \text{ ft.-lb.}
\end{align*}
\]

The down moments must now be deducted from the up moments.

\[
\begin{align*}
\text{Up moments} & = 33,900 \text{ ft.-lb.} \\
\text{Down moments} & = 35,900 \text{ ft.-lb.} \\
\text{Total} & = 69,800 \text{ ft.-lb.}
\end{align*}
\]

Adding the horsepower seconds of work performed in the two cycles—namely 2,269.31 and 2,271.39—the result is 300.
Coal from Peat or from Drifted Matter?

Speaking before the British Association for the Advancement of Science, Sept. 6, of this year the president of the geological section, Professor Percy Fry Kendall, declared that true coal seams — those, that is, that were unshaken — were generated where found, that is, from peat — had the following characteristics: (1) Wide extent, (2) uniformity of thickness and character over extensive areas, (3) freedom from intercalated detrital mineral matter, (4) constant presence of a soft earth or vegetable level, (5) entire absence of remains of aquatic animals within the seam. Substitutes, he said, negative for alternatives and affirmative for negatives and the characteristics of coal, which he regards as drift or alluvial matter, are truly set forth.

If, coal, he added, scales, teeth and bones of fish are almost invariably present, and it is from coal that our largest collections of coal-measure vertebrates have been obtained. Amphibian remains are more rare, reptiles are crowded to some places and partly fresh-water plants such as Chara, Equisetum are represented commonly ent by the plants themselves, but by the flattened wrinkle-silicified, the chaff-covered shell having evidently been dissolved by the acids generated by decomposing vegetable matter. The last content always 20 per cent before reaching the point at which it would be regarded as shale. The characteristics of coal are consistent with the view that it originated from a mass of vegetation macerated in pools of water somewhat after the manner in which flax is retted.

Sometimes the coal is in unconformable relation to the underlying beds, as at the Abram colliery, Wigan, England, where it rests in one district upon true coal and in the course of about a mile encroaches first on the coal, then upon its underclay and, finally, having become 7 ft. in thickness, it rests upon a bed of shale underlying the underclay.

It commonly happens, added Professor Kendall, that the presence of a patch of coal as a constituent of a coal seam is accompanied by an increased thickness, even out of proportion to the magnitude of the coal, and this irrespective of whether the coal is above, within or below the true coal. This may be explained by the fact that the process of fermentation by which the coal was produced reduced its volume more rapidly than the ordinary clay reduced that of the adjacent peat and so maintained a depression in which the plant debris of the peat bog could accumulate, but the ultimate effect of this fermentation was a less complete loss of hydrocarbons and, consequently, both because its contemporaneous loss was greater and its subsequent loss was less, the presence of a coal component increases the thickness of a seam.

A check on the area of the plotted cycle can be made as follows:

\[
\begin{align*}
116.2 + 115.3 & = 231.5 \\
\frac{2}{2} & = 1 \\
100.5 + 92.9 & = 193.4 \\
\frac{2}{2} & = 96.7 \\
100.5 & = 97.7 \\
\frac{2}{2} & = 48.8 \\
\end{align*}
\]

""
Huntington Show Suggests Modern Ways of Reducing Coal Cost—I

Typical West Virginia Mine Cars—Low Cars Permitting Use of Side Loading—Use of Band Brakes—Machine for Electrically Heating Rivets—Hoist for Long Slopes and Inclines

Much interest was exhibited in the Coal and Industrial Exposition held at Huntington, W. Va., Sept. 18-23, in the Chamber of Commerce Building. Lightning, it is said, seldom hits twice in the same spot, but the coal exposition has ventured for two consecutive years to descend on so small a town as Huntington. The rest of the country needs some of the enlightenment that has been so generously bestowed on this West Virginia town and it is certain that some other city will get it, as it was decided at a meeting of exhibitors to hold the show elsewhere in the coming year. The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers, thus deserted by their exposition, decided to withhold a decision on next year’s place of meeting till they found where the exposition was going to be held.

Prominent among the exhibits were four mine cars of mammoth proportions. They probably will carry but little coal, however, for apparently payment of coal by the carload instead of by the ton results in the filling of cars but little more than level full. The cars are, however, constructed to carry a maximum quantity of coal for a minimum height of body.

The American Car & Foundry Co. had a big all-steel car that was constructed for the Little War Creek Coal Co., at Maier, W. Va. Its weight is 4,400 lb., its length is 9 ft. inside and 10 ft. 8 in. over all, its width is 6 ft. and its height from the top of the rail to the top of the car, 3 ft. 2½ in. Its capacity is 107 cu.ft. and its gage 44 in. The wheels, which are fitted with Hyatt roller bearings, project above the bottom of the car and are hooded with steel covers; to stiffen the sides three steel gusset plates are set on each side. They connect the sides of the car with its bottom. It will be dumped on a rotary dump.

Across the way might be noted a rival car constructed by the Kenova Mine Car Co. for the Red Jacket Consolidated Coal & Coke Co., at Red Jacket, W. Va. This, which was a composite car with sides of steel and a bottom of wood, like the other, had hooded wheels and two angle stiffening plates on each side. It holds 2½ tons when level full. Its dimensions are as follows: Weight, 3,800 lb.; inside length, 10 ft. 6 in.; width, 6 ft.; height above rail, 29 in.; capacity, 90 cu.ft.; wheels, 14 in. in diameter; track gage, 48 in.; wheelbase, 40 in. A spring drawbar, a swivel hitching and a Timken roller-bearing wheel of the exposed Lynch-pin type were notable features.

Only slightly smaller is the car made by the Watt Mining Car Wheel Co. for the Island Creek Coal Co. This car has a gage of 44 in. for a track gage of an even 44 in. It has an 18-in. wheel, a straight-link hitching, Hyatt roller bearings and lifting end gate being intended, unlike the other two cars, for easy dumping. Its weight is 3,700 lb., its inside length 9 ft. 12 in., its over-all length 10 ft. 6 in., its inside width 5 ft. 5 in., its height above the rail over all 3 ft. 4½ in., its wheel...
It will be noted that modern mine cars are frequently riveted—not bolted. Rivets are less likely to become loose. Properly driven, they will hold permanently until a wreck of some sort subjects them to strains for which they have not been designed. Then the cars come to the shop, and the riveting must be renewed.

In this work the electric riveter of the American Car & Foundry Co. exhibited in the company's booth offers opportunities. The heat is, of course, not of the cheapest but it is confined to the rivet and not dissipated as to a furnace. There is no risk of burning a lot of rivets by leaving them in the fire. The heat is from the center out and not from the outer surface inward. Hence it lasts longer or else does not have to be made so intense to last as long. The rivet is in full view of the operator.

In a booth near the entrance to the show was exhibited by the Hocken-Smith Wheel & Mine Car Co., a car built for the Pond Creek Ry-Product Collieries Co., of Leekievile, Ky. Several illustrations are shown of it because, although it has certain qualities all its own, it is typical of the cars being used in West Virginia, a state where large loadings per man are made at most of the mines. The cars are quite low, this one being only 28 in. high. The height is kept low, usually not at all because the coal is thin, but because ease of loading favors a low car. It also saves injury to the coal in loading.

The band-friction double-reduction single-drum hoist of the Thomas Elevator Co. occupied another booth. It is intended for such work as sinking shafts, hauling cars up slopes or inclines or for other purposes where a machine with large drum and ample cable capacity is desired. It is fitted with a band friction on one end of the drum and a composition-lined band brake on the other. A band friction puts no end thrust on the bearings and is therefore especially advantageous on long hauls. The brake is of ample proportions and as it is placed on the opposite end of the drum from the friction any heat generated by it does not affect the operation.

These machines are furnished with a smooth drum face and cut gearing. When made with machine-cut grooves on the drum the friction may be locked in engagement and the machine used for operating skips, cages or cars in balance. The brake and friction shafts are fitted with babbitted bearings and the control levers are banked in a quadrant conveniently located for the operator. Speeds and capacities range up to 12,000 lb. rope pull and 600 ft. per minute. Either alternating or direct current may be employed.
Every Big Mine Should Have Its Locomotive Inspector

To Be Always "Fit" a Locomotive Must Be Inspected at Regular and Frequent Intervals—If Continuously Kept in Good Condition, with Hauling Loads Commensurate with Capacity, It Should Last Indefinitely

By W. M. Johnson*
Woodward, Ala.

ELECTRIC locomotives are now largely employed both in gaseous and non-gaseous mines for hauling coal from the working face to the pit mouth. These machines form the key to present-day coal production. They vary in size from four to thirty tons. Without them the output of some of the larger mines would be so seriously reduced that coal could not be mined economically. In fact to revert to mule haulage or other modes of transportation would mean disaster to the coal-mining industry.

Considering the thousands of electric locomotives that are put into the mines each year, the question naturally arises what percentage replaces worn-out equipment and what is installed in new development? This is not easily answered, as other considerations are immediately involved such as "What is the average life of a mine locomotive?" as well as many others.

Of course everyone experienced with mine locomotives will immediately answer that the life of an electric haulage motor depends entirely on the service it is called upon to perform. They believe that they have thus effectively answered the query. However, even if we restrict the scope of the question and limit the work of the locomotive to that commensurate with its size, so that the machine hauls loads proportionate to its capacity only and over track such as is normally found in coal mines, the question is not easily answered in a satisfactory manner.

ANCIENT LOCOMOTIVES ARE RARELY SEEN

From time to time the technical papers have published photographs of electric locomotives of ancient vintage that have been in continuous service for twenty or more years and that are still as good as new, or are doing as much work as ever. Here again is an answer to the query, but is it not rather the exception than the rule that a locomotive should operate for twenty years and be as good as ever, without any change in structure, or with little or no expense for repair parts during that time?

As a matter of fact, coal company records of cost of operation and repairs to electric locomotives are for the most part average costs and cannot be used in a comparative way to estimate the life of such a machine. Neither can a yearly depreciation method be employed.

Again if new parts are being continually added to a locomotive, is it fair to estimate the life of the machine at twenty years, when as a matter of fact probably twice the cost of a new haulage motor or a capitalisation amounting to the price of three locomotives has been spent during this period and its end finds the company possessed of a half or completely worn-out locomotive?

On what then does the life of an electric locomotive operating at normal load and over average trackage depend? The answer is: "On the thoroughness and regularity with which it is inspected and the promptness and excellence of the repairs made." The old adage, "It is easier to keep up than catch up," applies particularly to electric mine-haulage locomotives.

Consider your own mine. Are the electric locomotives used in it always in first-class condition, or are they over the pit a large part of the time? Is it cheaper to operate them in a hit-or-miss fashion until they go out of service for want of repairs, with the accompanying interruptions to haulage schedules and loss of tonnage or to keep them in such shape that they will maintain a 100-per cent efficient haulage schedule?

RAILROAD LOCOMOTIVES RIGOROUSLY INSPECTED

Look at the great steam-railway systems on which the very existence of the country depends. Are they run in a hit-or-miss fashion? Decidedly not. A fast freight or passenger locomotive after a run of 100 or 200 miles is thoroughly examined, oiled and passed by competent inspectors before it is again called upon to perform service. Are electric mine locomotives, many of which travel 100 miles per day and some of which cover an equal distance both day and night, treated in a similar manner? Or are they run until they fall apart? Again I affirm that "the life of an electric locomotive varies directly as the completeness of inspection and the quality of repairs made."

Most mine owners will say: "Of course we inspect our electric locomotives. Our mine electrician both inspects and repairs them. In fact he does everything but operate them, and he could do that if necessary." But should the man who makes the inspection be the one to make the repairs also? Emphatically not. Man's characteristic tendency to do as little physical work as possible and "get by" is the reason for so saying.

ELECTRICIAN SHOULD NOT INSPECT OWN MOTORS

The old biblical admonition to the effect that "a man can see the mote in his neighbor's eye but cannot see the beam in his own eye" is familiar to all. The same reasoning applies to permitting an electrician to make his own inspections. He soon will be making his inspection reports to suit his own convenience. And a report that does not embody a true statement of conditions is of less value than none at all, for it will convey an erroneous impression to the management.

In large operations with twenty or more electric locomotives in service an inspector is a necessity and will save his wages many times over in the course of a year. In the case of smaller companies working one or two mines and employing only a few locomotives, the proper scheme is to have the electrician from one mine act as the inspector for the other and vice versa. With a little friendly rivalry, it will be surprising to see the close scrutiny the locomotives will receive and to observe how delays, armature failures and kindred

*Electrician Superintendent. Woodward Iron Co.
troubles will decrease slowly and steadily until, instead of being an accepted daily occurrence, they will become unusual.

An inspector, where the mines operate daily, can handle about twenty locomotives per week as a maximum allotment, provided these machines are not scattered over too great a territory. He can report on each machine twice weekly. My inspector handles thirty locomotives per week equally divided between three mines. He works 10 hours per shift at night, six nights per week. He can thoroughly inspect, on the average, eight locomotives per shift, so that each week I have on my desk a complete statement of the actual condition of each machine. The mine electrician also receives a carbon copy of the inspection report the morning following. In this manner no time is lost in replacing any parts found needing attention.

To make the work of inspection as easy as possible, especially so far as writing is concerned, a printed form has been prepared arranged in pads so that a carbon copy is easily made. The form accompanying this article is an actual copy of an inspector's report. As may be seen, it requires little writing, yet conveys a complete record of conditions. These reports are likewise easily examined, as the status of any part requiring attention stands out prominently while that of those in good shape is automatically passed over at a glance.

This form is intended for use with a straight two-motor locomotive without reel attachment. It can easily be modified to meet the needs of any type, however, using the same symbolic scheme to reduce to a minimum the writing that the inspector is obliged to do.

I adopted this inspection system about a year ago. At that time one of our mines was producing 1,400 tons of coal per day with twelve locomotives in service. These machines were continually in and out of the pit for the renewal of armatures burned out by poling, for hot bearings, controller and brake trouble and numerous other misfortunes peculiar to electric mine locomotives. At the present time the same mine operates only nine locomotives, yet produces 2,300 to 2,400 tons per day. During the past six months not a single armature has failed, whereas prior to the adoption of this inspection system an average of one to two locomotive armatures were burned out per week. The same inspection scheme has been adopted for our coal-cutting machines, and the results obtained in the past half year have been highly gratifying.

How long will a locomotive last in mine service? At the present time we cannot estimate the life of our machines. As we are keeping them in first-class operating condition they should last indefinitely.

By the installation of means for the control of air currents, by the installation of instruments of precision and by making a long series of calibrations, the experimental coal mine operated by the U. S. Bureau of Mines at Bruce- ton, Pa., near Pittsburgh, has been put in condition for a study of some fundamental factors that govern the ventilation of mines. In one of the rooms of the mine a lead disk 3 ft. in diameter has been placed against the coal. Thermocouples have been placed in this disk and also at various depths in the coal and shale roof for the purpose of studying the rate of flow of heat through coal and shale. Such data, when obtained, will be of value in the control of ventilation in deep metal mines. This work is under the general direction of G. S. Rice, and under the personal supervision of J. W. Paul, assisted by G. E. McElroy, H. P. Greensward and H. C. Howarth.
American Mining Congress Considers Standardization, Taxation and Industrial Relations

Twenty-Fifth Annual Convention Held in Cleveland—Coal in Limelight
—Seek Laws to Prevent Interference by Organizations of Employers or Employees with Production or Distribution of Necessities of Life

COAL was easily the headliner at the twenty-fifth annual convention of the American Mining Congress in Cleveland, Oct. 9 to 14. The cataclysmic events in coal's history during the past year and the present general movement, both internal and external, to reorganize the coal industry are responsible. During the five days of the convention, held in connection with a striking national exposition of mining methods and equipment in Cleveland's new and magnificent Public Auditorium, much was said which may have a lasting effect upon coal and its relations with the public. The convention program directed much attention to standardization throughout all mining, upon mine taxation, better industrial relations within all branches of the industry, and to oil shale and its future, but there is no gainsaying the fact that coal was in the spotlight.

Sidney J. Jennings, of New York, was elected president; D. B. Wentz, of Philadelphia, first vice-president; H. W. Seaman, of Chicago, second vice-president, and E. L. Doheny, of Los Angeles, third vice-president. Directors elected were D. B. Wentz, W. C. Doring, president of the Southern Wheel Co.; W. H. Lindsay, of Nashville, and A. J. Nason, of Chicago. The convention and mining exhibition in 1923 will be held in Milwaukee.

At the closing session on Friday the convention adopted a ringing resolution on the labor question, declaring that "laws should be made and enforced by all the power of the government that shall forever strip labor organizations as well as employers of the ability to interfere with production and distribution of the necessities of life." A resolution was adopted putting the influence of the American Mining Congress behind the Federal Coal Commission and authorizing a committee of seven from the congress to co-operate with the commission and with the coal operators.

CROWDS FLOCK TO NEW AUDITORIUM

The convention and exposition drew mining men and others interested less directly from all over the country. A total of over 500 delegates registered but the throngs which flowed through the two immense floors almost full of exhibits in the Public Auditorium when the doors were open to the public would have indicated a much greater attendance. Cleveland itself contributed heavily to this crowd, for the great building is new and most of the taxpayers whose $6,500,000 built it have not yet seen its beautiful and spacious interior. It was generally admitted by exhibitors that they had never shown before in such a handsome and well-appointed building. Many of their displays were novel and most of them interesting and instructive.

Delegates began to register for the convention as early as Sunday morning, Oct. 9. The next day enrolment boomed as engineers and mining men arrived from everywhere. Short meetings of the boards of governors for the Southern and the Western divisions of the congress were the only program events of the morning, but in the afternoon the taxation conference, one of the important branches of the congress, began its series of meetings, which ran through the succeeding three days.

Monday evening the convention and exposition was formally opened with a program on the immense stage of the auditorium after a musical prelude on the municipal pipe organ played by Edwin von Krafft and sung by Miss Rex Haller, soprano, and the famous "Anthracite Quartet" of hard-coal miners from Pennsylvania.

Newton D. Baker, Secretary of War during a part of Woodrow Wilson's presidency and now president of the Cleveland Chamber of Commerce, made the address of welcome, in which he declared than an obligation rests upon those in the mining industry to devise means of cooperating with each other, to take the public into their confidence, especially in matters relating to coal.

President Harding, unable to be present, sent a letter to Michael Gallagher, of Cleveland, chairman of the speakers' committee for the convention, in which he assured the mining industry of his interest in it and his confidence in the wisdom and leadership of the congress. The President's letter is shown in another column.

Most of Tuesday morning, when the second general conference of the convention was held, was devoted to the interests of metal mining. W. R. Woodford, president of the Rail & River Coal Co., presided. W. J. Loring, president of the congress, who was scheduled for an address, was absent, serving on a committee investigating the Argonaut mine disaster in California. Carmi Thompson, vice-president of the Tod-Stambaugh Co., of Cleveland, iron ore operators, and now a candidate for Governor of Ohio, spoke on "Some Requirements of the Iron Ore Industry." Gold was treated by H. W. Seaman, of Chicago, Ill., and Bruce C. Yates, of Lead, S. D., and a paper on prospecting methods was read by Walter H. Trask, of Denver, Col.

In the afternoon the first of the convention series of all-some conferences, presided over by Victor C. Adelson, of the Colorado School of Mines, was held, running parallel with the second mine taxation conference and the first of the standardization conferences. That evening the general session was devoted to "Industrial Co-operation," with John A. Benton presiding.

The principal address of the evening was delivered by
GOhioal, L. D. WENTZ
Editors First Vice-President, American Mining Congress

W. A. Graves, vice-president of the Jeffrey Manufacturing Co. of Columbus, Ohio, a man well known for his firm belief in the value of encouraging a spirit of mutual helpfulness and co-operation between employer and employee. He urged his hearers among employers of labor to remember the importance of the human element in their industry and to earn it in good account by educating their men in the principles of mutual dependence. He said unions have their place and should not be antagonized unnecessarily, but that their helpful effort can be offset by proper methods and a wise attitude by men in the board offices and down the line.

Arthur Young, vice-president of the International Harvester Co., described the works punch system his company uses throughout its twenty-four plants, declaring that in three years only five appeals had been taken from the decisions of the joint council of workmen and bosses.

An important social conference took place Wednesday morning, as reported elsewhere. The manufacturers' division of the congress handled together that day at noon. In the afternoon both the mines taxation and the shale-oil conference continued.

Wednesday evening, amid much joy, the exhibitors told a similar in a temporary dancing room at the end of Machinery Hall, the lower floor of the auditorium. A troupe of entertainers, including an orchestra, a cartoonist, a dozen singers and dancers, and five hundred boys who sang and danced bravely on the floor in the center of the room were much applauded.

Municipality was given the floor on Thursday. Companies reported the meeting of which does not survey the interesting nature of their contests, occupied most of the day and were reported elsewhere, but not in the exclusion of special addressees by reason.

Colonel H. H. Longino, who is chief of the technical staff of the assistant secretary of the War Department, passed on all matters of standardization, spoke on the aftermath of standardization as a factor in industrial mobilization. He advocated a draft law for near ten to which would take in every man from twenty to forty and a scheme of fixing wages and profits that would "foster wages and profits at figures obtaining when war was declared." That evening W. S. Culbertson, of the Tariff Commission, explained the new act, saying that in his opinion the provision permitting the President to change the schedules and make adjustments would do more to take the tariff out of politics for good than anything that has ever been done. Judge Crawford, of the Industrial Relations Court of Kansas, told of the progress made by that novel experiment in handling labor trouble and pointed to Alex Howat in jail as what they do in Kansas to stop strikes.

G. A. O'Reilly, vice-president of the Irving National Bank of New York, on Friday morning painted an optimistic picture of business conditions in this country and put himself on record as favoring the payment by European countries of their debts to the United States. F. W. Fenn, of the National Automobile Chamber of Commerce, spoke on the importance of motorized transport in mining. Herbert Wilson Smith, of the Mining Congress staff, spoke on the relation of a protective tariff to the mining industry. Friday afternoon was devoted to viewing the exhibits and to dressing for the banquet that night.

The banquet, always a feature of the annual gathering of the Mining Congress, was a gay affair, despite the greatly mentioned and greatly bemoaned absence of pre-Volstead refreshments. The toastmaster, Richard F. Grant, of the M. A. Hanna Co., waved his opening remarks around the old familiar saying, "You are the days." After he had everyone saddened he turned Elisha Lee, vice-president of the Pennsylvania R.R., loose. Mr. Lee reviewed the shopmen's strike and said that decentralization of the labor problem offered the only permanent solution. He urged that when a man entered the railroad service he give up the right to strike, and pointed out that the stockholder never has a strike when his earnings fall lower than he likes.

Ira E. Robinson, of the Interior Department, gave the assembly what he described as a "good, old fashioned" talk in the old Fourth of July, spreadagle style, depreciating every modern tendency and extolling the Constitution and the liberty-loving patriots of the past.

LETTER FROM PRESIDENT HARDING

The Executive's message to the twenty-fifth anniversary of the American Mining Congress, Cleveland, Ohio, Oct. 9-14, 1922.
How Remedy Tax Evils That Beset Mine Properties?

Keen interest in mine taxation was well sustained throughout the twenty-fifth annual convention of the American Mining Congress at Cleveland, Oct. 9 to 14. In the series of taxation conferences running through the first three days the troublessome question of how to remedy tax evils which exist in most mining regions was threshed out from many angles, and committee reports, some of them voluminous, were read. As a general result the congress veered its course from state action to federal, on the theory that while the root of a good deal of the evil in mine taxation may be local the first remedy lies largely in the federal government.

So the congress after resolving that the load of federal expenditures be greatly reduced, realized itself for future taxation activity. A committee is to be appointed made up of at least one well-informed representative in each mining territory to act with the division of taxation so as to better maintain the congress' contact with tax matters everywhere, and the division is to proceed with the collection of a comprehensive library on the subject, to be maintained at Washington headquarters. Already a bibliography has been compiled by McK. W. Kriegh, chief of the tax division, which will be used as a basis for the building of the library.

The congress considered it a healthy sign of federal right-mindedness that two government officials were sent to the tax conferences to encourage better co-operation between mine owners and Washington. E. H. Batson, deputy commissioner in charge of the income tax unit of the U. S. Bureau of Internal Revenue, was one of these. He explained in great detail the workings behind the income tax, and which previously have puzzled many mine men. He showed how the bureau slowly had built up a working system which at last is able to cope with the involutions of mine taxation and said that by 1923 the government will have cleaned up all of the excess profits tax cases. Mr. Kriegh said this would release approximately $200,000,000 capital now tied up. This release, he declared, would prove a great boon to the mining industry. The second government tax official present was Albert H. Fay, chief of the natural resources division of the Bureau of Internal Revenue.

MINING CLASSIFIED AS A GOING BUSINESS

Carmi Thompson, of Cleveland, an iron-ore operator, who is candidate for Governor of Ohio, paid high tribute to Mr. Fay. "Mr. Fay does all that a good man in his position can," said Mr. Thompson, "but he is handicapped by an unfair law—a law that is unfair because it classifies mining as a going business when it really is a liquidating one. The more successful the mining operation, the faster it liquidates.

At the Monday taxation conference, which opened the tax program at the convention, reports on various state tax methods were read and discussed. The central unit of the congress' tax committee reported its inability to recommend any uniform system of mine taxation for the whole country because of the wide variations of method now in use by states. But it suggested that a uniform general system be worked out to include the taxation of mines, property owned, and profits. While interwoven with property taxes is such that separation is out of the question. The committee declared that the immediate need of tax remedy is great, remarking incidentally that there is much understating of the amount of taxes paid by mines, and that the industry suffers by reason of such estimates. It suggested that while it is difficult now to combat such errors made in defence of high mine tax rates, a library of tax information such as the congress contemplates creating should end this embarrassment.

Hammering home the idea that the present rather chaotic condition of mine-tax matters is expensive to the industry, an estimate was made that the 18,000 mining companies of the country paid out more than $2,000,000 to prepare and make their income and capital stock tax returns in 1921, and that adjustments cost the companies a total of approximately $23,000,000 more, bringing the total cost to at least $25,000,000 for that one year. The remaining sessions of the conference were intended to bring out possible remedies for the tax situation, so that this cost could be reduced.

Paul Armitage, of New York, who presided at most of the tax conferences, on Tuesday read an exhaustive paper on "Distributions from the Depleting Mines' Under the Federal Tax Laws," elucidating the laws on the subject passed since 1913 and now controlling. He remarked that there still is some doubt as to whether a quota of the capital invested in mines must be debited against annual profits to calculate net profits, but that this is not vital because since 1916 the government income tax laws make complete allowance for depletion. There is so much difference of opinion, however, on methods to be used in arriving at the proper annual allowance for depletion that Mr. Armitage suggested a committee of the Mining Congress take up the question with the U. S. Commissioner of Internal Revenue and the Division of Natural Resources. R. V. Norris, a well-known mining engineer of Wilkes-Barre, Pa., presented a discussion on the valuation of mine properties.

PROGRESS IN MINING ACCOUNTING METHODS

At the same session T. O. McGrath, of Bisbee, Ariz., a recognized authority on mine accounting, presented a progress report of his committee on mine accounting methods in relation to federal taxes, and W. R. Ingalls, of New York, addressed the conference on "Mine Taxation in Louisiana." Mr. McGrath's committee hold that since the mining industry has never standardized its accounting and costing methods, it was only natural that the Treasury Department go ahead and crystallize its regulations whether the mine men agree with them or not; so the committee recommended that uniformity be arrived at within the industry. On Wednesday George E. Holmes, of New York City, author of "Holmes— Ferris'" and chairman of the congress' committee on state taxation, spoke on "Invested Capital of Mining Corporations." Robert N. Miller, a former solicitor of internal revenue for the Treasury Department, explained a series of special and significant cases under recent revenue acts and Mr. Kriegh, of the congress' tax division, clarified many points on proper procedure in effecting settlements and compromises with the Commissioner of Internal Revenue.

The following resolution on state taxation was introduced by the tax conference:

Resolved that the report of the special committee on state taxation be accepted as read at this conference and that the thanks of the American Mining Congress be extended to the members of said committee and to those who cooperated with them.

Further resolved that since it seems impossible to obtain uniformity in mine taxation until such time as the various states agree to uniformity in the principles of general property taxation, the subject of improvement in methods of local taxation of mines be referred to the tax committees of the several chapters of the American Mining Congress.

Further resolved that subjects of general interest in mine taxation be referred to the standing tax committee, with power to confer and aid the tax committees of the several chapters; and

Be it further resolved that a general tax committee be created to be composed of one member from each state, to co-operate with the standing tax committee of the American Mining Congress on all matters of general interest in taxation. The members and officers of the standing tax committee of the national organization shall be ex-officio members and officers of such general committee; and

Resolved that the Board of Governors of the several divisions appoint at this session, or as soon thereafter as practicable, from each state within their jurisdiction, one man to be a member of such general tax committee, and that where a state is beyond the jurisdiction of the Board of Governors the standing tax committee be authorized to select from each of such states one man to sit on such general committee.
Problems of Operating Men

Regarding the Use of Booster Fans in Mines

Insurers Where the Use of Booster Fans Becomes a Necessity—Other Cases the Result of Bad Management

Need of an Efficient Mine Superintendent or Manager

FROM time to time there have appeared, in Coal Age, numerous articles in the use of booster fans for overcoming the ventilation in certain mines. In offering the following remarks, it is not my desire to repeat statements that have been advanced as to the advantage gained by the installation of such fans in any particular mine.

Undoubtedly, there are instances where it becomes necessary to use a booster fan in order to obtain all the benefits that are available. But, as a rule, the use of booster fans in all mines is likely to be abandoned, and where it is impossible to install any necessary apparatus to improve the ventilation in that section, the air being lost, it is realized that something must be done to counteract the unhealthy conditions which have resulted from the lack of proper ventilation.

Power Plan and Management Will Distinguish Need of Fans

On any occasion of a mine in property being sold and its air-currents being changed, Complied, cleaned and kept free of all obstructions to the flow of air, an inspection will always result in the installation of a booster fan or fans in order to maintain the required amount of air in the working places.

Without knowing the actual condition of a mine, or whether booster fans have been in use there, it would appear that the operation is a cheap and efficient method of ventilation. The mines that are operated by the same company and that have been in operation for years and years and years must have some factors in common other than those that have developed with a booster fan in the usual arrangement.

Some of these factors, however, have developed the ventilation system on the whole, although some of them may have been responsible for the development of others. In other cases, it may simply have been a good man in charge, with a thorough knowledge of the practical operation of the mine, and the needs of its future development.

The chief desire of a temporary foreman of this kind is to keep a low cost-sheet and put out cheap coal. In order to do that, he allows dirt to accumulate on the roads; falls of roof in the air-currents go unheeded; timbering of entries is neglected and complaints of bad air in the working places are frequent.

Under these conditions, there is sure to be evidence of bad management everywhere throughout the mine. This continues until affairs take a turn and the officials wake up to the idea that a change of foremen is necessary. It is wholly to the advantage of a coal company to employ an efficient and reliable foreman—one whom they can retain in permanent charge of the mine.

BUSINESS FOREMEN NEEDED

If a business man of intelligence and experience is needed in any position in a coal operation, it is in the position of mine foreman. Personally, I have seen much money wasted through the management on the part of the foreman in charge. For one reason or another, foremen are often prone to retain more men than they require and, yet, the mine is not kept in the best working condition.

No foreman is efficient unless he retains the mine in his charge and has a good working condition at all times and plans the work with a view to the future development of the property. As the workings of a mine are extended, the foreman must be able to provide and organize his crews that will insure good ventilation in the working faces. To do that, he must have a thorough knowledge of the theory and practice of ventilation.

EFFICIENCY QUICKLY SHOWN

As may be inferred from my previous remarks, the position of a foreman in charge of a mine will show itself quickly through the bad results obtained by his operation. This may not appear in a day or a month. In most cases, it may require a year or more to prove the inefficiency of a foreman. Unless the management are thoroughly familiar with the practical operation of the mine, and the needs of its future development,

The shrinkage of output and the daily mounting of the cost-sheet are, of course, warnings of breakers ahead; but often, present fears are allayed by the plausible excuses of the mine foreman. It is then up to the management to form their own independent opinions, and determine whether the fault lies with the foreman, or that the condition is unavoidable.

In closing, let me say that dirty tracks, falls of roof blocking the air-currents, accumulation of water at the working faces, or on the main haulage roads, cannot be explained away by excuses, provided the foreman has the means at hand for doing the work required.

O. KENNETT

Hillside, Ky.

Mine Foreman.

Relation of Foremen and Miners

Need of training all miners to have confidence in themselves—Two types of mine foremen—Two types of miners.

READING the article "Gaining the Confidence of Men," by G. W. Breedon, Coal Age, Aug. 24, p. 290, it occurred to me that it would be a good idea to inspire our miners to have more confidence in themselves, and rely more on their own judgment in the placing of their shots and the standing of their timbers. Teach them to take proper care of their working places, and not to depend on the foreman to tell them how and when to do these things.

In my opinion, it is a good thing for a miner to confer with his boss when he visits his place, and ask for his ideas regarding timbers or timbers under dangerous top. But a miner should never wait for him to point out where timbers should be stood to make the place safe.

TRAIN MINERS TO INDEPENDENCE

Miners should be trained to be careful and watch for any dangerous conditions that may appear. Then, without waiting for the boss to tell them what to do, the miner should proceed at once to make himself safe.

It seems to me that the efficiency of miners who stand timbers only when approved by the foreman, or who depend on him to arrange their shots, cannot be estimated very highly. It is all right for a miner to have the utmost confidence in his foreman's judgment, in regard to standing timbers and arranging and charging shots; but every miner who is in a charge of timbers should have the ability to take care of himself without being told to do so.

The foreman should be a man of experience, whose judgment can be re-
lied on in almost any emergency arising in connection with the mine work; but that does not signify that he should know where timbers are needed in a working place any better than the old experienced miner who works there every day.

Training a miner to depend on his foreman to tell him what things he must do to keep his place safe has a tendency to cause him to lose confidence in himself in that respect. A miner who has no confidence in his own ability to stand timbers and arrange his working place is worthless as a mine worker.

**Type of Foreman on Whom Miners Learn to Depend**

Competency and ability on the part of the foreman to fill the position he holds and honestly in dealings with his men will gain their abiding confidence. Consider two foremen, for example: Of one it can be said, he is a kind and pleasant fellow; but he does not know anything about practical mining. Can you rely on his judgment, or on anything he may say regarding the work? His opinion may be of some use, and as ready to forget them. Such a foreman cannot gain or long retain the confidence of his men.

Of the other foreman it can be said, he is rather an unsocial man, or distant in his manner; but when it comes to handling the work he stands very well. His word is as good as his bond. He talks but little, but means all he says. His judgment about the work is good; and he gives it when and where it is needed. Miners will have confidence in such a foreman, though he may be close and strict in his dealings with them—friendly but never intimate.

**Two Types of Miners Compared**

In a certain coal mine, there are two miners employed. One of these is not skilled in his profession, although he has been in the mines for years. He is incompetent to do work where care and the exercise of good judgment are required. The other miner has not been in the mines many years, and yet he is skilled and competent to do any kind of work pertaining to the mine. He is a good workman.

If in a section of this mine there is a dangerous and difficult piece of timbering to be done, which of these men will the foreman choose for the work? Will he select the miner first named? Can he have confidence in his judgment and ability to perform such work?

The answer is, No!

Some miners possess great friendship and respect for their foreman as long as they are shown special favors; but when there are no favors coming, their regard for him wanes. The better element of miners, however, have confidence in the foreman who is honest and capable and who, in a business way, looks after the welfare, interest and safety of all and treats all his men with equal fairness in his dealings. A foreman who sacrifices honor and principle to gain the favor and confidence of a few of his men will soon lose the respect and confidence of the better and more intelligent element.

**Practice of the Golden Rule the Key to Mutual Confidence**

In the article previously mentioned, Mr. Breeden says in substance that his experience as mine foreman has taught him to treat every man as he would have them treat him under similar circumstances. Let me add, the practice of that principle is the key that will unlock the door to a mutual and abiding confidence between men and officials. The hope of industrial peace is to be found in the practice of the Golden Rule.

**John Rose**

Former State Mine Inspector.

Dayton, Tenn.

**Longwall Retreating in the Panel System**

Butt headings driven up the pitch—Panels worked out by the retreating method of mining.

**Referring to my previous letter** describing a method of handling a fire situation in a longwall mine, Coal Age, Aug. 17, p. 248, it appears I did not make myself clear in regard to the method of working out the panel.

Starting on the main headings, each panel is worked by driving three pairs of butt headings directly up the pitch. Each pair of headings was driven on 50-ft. centers, leaving 245 ft. of solid coal on each side of each pair of butts. It is stated that these pillars were to be worked out on the longwall retreat system. In my opinion, the area within the panel could not be worked on the retreating system, until other developments had been driven to the outer edge of the panel area.

My idea was to drive longwall advancing faces across the pitch, starting left and right from the butt entries and leaving gateways for switches, at suitable intervals, on each pair of butts.

**Thomas Allen**

Mine Rescue Station, Mt. Harris, Colo.

**It is difficult to understand how working out a panel, by extending a longwall advancing face across the pitch, starting left and right from the butt entries and leaving gateways for switches, at suitable intervals, on each pair of butts.**

**Charging Holes With Steel-Headed Tamping Bars**

Steel tamping bars dangerous under any conditions. Danger greatly increased if coal containing naphtha.

Charging a hole with loose powder is a dangerous practice. Tamps all holes with clay.

**Reading a recent reference to the blasting of coal in mines, in respect to the dangers attending that work, I am reminded of one or two dangerous practices to which I believe attention has not as yet been drawn.**

The first point I would mention in this connection, is the use of steel-headed tamping bars. In spite of all
In my opinion, it should be the duty of the district mine inspector, in making his rounds of the working places when Booster fans are in use, to see that the miners are supplied with a suitable tamping bar. He should urge that these be kept on hand in the supply house, and sold to any miner who is not already supplied. The bars should be sold to the miner at cost, with freight charges added.

In the case of a ventilation, let me suggest that coal companies should supply their miners with clay or other incombustible material for tamping their shafts. This will go far to obviate the use of fine coal dust and slack for that purpose, which is too often the practice of miners where other material is not available.

It is hardly necessary to repeat what has been so often urged in Coal Age, that competent shotfiring men should be employed whose duties it would be to examine, charge and fire all shots in the mine, except such shots as are, in their judgment, for any reason unsafe.

Every miner should be instructed to remove the fine coal cuttings, after drilling a hole in his place. In most cases, arrangements should be made for taking these cuttings out of the mine. Where dustproof cars are in use, the cuttings can be loaded out with the coal.

In closing, let me say that when these and a few other precautions necessary for safety are followed by miners and the officials in charge of the mine, we shall see a gradually decreasing percentage of mine accidents. What is needed is the strict enforcement of rules for safety.

OSCAR H. JONES,
Wilder, Tenn.
Fentress Coal Co.
in dangerous quantities in the working faces. Therefore, at the best, a booster fan should only be regarded as a make-shift, for the purpose of avoiding expensive repairs in a portion of the mine that is about finished.

It is unnecessary to dwell further on the dangers that follow in the wake of installing a booster fan at any important point in the mine. In case of an explosion in the mine, such a fan is of little or no assistance to the rescuers who would enter the mine. The sparking of the motor is an added danger, in a mine generating gas. It is a safe general rule never to place any ventilating apparatus at any other point than on the surface where it will be subject to constant supervision and accessible at all times.

## Examination Questions Answered

### Indiana Mine Bosses' Examination, Indianapolis, 1922

(Selected Questions)

**Question:** Give five causes of accidents that occur on haulageways, and state the method to prevent them.

**Answer:**
1. Accidents to persons walking the road and being caught by a car or trip. 2. Accidents due to men and boys riding on loaded trips, contrary to the regulations of the mine. 3. Accidents to motormen and trip riders when cars are derailed, causing a wreck. 4. Accidents due to cars standing on a room switch where the track is supposed to be clear for the motorman. 5. Collision of cars by reason of faulty schedules, or disobedience of orders by motormen and drivers.

To prevent these accidents from occurring:
1. Provide ample clearing space on one side of the track and refuge holes at short distances apart, kept whitewashed and free from obstructions. Every trip should have a warning gong or other means of telling the approach of danger.
2. Enforce strict regulations in regard to persons riding loaded trips, and provide suitable penalties for violation of the rules.
3. Have a good schedule for the running of cars or trips and enforce strict regulations regarding the maximum speed of hauling.

**Question:** Give five safety precautions that a miner should observe on going to his working place at the face.

**Answer:**
1. A miner should enter his place with caution, observing carefully the condition of the roof and timbers as he proceeds. 2. If he has brought his powder with him, on coming into the mine, he must first put it in a safe place before proceeding.
3. He should look for the mark left by the fireboss, showing that the place has been examined and found safe.
4. Unless the mine is known to be free from powder in blasting the coal; failure to remove the fine cuttings in machine mining; neglect to clean up roads and air-courses and remove accumulations of dust on the working places. To prevent these occurrences, the required powder should be used and the blasting performed by competent shotfirers. No accumulations of dust should be permitted at the working faces throughout the mine. Roadways and air-courses should be cleaned, at regular short intervals, and an effective spraying system installed in dusty mines where the coal is highly inflammable.

**Question:** In what way would you provide for the protection of your men from falling roof?

**Answer:** Frequent careful inspection of the working places, by the foreman, assistant foreman, safety inspectors and fireboards; and the enforcement of strict rules and regulations regarding the setting of timber in working places, will go far toward protecting miners from the falling of the working face. Particular attention must be given to the work of drawing pillars. All workers must be carefully instructed in respect to making themselves safe. In addition, an ample supply of suitable timber should be kept in all working places, ready to use when needed. The most effective safety device known, however, is a careful man.

**Question:** What is the best and safest way to detect the condition of the roof?

**Answer:** Besides the usual method of sounding the roof with a pick, holding one hand against the roof while striking the blow, to detect any tremor or hollow sound that would indicate an unsafe condition, it is important to make thorough inspection to see if any slips or fault lines are present. If these are found they must be carefully studied and means taken to avoid accidents therefrom.

**Question:** What is the danger arising from working a mine adjoining an abandoned mine?

**Answer:** The abandoned workings may contain accumulations of water or gas that would flood the live workings and endanger the men should a place break into the old workings. In order to minimize this danger drillholes must be kept in advance of the faces of all places approaching old workings that have been abandoned. No reliance can be made on the accuracy of surveys of such mines.

**Question:** Give method of procedure in case an explosion occurred in a mine of which you had charge, and the ventilating devices have been injured and men must be rescued.

**Answer:** Call for volunteers and select the most experienced men to form rescue parties. Make such temporary repairs as are necessary to restore the ventilating current. The rescuers, equipped with safety lamps and wearing breathing apparatus, if such is available, must enter the mine with the air and proceed with caution, making only such repairs as may be necessary to restore the current. Send at once for physicians and other assistants.
British Household Coal Prices Now 63 Per Cent Higher Than Before War

Although 18 lb. pieces of three qualities of coal were formerly used at the rates of £1, £2, and £3 per ton in British households, the present rate is considerably more than that of the last, as shown in the following:

<table>
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<th>Quantity</th>
<th>Present Price</th>
<th>Last Price</th>
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<td>£0.03</td>
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<tr>
<td>5 lb.</td>
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<tr>
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The distribution charge includes delivery and fuel costs, storage charges, handling, and profit. Today's prices are sold as an additional freight per ton, the final price being a hundred more than that of the last previously mentioned. In 1906 the average price of this coal was 6, the service and wage cost was 50, and the total making 58. The current prices are about 63 per cent above those quotations.

Kentuckians to Consider Mine Problems

Under the leadership of A. G. Spillane, general superintendent of the St. Bernard Mining Co., Earlington, Ky., their president, the Kentucky Mining Institute will assemble, Nov. 3 and 4, in the昶ch Park Hotel, Louisville, Ky., to discuss mine problems with special reference to the needs of their industry at the mines of their state.

Two sessions will occupy one on the preparation of coal and the other on small mining machinery, the latter being presented on behalf of the institute by Alphonse F. Brophy, superintendent editor of Coal Age. This will occupy the first session, opening at 10 a.m. The second session, at 10:30 a.m., of the same day, will hear papers, one by Graham Bright, chief engineer of the Westinghouse Electric & Manufacturing Co., of Pittsburgh, Pa., on "Catering Lunchrooms for Coal Mines," another by C. D. Franklin, district superintendent of the Portland Cement Association, on "What Good Results Mean in Mining Districts," and a third by T. M. Uddom, coal broker and coal agent of the Louisville & Nashville H. R. Leavitt, Ky., on "Present Coal Trade Problems and Prospects for the Future."

The same evening at 8 when a mahogany will be held at which the subject to be discussed will be "How to Make an Operators' Association of Mine Value." In this discussion the following are scheduled to discuss the problem: R. A. Hook, general superintendent, Lexington, Ky.; H. B. Clayman, attorney, Harlan County, Ky.; J. E. McCay, secretary, Southern Appalachian Coal Operators' Association, Nashville, Tenn.; J. E. Butler, general manager, Stearns & Lumber Co., Stearns, Ky.; G. E. Richardson, president, West Kentucky Coal Co., Sturgis, Ky.; R. C. Tway, president, R. C. Tway Coal Co., Louisville, Ky.; Munro B. Lanier, president, Munro-Warner Coal & Coke Co., Birmingham, Ala.; C. S. Sneed, general manager, Pioneer Coal Co., Kettle Island, Bell County, Ky.; K. A. Muckley, president, the Harlan Coal Co., Louisville, Ky.; Harry E. Bullock, president, Carri Fork Coal Co., Lexington, Ky.; Frank D. Hurlburt, president, St. Louis & Missouri, Earlington, Ky.; F. P. Wilson, general manager, Crampton Coal Co., Reivier, Ky.; James D. Overall, general manager, Reinecke Coal Mining Co., Madisonville, Ky.; C. J. Norwood, University of Kentucky, Lexington, Ky.; R. Dawson Hall, Engineering Editor, Coal Age, New York City.

On Saturday a business session will be held at 9 a.m., after which the meeting will be adjourned.

Cliftonville Case Involves 218 Union Men 71 Charged with Murder

Two hundred and eighteen union miners were placed on trial at Wellsburg, county seat of Brooke County, W. Va., on Oct. 9, charged with complicity in the death of Sheriff H. H. Duvall, of Brooke County, who was killed while repelling an attack on the Cliftonville mine of the Richland Coal Co., on July 17. Seventy-one of the defendants are charged with first-degree murder. The indictments range from murder to conspiracy and aiding and abetting. As many as half a dozen indictments are pending against some of the defendants, all of whom, if it has been announced, will be prosecuted to the full extent of the law.

Prosecuting Attorney W. S. Wilkins of Brooke County will be assisted by John J. Coniff and J. B. Handlan, of Wheeling. Charles J. Shuck resigned as Assistant District Attorney to engage in the case as counsel for the defendant and has associated with him D. A. McKee, formerly prosecuting attorney of Ohio County; F. A. O'Brien and M. J. Cullinan, all of Wheeling, and John D. Gardner, of Steubenville, who was once a miner. One of the most interesting phases of the case is that John J. Coniff, who was the principal attorney for the defendants in the Matewan case, will act as one of the principal attorneys for the state in the Cliftonville case.

Martial Law Lifted in Mingo County

Martial law, established in Mingo County, West Virginia, June 27, 1921, more than fifteen months ago, after a series of outbreaks, which resulted in several deaths and the flight of considerable numbers of people ordered by Governor Morgan. Peace has been restored along the Tug River, where war between union and non-union miners spread terror and resulted in the intervention of federal troops.

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Preliminary Statistics of Production of Coal in Indiana in 1921

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<tr>
<th>Coal Mines</th>
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<th>Total Production</th>
<th>Average Value per Ton</th>
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Total coal produced in Indiana in 1921 was 36,500,000 tons.
New England has made strenuous efforts to avert a domestic coal shortage before the advent of coal-burning weather. Despite all the warnings of an impending famine, there are several encouraging factors in the situation in that section which indicate that household consumers may "get by" with a minimum of inconvenience this winter.

Unseasonably warm weather has delayed the lighting of furnaces. This has proved a welcome respite to retail dealers and has enabled shippers to spread a thin veil of anthracite over the territory as a bulwark against the insistent demands which will come with the first cold snap. More coal went into cellars just prior to the anthracite suspension than has been generally realized. New England got a fair proportion, at least, of the mine storage stocks that were moved during April, May and June. Substitute fuel is plentiful; little has been distributed at retail, but it will be available when wanted. Lastly, economy in fuel consumption can always be expected during a period of shortage with its attendant high prices.

Conditions in Massachusetts are typical of New England as a whole. That state, through its Fuel Committee, is taking active steps to safeguard the fuel supply and protect its citizens from extortion. In urging upon the Federal Fuel Distributor, at Washington, the necessity for adequate supply and reasonable prices, James J. Phelan, Massachusetts Emergency Fuel Distributor, describes the situation in that state as follows:

"Bituminous reserve stocks for industrial purposes are not in excess of the line of safety, considering our remoteness from the mines. Anthracite deliveries by dealers to households so far this season, commencing April 1, are carefully estimated not to have exceeded 25 per cent of the total quantity customarily distributed by dealers to households within the same period of time in normal years. "In view of the fact that the people of New England and of Massachusetts have always used anthracite for their household needs, and we have this year lost five out of twelve months' anthracite production, it follows that our people will be unable to secure adequate anthracite supplies. We shall, therefore, be compelled to use considerable substitute fuel to take the place of, or mix with, such supplies as we may be able to secure.

WOULD NOT HESITATE TO ISSUE EMBARGOS

"I am glad to observe that you are exerting every effort to secure the fullest transportation services in order to provide the maximum quantities available as promptly as possible. I, therefore, trust that you will not hesitate, whenever the occasion requires, to issue embargos, and establish priorities that shall maintain constant and equitable distribution between states. In this connection may I point out that in my order of Sept. 21 'all dealers and consumers receiving fuel in carload lots must unload such cars within the twenty-four hours following the receipt thereof. Every day saved in the use of coal cars should be a gain of several tons in production."

"There exists to-day a variation of approximately $5 in the nine prices being charged Massachusetts retail dealers above the costs prevailing last March for anthracite, resulting in increased costs to our householders. I can, and shall, control the gross margin which may be added by dealers to the cost of coal to them, in order to prevent extortion within the state, but it is obvious that the cost of coal at its sources is beyond my control. You will understand that our earnestness in this matter is based upon the desire that the federal and state governments shall fully co-operate in such a way as will secure to the citizens of Massachusetts the best results possible under the present difficult conditions."

New England is getting more than its fair share of current anthracite shipments, when the greater Western and Lake movements are considered. Requirements for the winter in Massachusetts are estimated at 4,000,000 tons. By Oct. 1 all-rail shipments of anthracite by this section were averaging 300 cars per day. The normal movement during the month of March, if this movement and shipments by water can be maintained, the estimated shortage of 1,500,000 tons will be reduced materially. However, this shortage will never for the most part at the beginning of the season, therefore the main problem is to overcome this difficulty for perhaps 60 or 90 days, after which it is expected that the conditions will gradually become normal before the season has ended.

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**Note:** The headline shows a literal English "anthracite" from Providence.
**Coal Age**

*Vol. 22, No. 16*

**«..tmi & M. R.R. Takes Much British Coal**

Unloading cargo directly into railroad cars, shown in foreground.

*Coke is finding a better market for domestic purposes than for years past. The present emergency also has produced a strong market for Rhode Island coal, which is being sold not only at points adjacent to the mines but is finding its way to more remote New England points. The public has lost much of its faith in this coal, partly because of its weight, which made it appear small in bulk when delivered, and partly because of its excessive ash content, but mainly because of the difficulty in kindling it. This coal is extremely variable in character and quality, ranging from anthracite to graphite and, unlike Pennsylvania anthracite, its high content of water necessitates a special drying process. During the last year or so extensive experiments have been made in preparing and firing this fuel, and at the present time one company at least is putting it on the market in sizes and condition that makes it an excellent substitute for Pennsylvania anthracite and at a price which is attractive. New methods of firing are necessary; the coal needs considerably more draft than other fuels, but once one becomes acquainted with its peculiarities it is said to be far more satisfactory as a domestic fuel than bituminous coal.*

*Anthracite receipts are making inroads on the shortage with every day's delay of cold weather. With the practice of economy and a plenitude of substitutes at hand when wanted, the worst that New England householders should experience this winter is the necessity of adapting themselves to the use of unfamiliar fuels. At that the substitute tonnage will not be large and its use will be confined to the early part of the season.*

**British Fuels, Though High Grade, Do Not Ship Well**

British shippers also made an attempt to push their Admiralty Large for domestic purposes, but, like the Welsh semi-anthracite, this coal has not cut much of a figure in the domestic market. Both are high-grade fuels, but do not ship well. The New Englander has been so accustomed to the use of our clean and uniformly sized anthracite that the physical appearance alone of the British coal has been against its sale at retail. The following analyses were made from recent receipts in New England:

<table>
<thead>
<tr>
<th>Coal Type</th>
<th>Carbon Content</th>
<th>Volatiles</th>
<th>Ash</th>
<th>Moisture</th>
<th>Sulphur</th>
<th>Brine</th>
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</thead>
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<tr>
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<td>7.96</td>
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<tr>
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<td>86.50</td>
<td>9.02</td>
<td>14.09</td>
<td>5.48</td>
<td>0.87</td>
<td>0.62</td>
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</tbody>
</table>

The U. S. Bureau of Mines, in co-operation with the U. S. Public Health Service and the Society of Heating and Ventilating Engineers, is engaged in a study of the relative importance and correct correlation of the many individual factors concerned in the problem of the physiological effect of different conditions of temperature humidity and air motion. A special room has been constructed for this purpose at the Pittsburgh station in which the air conditions are controlled by apparatus outside the chamber and entirely separate from it. A comprehensive program, which includes a quantitative study of a considerable number of bodily functions, is being carried out. The work has not yet been completed, but enough has been done to demonstrate the importance of determining the physiological reaction to environment as a measurement of the harmful effect of heat and humidity, and to show that feelings of discomfort as a standard of measurement cannot be depended upon because there is a certain adaptation of the sense organs to an unchanging environment, and individuals differ in their sense reactions.
Smokeless Operators Will Sell Domestic Sizes at $6; Spens to Probe Anthracite Prices Over $9.25

Prepared sizes of smokeless coal for domestic use will not be sold at a price in excess of $6 a ton, an agreement to that effect having been reached by the Federal Fuel Distributor and operators representing 80 per cent of the smokeless production. Fuel Distributor Spens gave out the results of the conference in the following prepared statement:

"The Federal Fuel Distributor had a conference on Oct. 14 with four operators in the 'smokeless field' of West Virginia relative to coal prices. This field comprises the Pocahontas district, the New River district, the Winding Gulf district and the Tug River district, and the estimated total coal production in these four districts is 36,000,000 tons per annum. The operators that were present at the conference represent approximately 80 per cent of the commercial production.

"The maximum price f.o.b. mines on prepared sizes for household use that was observed by the operators, through co-operation with federal and state authorities, prior to cessation of the miners' strike, and at a time when the coal supply in the 'smokeless field' practically equalled the demand, was $5.13 per ton, including sales agency's commission. With the settlement of the miners' strike in union coal districts, the operators in the 'smokeless field' found it necessary to advance the wages in their mines materially, resulting in an estimated increased cost of production of the prepared sizes of approximately $1 per ton. In addition, with the ending of the strike, the coal supply commenced to diminish, due to distribution of equipment that naturally had resulted from a wider distribution of this 'non-union' coal, the immediate demand for cars from 'union' mines, and the retarded transportation incident to the railway strike, until today the coal supply in the 'smokeless field' is appreciably below current requirements and quite below the supply available at the time the former price was established.

Smokeless Coal Now Much in Demand

"The demand for 'smokeless' coal is very great, and since the termination of the miners' strike, at which time this understanding as to prices was cancelled, f.o.b. prices at the mines on domestic coals have ranged as high as $8.75 per ton plus 8 per cent sales agency's commission, or a total of $9.45 per ton. These operators, however, in appreciation of the present emergency and in a desire to continue to operate with the federal government in the accomplishment of its purposes, indicated a willingness not to exceed a maximum price f.o.b. mines of $6 per ton on the prepared sizes of coal for domestic use, this price also to include the sales agency's commission. Therefore, effective at once, this will be the maximum price f.o.b. mines that wholesalers, retailers or other purchasers of these coals will be asked to pay.

"While, as stated, the entire production of the 'smokeless field' was not represented at the conference, we have been assured that the action taken by the very large majority will undoubtedly be followed by the remaining interests.

"Conferences on the matter of coal prices are being arranged by the Federal Fuel Distributor with representatives of mine operators from each of the states coal-producing districts east of the Mississippi River. Fuel Distributor Spens is giving attention also to the price situation in certain coal-producing states where it is reported that coal is being sold within the state at a certain maximum figure agreed upon with the state authorities while it is being marketed outside the state at figures in excess of this maximum.

"Lieutenant-Colonel Hatch, U. S. Marine Corps, retired, has been designated with the permission of the Navy Department to act as the representative of the Federal Fuel Distributor on the fair practices committee of Pennsylvania, an organization which functions as a part of the Pennsylvania Fuel Commission and which is giving its special attention to matters affecting the price and distribution of anthracite. Lieutenant-Colonel Hatch's residence is in Philadelphia. He succeeds E. M. Durham, Jr., who is resuming his duties with the U. S. Railroad Administration. Arrangements have been made for a conference between the federal distributor and a special committee of the National Coal Association, of which J. C. Brydon, of Baltimore, is chairman, to be held in Washington, Oct. 18, for the purpose of discussing matters relating particularly to transportation conditions and earnings.

"The following statement summarizing developments in the anthracite price situation was issued Monday night by the Federal Fuel Distributor:

"Approximately 75 per cent of Pennsylvania's anthracite is produced by the larger, or so-called 'company' operators. The balance is produced by the so-called 'independent' operators. On the 75 per cent production a price of $8.50 per ton f.o.b. mines, established by Pennsylvania state authorities prior to the creation of this office, applies as a maximum, although on a goodly percentage of the production prices ranging from $8 to $8.35 per ton have tarily been observed. On the remaining 25 per cent production prices range from $9.25 to as high as $14.25 per ton f.o.b. mines.

"The fair practices committee of Pennsylvania was appointed several weeks ago to investigate cost of the 'independent' production and to determine fair f.o.b. mine prices. The Federal Fuel Distributor is represented on this committee.

"This committee commenced to function about Oct. 1, and since that time, pending a more thorough investigation and final conclusions, 'independent' operators, representing approximately 20 per cent of the total production, have signified a willingness to observe a maximum price of $9.25 per ton f.o.b. mines, the prices theretofore on this production having ranged in some instances as high as $10.50 per ton.

"In order that the fair practices committee may concentrate its efforts on the remaining approximately 5 per cent, on which production prices are today ranging as high in some cases as $14.50 per ton f.o.b. mines, the Pennsylvania Fuel Commission and the Federal Fuel Distributor have agreed as a temporary expedient to defer investigation of these independent operators whose prices will not exceed $9.25 per ton f.o.b. mines. The Fair Practices Committee have been advised by the Pennsylvania Fuel Commission and the Federal Fuel Distributor that their findings as to fair prices that should obtain for the 5 per cent production should be completed by not later than Oct. 31."


Jobbers' and brokers' commission charges on sales of coal to retailers and consumers must not raise fuel prices above maximum levels fixed for coal at the mines by the state, under a ruling by C. J. Neal, state fuel administrator of Ohio and approved Oct. 11 by Governor Harry L. Davey. Under this ruling the "fair prices" of $3.36 to $4.80 established in Ohio include the merchant's profit. Mr. Neal's announcement reads:

"Effective Tuesday, Oct. 10, prices received by producers in Ohio for coal sold to jobbers, brokers or wholesalers under a ruling by C. J. Neal, state fuel administrator of Ohio and approved Oct. 11 by Governor Harry L. Davey. Under this ruling the "fair prices" of $3.36 to $4.80 established in Ohio include the merchant's profit. Mr. Neal's announcement reads:

ARTICLE IN THE newspaper was to be composed before the Interstate Commerce Commission on Oct. 15. The decree in the matter of mine rating and coal distribution rules will be considered at the same time. Commissioner Atchison will preside.
Maurer Foresees Repetition of This Year's Trouble Next April*

Until this week a thing on a sort of a real advantage in the Central Competitive Field had almost been unheard of. But now the coal interests are doing something about it. That is, when the demand is so great that the operators are finding that it is more economical to do business by giving the miners a wage than to keep the mines idle. This has been going on for some time, but it is only in recent weeks that the operators have taken it up in earnest.

The operators in the Central Competitive Field, which includes West Virginia and the neighboring states, have been increasing wages, and it is said that this has been a great move on the part of the operators. They are paying more than double what they used to pay, and the miners are getting more than double what they used to get. The result is that the miners are getting more than double what they used to get.

The miners have also been working harder than ever before. They have been working for more than double the time they used to work. The result is that the miners are getting more than double what they used to get.

The operators are also paying more than double what they used to pay. They are paying more than double what they used to pay. The result is that the miners are getting more than double what they used to get.

Bradley Defends Policies of Non-Union Operators*

During the long depression of 1921, when coal was a drug on the market, when the coal industry was ready for the bandit receiver, the great Southern district was producing 80 per cent of its maximum.

That illustrates a very important point. There must have been a reason for that, and what was that reason? It was the ability to adapt itself to changing economic conditions. You travel through those fields and you will find enormous collieries, tremendous operations, wonderful mining towns, adapted to the comfort and the convenience of the employee such as you will find in no union field, where the bitterness and distress of class hostility has been injected, so that the operator doesn't feel like giving that man a place to work.

There in the South, where we have this co-operative spirit, you will find the cheapest living, the cheapest rents, the cheapest store prices; you will find co-operation in reducing wages and in raising them. We know when we should pay our men more and we do it. We are not tied up by a contract, running through every conceivable up and down of economic depression and keeping the men from getting a decent wage in good times, and taking the work away from them in bad times.

We only wish that you had the same advantages.

When I think about it I feel that I simply can't express to you what it means to the operator who is on that basis with his labor. It is a partnership, and that is what it ought to be. It is a man-to-man relationship. There is no third party to come between telling the thrifty workingman that he is being cheated; no third party to come in and tell the honest, hand-saving son of toil: "Don't work so hard."

Why is it necessary to have an investigating commission for the coal industry when the coal industry has been investigated by a public committee every eighteen months for the last seven years? Why can't they take some of that somewhat experiment for it? To a man like George Otis Smith and have him compile it and tell the story, with the affidavits to back it up? It wouldn't be enough of a smoke screen.

Now, this is what we are getting out of Washington. This coal labor problem—I feel very much about my coal business as I do about my garden. I have been fighting bugs and insects and plagues in that garden from early spring to late fall every year; my only bill for insecticide is more than almost the pleasure that I get out of the garden. And that is just exactly what I have been doing with my coal business. I have been fighting the pests, the diseases, the assailants, and in West Virginia, by God, we fight them with a rifle, and so would you. You wouldn't let a sneaking skunk steal up and put a wire through your garden, whereas, if you didn't want to do it. Now we come to the crux of the labor problem. It is a question of the enforcement of the law that we have got. Labor courts, boards of conciliation—put them in the waste-
paper basket! Give the man who wants to work and who has the right to work the protection which he deserves—to work. There wasn't a time during this strike in the anthracite and bituminous coal industry that the mines couldn't have been manned by men who wanted to work, but they were afraid—a fear that they would be massacred, as they were at Herrin.

The public of the United States doesn't realize the crime that your union operators and the United Mine Workers have perpetrated on you. The public of the United States doesn't realize that the price of fuel for the future is today in the hands of the labor oligarchy, which has every intention of emulating Lenin and Trotsky; they are jealous because they haven't beaten them to it. And when you get the entire fuel resources of a nation in the control of such an unscrupulous, small group of men, you can sit around the table and say, "Now, John, you shouldn't do that," but it will get you nowhere.

Why should the public allow us to operate our mines if we haven't got the gumption to fight for our customers? They had better make their deal directly with the labor oligarchy; no use in counting us in. Why give us our profit? What have we done to earn it?

Before there is any other situation such as we have just come through, before another first of April, let us pray to God for the sake of the 110,000,000 people of the United States, who were held up by those controlling that traffic, just as the highwayman in the night holds up the express crowded with people, so the leaders of this labor oligarchy have held up that 110,000,000—yes, let us see, that these high-paid public officials enforce the law; let us see that the public knows the situation so that they will demand that that law be enforced for their own protection.

Michigan Legislature Expected to Pass Fuel Bill Similar to New York's

Michigan's Legislature assembled in special session Oct. 10 to consider legislation to regulate distribution and cost of coal in the state and the Senate on Oct. 12 by a vote of 24 to 4 approved the measure submitted by the state's administrative officers, after slight amendments. One of the modifications limits application to coal and coke, releasing wood, oil and other forms of fuel, and another change eliminates authorization for appointment of a salaried fuel administrator.

The administration bill encountered rougher going in the House. It is predicted, however, that the House will pass the bill in modified form and that House and Senate will then harmonize the efforts of the two bodies.

The measure is modelled quite closely on the New York law, though its provisions are said to be less drastic. It contemplates a system of licensing dealers and provides for seizure of coal or coke in possession of dealers.

SPENS WILL NOT ATTEMPT TO FIX PRICES

The Federal Fuel Distributor has no intention of attempting price-fixing. This was brought out at a conference between John W. Davis, special counsel for the National Coal Association, and the law officer of the Fuel Distributor's office. Mr. Davis in a telegram to A. M. Ogle said: "Counsel for the Fuel Distributor assures me that the Fuel Distributor has no intention now or hereafter to attempt the fixing of prices. All efforts will be directed to moving coal.

DENIES OHIO COAL WILL BE FORCED INTO MARKETS OUTSIDE THE STATE

Emphatic denial was made by Commander H. H. Rouss, federal representative in Ohio of the Federal Fuel Administration, to reports that Ohio-mined coal will be forced into interstate channels, thus compelling Ohio dealers to buy from other states at exorbitant rates, because of the Ohio emergency control system.

"Statements to the effect that Ohio's fair-price law would deprive the people of this state of coal are not founded on fact," Commander Rouss avers. "Definitive instructions on that very point reached us recently. State Fuel Administrator Neal, on his recent visit to Washington, was assured that any effort to evict the Ohio law through interstate channels would meet with a sharp check from the federal authorities."

ON PAGE 561 of Coal Age last week the Ohio fair-price schedule by districts contained an error in District 7, which should read as follows: "The counties of Trumbull, Portage, Summit, Mahoning, Medina, Wayne and Stark and the County of Columbiana except the townships of Washington and Yellow Creek, $4.86."
Coal Wholesalers Express Satisfaction With Personnel of Coal Commission

Residential and industrial users generally regard with satisfaction the personnel selected by the President to constitute the United States Coal Commission and believe thatComposition can thoroughly expedite good will results from the fact-finding proceedings. The President’s choice of the following commission members: Honoring. General. Arm. J. Mead, chairman; Honoring. General. J. P. Morgan, Jr.; Honoring. General. E. J. Hall; Honoring. General. W. R. Grace; Honoring. General. J. H. Foraker; Honoring. General. E. M. Shaw; and Honoring. General. H. F. Coats are good signs that the coal situation is on the point of being properly decided.

Transportation is a definite factor, as reported by the President, in ameliorating the situation, and Acting Commissioner Coatsman expressed the belief that the railroads as a whole have been performing remarkably well under the conditions with which they have had to contend.

Positioning of the Federal Fuel Administration thus far has been highly pleasing to the associations of wholesalers, since the movement of traffic has been preserved without the confused conditions that some feared might result.

Rehearing of Coronado Case Denied

Rehearing of the Coronado coal case was denied by the U. S. Supreme Court in a ruling from the bench Oct. 9. Unless the original plaintinity institute a new suit in the court, no other move is possible in the case.

In this suit, the United Mine Workers of America brought the Coronado Coal Co. and others because of obstruction of mine property in Arkansas during a strike. The Supreme Court on June 5, had handed down a decision of far-reaching importance, holding that labor unions, although not incorporated, are liable and liable for damages which result from acts of their members or an authorized strike in matters affecting interstate commerce. The court held, however, that it could not sustain an award of damages in this case because it had not been established to the satisfaction of the court that the acts were in restraint of interstate commerce during an authorized strike.

Argument has been heard in the case of the Corona Coal Co. vs. the Southern Railway, involving assignment of cars and the coal movement.

The case of the Hillbam Coal Co. has been passed to be

Floating Coal Down the Ohio on Artificial Waves Leaves Many Barges Stranded

Government engineers have had considerable success at various times in creating artificial waves in the upper Ohio River by firing coal down from West Virginia mines toward Cincinnati, but this month a 30,000-ton coal was a failure as the water was lower than at any time in fifteen years and when the pools of water above the various dams were released they spread out and moved so rapidly that the artificial stage did not hold long enough to enable the boats to make headway.

Out of ten steamers one but one boat got into trouble. The Kasaawoa, No. 17 in the list, was scattered at various points on the Ohio River, and will have to wait for a considerable time before proceeding. In the meantime they may be out in for the winter, as there have been seasons when there were no heavy rains on the river rises until after the first of the year.

One steamer lost two barges near Dam 28. When they hit bottom and sunk. The steamer Mitchell went aground off Ironton, Ohio. The Island Creek—a towboat, which had been stranded on a bar below Maysville, Ky., for a week, managed to get off when the artificial wave reached her. She had a line of barges carrying between 5,000 and 6,000 tons, and at last reports was expected to reach Cincinnati. The R. F. Gilham reported tied up at Lock No. 65, near Martinsville, W. Va., where she had made two trips down the river when the wave of water is available. Handling a coal tow is no easy matter with a good river, but with shallow water and an artificial wave, creating a strong current, towing becomes a serious problem. However, previous efforts to bring out a lot of coal through artificial waves created by manipulation of locks and dams have been successful.

Railroads Consume 300,000 Tons Less of Coal During July Than in June

Class 1 railroads consumed 6,886,000 net tons of coal during July, 1922, as charged to account 204, compared with 6,892,000 tons in July last year, according to a report of the Bureau of Statistics of the Interstate Commerce Commission covering 182 steam roads. June consumption was 6,787,000 tons. For the first seven months of 1922 these roads consumed 51,061,000 tons as compared with 52,514,000 tons during the same period in 1921.

The delivered cost per ton in July was $4.32, or 38c. above the same period last year. The per-ton cost for the year to July 31, however, was only $3.67 as compared with $4.37 during the corresponding period of 1921.

Fuel-oil consumption continues to gain. During July 120,626,000 gallons were used, as compared with 114,911,000 gallons in July, 1921. The figures for the first seven months of 1922 and of 1921 were $31,923,000 and $11,719,000 gallons respectively.

End Strike at Connellsville Union Mines

Non-union mines in the Connellsville coke region are all gaining substantially in output and man-power and the car supply is improving. The Taylor Coal & Coke Co. at Searight resumed operations during the past week.

The strike at the Diamond mine of the Diamond Coal & Coke Co. went out because they were asked to load Mather Colliery Co. (open-shop) cars, and the Lilly Coal & Coke Co. men quit because they were loading Pittsburgh Steel Co. barges. The Diamond miners stayed out only one day, but as a result of meeting Sunday several mines along the river—the National Mining Co. mine, below the Lilly, went out Oct. 8, and stayed out three days. They went back to work Oct. 12 and the men at Lilly went back the following day. The National Mining Co. is a union subsidiary of the United States Steel Corporation and the men quit rather than load Carnegie Steel Co. barges.

According to unofficial information there has been a steady return of men to work at the leasing No. 1 plant of the H. C. Frick Coke Co. during the last two weeks.

Restrictions on Bunker Coal Raised

An order raising the restrictions on bunker coal was issued Oct. 13. During the time that the restrictions were in force some 200,000 tons of coal which ordinarily would have gone to foreign ships has been diverted for American use. The accumulation of coal at ports and the sharp decline in prices at tidewater are regarded as sufficient indications that the regulation, which frequently imposed a severe hardship on shipping and on dealers and operators, could be cancelled.

The Navy Department has given permission to the City of Boston to use the coal unloading facilities at the Boston Navy Yard for coal consigned to the municipal coal yard. The plans for this municipal enterprise have been laid before the Federal Fuel Distributor and he has interposed no objection to the project.
Coal prices are still slipping downward and demand is but little improved, though signs are not lacking that the bottom will be reached before Nov. 1. Colder weather has strengthened the demand for domestic bituminous coal and this has been reflected in a better steam call. Industries normally go into the winter with increased stocks as a bulwark against poor receipts when transportation conditions are bad. This year has been the exception and buying has been on a hand-to-mouth basis. The prospect of still lower prices is now delaying purchases, but the recent touch of cold weather has shaken this resolve in a manner which indicates further buying action in the near future.

Demand has not yet revived sufficiently to hold prices. Coal Age Index of spot bituminous coal prices stood at 368 on Oct. 16 as compared with 380 a week earlier. This corresponds to an average mine price of $4.45, a drop of 15c. in the week. The previous week registered a decline of 29c. The trade expects the end of the price drop, which has been in progress since the middle of August, to await the advent of real cold weather, bringing with it deferred industrial and domestic demand.

Realizing Values, More Consumers Enter Market

Some large consumers have realized the good values now offering, and the past week has seen heavier takings by the railroads and utilities. The rank and file of buyers, however, have not yet appeared in the market, except for day-to-day requirements.

The market ranges from excessive dullness in New England to mild activity in the Chicago territory, which appears to be awakening to the fact that the time is short to obtain additional tonnage before the usual seasonal transportation difficulties appear. New York and other North Atlantic sections are experiencing better coal receipts via Tide and all-rail, offsetting the declining volume of British coal. Hampton Roads is in over-supply because of transportation congestion in the West, and coastwise factors are plying New England and North Atlantic centers with all the tonnage the market will stand, to the detriment of the all-rail fuels. Pittsburgh, Cleveland and Detroit are in more comfortable supply and inquiries are picking up with the recent cold spell.

Much transportation progress has been made during the past week. It has been possible to move large amounts of coal which were being held on sidetracks and in yards between the mines and destination. This accumulation has not been cleared up by any means but most of the railroads are beginning to make an impression on their accumulation of loaded cars.

Despite the large amount of coal still being held on railroad sidings, reports to Washington indicate that there are many cases throughout the country where coal is being sold for demurrage charges. Demands for priority have practically ceased.

Retail distribution of anthracite is progressing smoothly. Strict rationing of supplies has spread considerable tonnage over the East, but Western markets are obtaining little fuel. The Lakes have taken approximately 200,000 tons of hard coal since the strike ended, and it is not expected that the Northwest can
COAL AGE  Vol. 22, No. 16

BITUMINOUS

"Continuous returns on coal at present are not expected for the week ended Oct. 14, with an average of about 3,092,000 tons," says the Geological Survey. "During the five weeks just closed the average has been at an almost uniform rate varying little from an average of about 3,750,000 tons."

The number of cars dumped on Monday, Oct. 8, reported by the railroads, was 69,850, the largest reported this year; but on Tuesday thousands fell off to 39,289, a figure obtained on several Mondays since the close of the strike. The total cars dumped on the first four days of this week shows an increase of 3.9 per cent as compared with the same days of the week before. Full returns on loadings for the week are expected to show an output of 9,800,000 to 10,000,000 tons."

TIDELWATER SHIPMENTS FOR SEPTEMBER 1922 (In thousand of tons)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>New Phila. R. R.</td>
<td>125</td>
<td>225</td>
</tr>
<tr>
<td>Hampton, Chicago</td>
<td>500</td>
<td>450</td>
</tr>
<tr>
<td>Total</td>
<td>625</td>
<td>675</td>
</tr>
</tbody>
</table>

CUMULATIVE TIDELWATER SHIPMENTS, JANUARY TO SEPTEMBER 1922-1923

<table>
<thead>
<tr>
<th>Destination</th>
<th>1921</th>
<th>1922</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hampton Roads</td>
<td>28,194,000</td>
<td>30,512,000</td>
</tr>
<tr>
<td>Total</td>
<td>28,194,000</td>
<td>30,512,000</td>
</tr>
</tbody>
</table>

Hampton Roads dumpings were 262,997 net tons during

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

<table>
<thead>
<tr>
<th>Current Quotations</th>
<th>Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-Tension, Eastern</td>
<td>Markets</td>
</tr>
<tr>
<td>Sept. 16</td>
<td>Oct. 6</td>
</tr>
<tr>
<td>Pittsburgh</td>
<td>16.25</td>
</tr>
<tr>
<td>Kansas City</td>
<td>15.75</td>
</tr>
<tr>
<td>Chicago</td>
<td>16.75</td>
</tr>
<tr>
<td>Green Bay</td>
<td>16.75</td>
</tr>
<tr>
<td>Milwaukee</td>
<td>15.75</td>
</tr>
<tr>
<td>St. Louis</td>
<td>16.75</td>
</tr>
<tr>
<td>St. Paul</td>
<td>16.75</td>
</tr>
<tr>
<td>Denver</td>
<td>16.75</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>15.75</td>
</tr>
<tr>
<td>San Francisco</td>
<td>15.75</td>
</tr>
<tr>
<td>South and Southwest</td>
<td></td>
</tr>
<tr>
<td>Big Bend Lump</td>
<td>16.75</td>
</tr>
<tr>
<td>Big Bend Lump</td>
<td>16.75</td>
</tr>
<tr>
<td>Small Mine Lump</td>
<td>16.75</td>
</tr>
<tr>
<td>Small Mine Lump</td>
<td>16.75</td>
</tr>
<tr>
<td>Standard lump</td>
<td>16.75</td>
</tr>
<tr>
<td>Standard lump</td>
<td>16.75</td>
</tr>
<tr>
<td>South and</td>
<td>16.75</td>
</tr>
<tr>
<td>West Ky. Lump</td>
<td>16.75</td>
</tr>
<tr>
<td>West Ky. Lump</td>
<td>16.75</td>
</tr>
<tr>
<td>West Ky. Lump</td>
<td>16.75</td>
</tr>
<tr>
<td>Kansas Mine</td>
<td>16.75</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Current Quotations</th>
<th>Spot Prices, Anthracite—Gross Tons, F. O. B. Mines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent</td>
<td>Company</td>
</tr>
<tr>
<td>Sept. 16</td>
<td>Oct. 9, 1922</td>
</tr>
<tr>
<td>Pennsylvania State Tax</td>
<td>17.80</td>
</tr>
<tr>
<td>250 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>300 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>350 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>400 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>450 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>500 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>550 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>600 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>650 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>700 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>750 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>800 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>850 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>900 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>950 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>1000 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>1050 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>1100 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>1150 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>1200 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>1250 PS</td>
<td>17.80</td>
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<tr>
<td>1300 PS</td>
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<td>1350 PS</td>
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<td>1500 PS</td>
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<tr>
<td>1550 PS</td>
<td>17.80</td>
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<tr>
<td>1600 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>1650 PS</td>
<td>17.80</td>
</tr>
<tr>
<td>1700 PS</td>
<td>17.80</td>
</tr>
</tbody>
</table>

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

†Advances over previous week shown in heavy type, declines in italics.
How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U.S. Geological Survey in Table V of the Weekly Report.

<table>
<thead>
<tr>
<th>Field</th>
<th>Jan. 1 to Sept. 5, 1922</th>
<th>Sept. 30, 1922</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Total</td>
<td>45.6%</td>
<td>55.7%</td>
</tr>
<tr>
<td>Alabama</td>
<td>63.5%</td>
<td>64.6%</td>
</tr>
<tr>
<td>Sonorat County</td>
<td>55.5%</td>
<td>57.9%</td>
</tr>
<tr>
<td>Panhandle, W. Va.</td>
<td>53.3%</td>
<td>53.3%</td>
</tr>
<tr>
<td>Virginia</td>
<td>54.6%</td>
<td>59.8%</td>
</tr>
<tr>
<td>Harlan</td>
<td>54.8%</td>
<td>59.6%</td>
</tr>
<tr>
<td>Hazard</td>
<td>51.2%</td>
<td>58.4%</td>
</tr>
<tr>
<td>Pocahontas</td>
<td>49.8%</td>
<td>60.0%</td>
</tr>
<tr>
<td>Tug River</td>
<td>48.1%</td>
<td>63.7%</td>
</tr>
<tr>
<td>Logan</td>
<td>47.6%</td>
<td>61.1%</td>
</tr>
<tr>
<td>Cumberland-Fiedmont</td>
<td>46.6%</td>
<td>56.6%</td>
</tr>
<tr>
<td>Winding Gap</td>
<td>43.7%</td>
<td>54.3%</td>
</tr>
<tr>
<td>N. E. Kentucky</td>
<td>32.9%</td>
<td>47.7%</td>
</tr>
<tr>
<td>New River</td>
<td>24.3%</td>
<td>37.9%</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>63.9%</td>
<td>59.6%</td>
</tr>
<tr>
<td>Iowa</td>
<td>57.4%</td>
<td>78.4%</td>
</tr>
<tr>
<td>Ohio, Eastern</td>
<td>52.6%</td>
<td>46.6%</td>
</tr>
<tr>
<td>Missouri</td>
<td>50.7%</td>
<td>66.8%</td>
</tr>
<tr>
<td>Illinois</td>
<td>44.8%</td>
<td>54.5%</td>
</tr>
<tr>
<td>Kansas</td>
<td>42.0%</td>
<td>54.9%</td>
</tr>
<tr>
<td>Indiana</td>
<td>41.4%</td>
<td>53.8%</td>
</tr>
<tr>
<td>Pittsburg</td>
<td>41.2%</td>
<td>39.8%</td>
</tr>
<tr>
<td>Central Pennsylvania</td>
<td>39.1%</td>
<td>50.2%</td>
</tr>
<tr>
<td>Fairmont</td>
<td>35.3%</td>
<td>44.0%</td>
</tr>
<tr>
<td>Western Kentucky</td>
<td>32.5%</td>
<td>37.7%</td>
</tr>
<tr>
<td>Pittsburgh*</td>
<td>30.4%</td>
<td>31.9%</td>
</tr>
<tr>
<td>Ohio, southern</td>
<td>26.0%</td>
<td>13.0%</td>
</tr>
<tr>
<td>* Rail and river mines combined.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Car Loadings, Surplusages and Shortages

<table>
<thead>
<tr>
<th>Week ended Sept. 30, 1922</th>
<th>All Cars</th>
<th>Coal Cars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous week</td>
<td>988,381</td>
<td>189,349</td>
</tr>
<tr>
<td>Same week a year ago</td>
<td>973,291</td>
<td>187,876</td>
</tr>
<tr>
<td>Surplus Cars</td>
<td>5,483</td>
<td>3,486</td>
</tr>
<tr>
<td>All Cars</td>
<td>12,072</td>
<td>6,975</td>
</tr>
<tr>
<td>Coal Cars</td>
<td>293,417</td>
<td>107,666</td>
</tr>
</tbody>
</table>

Coal Age Index 358, Week of Oct. 14, 1922. Average spot price for same period, $4.45. This diagram shows the relation and actual prices on fourteen coals, representative of quality and percent of the bituminous output of the U.S. ( excluding run-of-mine normally shipped and used, with respect to the tonnage of each normally produced. This average is compared with the average for the seven preceding weeks, June 12, 1921, as 100, after the same was adopted by the Department of Commerce as "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

The week ended Oct. 12, practically unchanged from the preceding week. Coastwise markets— the bulwark of the Roads shippers—are in much softer condition and prices are being shaded to close sales. New England especially is in such comfortable supply that it is difficult to see where any considerable inquiry can develop before Jan. 1.

Last week's dumpings were 1,493,273 net tons during the week ended Oct. 16, as compared with 1,179,218 tons in the preceding week. The season's Lake movement to date is 12,432,474 tons; last year it was 20,382,948 tons.

ANTHRACITE

Production of anthracite continues to increase. The output during the week ended Oct. 7 was 1,959,000 net tons, and loadings for the first four days of the week indicate an output of about 2,000,000 tons in that period. Much inconvenience is being caused by the slowness in the movement of steam sizes. There are now more than 150,000 tons of these coals between the mines and Eastern cities.

COKE

Production of coket coke continues to increase. The output during the week ended Oct. 7 was 171,000 net tons, 11,000 in excess of the preceding week. Coke prices are at last breaking, but the supply is still too costly and limited to tempt additional blast furnaces to resume.
Foreign Market
And Export News

Continental Orders Replace American Business
On British Market: Prices Strong

French Fear Domestic Coal Shortage

Coal of the Nord and Pas-de-Calais has become more active still and domestic demand is especially pressing. A few collieries are restricting their shipments in provision for a strike which may break out before Nov. 1. A shortage of domestic coal is apprehended as soon as winter sets in.

The outcome of the present conflict between operators and miners may be determined when the French Parliament reassembles. Should, however, collieries of the Nord and Pas-de-Calais obtain no relief from their present plight, they may again be in no man's land in the situation as soon as British competition reasserts itself.

Miners of the Nord and Pas-de-Calais have published their schedule of prices for the fourth quarter, which is the same as for the third quarter, with summer bounties which are now off.

FRENCH MINE PRICES

<table>
<thead>
<tr>
<th>Coal Description</th>
<th>49fr.</th>
<th>51fr.</th>
<th>53fr.</th>
<th>55fr.</th>
<th>57fr.</th>
<th>59fr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steam coal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anthracite</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown coal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The adjusted price of German coke delivered to French blast furnaces by the Société des Cokes de Hauteriveaux has been maintained for October and November at the same limit as for September—59fr. at the Franco-German frontier. On the other hand, French collieries of the Nord and Pas-de-Calais have reduced the price of the metallurgical coke they supply to the said Sociétés, in view of its being pooled with German coke, to 92fr. for November from a previous limit of 95fr.

Hampton Roads Pier Situation

N. & W. Pittsburgh, Lambert Point

<table>
<thead>
<tr>
<th>Carried on board</th>
<th>Tons on board</th>
<th>Tons dumped</th>
<th>Tonnage waiting</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,410</td>
<td>2,410</td>
<td>2,410</td>
<td>2,410</td>
</tr>
</tbody>
</table>

Virginia Ry. Pass, New Point

<table>
<thead>
<tr>
<th>Carried on board</th>
<th>Tons on board</th>
<th>Tons dumped</th>
<th>Tonnage waiting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,500</td>
<td>1,500</td>
<td>1,500</td>
<td>1,500</td>
</tr>
</tbody>
</table>

Coal Paragraphs from Foreign Lands

France—The government has been notified of the latest developments of the current strike at the works in the Pas-de-Calais. The present strike is more serious than the preceding one, which was last summer. A more general strike has also been notified at the mines in Pas-de-Calais.

Spain—A report from Madrid states that the national government has issued an order for the immediate withdrawal of the troops from the Asturias, where the miners’ strike is still continuing. The government has also ordered the immediate discharge of the miners who have been arrested for looting.

Pier and Bunker Prices, Gross Tons

<table>
<thead>
<tr>
<th>Port</th>
<th>Oct. 17</th>
<th>Oct. 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hull</td>
<td>50 f.o.b.</td>
<td>50 f.o.b.</td>
</tr>
<tr>
<td>Ghent</td>
<td>75 f.o.b.</td>
<td>75 f.o.b.</td>
</tr>
<tr>
<td>Antwerp</td>
<td>50 f.o.b.</td>
<td>50 f.o.b.</td>
</tr>
<tr>
<td>Rotterdam</td>
<td>50 f.o.b.</td>
<td>50 f.o.b.</td>
</tr>
</tbody>
</table>

BUNDY

1. New York...30/36.5 19/26.5 30/36.5 25/32.5
2. Philadelphia 7.50/7.75 7.50/7.75 7.50/7.75 7.50/7.75
3. New York...25/32.5 25/32.5 25/32.5 25/32.5
4. London...50 f.o.b. 50 f.o.b. 50 f.o.b. 50 f.o.b.

Cardiff

<table>
<thead>
<tr>
<th>Oct. 7</th>
<th>Oct. 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>25/32</td>
<td>25/32</td>
</tr>
<tr>
<td>25/32</td>
<td>25/32</td>
</tr>
</tbody>
</table>

Nevastowe

<table>
<thead>
<tr>
<th>Oct. 7</th>
<th>Oct. 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>16/18</td>
<td>16/18</td>
</tr>
<tr>
<td>16/18</td>
<td>16/18</td>
</tr>
</tbody>
</table>

Coal Quotations by Cable to Coal Age

<table>
<thead>
<tr>
<th>Coal Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>British coal</td>
<td>25/32</td>
</tr>
<tr>
<td>German coal</td>
<td>25/32</td>
</tr>
<tr>
<td>French coal</td>
<td>25/32</td>
</tr>
<tr>
<td>Belgian coal</td>
<td>25/32</td>
</tr>
</tbody>
</table>

Advances over previous week shown in heavy type; declines in strike.

Current Quotations British Coal f.o.b.

<table>
<thead>
<tr>
<th>Port</th>
<th>Oct. 17</th>
<th>Oct. 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hull</td>
<td>50 f.o.b.</td>
<td>50 f.o.b.</td>
</tr>
<tr>
<td>Ghent</td>
<td>75 f.o.b.</td>
<td>75 f.o.b.</td>
</tr>
<tr>
<td>Antwerp</td>
<td>50 f.o.b.</td>
<td>50 f.o.b.</td>
</tr>
<tr>
<td>Rotterdam</td>
<td>50 f.o.b.</td>
<td>50 f.o.b.</td>
</tr>
</tbody>
</table>
Cooler Weather Fails to Stimulate Coal Market

Prices Firm Only on Good Grades—With Car Shortage Acute, Shippers Confine Efforts to Regular Trade—British Coal No Longer a Market Factor.

Colder weather has failed to cause much stir in the coal market. Only good grades are salable at firm prices, while the poorer qualities are forced to sell at lower figures. Shippers are not active in soliciting orders, as they are barely able to take care of their regular trade, so acute has the car shortage become.

Some large consumers have realized the good values now offering and are taking in a limited tonnage for storage, but the average buyer is still restricting his orders to current requirements. British coal has ceased to be a market factor, but this has been replaced by heavier American receipts, both by Tide and all rail.

PHILADELPHIA

No improvement is noticeable in the bituminous trade, the consumer holding off as usual, while the producer is not soliciting trade, being busy distributing tonnage to his regular trade. Car shortage is still a very serious problem. Quite some complaint is heard of poor quality coal coming into the market, but this usually springs up when coal of the better grades is not to be freely had. With the consumer's attitude of waiting for lower prices, he is at the same time inclined to become more critical as to quality. The railroads now seem to be accumulating better stocks of engine fuel and are reported to have close to a month's supply ahead, or in prospect.

Prices are still inclined to weaken. Nothing seems to shake the consumers' confidence in much lower prices and they congratulated themselves that they are slowly achieving this result. Contrasted to this attitude we know of some large consumers who have contracted for blocks of tonnage of the best coal at prices that closely approximate the present spot market. At Tide there is only ordinary business in bunkering, and only a minimum of shipments for export. British coal also seems to have ceased to be a factor in the market.

CENTRAL PENNSYLVANIA

Car shortage is about the only thing interfering with production. On the lines entering the central region and in the region reached over the New York Central, the supply of cars is only 30 per cent of requirements. The miners are working in full force throughout the union areas. The non-union mines are rapidly gaining in the strike and to all intents and purposes the strike in the non-union operations is over. The Berwind-White Coal Co., at Winding, where the battle was most bitterly contested, is making daily gains in production.

Prices quoted at the mines are: Pool 10, $4.20@$4.50; Pool 9, $4.50@$4.75; Pool 1, $4.75@$5. Lower grades are quoted at $4.

Baltimore

Now that winter is approaching rapidly the seasonal jump in demand for storage in anticipation of traffic congestion to come later might well be expected. So far this has failed to materialize and even the larger industries are going ahead without much reserve.

The easy market has had the tendency of preventing any further jumps in prices, as the buying there has been a recession, this being especially true of gas coals. With the call for soft coal coming from sources that normally get it at a premium, there is noted a particularly strong demand for lump but there has been so little screening done that dealers are at a loss to know where to get the lump for this trade as they recommend.

The situation has strengthened the call for English coals, even though they are selling much above the American lump. Following the importation of 88,789 tons of British coal at Baltimore from the latter part of August till Oct. 15, it is reported that other ships will shortly arrive. The October arrivals were two with a total of 13,580 tons. The first export movement noted since last April came on Oct. 9 when a schooner sailed for Cuba with 2,816 tons. The last previous export movement was on April 10, when 2,916 tons cleared for Cuba.

New York

No buying to amount to anything has come into the market and prices show little tendency to advance. At the same time the decline seems to have been checked, in the better grades of coal at least. There has been no improvement in the situation. If anything, it is worse.

With such a state of affairs prevailing when the railroads have nothing to contend with in the way of adverse weather conditions, it is easy to surmise what will happen when low temperatures make their appearance. Yet the average consumer is making an effort to get stocked up against such a time. The hope of getting coal cheaper by waiting is the acting motive of many car owners.

Few of the operators are willing to commit themselves over a period of months at the prices now prevailing in the spot market. They are fully as confident as the buyers when it comes to predicting the future course of prices, the only difference of opinion being as to which way the cat is going to jump on the all-rail territory, owing to the scarcity of orders, shippers have been sending somewhat more coal to Tide-water than the local market can absorb readily. Some of it has got on dehur- rage and is causing some unsettlement. Between 1,500 and 1,600 cars were reported standing at the piers at the end of the week.

Anticipation quotation are shown in the Weekly Review.

Upper Potomac

Mines are not troubled so much by a shortage of cars as they were during a part of September and hence it has been possible to increase output somewhat on the line of the Western Maryland. Georges Creek production is not being increased materially but the de- standing sold for heating fuel. On the Meyersdale field where many strikers are working. Aware of that fact, Georges Creek operators are bringing eviction proceedings as to make room for men who will work. As it is necessary to dump all coal produced into Eastern markets the price is off.

Fairmont

Changes in the Eastern market have been very rapid and peculiar. Much coal billed to the Lakes is being thrown back on producers who have to find a market for it in the West and that is creating confusion. The B. & O. is assigning cars and that is only aggravating conditions connected with an acute coal shortage. Coal demand is extremely light. Coke production is being increased.

South

Birmingham

Buyers of steam coal are maintaining a rather critical attitude toward the market. Consumers are placing orders for immediate needs only with requests for prompt shipment, and are apparently obtaining a stock of coal. The principal demand is coming from small industries and utilities in Alabama, Mississippi and Georgia, while some run of mine is filling the special orders for the higher grades. A few days of cool weather has created a more insistent demand for domestic. Conditions incident to an increased supply have not improved the situation. Consumption of both production and movement very materially. Price for all grades of domestic are at a standstill. Quotations on steam have eased off to some extent.

Car supply on the Southern lines last week has shown some little improvement, but the situation is little or any better than a week ago. Production is around 345,000 tons per week.

Virginia

Virginia mines are recovering in a measure from the handicap of a car shortage. The sales are up to 90 per cent, with C. C. & O. mines leading all others. Although there is not a stiff demand for coal, no losses have been sustained on far cars, owing to the shortage of equipment.
**Anthracite**

**Rigid Domestic Rationing**

Eases Tension in East

Western Markets Wait Awaits Hard Coal—Lake-in-Arrow Shortage in Northwest—Independent Quotations Are Modified—Steam Sacks Harden

The industrial situation is more reassuring as strict rationing has distributed a little coal over a wide area of the East. Western producers are not expected to receive much tonnage for another 60 days. The Lakes are beginning to get hard coal—200,000 tons since rationing was resumed—but it is realized that winter will find the Northwest in short of its requirements.

Independent quotations show a lower range. There is less tendency to buy 112-coal, and the majority of the independents are adhering to the 3525 maximum for the family coal. Steam prices are in heavy over-supply and the market has softened perceptibly.

**Philadelphia**

Coal weather has brought a snap to the retail trade that is not desired by the dealers. The consumers are asking for hard-sensory for coal. Most prices are on the range of exceptions. To compensate, the independent dealers are quoting the highest prices. The tendency has been toward those that have shipped orders and offer rebates when it is possible.

The high prices seem to be reaching a visible point now, as the efforts to keep the independent into the coal market seem to be nearing a close. Baltimore has not sold a ton of the small independent will continue to charge $4. So far nothing has been given out as to the fact of two or three orders that are reported to be coming in.

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**New York**

The substitution of all burners and soft coal is burned in part for the accumulation of steam coal. They are buying in all directions, although it is realized that the turnover of steam coal will create a better market in the fall.

**Baltimore**

Dealers are being swamped with orders now that there is a snap in the atmosphere. Less than 60 per cent of immediate needs, entirely outside of any coal for storage, and the winter is over. Dealers are sticking to their lot deliveries but even this does not meet the situation as consums generally are refusing to take 112-coal as a substitute. In view of the fact that Baltimore dealers are still getting practically only independent coal at high prices the majority of dealers are still forced to sell the more popular grades at $16 per ton.

Officials of the Maryland Distribution Committee who have been investigating conditions have openly said the greater part of the trouble to this fact.

**Anthracite Fields**

The mines are all working to capacity and they have not been hit as badly by the car shortage this week. There are no labor disturbances anywhere in the region.

There is no demand for the steam *bars.* Some of the companies are complaining about this.

**Buffalo**

The demand keeps up, but people understand the situation and do not try to get coal in quantity. Nobody is getting more than about half as much as was needed a year ago. Lake shipments are cut down.

Lake shipments last week were 71,970 tons, of which 22,500 tons cleared for Milwaukee, 22,500 for Duluth and Superior, 14,500 for Chicago and 7,500 for Buffalo. Freight rates are 50c. C. to Chicago, 50c. to Milwaukee, 45c. to Sheboygan and 40c. to Duluth.

**Boston**

Shipment of coal is slowly dribbling through all rail, and practically every well-connected dealer has had a fair quota since mining was resumed. Dealers have perhaps had better receipts in proportion, but this is due rather to eccentricities of car supply than to any design on the part of the railroads.

Prepared sizes are being distributed in sparing amounts, but during the mild weather there was very much less public anxiety in evidence than was expected. Householders have apparently concluded that somehow or other they will manage to get through the winter and they are gracefully accepting the situation. Or, if it be so, the situation is not as distressing as has been made out.

**Coke**

**Uniontown**

Coal buyers are retaining their advantage in the market by limiting purchases. In addition, and operators, faced with the problem of keeping their working forces together are forced to close sales at figures they claim out of production costs. The car situation is a bit easier. Because of the railroad situation, the carriers are keeping close check on cars placed for loading and are demanding that a consignee be named as shortly as possible after a car is loaded. That condition also helps to soften the market.

The strike of Connellsville miners has ceased to be a matter of public interest. At practically all the larger plants there are groups of "hold-outs" but at the present time many of them have returned to work.

The trade is quoting $3@4 50c for steam coal. Three-quarter lump is $3.25@4 50c with byproduct, 95c@1 50c.

**Connellsville**

The break in Connellsville coke prices has begun at last. A few days ago sales were $6@6 75 while they were quoted freely at $7 25 per ton. The market has ample room for further declines, since coke has not been sold for less than its natural ratio to coal, according to the formula of 114 tons of coal at the market price plus the cost of coking. With the coal market at $10.50, the coke is made at $1.00, and the formula would make $6.50 as the coke price.

Foundry coke has also declined, but somewhat sluggishly as some foundries, not well posted, have been paying close to the old prices. The market is now quoted at $12.50@13.50.

The condition no longer obtains of there being an indefinite number of blast furnaces waiting to resume and willing to pay the open market price. Pig iron consumers evidently are unable to pay present prices, while furnaces could not make lower figures except with cheaper coke. As furnaces get into operations, deliveries are made on old contracts and thus the need of consumers to buy pig iron in the open market is reduced.

The Courier reports coke production during the week ended Oct. 7 at 91,100 tons by the furnace ovens and 35,250 tons by the merchant ovens, a total of 126,350 tons, an increase of 7,670 tons.

**Buffalo**

Demand continues light, for the local plants are running actively and they are able to supply the furnaces pretty well. At the same time the coke situation at the big Pennsylvania oven centers is not good.
Regional Market Seems Ready for Upturn Now

Domestic Demand Continues Heavy and Steam "Buyers' Strike" Gives Signs of Breaking—Car Service Improves Only Slightly.

Continuance of a heavy domestic demand and very little, if any, improvement in car service by the roads keep the markets of this region about on the level of last week. While it is true there is no rush of steam buyers and a good deal of those grades are getting into distress almost daily, yet railroads are taking heavier tonnages for their own use and other big steam consumers are displaying more interest in deliveries on contracts. With the approach of colder weather the coal industry gets into a better position temporarily—only to prepare gloomily for greater difficulties later on.

Car supply throughout southern Illinois is still in the neighborhood of 30 per cent, while northern and central fields are down to 45 or 50 per cent—and that the service is no better. West Kentucky is running about 20 per cent of the time and Indiana fields somewhat less than half time. Prices generally throughout this section are unchanged from last week, except in Kentucky where a slight weakening of mine run and screenings was noticed.

CHICAGO
A tinier opening up of the domestic market, after the slight softening, and a certain uneasiness on the part of some of the big steam buyers who are still "on strike" are signs which coal men are reading just now. Many retailers who have not attempted to stock anything, are trying to do so now, finally concluding that domestic prices are not due for a drop. Householders who have been following to the letter the retailer's advice to buy only in small quantities, are now asking for a good deal more than the yards can deliver. The result is a considerable backwatering of orders followed by an epidemic of coal prescriptions signed by many doctors.

Some hard coal has reached here but on a restricted scale. The anthracite mine price quoted here ranges from $9.50 on buckwheat and pea and up to $12 on the larger sizes. Smokeless mine run and lump sells for $6.25 or $7 except the little which is jobbed.

Several elements are combining to take some of the rigidity out of the "buyers' strike" among big consumers of the steam grades. It is that a good many short contracts for oil expire at once and many may not be renewed.

Another is that few industries are stocked with coal and the third is that it seems more apparent every day that the strengthening of rail transportation will not be relieved soon and cold weather with an inevitable rush of demand is due at any moment. For these reasons there are fewer coal contract cancellations nowadays.

WESTERN KENTUCKY
The general markets are weaker and with industrial consumers refusing to stock, and retailers buying only for immediate needs, producers are finding it harder to sell coal. Unless there is material improvement soon in demand for either for domestic or steam, many in concern will have to look to the heavy demand will develop for prepared. Right now there appears to be an increasing tendency for domestic consumers to take up better grades of clean mine run for heating use.

Lump coal which has been strong at $5 and over, is now quoted at $4.75 in some instances for off-grade, while supplies are plentiful at $2.75 to $3.25 in quantities. Mine run has broken to $2.75 @ $3.25 and screenings, $2.75 @ $3.

SOUTHERN ILLINOIS
Lack of rail equipment and failure to sell steam sizes stand out strong as obstacles in the Du Quoin and East Jackson field. At one or two places a little steam is held without billing and if cars were plentiful there would be a lot of this stuff on hand. Railroads are buying again, however, and the car situation is just a trifle better than strong demand for lump, egg and nut is unusually good.

Somewhat similar conditions prevail in the Du Quoin and East Jackson field. At one or two places a little steam is held without billing and if cars were plentiful there would be a lot of this stuff on hand. Railroads are buying again, however, and the car situation is just a trifle better than strong demand for lump, egg and nut is unusually good.

In the Mt. Olive district working time is two or three days a week. The railroad tonnage is heavy. Several trunk lines have trouble in getting cars and demand for lump, egg and nut is unusually strong.

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ST. LOUIS
A little more reasonable weather has started to develop and demand on the cheaper grades. The light tonnage of Carterville is going at a premium of $3.50 to $5.00 @ $6 at the mine. The retail price is $6.50. Mt. Olive, which is available as a rule, is $8 at the mine and retails at $7.50. This makes Mt. Olive the popular coal.

Country domestic and steam demand are both picking up. Locally steam is not selling, except from day to day. Very little coal is piling up in storage. Railroad movement has shown some improvement though hundreds of cars are held in East St. Louis on account of the inability of the Illinois and Missouri Pacific to handle them.

INDIANAPOLIS
Demand has been more active during the past week, due largely to the imminence of cold weather. Most of the domestic coming from the domestic consumer and retail dealers generally are limiting their sales to three tons in order to have enough to go around.

There has been no particular strength in the price situation during the past week, although there has been a fairly ready market at the established prices. Domestic coal of the Indiana grades is retailing around $7 @ $8.50, while foreign mined coal, such as Pocahontas, Kentucky and West Virginia, is retailing around $11.50 for the prepared sizes, with about $5.00 lower for mine run. Demand for steam coal is fair.

LOUISVILLE
Heavy rains for the past several days are resulting in better river stages and packets are resuming operations. A number of coal trains are leaving up. Ohio is expected to reach Cincinnati on the rise and some of this coal will come to Louisville and sister cities. General demand is slow. Everybody appears to be getting immediate supplies and at present prices there is no stocking demand reported. When the Lake movement steps this will throw more production to the industrial and domestic consumers, and may ease prices.

Retailers are hot over the fact that there is a range of $2 a ton and more between mine run and lump. A few retailers who have the new screening equipment are taking advantage of the fact, but others are endeavoring to get some domestic users to take mine run.

It is hard to sell coal now, not only locally but north of the river and in other sections. There is a lot of railroad demand but there has been, but it appears as if the country generally is anticipating lower prices and is not worrying. Car supply is reported at about 20 per cent on most lines, with the Illinois Central remaining about 50 per cent.

Canada

TORONTO
The volume of business is light with conditions unsatisfactory and prices variable. Limited shipments of anthracite received from the line companies are being retailed at $13.50 per ton, the price in the Freeport market. Dealers are obtaining supplies from independent producers and selling considerably higher. Several new longs have been run. The price is $11.25 to $11.50 for 100, 200 and 300 car lots, especially in Ontario. The sales of the new lots are not encouraging.

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Eastern Inland

Seasonal Temperature
Tends to Stabilize Market

Pittsburgh

Production continues at much the same rate as for several weeks past. There is somewhat faster sampling and coal shortages, this being due, apparently, rather to operators' wishes than to lack of buyers. There are no great changes in the number of buyers of the forward kind.

The hammer in the open market has been further. Consumption of coal by industrial plants and apparently also for household consumption is not so heavy as it was early in the month. Car shortages have been causing much difficulty in receipt of coal by local industries. Supplies are continuing to be adequate, but difficulties are experienced in making freight adjustments. The market stands at about $6.25 for large grades of steams, $6.25 for $6.00, $5.75 for $5.00, $5.25 for $4.75, and about $5.00 for $4.50.

Pittsburgh

No. 6 coal is the fuel of coolers and serving as a substitute for steam heating. Prices are $10.50 for No. 8, $9.00 for No. 7, $8.75 for No. 6, and $5.00 for $4.75 for lump.

COLUMBUS

A reaction has taken place and all grades are stronger. Demand for lump is the strongest feature with sales made at record prices. The regulations of the Ohio Fuel Administration relative to maximum prices are having the effect of driving the lump out of the state. Retailers in all sections are trying to buy stocks at the same price, and the equal spelt has forced the consumers into the market.

Retail stocks are almost nothing and the public is apparently waiting up in order of the situation. Many of the dealers are compelled to buy West Virginia and Kentucky lump at high prices to take care of the demand. Retail prices are strong and some deliveries with Hocking lump selling around $8@9. West Virginia splints are $10@10.50, and Pocahontas, when obtainable, is higher.

Steam business is not as active, although railroads are taking a large tonnage. The Lake trade is now booming with a large tonnage moving. Ohio mine to the Lakes.

Much of this is mine run which is bought around $3.25. Some mine run which is incapable of being screened is selling at slightly less figures.

DETOIT

Receipts are rather more liberal. According to railway figures, 1,396 cars were received in 48 hours ending at 4 p.m. Oct. 11. Average daily requirements, excluding railroad coal, are approximately 550 cars, and there is not a very active demand. The greater part of the business is apparently on a more or less continuous to-month basis, representing purchases by industrial plants that have exhausted their reserves. Assuming that a reduction of prices is limited, it is likely to come after the close of the Lake movement, the retailers are striving to guard against being caught with too much coal in anticipation of present prices. The householder demand represents a makeshift to tide the buyer over to a time when he hopes to find anthracite available.

EASTERN OHIO

NORTHERN PANHANDLE

Prices vary as widely as ever. The range is $6@$6.50 for Pittsburgh gas lump, and Allegheny Valley mine run, $3.75@$4.25, with some No. 8 at $4.75 for lump. Slack is not as high as mine run, about $3.25@$3.50.

Mines are experiencing difficulty in securing all the cars they need, and in moving coal in the usual channels even when received. Lines to the Lakes are choked with loads. The fact that so many mines load railroad fuel is helping to maintain an output. Prices are lower all along the line in view of the large presence of coal turned back from the Lakes.
Northwest

Coal Cargoes Up Lakes—Not So Numerous Now

Unprecedented Shipments Fill Demand
During Past Weeks—Rail Coal Is Arriving Too—Low-Grade Stocks on Hand Worry Dealers.

The tremendous flow of cargo coal up the Lakes gave evidence, at the end of last week, of slacking off considerably and the keen edge of Northwest demand was somewhat blunted so that nobody worried much even though cold weather is arriving and household demand for hard coal is getting brisker with small shipments to satisfy it. In some markets the price of anthracite continues to stick around last year's scale. Since the general advance on smokeless coals a short time ago there have been no further ascents of quotations on any domestic coals.

A fair flow of rail coal continues, some of it crossing Lake Michigan by carferry from the East, some coming up from Illinois and some from the lignite fields of North Dakota. The result is so much coal is here that dealers who stocked lightly on lower-grade fuels during the summer anticipating a worse October condition than prevails, are having trouble unloading.

MINNEAPOLIS
The wholesale trade is pretty well over its fears of a serious shortage and is now studying the opposite danger of having too much of the high-priced but lower-grade soft coal, which had to be bought when coal first became available.

The better coal is now available, and it is a commercial puzzle what to do with the poorer grades on hand.

The fuel distributor has made an announcement that the Northwest is reasonably assured against any serious shortage of soft coal. This has been realized for some time past, since it became apparent that there would be a reasonable functioning of the railroads. It is true that the interior has not been buying heavily. So far movement from docks is some 20 or 25 per cent lower than a year ago.

It is anticipated that prices on both soft coal and hard will average at least $1 a ton higher than a year ago, although no new hard coal has reached these cities, and no new prices have been announced.

The demand for steam coal is limited. Buyers are awaiting lower prices.

DULUTH

Official figures just made public confirm reports that there was a heavy falling off in shipments from the docks during September. Only 16,178 cars went out, of which approximately one-third were loaded at Duluth and two-thirds from Superior. Last year 18,735 cars were shipped.

Receipts of bituminous coal during September were gratifying. A total of 1,828,900 tons were received as compared with 657,170 during the same month last year, but anthracite receipts were only 10,600 tons as against 182,600 tons in September last year.

For the season to Sept. 30, receipts of anthracite aggregated 27,500 tons, as compared with 1,380,000 tons last year, and bituminous receipts were 1,963,800 tons against 7,186,492 tons last year.

Prices on anthracite have been set as the same as during the latter part of 1921. Coal will go from the docks as follows: Stove, $12.50; nut, $12.75; egg, $12.90; peat, $11; buckwheat, $8.50. Anthracite is being allocated by the fuel administrator at St. Paul. The four cargoes which were received this week were sent to North and South Dakota, the Mesaba iron range cities and villages and to Duluth and Superior. Bituminous prices remain firm as last quoted.

Besides the four anthracite cargoes 52 of bituminous arrived here this week. It is thought that this will prove the high water mark in shipments as only 19 vessels are reported on the way.

New England

Steam Demand Still Quiet; Prospects Not Very Bright

Light Industrial Production and Use of Oil and Electricity Make Gaging of Requirements Difficult—Only Scattered Inquiry Expected—British Receipts Wane.

Demand for all grades of steam coal is extremely quiet. Inquiry is restricted to small users, and apparently there is little prospect of any comprehensive business for some weeks to come. The textile and other industries are still on light production and so much tonnage has been replaced by oil and electric power this year that it is more difficult than ever to gauge probable requirements.

The trade seems to have settled down into an attitude where every sale is as much to the good, and only scattered inquiry is expected the balance of the year. Receipts of British coals are slowing down.

They may win in their position, for there is accumulating a certain amount which will doubtless have to be offered at reductions.

Steam for the Pennsylvania grade and the remainder of bituminous and anthracite coals is practically sold, and for seven or eight weeks there will be no business in British coal. The only outlet is for the heavy steams, and these are limited to a few orders to New England with a few cars for the New River.
Cincinnati Gateway

Domestic and Smokeless Exceed Gas-Coal Values

Despite a drop in steam and gas demand, the market in Colorado remains too stiff to allow a slackening in the condition of the Western fields. The demand is too intense to allow of the slackening in prices that the market is showing. The tendency to cut out and to cut prices is being met by the production of a large quantity of coal from the Western fields. The result is a further fall in the price of coal in the West, and the tendency to the low price range of a ton or less than $1.00.

VOLATILE RANGES

As long as the market remains strong in the West, the tendency to fall in prices is being met by the production of a large quantity of coal from the Western fields. The result is a further fall in the price of coal in the West, and the tendency to the low price range of a ton or less than $1.00.

LOW-VOLATILE FIELDS

NEW RIVER AND THE GULF

With an inactive market for smokeless coal in the East, a slight falling off in the production of gas coal is being noted. The demand is too intense to allow of the slackening in prices that the market is showing. The tendency to cut out and to cut prices is being met by the production of a large quantity of coal from the Western fields. The result is a further fall in the price of coal in the West, and the tendency to the low price range of a ton or less than $1.00.

KANSAS CITY

The Kansas coal fields are getting better running time than the average of other fields and as a result the market is fairly easy and prices steady. Fuel oil continues a great factor. Some steam plants are still changing over to oil and some are changing back to coal. Operators have been ordered to stop coal without any exception in the market in order to reduce the slack, and operators are being required to produce more coal to meet the demand.

SALT LAKE CITY

Business is still quiet. The weather continues summertime and those who would buy coal for storage purposes are waiting for reductions of the grand jury, which set out a few weeks ago to examine the price-fixing charges preferred against the operators and dealers by a local newspaper. It is hoped that no indictments will be made.

The car shortage is hampering the mine and mine operators have decided to hold the price on the basis of the run of mine. It is estimated that Salt Lake City has about 10,000 tons in its yards now.
News Items
From Field and Trade

ALASKA

The Alaska Agricultural College and School of Mines opened at Fairbanks Sept. 15, with a student body number has made arrangements to enter. Miners all over Alaska with the school, organized and headed by Charles Ernest Hatcher of New York, the territory, opens with the largest college in Alaska, made up of gifts by individuals.

CONNECTICUT

The Elm City Coal Co., New Haven, has recently been incorporated to engage in the coal business. The capital stock is $25,000, and the incorporators are: Jacob Roddey, M. Y. Fisher, and A. J. White, all of New Haven.

The Capital Coal Co., of Hartford, has filed articles of incorporation under the laws of Connecticut to engage in the retail coal business. The capital stock is $5,000, and the incorporators are: Jacob Benson; Joseph J. Benson; and Joseph J. Trachtenthorn; all of Hartford.

ILLINOIS

The Callaway County Coal Co., which has been developing the Callaway County, Mo., for nine years, but which was reorganized last year, has just begun operations, and equipment to F. L. Crosby and Lester J. McLenin, both of Illinois, L. W. Hite, of Farmer City; H. G. McCullough, Canton, Ill., and Carter Norris of Fulton, several companies, by which they will own and operate a new corporation under the name of the Callaway County Coal Co. The company has purchased 89 acres of land near Cuba, Ill., which, according to a government survey, will be a good location for a coal field. The field is now being worked, and a mine is expected to be in operation by the middle of November.

Coal has been found near Mt. Vernon, in Posey County, at a depth of 75 ft. A 30-in. vein was struck at 32 ft., but the thickness of the lower vein is more than 4 ft. The prospect is said to be a good one, and Girdler & Broome, who have mines in Illinois, work on the mine proper will be started in a short time. The Verona Coal Co., of Verona, has been incorporated with a capital stock of $50,000. The incorporators are: C. H. Fell, Keokuk, Fred Harford, R. J. Glenn, J. F. Harford and William Earl.

Coal hoisting at the Littlefield mine, purchased several weeks ago by receiver’s sale by Harry Turner, will be in progress within a month. The mine has been sunk 200 ft. deep, and is a capitol stock of coal. The present vein is six feet thick.

INDIANA

A petition for articles of incorporation for the Chicago, Attena & Southern Coal Co., which will take over and operate the Illinois & Southern Coal Co., as the Indians coal road, will be filed with the secretary of state on Oct. 15. Soon. While the mines in the southern section have been abandoned, the northern part of the line have been developed. Brick and clay plants are strong along most of the line and many plants were threatened with extinction when the line was abandoned.

Felix M. McWhirter, president of the People’s State Bank in Indianapolis, has been asked to become a partner in a coal and coke distributor, to serve as a member of the board of directors of the coal and coke distribution problem in Indiana with keeping in touch with the Indiana fuel situation and informing the federal fuel administration of the needs of industry.

Moyer Shank, of Indianapolis, has named five citizens to serve as a committee to work with the government in regulating distribution and prices of coal. Among the five named, two are out of state, and one is out of the state. Two have announced that he will serve on the committee. The mayor has announced that he will appoint others who will serve on the committee.

A consolidation is taking place between the Indiana Bituminous Coal Operators’ Association, which is the old labor organization of shaft mine owners, and the Indiana Coal Producers’ Association of strip mine men. The question of representation in plans on the new organization Committee of the joint operators’ and mine’s conference is now being disposed of. The state has two representatives, but since the strip association fuses with the operators, there is nothing in the way of the Brazel Block region for the president of the state to unite will in reality have three seats because Phil. Penna., permanent chairman of the joint conference, is a member ex officio.

KENTUCKY

In western Kentucky when strikes tied up other mines, there was so much money that roads were full of miners who were traveling to their work in automobiles. One miner was reported as buying a big car. Used cars bringing 40 to 50 cents in 1921 were selling at 100 cents in the cities. Today the coal car shortage is so severe that it is hard for miners to keep up even a "Liz" on surplus earnings. Reports of actual starvation conditions among miners has been a fact so well known.

B. H. McCormack of Cincinnati, E. McCrann of Dayton, and C. H. Carson of Lexington have all been at the Coal Operators’ Conference here to confer with the above concern. Mr. Heffern and associates have formed the Heffern Elkorn Coal Company to operate 150 miles on Marrowbone. This company plans on opening up to the Allied Coal Co. by adding equipment and installing an instillodine in all respects.

The Jacqua Mining Co. has been formed by W. H. Cottingham, W. C. Burch and Ed. Harney. The Smith-Abston Coal Co., has been capitalized at Hazard, Ky. for $25,000 and the incorporators are: M. V. Abston, G. B. Smith and G. H. Abston.

MISSOURI

The Carter Coal Co., of Wellington, has been incorporated with a capital stock of $25,000 in Missouri as well as a Missouri establishment. The incorporators are: Fred D. Dresser, Charles G. Brown, John H. Lumsden, W. E. Woolley, Edward H. Brown, George H. Drewell and Adolph H. Kubman.

MONTANA

An operating held late in September, at Butte, that has the miners strike their own in a position to the National Coal Strike, which was called to end with the recent rates for the present.

NEW YORK

In order to give greater attention to C-H business in western New York and Ontario, a branch office has been opened by the Cuyler-Hannans Co. The office is located in Buffalo. A. A. Hansen, formerly located in New York, has been placed in charge.

J. B. Clark, Jr. has recently become associated with the Pennsylvania Trust Co., as sales engineer, and will make his headquarters in New York office. For a number of years, Mr. Clark has been associated with the Koppers Company of Pittsburgh, Pa., and the United States Steel Corporation, doing business in the coal industry. The new office will be known as the Pennsylvania Trust Co., of New York.

Grant B. McLaughlin & Co., on Oct. 1 opened a coal office at 713 Mutual Life Iron, Mr. McLaughlin formerly connected with the Donner Steel Co. and will also look after the iron trade.

OHIO

C. A. Clyborne, president of the Three States Coal Co., with headquarters at Bluefield, W. Va., has opened an office in the Cincinnati office of his company.

For the third time, the Columbus Board of Trade, Sumner Coal Co., has filled the last date for opening bids has been fixed at $5,000. For the former occasions all of the bids were refused.

Quite a few coal companies, mostly for mining and distribution purposes, have been chartered recently under the laws of Ohio. Among the number are: Windsor Coal Co., New Philadelphia, has opened a mine in Jefferson County, incorporators: H. W. Thomas Rock Coal Co., of Columbus, A. Barakat and S. S. Hill, The Hughes Coal Co., of Byesville, capital: $25,000, incorporators: R. G. Barnard, Jacob Wamsler; James W. Bird, L. W. Morgan; E. E. Solomon.

The Grove Coal Co., of Akron, capital: $75,000, incorporators: E. A. Milton; C. A. Mason Co., of Columbus, capital: $25,000, incorporators: Katherine Wynne, Rose Darling and George W. Coble.

PA, PENNSYLVANIA

A State charter was granted at Harrisburg to the Deerfield Hill Coal Co. of Pottsville. It has a capital stock of $10,000, and David Dr. Griffiths, president. The corporation is incorporated for the purpose of purchasing and selling coal for the market and the purpose of mining and developing coal fields. Incorporators: Alexander and Albert Mays, all of Pottsville.

The Shaffer Coal Co., of Johnstown, has received a capital stock of $75,000, and Pottsville, and in the management of the company. Incorporators: W. J. Minnich, Mrs. and C. A. Minnich.

The Delaware Lackawanna & Western R. R. Co., of the Anthracite, has been incorporated with a capital stock of $10,000, and W. J. Minnich, president, and C. A. Minnich, treasurer. Incorporators are: W. J. Minnich and Thomas Hanfman, T. A. Johnst,

TEXAS

United Mineworkers of America have opened a new office in Houston. A branch office was opened in the American Labor Union Building. The office is under the direction of J. R. Minnich and has been furnished with new quarters.

The American Fuel Co. is said to be doing an active business in the fuel market out of this office, and they have a large supply of fuel available for immediate shipment.

Albert Griffin has severed his connection with the Keene Mine, Balf-Collins Coal Co., Roundup. Mr. Griffin was superintendent.
COAL AGE
Vol. 22, No. 16

VIKILLMA
VIIKILLMA

Traffic News

Recent Patents

Mineral Shovel

C. Y. Tinsley

K. A. Dyer

M. D. C. Turner

J. W. T. Black

H. M. Soper

Feeling Barre. Arthur F. Case, Cleve-
dland. Claims for patent. See
e. Goldman; Howard W. Morgan Co.,
Cleveland, 1,427,691; Aug. 28, 1922; file
July 26, 1921; serial No. 23,

Mining and Loading Machine. Edmund
c. Bailey. Claims for patent. See
e. Goldman; Thomas B. Kelch, New
York, 1,427,689; Aug. 21, 1922; file
July 15, 1921; serial No. 29,

Trade Literature

Type M-1 Demand Meter. General Elec
trical Co., Schenectady, N. Y. Claims for patent. See
e. Goldman; L. J. Hanks & Co., New
York, 1,427,413; Aug. 21, 1922; file
May 13, 1922; serial No. 21,

Remover—The Heating and Ventilating
Blower Co., Columbus, O. Claims for patent. See
e. Goldman; Frank F. Hovey, Chicago, 16. Bulletin No.
6; Oct. 16, 1920; serial No. 11,

Swing Hammer Pulverizers. The Jeffery
Co., Chicago. Claims for patent. See
e. Goldman; B. E. Showalter, Chicago, 16, Bulletin No.
394; Oct. 16, 1920; serial No. 37,

Clay Products Cyclopaedia. Industrial
Publications, Inc., 609 South Dearborn St.,
Chicago, III. Pp. 202; 9 x 12 in.; Illus-
trated. This book consists of two main
parts, the first contains definitions and
statistics and the second, catalog pages of
manufacturers. Each page gives to the
clay products manufacturer all possible information he requires.

Thomas Mine Hoists. Thomas Engine
Works, Chicago, III. Pp. 14; 8 x 11 in.; Illus-
trated. Descriptions for different types of
hoists, including single and double reduc
tion end-lift electric shaft hoists, drum
single- or double-end electric hoists, and
uplift electric hoists. In addition, the
capacity of mine hoists, truck hoists, and
two-speed electric hoists is given. These
table is followed by specifications for
car pulleys, both horizontal capstan and
vertical capstan.—Advertiser.

Obituary

Frank J. Shaffer, aged 62, secretary and
treasurer of the Hocking Valley Products
Co., died recently from the effects of an automobi-
lee accident suffered last April. He had been
associated with the mining company for about
10 years.

Coming Meetings

Kentucky Mining Institute will hold its
annual meeting Nov. 3 and 4 at Seaback
Hotel, Lexington, Ky. Secretary, Elizabeth
C. Rogers, Lexington, Ky.

The National Industrial Traffic League
will hold its annual meeting Nov. 15 and
16 at the Hotel Commodore, New York
City. Secretary, J. B. Boker, Chicago, III.

Canadian Institute of Mining and Metal-
ling, annual Western meeting Nov. 15-17
at Vancouver, B. C. Secretary-Treasurer,
D. C. MacKenzie, Montreal, Quebec, Can.
When and Where to Apply Self-Restraint

WHAT a lesson the public is teaching itself on coal! A most remarkable demonstration of the great axiom that the destiny of the coal trade is in the hands of the consumer is being staged. There have been buyers' strikes on coal before but never under the conditions of today. Previous general withdrawals of consumers from the market, to the discomfiture of the coal producer, have always had a background of large stocks and were explainable as the normal result of falling prices on an overstocked market. They have always gone too far, it is true, and reacted in the end to the disadvantage of the buyer. Hitherto these long sweeps have had no guidance; they have simply been the expression of uninformed mass psychology.

Six years ago this week the country awoke to the realization that consumers' stocks were low, consumption was increasing and that a nationwide car shortage had developed. Prices at once reacted to new high levels. The coal shortage then begun lasted until the armistice. Conditions with respect to stocks, consumption and car supply are essentially the same today as in the autumn of 1916. The differences are only in degree; the relative positions are the same. Yet the price is falling.

The United States Chamber of Commerce has just completed a survey of the country and reports that although reserves of soft coal are "less than normally carried," the bituminous-coal situation "is becoming easier," and that there is no "general complaint as to price." Production of bituminous coal is no more than sufficient for current consumption and permits no stockpiling. "It should be borne in mind, however," says the Chamber, "that this is an average figure of stocks of small plants and large plants, and covers stocks varying from a few days' to two or three months' and in some instances even longer."

The self-restraint of the buyer is being intelligently directed. The mine price of soft coal is even yet high enough to call forth all the production the railroads can carry. The buyers are taking all the coal they can possibly get, but they are buying it without panic. From the standpoint of supply and requirements—as contrasted with demand—this is a sellers' market. Yet the buyer is so largely in control that he is really making the price on a large part of the output.

In 1919 the positions were reversed. The country was overstocked with coal, consumption was falling sharply. The coal producers, fresh from the lessons of the fall, having been forced by the Fuel Administration to learn their costs, refused to be stampeded into price cutting. It was a buyers' market in the summer of 1919. If ever there was one, but the price was maintained by the self-restraint of the seller.

If it be granted that steady prices and absence of violent fluctuations in the market make for stabilization of the coal industry, then the obvious conclusion is that self-restraint should be preached to and practiced by the side that will be benefited thereby. Teach the public its responsibility in a two-sided game, as well as the coal operator. It is easier and more sensible to drive home to the buyer his selfish interest in not going wild and paying prices for coal that cannot encourage production and thus to prevent high-price scandals, and to give the operator the right and opportunity to protect himself against the ruinous low prices that obtain at other times, than to campaign against the natural and human instinct of the buyer to treat the price to the lowest level irrespective of consequences, or of the producer to refuse to take a handsome profit when it is offered to him.

The present concerted restraint of the coal buyer is not an accident. It is the result of broad national planning, conceived in advance of the fact. It exhibits a phase of the national coal situation that we trust will not be overlooked by the Federal Coal Commission in its study. It is true that the chapter is but opening, that the experiment may fail, but it is certain that future chroniclers of the coal question will look back on the buyers' strike of 1922 as a well-conceived stroke of national policy, carefully executed, and that credit for its conception and execution will be placed where it belongs.

Solving Hard Coal's Commercial Problem

COMMERCIAL production of large sizes of anthracite, including peat, averages around 50,000,000 gross tons per year. Of this, in normal years, the railroads take about 2,500,000 tons: gas plants, 700,000 tons, mainly the egg and broken sizes, and industrials, some 1,800,000 tons, a total of 5,000,000 tons, or about 10 per cent of the prepared sizes. This represents a substantial and desirable trade.

It was generally recognized during the war that household use should have preference in distribution of the larger sizes and the allotments of the Fuel Administration to other than domestic consumers were cut as much as possible. The allowance for railroad use, for instance, was cut half the normal taken for this purpose. Somewhat the same situation has arisen this autumn. With retail distribution of the favored sizes largely on a hand-to-mouth basis and consumers' reserves at a low point, hard-coal shippers are holding back other consumers and discriminating in favor of the small user.

A small industrial consumer of egg coal recently called on the president of an anthracite producing company to inquire as to the prospect of getting 500 tons of his winter's requirements. He was told that he had not the slightest chance, that he was "out of luck," that in fact he had "had his chance" in some way and raises the question. The buyer mildly stated that he well knew that he was a "non-essential" but that during the war...
Today and Yesterday

NEW occasions bring new duties, and the mining engineer should be as vigilant of this as anyone. A great change has come over the mining industry in recent years. A few years ago the need for exploration dominated every other need. Every mining man in the coal regions of Pennsylvania and later of West Virginia and Kentucky was a geologist, and the residents of those sections were hardly, if at all, behind. Every farmer had coal land to sell, every lawyer and real estate man (they did not then term them realtors) had coal land to lease or dispose of, and every merchant had in mind making options on coal land or had already hit it cornered and for sale. The mining engineer’s intensive study of geology, consequently, not only solved everyday problems but gave him a standing in the community that he could capitalize.

The day of exploration is largely past. A little of the matter interest and need for coal geology remains and will always remain. There are still outcrops to be traced and drill holes to be bored; there are still a few unexplored areas in the more important fields; there are still possible extensions of old fields; there are waste and faults, but these matters do not stand where they once did as the leading problems of the engineer. It is a day not so much of exploration of doubtful, as of development of known, deposits.

In mining today we are no longer satisfied to use the natural forces of nature aided by mechanical appliances. The study of mechanical engineering therefore is the greatest need of the mining man. He no longer can satisfy himself with geodesics, with the geometry of the coal measures, the chemistry of mine gases, the physics of coal and dust, as was once his wont. He has now to delve and delve deeply into electricity; he has to attain a mechanical mind. He cannot safely let the industry move away from him.

For a while he may be able to regard his mechanical brethren as a man in an inferior branch of the service and “make away with it.” Or again, for a season he can hide his ignorance of electricity by relying on the advice and plans of the admiral of an electrical house. But let him not deceive himself; he cannot do it forever.

Let him study now when he has the opportunity; let him ask questions today, when ignorance of electrical lore is still regarded with tolerance; let him gain experience while the chance offers, or the time will come when so much has to be learned that a busy man cannot hope to acquire it and when his mind, no longer as retentive and flexible as in early years, will fail to grasp what is presented to it. The coming executive is going to be well booked on electrical methods. Are you hoping to become an executive or are you expecting to continue in that position? You cannot do it if indifference to such matters prevents you from studying electrical methods.

How Nicely They Do It

A PAPER from DuBois, Pa., contains the heading “Road Work Suffers as Back-to-Mine Move Grows” and describes how the men are leaving their labor on the high roads to work at the mines. The road contractors, if they ever give a passing thought to the irregular way in which their industry functions, need not worry about their men being idle in the winter. The mines will take care of them at good pay, which is about three times as large as the contractors on road work are offering.

The reason why the employees of road contractors do not have an idle season is that they are willing to work at low wages and so can readily drift from one kind of a job to another. If the coal mines paid $2.80 a day to their men they would be deserted in slack periods, and the miner, finding work elsewhere, would make no complaint about the layoff. But because he gets about $8 a day he can find no place to go where he can do as well. He is therefore disposed to stay, working part time at the larger sum and making as much as if he worked steadily at the smaller. Thus he continues his residence around the mines and finds fault with the operator if for several days each week the working whistle is not blown.

If wages dropped at mine workings to $2.80 per day the last would be heard about the overmanning of the industry. Why is it overmanned? Because it pays best, because it is desirable work—cool in summer, warm in winter—also because, unlike most rough work, it is reasonably steady. Most routabouts have to spend several evenings each month hunting for jobs. They are laid off for every rain and sometimes do not have a chance to return to work till the roads dry. They do well to average an even 200 days a year and then only by eternal watchfulness for odd jobs.

The mine appears to serve as a good opportunity for reasonably steady labor at a high rate. With the present pay the men cannot be driven away from the mines, but should it fall to road-making levels it would be easy enough to wash one’s hands of one’s men. They would be gone within a day after the work stopped, for then any other job would be at least as remunerative even if not as reliable or as easy as coal mining. The mine workers are always protesting to the public of their hardships, their great hardships—low pay, bad working conditions, irregular work, w'ood charges, house rent, doctor and hospital check-offs—but the overmanning of the industry proves that they stay, that once they have joined the coal-digging confraternity they will not leave the mines. By this sign they surely make a more conclusive answer to their allegations than anything the operators can say.
Detection of Waste of Time
And Current at
An Anthracite Colliery

BY D. C. ASHMEAD
Kingston, Pa.

Few Know Just How Many Hours Their Breaker or Tipple Runs—John Conlon Colliery Measures Idle Time with a Recorder—Also Checks Current Used by Hoists—Care in Detecting Grounds

NEAR the city of Wilkes-Barre is the independent colliery of John Conlon with an output of about 300 tons a day. It is supervised directly by members of the Conlon family with a supervision probably more careful and competent than is customary with a mine of such an output.

The Conlons have long recognized that one of the greatest sources of loss in operation arises from broken time during working hours. Delays in one section of the operation often tie up the whole plant, for nearly all the plant operations are dependent, not only ultimately but almost immediately, on one another. Without storage-provision division of labor inevitably produces great loss of time and in mining operations each department must do its work with unerring schedule or almost all other departments will be obliged to wait for the slow department to come up to the mark, thus entailing considerable monetary loss.

Frequently the length of time wasted is far greater than is recognized. Delays are vexatious and we rather like to minimize them when estimating their importance. Because their length is rarely a matter of record, few steps are taken to reduce their number and duration. Hoists are not used to their full capacity, locomotives stand idle, breakers fail to operate. Everywhere are men and machinery on the job yet without doing work of value, adding to the payroll but not to the product.

To detect the wasted time in their collieries the Conlons purchased a number of Servis Recorders. The interior of one of these simple recorders is shown in Fig. 2. The recorder consists in part of a clock to which is attached a recording chart. This paper is graduated to show 10-minute periods. In the other half of the recorder is a pendulum to which a pencil is attached. The recorder is hung vertically, so that the

FIG. 1—RECORDERS SHOWING WHEN PLANT WORKS
Illustration is of interior of instrument. The right half is a paper chart which is revolved by clockwork, it rotates once in 24 hours. On the left is a pendulum in the form of a half disk, and shows turned on one side. When the recorder is properly hung, the pendulum swings with the vibration of the breaker or mechanism to which it is attached. A pencil makes a mark on the chart whenever vibrations are to be recorded.

*Anthracite Field Editor, Coal Age.
North—Headpiece shows the John Conlon Colliery, near Wilkes-Barre, Pa. This is a long established, independent operation with offices at Hudson, Pa. About 100 men are employed.

FIG. 2—CHART SHOWING WHEN BREAKER WORKED
From this chart the actual time of any delay and its length can be ascertained. When operations are to be made and various laborious, this story is already half told. From this chart it is known the colliery can be found and the problem understood. What suggests why and why some time was allowed can be ascertained
The pendulum swings freely. The case is then closed and locked. As the machinery or the breaker on which the recorder rests vibrates the pendulum swings, making with each swing a mark on the recording dial. When there is no movement because the machinery or the breaker is also no mark appears on the dial. In consequence, the exact time during which the machinery is working is registered on the revolving plate. Every day these dials are collected and the time of full operation or its converse, the time of idleness, is measured.

Not only is the full time of operating shown but each stop also, and it is possible therefore to check up the entire operation of the breaker or motor by inquiring into the reasons for the particular shutdown. Finding out the reasons of delay, some rearrangements may be made that will make such delays unnecessary in the future. Just the manner in which the records of this meter are made and used is shown in Figs. 2, 3 and 4. The first shows the actual performance of the breaker in one of its regular runs, the second shows how the results are tabulated day by day and the third expresses by means of a curve the operation of the breaker. By comparing the hours worked by the breaker and the number of cars loaded each day it is easy to determine if the breaker when working is at all times equally efficient.

So much for saving of time; now for savings of current. Two men employed to do the same work under precisely the same conditions will do it with entirely different expenditures of current. One man will be more efficient than another, and even where the efficiency of the least efficient has hitherto satisfied the management and is above the average, comparison with officials and the man himself to see how his efficiency can be raised.

At this mine a hoist is installed which raises the coal through a short slope up a plane to the top of the breaker (headpiece). It was decided that the efficiency of the men operating the hoist should be tested. A Westinghouse graphic meter (Fig. 5), showing the current used, was hooked to the line. This was done without the engineer being informed. From the two charts thus obtained, parts of which are shown in this article, one engineer can be seen to be considerably more efficient than the other. In the first chart the engineer is shown to have used at times as much as 240 amperes and without did not bring his loads as rapidly to the surface. It is evident that he threw the controller fully on when starting. On the other the other engineer used barely 160 amperes as a maximum and in most cases less than 144 amperes, and yet his hoisting time was shorter.

From these diagrams it can be readily deduced, therefore, that one engineer got out more coal with less power and in less time than the second engineer. Evidently with proper instruction the less efficient man could learn to do his work as well as the other man; if not he could be given work where his lack of cooperation or skill would not so greatly injure the company.

The use of electric power without the performance of work is one of the most unnecessary wastes of power around a mine. This type of waste is caused by short-circuits and grounding. At the Conlon Colliery much care is taken to prevent loss of power due to grounding, and for this the simple device illustrated diagrammatically in Fig. 8 is shown. A bank of four lamps (shown also in Fig. 9) connected in series is placed above the switchboard. Lamp No. 1 is connected to wire No. 1 from the transformer and lamp No. 4 with wire No. 3. A connection is made from the ground to a Westinghouse voltage relay. Another terminal of this relay is connected to a point between lamps Nos. 2 and 3. The other two terminals are connected with the leads to wires Nos. 1 and 3. One of these connections is in series with the no-voltage release coil on the main switchboard.

If there are no grounds on any of the lines, then the voltage of the ground lead is 186 volts. An increase
FIGS. 6 AND 7—RECORDS OF TWO MEN HOISTING
SIMILAR LOADS ON INCLINE

The engineer whose power consumption was recorded in the upper chart, Fig. 6, used little power and, as can be seen by the frequency and regularity of his peaks, made many runs per hour. The second man was a current waster and did not land as many trips as the first man. He evidently needed instruction.

of potential of 4 volts in this ground will open the contacts on the relay and release the circuit breaker, on whichever line it happens to be.

In case of a ground in line No. 1, lamps Nos. 1 and 2 will light up; if in line No. 3, lamps Nos. 3 and 4 will light up, but if the ground is in line No. 2 all the lamps will burn brightly, in all cases increasing the voltage, which when normal is at 186. When the voltage rises

in the ground above 186, the relay will open, breaking the circuit in the series coil on the circuit breakers and opening the circuit.

Having a system of this kind it is possible to detect instantly whether there is a ground in any of the circuits. Knowing this the electrician can locate the leak and make the needed repairs. It also tells him when the repairs have been made satisfactorily. When the lines have no grounds the lamps burn with a dull-red light.

By being able instantly to detect losses due to grounds and to ascertain what power is lost in electric machinery by inefficient operation this company has been able to keep its power bill down to about 9c. per ton of coal mined. No steam is produced at this mine. All the power is electric, and therefore with the proper testing apparatus and a man who understands its proper use large savings have been made. There are many

FIG. 8—ADJUNCT TO SWITCHBOARD LOCATES LEAKS

Short-circuits and grounding cause many current losses preventing the power being used for useful purposes. To that device the Cordon colliery gives much credit for lowering the cost of current to 9c. per ton.

FIG. 9—WIRING OF LEAKAGE DETECTOR

In case of a ground in line No. 1, lamps Nos. 1 and 2 will light up. If one occurs in line No. 3, Lamps Nos. 3 and 4 will light up but if the ground is in No. 2, all the lamps will burn brightly, in all cases increasing the voltage which, when normal, is at 186.

When the voltage rises in the ground above 186 the relay will open, breaking the circuit in the series coil which forms part of the circuit breaker and opening the circuit.

operations in the anthracite region which show a power cost running many times the figure given here. For anthracite unfortunately cannot be mined with as small a power consumption as most of the bituminous coal of this country.

STUDY OF THE PHENOMENA of coal-dust explosions has been continued by the U. S. Bureau of Mines during the present year in a specially designed steel laboratory gallery. This gallery is 10 in. in diameter and 14 ft. long, and is provided with a bresleth that has a small cannon and relief valves. Dust under test is injected into the gallery at points spaced 1 ft. apart throughout the length of the gallery and compressed air is used for projecting the dust.

A study was made of the interval between the time of projecting the dust and firing the cannon and the influence of the temperature and humidity of the air within and surrounding the gallery was determined. More than 20 tests have been conducted with standard Pittsburgh coal dust, in a part of which inert shale dust was used to limit or prevent the propagation of flames. The gallery has been equipped with the necessary pipes and meters to admit of the use of natural gas for the study of the influence of low percentages of gas on the explosibility of coal dusts. A number of dust samples from industrial plants and from coal mines have been tested in the gallery in connection with explosive hazard reports made by field engineers of the bureau.
Problems of Bituminous Coal Washing and Measures Now Being Taken for Their Solution

Review of Washery Methods—Trouble with Wet Coal in By-product Coking—Why Wash Fine Coal?—Preferably Screen It Out, Wash the Course and Mix Washed Coal with Unwashed Fines

BY G. R. DELAMATER
Harrisburg, Pa.

I N THE last three or four years only a very few coal washeries have been constructed in the United States and it is not difficult to find the reason for this fact. During the past twenty years many washeries have been built employing the wet process with a wide variation in the method of its application. It would seem that a marked prejudice against this process in general is now held by practically all who are engaged in the washing and preparation of bituminous coal.

Until about ten years ago the jig in various forms was almost the only type of concentrator employed in the washing of bituminous coal. An exception was the Campbellumping table, which has been installed in several of the largest washeries in the country. That the results obtained were quite satisfactory in many instances is proved by the recent construction of a second plant for the Cambria Steel Co. at Johnstown, Pa., which is one of the few washeries built in the last four years. Some effort has been made to introduce trough and drag washers, but these proved unsatisfactory and attracted but scant attention.

Wet concentrating tables of various types, although extensively employed in ore-dressing plants, had never been used in this country for the preparation of coal, as it was quite generally felt that their capacity, considering the coal involved, made them impracticable for such use. Furthermore, their employment in ore concentration was confined to the small-mesh material, jiggling of the larger sizes being the usual practice. We should like to see a field generally conceded to be well advanced in the art of concentration had the effort of fixing the concentrating table in the minds of coal men as being unsuitable for treatment of the coarse sizes.

STUD CANNIN FUEL CO. INTRODUCES WET TABLES

The Stud Cannin Fuel Co. of Davisen, N. M., probably was the first firm to attempt development of a wet table for the concentration of coal, both small-mesh material and some of the larger sizes. The results obtained attracted the attention of manufacturers of wet concentration tables and resulted in the development of several new types suitable for coal treatment.

Possibly the next development of importance was the introduction of the Farr thickeners to replace the old drag-conveyor sludge-tank equipment used as the first step in the reclamation of the washed coal from the water. Closely following this came the introduction almost simultaneously of the Wendell and the Elmore centrifugal continuous washers.

Rapid replacement of the beehive by the byproduct coke oven imposed an even greater need for improvement in coal-cleaning methods. For example, exceedingly wet coal charged to the beehive oven was not deemed objectionable and at times was even considered desirable, but coal with a moisture content in excess of 8 per cent charged to a byproduct oven usually resulted in a loosening of the carbon deposit on the walls of the cooking chamber, thus creating leakages which seriously affected the yield of byproducts. It was found that in some instances the centrifugal drier so successfully overcame this difficulty that it was no longer necessary to store the washed coal in draining bins before it was charged. It should by no means be assumed, however, that the centrifugal drier always can be used successfully, as many conditions may be encountered where it would not be at all suitable.

BONSON TABLE GAVE QUITE PROMISING RESULTS

Various methods of dry concentration developed but probably the first to attract serious attention was the Bonson dry concentrating table. Promising results were obtained in its first application to coal, but, unfortunately, those in control of this process failed to co-operate with men of the coal industry thoroughly familiar with the requirements and conditions to be met. As a result the improved table failed to accomplish results equal to those achieved with the original device, and interest in this process died out completely.

The next development of note was the introduction of the “Chance Process” by the T. M. Chance Co. of Philadelphia, Pa. In this process sand is introduced into the water in a suitable container and by agitation is maintained in suspension, thus creating a liquid of high specific gravity. Separation of the impurities from the coal is accomplished in a manner similar to that employed in the laboratory float-and-sink test, where zinc or calcium chloride is used to produce a liquid of the desired specific gravity.

It would be well to mention here that some ten or twelve years ago J. R. Campbell, chief chemist of the H. C. Frick Coke Co., patented and experimented on a commercial scale with a calcium-chloride process, but while the separations were exceedingly satisfactory other objectionable features developed which caused the abandonment of this effort.

When the T. M. Chance Co. started development of their process on a commercial scale in the Pennsylvania anthracite field gratifying results were obtained; but it was found that with the rectangular tank which they were using they could not obtain a constantly consistent separation of the impurities from the coal. Upon adopting the old and well-known inverted Robinson cone tank, however, this trouble was overcome.

H. R. Conklin has under development at one of the breakers of the Hudson Coal Co. at Scranton, Pa., a process quite similar to the Chance method except that in place of a coarse granular sand a fine material is
used, preferably of high specific gravity and ground to pass a 200-mesh sieve. This process necessitates the employment of a Dorr thickener to reclaim the solids by which the desired gravity of the liquid is maintained. This process has shown some highly encouraging results. Its development and introduction is now controlled by the J. V. N. Dorr Co., of New York. No effort has as yet been made to apply either of these processes to the cleaning of bituminous coal on a commercial scale.

Coincident with these developments came the introduction of the Trent process. This is a radical departure from all other methods employed in the cleaning of coal. By agitation the pulverized coal is mixed with water and a suitable oil. The oil has an affinity for the carbon but not for the non-combustible particles. An amalgamation of the oil and carbon results. The ash reductions accomplished are quite remarkable as compared with results obtained by other systems of concentration. Some difference of opinion exists concerning the reliability of this process for the reduction of sulphur, also as to its practicability for cleaning coal to be used in the manufacture of metallurgical coke.

**Diy Tables to Be Operated at McComas**

Almost simultaneously with the introduction of these various processes Sutton, Steele & Steele, of Dallas, Tex., introduced a dry concentration table. The general apathy existing with regard to any wet process resulted in almost immediate interest being taken in this new table. A plant was built and put into operation in Oklahoma, another in New Mexico and testing plants were constructed both at Dallas, Tex., and at Welch, W. Va. Finally, a contract was given for a completely equipped plant to be built at McComas, W. Va., for the American Coal Co. This should be ready for operation about Jan. 1, 1923.

The present inactivity in coal-washery construction probably arises from the uncertainty in the minds of coal men as to whether a more satisfactory dry process has at last been found. Many coal companies are ready to contract for coal-cleaning plants but are patiently waiting for conclusive proof of the efficacy of the dry process through its additional commercial application before deciding between wet and dry processes for their own operations.

Within the past year two additional dry processes have appeared, one known as the Seagrave dry concentration table, now controlled by Walter J. Sykes, of Danville, Ill., and the other known as the Stebbins dry concentration table, being introduced to the coal field by Briscoe & Stahl, of Detroit, Mich.

While much is claimed for the Seagrave table, based on results said to have been obtained in ore concentration, no machine yet has been built and tested on coal, and therefore its value to this industry is unknown. The Stebbins table also is a Western development. It is reported that this table is being quite extensively and successfully used in ore and borax concentration. Testing and development has been under way at Detroit on both bituminous and anthracite coal with gratifying results. This table doubtless will be heard from in the future.

At present, therefore, the situation seems to be one of uncertainty, first because of dissatisfaction with old wet concentration methods and second on account of the incomplete development of both the new wet and the dry processes. Much of the dissatisfaction with any wet process arises not so much from any inability to accomplish satisfactory reductions in ash and sulphur content as from difficulty encountered in dewatering the washed coal, also from attendant coal losses and undesirable operating conditions resulting from wet coal of the smaller sizes.

The use of the thickener greatly diminishes coal losses in the smaller sizes, yet a question may be raised as to its suitability to coal-washing work as compared to that of the old drag-chain sludge-tank method on account of the moisture content of the reclaimed coal. As a water clarifier the thickener is far superior to the sludge tank, but the reclaimed coal product is in a fluid state while that of the sludge tank is a wet solid and in better condition for intermixing without further dewatering with the rest of the coal product of the plant.

By simplifying the equipment needed in wet concentration and by reducing the number of the operations needed, the objection to the use of water for that purpose will be removed, especially if the dewatering difficulties and coal losses can be eliminated. Granting this, wet concentration may yet hold a most important place in the cleaning of coal.

I have purposely neglected to mention another development introduced by myself about four years ago in which the screening of the coal plays an important part. Before taking up the details of this process I wish to emphasize the importance of the screen in the future of coal concentration. In many instances it will be found that sufficient ash-and-sulphur reduction may be accomplished if the coarse coal only is washed, thus necessitating the screening out of the smaller sizes before the washing process is begun.

With dry concentration close sizing of the coal has been found advantageous. Scant success has resulted from efforts made to dry-concentrate coal below 16 mesh, and the difficulties and expense encountered in eliminating obnoxious dust where attempt is made to clean such sizes make dry concentration of fines of doubtful value.

**Jig for Lump, Air for Slack, Use Dust Raw?**

While fair success is reported in dry concentration of the larger sizes it has yet to be proved that such sizes can be more cheaply cleaned in this manner than by a jig. In many respects the intermediate sizes would seem to be the legitimate field for the dry process. While it may ultimately appear that some coals can be more efficiently and cheaply cleaned by wet processes and others by dry, it is more than probable that a combination of the two will suit the majority of cases. Thus the screen is sure to enter the coal-cleaning problems of the future.

Prior to the introduction of screening equipment of a type wherein the screen cloth is electrically vibrated at great rapidity without movement of the heavy frame of the machine, the cost of screening coal in large quantity and through comparatively small mesh made consideration of such a process prohibitive. The data presented herein, however, will show the possibilities of the use of this type of screening equipment.

Attention is particularly called to the fact that instead of washing all the coal, the fines were screened out ahead of the washery and only the oversize from the screens treated. The unwashed fine material being bypassed and mixed with the washed oversize coal.

Instead of this resulting in a higher ash and sulphur...
not only applied to coals of the Eastern states but also those of the Rocky Mountain district. Later experiences with coal from various parts of the country and from the Argentine Republic and Alaska have brought this situation more and more to my attention, with the result that the tests were made, the results of which will be set forth in a succeeding article. I have also recently made a study of this situation in the Alabama field. David Hancock, consulting engineer and chemist, of Birmingham, Ala., has made extensive studies of the result of which quite conclusively prove this contention as regards much of the coal in that district. He has devised a special chart upon which are graphically shown in a surprisingly effective manner the results of float-and-sink tests made upon the raw coal, and the washed coal and refuse products of various coal washeries in that district. Others in that field also have proved by similar investigations that it would be advantageous to bypass the fine coal around the washery.

Sandstone Dykes Through Whitehaven Coal

As usually interpreted a dyke is an igneous intrusion passing across the geological strata. Thus defined a sandstone dyke is an absurdity. The material could not be of igneous origin but the crack in which the sand was found might have been formed by an earthquake and so be due directly to volcanic action. If, then, the term may be permitted, dykes of sandstone have been found in the coal beds of Whitehaven, Cumberland, England.

They were described at a meeting of the British Association for the Advancement of Science by Professor A. Gilligan. The Whitehaven sandstones, extensively exposed in the cliffs along the sea front, show no such signs of cracks and sand fillings. The sandstone probably rests somewhat unconformably on the Lower Productive Coal Measures, and it is believed that the earthquake action occurred shortly after the period of deposition of the Lower Coal Measures and not later. Only in one case is the crack a true fault, and then the displacement is only 2 ft.

The average width of the dykes is from 2 to 4 in., but sometimes they increase to 10 in. or dwindle down to mere films. The dykes are sometimes split. Veins of calcite and barite traverse the dykes longitudinally and transversely and lenticles of shale and coal also are of frequent occurrence in some portions of the dykes. Professor Gilligan said that he believed that the dykes were filled by deposition from the unconsolidated sands that ultimately formed the Whitehaven sandstone. In the discussion Professor Kendall mentioned one or two examples of earthquake dykes which he asserted had been filled by sand forced up from below.

For the Purpose of Determining Specifications for the construction of concrete stoppings in coal mines that may be developed on the public lands of the United States, the U. S. Bureau of Mines, in cooperation with the Bureau of Standards, is constructing in the experimental mine at Brueton, Pa., a chamber in which it is proposed to conduct tests to determine the strength of reinforced concrete stoppings when subjected to a pressure up to 50 lb. per square inch, suddenly applied. The tests require the construction of a permanent stopping, which was completed at the close of the fiscal year, and a test stopping, which is under construction in accordance with a design prepared by the Bureau of Standards. The work is under the personal direction of J. W. Paul, chief coal mining engineer, assisted by H. C. Howarth.
Crested Butte Field Produces Four Kinds of Coal From a Territory Five Miles Wide

Anthracite and Three Grades of Bituminous Coal Are Mined in This Cold Timber-Line Region—Lava Flows Have Maturated the Coal, Leaving Three Per Cent of Volatile Matter

BY CHARLES M. SCHLOSS
Denver, Colo.

NOWHERE, perhaps, in the world can a greater variety of coal be found in as small an area as in the Crested Butte field of central Colorado. Four kinds of coal, ranging from a bituminous of low rank to an anthracite of high rank, are all mined within a circular area five miles in diameter.

Crested Butte lies in the Elk Mountains on the western slope of the Colorado Rockies. The field is handicapped by its isolation and by the fact that all it produces and all it ships in must travel by a narrow-gage railroad and be transferred to or from standard-gage equipment. It prospers nevertheless, distributing its anthracite over the entire western half of the United States as well as north into British Columbia and south into Mexico. The transference point is Salida, on the Denver & Rio Grande Western R.R. Here the Rio Grande Southern narrow-gage road commences its 316-mile stretch to Crested Butte.

That region at its five plants mined in 1921 only 197,228 tons of coal, a little over 2 per cent of the total output of Colorado during that year, that output being 9,141,947 tons. The four coals mined are all high-grade coals. They are respectively non-coking bituminous, a bituminous making a strong coke, semi-anthracite and anthracite. They will analyze as in Table I.

<table>
<thead>
<tr>
<th>Type</th>
<th>Moisture</th>
<th>Volatile</th>
<th>Fixed</th>
<th>Ash</th>
<th>Unit Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-coking</td>
<td>5.52</td>
<td>34.64</td>
<td>56.89</td>
<td>3.45</td>
<td>11.25</td>
</tr>
<tr>
<td>Coking</td>
<td>2.46</td>
<td>48.41</td>
<td>45.30</td>
<td>3.51</td>
<td>14.01</td>
</tr>
<tr>
<td>Semi-anthracite</td>
<td>6.40</td>
<td>10.80</td>
<td>80.80</td>
<td>8.28</td>
<td>14.43</td>
</tr>
<tr>
<td>Anthracite</td>
<td>2.70</td>
<td>3.32</td>
<td>88.15</td>
<td>5.81</td>
<td>14.09</td>
</tr>
</tbody>
</table>

The non-coking coal is an excellent domestic fuel, the coking is the equal of any heavy-draft locomotive bituminous coal in the United States, and the anthracite fully equal to that of Pennsylvania. The latter has the advantage over the better known coal in that Eastern state in being much freer from dirt, rock and bone. It is, further, with one exception the only commercially developed anthracite west of Pennsylvania, the one exception being a small bed at Los Cerillos, N. M., near Albuquerque.

Because of its excellence, Crested Butte anthracite enjoys an unusually broad market, bounded by the Pacific Coast on the west, Mexico on the south, Kansas City and Omaha to the east, and Canada to the north. Some goes to Mexico, some to British Columbia; one car found its way as far north as Nome, Alaska. Denver consumes more than any other city, San Francisco is next, and Kansas City third. Kansas and Nebraska, however, are the large consumers.

The operators in the field have standardized on the following sizes: Nos. 1 and 2, 24 in. to 5 in.; Nos. 3 and 5, 14 in. to 23 in., and No. 6, 8 to 11 in. Nos. 1 and 2 are adapted for large domestic furnaces and open grates; Nos. 3 and 5, for base-burners, kitchen ranges, small domestic furnaces, and open grates; No. 6, for domestic furnaces with small openings in the grates, kitchen ranges, laundry stoves and for banking furnace and range fires. On the refuse piles of Crested Butte a third of a million tons of anthracite dust have accumulated. It is only in recent years that a market for this "carbon dust" has been found. Smelters manufacturing zinc oxide for paints find it a prime fuel and reduction agent.

To the one who seeks the why and wherefores of natural phenomena the Crested Butte field gives much material for investigation and study. Geologists basing their hypotheses on the presence of porphyry masses and eruptive mountains credit the variety of coal found here to a flow of eruptive rock emanating from the main range and covering much of the sedimentary strata. The intense heat of the incandescent liquid rock meta-
morphed the bituminous to anthracite wherever it came anywhere near the coal. No trace, however, of the lava flow remains; it has been entirely removed by erosion.

Due to various rock movements the coal beds are more or less irregular in thickness. Many local, but not serious, faults are present. The roof and floor are either sandstone or shale. The bituminous beds vary in thickness from 4 ft. to 16 ft., the anthracite from 2 ft. 6 in. to 4 ft. The coal beds are either horizontal or on a moderate pitch. Many props are used, but their cost is not high. They are cut on the hillsides around the mines.

The coal at Crested Butte was discovered in 1879. Lack of shipping facilities delayed exploitation until 1881, when, upon the advent of the railroad, the first bituminous mine was opened. This same property has been producing ever since—more than 40 years.

From an engineering or mining standpoint Crested Butte offers nothing extraordinary. Its methods and machinery are not unusual. Two of the mine openings are so much higher than the railroad that gravity planes are necessary to land the trips at the dumps. The remainder are at tipple level. One mine sank a shaft but later abandoned it and began taking coal from another bed through a slope; the other openings are either drifts or slightly pitching slopes; the steepest has an inclination of 7 deg. Two are gaseous and use electric lamps; open lamps are used in the others.

In 1921 two shortwall coal cutters cut all the machine coal—only 3,641 tons. Longwall advancing methods are successfully applied by one company, room-and-pillar by the remainder. The machines operate in room-and-pillar workings. In 1921 55,323 pounds of black powder were consumed, that being used more than any other explosive. However, 5,415 lb. of permissible and 4,650 lb. of dynamite also were used. Haulage motors are conspicuous by their entire absence. Mules and hoisting drums substitute for them. Coal washeries and cleaning plants, likewise, are not found. Some refuse is picked out at the faces and the remainder in the screening plants.

Old Ruby Anthracite Mine, Now Abandoned

Note the trees around the plant growing up to levels near the timber limit. Climate is so cold that Japanese, Greeks, Mexicans and negroes avoid it.

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Cable Cut by Rock from Bottom Shot Fires Crevice Gas

Ignition of Gas in Atmosphere Filling Longwall Face Fatally Burns Eighteen Men, Doing Hardly Any Damage in Mine of Canadian Collieries, Ltd.—Shot Said to Be Flameless—New Electrical Regulations

EXCELLENT as were the safety provisions at the No. 4 Mine of the Canadian Collieries (Dunsmuir), Ltd., at Cumberland, Vancouver Island, Canada, gas nevertheless collected in it and exploded on Aug. 30, killing eighteen men. A report made by George Wilkinson, former chief inspector of mines for British Columbia, who was given a special investigation commission by William Sloan, Minister of Mines, details the circumstances and gives advice as to the manner in which a repetition of such a disaster may be avoided. Of those fatally injured on this occasion only two were British, one being a Russian, six being Japanese and nine Chinese.

Briefly, Mr. Wilkinson finds that the source of the trouble was a flash, or open sparking, caused by an arc in the electric trailing cable at the socket used to connect this cable with the main electric circuit. This electric cable furnished the necessary power for the operation of a coal-cutting machine. The latter, a Sullivan alternating-current chain cutter, was of a type approved by the U. S. Bureau of Mines for use in gaseous mines.

NEW RULES FOR ELECTRICAL OPERATIONS

"After giving the matter careful consideration," says Mr. Wilkinson, "I would recommend the adoption of the following rules as part of the Coal Mines Regulation Act and would further suggest that the use of electricity be fully investigated by the Department of Mines, so that, if possible, definite conclusions may be reached as to the conditions under which the use of this power underground in coal mines may be permitted." The rules recommended are:

(1) The terminals of main feed lines in no case shall be located within 50 ft. of any coal face. (2) The current shall be cut off and the cables made dead in that vicinity when blasting, and the current shall not be switched on again until blasting is finished and the places are examined and pronounced safe and until the cables have been examined and found free from any defect. (3) All permanent electrical installations and transforming stations underground shall be made fireproof. (4) All switches and terminal connections shall be protected or enclosed so as to prevent persons coming accidentally into contact with them, to avoid danger from arcs or short-circuits resulting from fire or water. Where there may be risk of igniting gas, coal dust or other inflammables, all parts shall be so protected as to prevent open sparking. (5) All cables used underground shall be covered with insulating material, and, where high voltages are used, properly armored cables of standard thickness shall be provided. (6) All trailing cables shall be of properly armored construction whatever voltage is used.

Confidence is expressed that these rules will give an additional margin of safety. Rules 1, 2 and 3, it is asserted, should be put in force at once. As for Rules 4, 5 and 6, it probably will require three months to obtain and install the armored cables and other material required to make them effective. Mr. Sloan already has taken the action necessary to give these recommendations the effect of law. Orders in council have been passed and from Oct. 2 the rules enumerated have been a part of the Coal Mines Regulation Act. In the course of "general remarks" the report reads:

"It was a small explosion to take such a heavy toll and only a combination of circumstances made it do so. Occurring on a longwall face many men were in the path of the flame despite the short distance it traveled. As most of these men were working at the face and the seam was not thick, they could not escape. It is my opinion that if the current had been cut off the cable while the shot was being fired there would have been no explosion, and the fireboss erred in not requiring this to be done seeing that the terminals of the feed cables were in such close proximity to the shot.

"The terminals of the main feed line should not have been located so close to the face and fixed flameproof terminals should have been used. I do not mean to infer that an arc could not have been created if the terminal boxes had been installed, for if the blow had been of sufficient force to draw the bare end of the connecting cable clear of the insulated material an arc might nevertheless have been created, but the chances of this happening would have been decreased. It is questionable whether, owing to the quantity of gas liberated by the strata and the peculiar conditions existing, it would be wise to continue the use of electric mining machines in this section.

"Up to the present, because electric power has been used to only a limited extent in the mines of British Columbia, no specific regulations governing its use have been made. No doubt it will be used more extensively in the future as it already is in the coal mines of the United States and Great Britain.

DANGER LURKS IN THE CABLE CONNECTION

"These electric coal-cutting machines were installed by the Canadian Collieries (Dunsmuir), Ltd., nearly seven years ago, and the recent accident is the first recorded. Though the machines are approved by the U. S. Bureau of Mines, their safety must be judged by the weakest link, which in my opinion is the cable and especially that connection which is in close proximity to the working face.

"Edison electric safety lamps are used throughout the mine. The only exceptions were the few flame safety lamps used for testing purposes. No one was permitted to blast the coal in this section, and most of the bottom lifting was done without blasting. Explosives were used only in places where the rock was so hard that it could not be lifted without it. Even then only permissible explosives were used.

"It is hard for the higher officials and the inspector to watch every detail in a mine of this size. The terminals of the main lines are being moved from time to time, and this detail comes mainly under the control of the under officials. Enough electricians were employed to do this work, and an adequate number of certificated officials were employed to supervise it. In
addition to the large staff of register officials, the company employed a safety engineer who holds a first-class certificate of competency. He constantly patrols the works in an end, keeping up and pointing out any defects that may imperil accidents.

The floor has two main entries from which at a point 75 ft. from the portal two slopes diverge, No. 1 slope being 7,000 ft. long and running due north, and No. 2 slope being 9,000 ft. long and running north 45° east. Levies have been turned off the latter slope in an easterly and westerly direction.

The explosion occurred in what is known as the main剥离 district off No. 20, East Level, No. 2 slope. Part of the face is machine-quarried, the coal from that part being shoveled into cars by loaders. Another part was worked by hand miners. A trailing cable 200 ft. long connects the main circuit to the machine.

With reference to the condition of the mine as to gas, Mr. Wilkinson quotes the daily reports of firemen from Aug. 20 to Aug. 22, the inspectors' reports for the months of June, July and August, and the gas committee’s reports for the same three months. From these reports, he observes, it is plain that much gas is being made in this section of the mine, chiefly due to the roof ‘breaking through to a small seam of coal about a foot thick which lies about 15 ft. above.

The inspectors' reports show that explosive gas has been found in small quantities in No. 3 level and other places in that vicinity and that a 1-in. gas cap was obtained at points along the roof line, but that it was less as the lamp was lowered and probably did not exceed 1 in. from No. 3 level to the end of the longwall face. No explosive gas or gas caps have been reported below No. 3 level.

According to the length of the flame caps and their relation to percentage, as shown in a pamphlet issued by the Department of Mines, the above-mentioned caps of gas are equivalent to 2.08 per cent and 1.08 per cent respectively. The low explosive limit is 5.5 per cent. The withdrawal point as set by the Coal Mines Regulation Act is 2.0 per cent, leaving a margin of safety of 3 per cent. But the margin in this case appears to have been 3.42 per cent.

**Many Deaths but Little Explosive Violence**

Mr. Wilkinson states that conditions as he found them in his examination of Sept. 1 indicated that the mine had been little damaged by the explosion. He goes on to tell in detail of the conditions in each level visited. Regarding No. 1 slant off No. 4 level* he says:

"About a 1-in. gas cap was obtained in this place and an atmosphere that was explosive in a cavity on the right side of the roadway above the terminals of the main circuit of the electric power line. The trailing cable from the mining machine is connected with the main line at this point.

"A shot had been fired in the floor of this place, and it was almost simultaneously with the firing of this shot that the explosion occurred. A rock flying from the shot came in contact with the trailing cable with sufficient force to break the insulating and bare wire wire and had also torn one of the three connecting wires from the socket where they were connected with the main circuit. The shot had done its work well.

"No damage was done in this place but much dust was deposited on the timbers. The shotlighter with two of the workmen out of the place stood in No. 2 roadway off this slant about 30 ft. distant from the shot. They were slightly burned on the face, hands and arms. A car standing about 45 ft. from the face had not been moved. In No. 3 slant, No. 2 level, No. 1 place, there was no damage. A car was standing at the face and apparently had not been moved. The badly burned body of John Johnston, a miner, was found on the slant about 80 ft. back from the face.

"In No. 2 place, off No. 3 slant, No. 2 level, there were signs of considerable heat from flame. Two shovels were standing against a cog on the face line in this place. There had not been sufficient force to move them. In No. 3 slant a 5-ft. post was found with the saw in position for cutting. A car was standing undisturbed."

**IGNITION OF GAS RATHER THAN AN EXPLOSION**

Commenting on the evidence Mr. Wilkinson asserts that the outbreak may better be termed a burning of gas than an explosion. He adds: "It would appear as if the percentage of methane had bordered on the lower explosive limit. The flame passed up the longwall face with the air current. The shotlighter, who was standing 30 ft. below the point where he was firing the shot, was only slightly burned. E. McAdam, who was working in No. 1 level, about 700 ft. up the face, did not see any flame, consequently the distance it traveled along the longwall face did not exceed 750 ft."

It is stated that conditions point to No. 1 slant of No. 4 level as being the point of ignition. It was in this place that a shot was fired in the bottom, as described. The roof in the place is broken and full of slips and crevices, and there is a cavity which has a length of 8 ft., a width of about 1/2 ft. and a height above the roof line of about 12 ft. Fissures and crevices extend back into the gob; to what distance and height is unknown. A fault with an approximate downward displacement of 3 ft. had been crossed by the place above this. It had run out before it reached this place, but it extended for some distance in the opposite direction. This resulted in a considerable area of exposed roof being badly broken, and no doubt the breaks in this roof continued upward to the small seam which overlies the one being worked. The crevices made by these breaks would provide a large storage space for methane, as the ventilating current could not be diverted to clear them. This gas also would be out of reach of anyone testing, as a safety lamp could not be got into the crevices.

Small quantities of explosive gas had been found in several places on the return side of No. 1 slant for some time prior to the explosion. This being so it is not safe to presume that the crevices higher up, which could not be examined because of their inaccessibility, also contained methane. The distance traveled by the flame was not great, and it died out after passing the working places in the disturbed area, showing that there was lack of explosive material elsewhere.

Commenting further on the cause of ignition it is stated that the main three-phase circuit was carried up No. 1 slant, No. 4 level, to a point approximately 16 ft. from the coal face and about 4 ft. from the end of the bottom lifting. The top cable was about 1.7 ft. below the roof line and the bottom of the cavity. The lower cable was about 3 ft. above the top of the rock to be lifted. Mr. Wilkinson speaks again of the break-
ing of the wire by flying rock following the firing of a shot and asserts that there must have been considerable flash from the arc so created. The break occurred only about 2 ft. from the cavity.

There were only two possible sources of ignition; one, the arcing of the electric circuit, and the other, flame from the explosive in the shot. The shot was a good one, according to Mr. Wilkinson, and the chances that any flame resulted are remote. It was some 8 ft. from the cavity, whereas the junction point of the trailing cable was only about 2 ft. distant. He adds: "From conditions as seen after the explosion I have to conclude that actual ignition must have been from flame or sparking from the electric wires."

References are made in the report to the evidence of the fireboss at the inquest to the effect that he had carefully examined the place before firing the shot and found no gas and also that he had examined the cavity in the roof with similar results. Mr. Wilkinson expresses doubts of this. It is possible, he says, that this was done, and that there was a change between the time of examination and the firing of the shot. However, assuming that the cavity was clear, so far as could be ascertained by the fireboss, the crevices above it no doubt contained gas.

On June 26, 22,000 cu.ft. of air were provided for the use of sixty-two men and eight mules; on July 25, 20,000 cu.ft. were supplied, and on Aug. 11, 25,000 cu.ft. were circulated for the same number of men and mules. The amount passing is nearly three times that required by the Coal Mines Regulation Act under normal conditions, according to Inspector Jackson's reports. Since the installation of a booster fan, electrically driven, for augmenting the ventilation the quantity passing in this district has been increased some 6,000 cu.ft. per minute.

Officials of the Canadian Collieries are said to have been faced with unusual difficulties in the ventilation of the mine, which is of large extent, having been operated for thirty years or more. Large extraction of pillar areas in the earlier days of operation, without any thought for the future, has made many difficult problems which the present-day management is endeavoring to solve. Thomas Graham, the superintendent, and his staff have made many improvements in the past five years. Among these are "the building of permanent stoppings with a gunite finish on main airways practically throughout the mine, the installation of a second fan of the Sirocco double-inlet reversible type with a rated capacity of 200,000 cu.ft. per minute against a 6-in. water gage and the construction of a new and separate return airway through the old works for practically the whole length of the slope."

Work Both Wood and Metal on One Machine

ONE of the “side issues” of every coal mine—one of those things that contribute nothing directly to the extraction of coal yet without which little coal would be produced—is the mine shop. In the old days this was a blacksmith shop pure and simple—a place where mules were shod, picks sharpened and drills and augers dressed. With the passage of years, however, the equipment of the mine has changed and similarly the needs of the shop. The electric locomotive, the coal cutter and various mechanical appliances of a similar nature necessitate a type of repair impossible with only forge, anvil and possibly hand drill press.

Of all the machine tools yet invented it is well recognized that the lathe, being the most flexible, possesses the greatest possibilities. American manufacturers have developed this machine to a high state of perfection; that is, they have developed many special lathes adapted to special uses. In the mine shop, however, particularly if this shop be small, the special tool is the type to be sedulously avoided. On the contrary, the kind of lathe most to be desired is an “all around” machine or what might be termed a jobbing lathe—that is, one upon which a great variety of operations may be performed without its being specially designed or adapted for any one in particular.

In the accompanying illustration is shown a lathe recently placed on the market and well adapted to the small shop having a variety of work to perform. This lathe is designed for turning either wood or metal and is made rigid enough to withstand the possible high-speed vibration of the former and the heavy cuts of the latter.

Possibly of most interest to mining men, however, is the large number of attachments with which this machine may be provided. For metal working these include grinders, buffers, millers, gear cutters, etc., and for woodworking they embrace sanders, grinders, buffers, polishers, bandsaws, jig saws, jointers, planers, saw tables, mortisers and the like. Of course, the procurable equipment includes raising blocks, a compound rest and a turret. Many others also are available, built especially to fit this machine.

Thus it will be seen that this machine is adapted to the performance of many operations. The attachments, such, for instance, as the band saw, take up far less floor space than would separate machines performing the same service. When not in use these may be taken off and set to one side out of the way. This machine is being built and marketed by the Little Giant Co. of Mankato, Minn.

![Diagram of lathe](image-url)
Huntington Show Suggests Modern Ways of Reducing Coal Cost—II

Abrasive for Keeping Tires in Condition—Self-Renewing Water-Softening Material—Means of Ridding Mine Towns of Typhoid—Bucket Conveyors—Helical Gears

In an article regarding the Huntington Coal and Industrial Exposition, Sept. 15-23, appearing in Coal Age last week, the wide, low, spacious mine cars of the West Virginia mining region as shown at several booths were described as well as an electric rivet heater and a mine hoist of large rope capacity.

At another booth was an exhibit of "feralum," the substance which, set in a brake wheel, wears off false flanges and so makes it unnecessary to take the wheels off their axles, to turn down the tires and replace the wheels, to lay off mine locomotives temporarily while this work is being done, and to renew shoes. Moreover, wear and tear on frogs and switches are prevented by this grinding, as also the derailments that are the result of false flanging. The cutting of fishplate bonds is avoided and electric welded bonds if attached to the upper part of the rail are protected from injury.

When the brake shoe with abrasive material imbedded in it has ground down the false flange, the body of the shoe that has no cutting abrasive rests on the main portion of the wheel, the part that runs on the rail and is worn by traction and sparking, and the cutting substantially ceases except as much as is necessary to keep the wheels true. Abrasive shoes are put also on new wheels to prevent them from getting out of shape. The keeping of false flanges off tires saves the rail surfaces from much wear.

Interesting also was the exhibit of the Permutit Co. Permutit is a zeolite (so called because it intumesces or acts so rapidly as to be said to boil when acting on the hardness in water). It is a sodium aluminum silicate that exchanges its sodium for lime or magnesia when those elements come in contact with it in the form of the hardness in water. It has the advantage that it can be regenerated by passing through it common brine (sodium-chloride solution). In consequence when permutit is used to soften water before its introduction into the boiler of feedwater heater, the chemical after change need not be thrown away but can be used again and again after it has been regenerated by brine. The regeneration cycle is ordinarily arranged to take place at night, when the plants are closed, or two softeners are placed in parallel to give a 24-hour continuous serv-
as a softener of permanent hardness, cannot compete in cost with lime as a means of removing temporary hardness. Therefore the best practice is often to use lime for the latter and Permutit for the former. Whether to do so is a matter for expert determination.

The Kaustine Co., Inc., exhibited its line of sanitary products and here it may be said that one cannot be favorably impressed with the sanitary conditions in mining villages with the houses perched often above one another and sewage seeping down from the imperfect vaults now in general constructed. The evil is perhaps not painfully apparent. It takes a medical man to realize it. There has been little objection made by the residents of mining villages, though they are the persons subjected to the evil effects just described. Still, many mine operators have sensed the dangers of seepage and flies and wondered whether they could not make their village more typhoid-proof.

I am told that the owners of many mining plants in West Virginia are not only aware of the danger but are
All the illustrations shown are for single units, but multiple units are provided where these are desirable for schools, stores, bathhouses, churches, assembly rooms, ballrooms and like places.

Coal soda has a demineralizing effect on galvanized vessels, so these are made of Armco iron, which is 99.84 per cent pure. This is covered with an enamel that is unaffected, it is said, by acids, alkalis or the elements. The top of the tank is fitted with a revolving trap which serves to keep the tank reasonably tight, but the nature of the contents after reaction by the caustic soda renders this quality less necessary. In one illustration will be seen the agitating paddles which are set in motion automatically by the closing of the lid. Where sewers are laid throughout the village and the sewage is conducted to a central point septic tanks are used instead of chemical tanks.

The Egyptian Iron Works exhibited an eccentric having instead of the usual eye a self-acting ball. This eccentric is intended for use with shaker screens. With such a connection between the shaft and the screen no harm results if the eccentric bearings are not in alignment. The ball forms a joint so truly universal that no ordinary misalignment can bring improper stress on the eccentric.

Both the Hyatt and Timken roller bearings were well represented in the Huntington show both directly and in the use of bearings for mine cars. The Timken Roller Bearing Co. lays stress on the ability to take up wear in the bearings while eliminating that in the running gear.

The Joy Machine Co. showed a full-sized loading machine which loaded coal all day long. The Westinghouse Electric & Manufacturing Co. had a bar-steel conductor-cable-reel locomotive running on tracks and both the Westinghouse and the General Electric Co. had an exhibition of their automatic substations equipment.

A. Leasen & Sons Rope Co. had a model illustrating its equipment at the mines of the Bradshaw Coal Co. at Bradshaw, W. Va., on the Dry Fork Branch of the Norfolk & Western R.R. The coal is 600 ft. above the railroad, and the point nearest the railroad is 1,200 ft. distant therefrom. This company had been using a surface incline to reach the bottom of the hill and mules to haul the cars over the Dry Fork of the Tug River. The rope is supported only at the ends and it has a rated capacity of 125 tons per hour, or 1,000 tons per day of eight hours. However, one man can readily lower 50 per cent more and do it safely. The span is 1,320 ft. and the fall 380 ft., the cost for operation being approximately 1c. per ton.

The R. D. Nuttall Co. had a booth where were displayed the helical gear reduction units by which continuity of contact, reduction of noise and vibration are attained. With such a gear the load is transferred from the pinion teeth to the gear teeth progressively, gradually and without shock regardless of how badly they are worn. They do not drive by a series of impacts, as is inherently the case when an ordinary pinion drives a spur gear. It is asserted that the wear being uniform permits a new pinion to be applied to a worn gear with satisfactory results. Compared with ordinary spur gearing the teeth have a greater rolling contact and are provided with a large quantity of metal at their roots. Unlike a herringbone gear the pinion can float across the main gear without injury. These gears are suited for many purposes, among them for driving hoists and pumps. At the Carnegie Coal Co.'s plant at Atlasburg, Pa., a helical gear of this kind has been installed for driving a 12-ft. exhaust mine fan, replacing the steam drive.

The Nuttall firm also showed a trolley and pole head for holding it. This trolley is provided with a centering spring that brings the wheel back to its normal position. Instead of the pole head covering the sides of the pole it covers the top and bottom. In consequence when the trolley escapes from the trolley wire and hits against an offset in the roof or on the edges of cross beams, the blow falls on the steel fork and not against the wood of the pole. This prevents it from being shattered. The cable is firmly clamped to a grooved plate, using bolts instead of set screws. The motorman is almost sure to have a wrench with which he can tighten up the connection should that be necessary, yet is quite likely not to be provided with the wherewithal to tighten setscrews where these are used to clamp the connections to the trolley-pole head.

AT THE PITTSBURGH (Pa.) experiment station of the U. S. Bureau of Mines, J. D. Davis, fuels chemist, and J. F. Byrne, research fellow, Carnegie Institute of Technology, have investigated the relative tendency of Pennsylvania coals to ignite spontaneously. The research consisted largely in the development of methods for the determination of the comparative sensitivity of coals to oxygen.
Where Coal-Mining Practice Could Be Materially Improved

Examination Started Too Long Before Men Enter the Mine for Work—Practice in the North of England

—Economy in Handling Coal at the Working Face

Born in England and starting work at the early age of 13 years, for ten years I labored there as a miner's helper and doing various kinds of work about the mine, before deciding to come to this country.

Looking back over that early experience in England and judging it by what I have seen in American mines, I find there is much to be learned by way of comparison. In the fifteen years that have passed since I came to America, I have worked in many coal mines from southern Illinois to British Columbria. During that time, my eyes have not been closed to what has been going on about me and I find that many lessons can be learned through close observation and comparison of the means and methods employed in different localities.

Firebosses Start Examination Too Long Before Men Enter Mine

It was reading the numerous letters that have appeared in Coal Age, regarding the fireboss’ identification mark, that leads me to offer a few comments on this work. I am deeply impressed with one fact; namely, in the large majority of cases, the fireboss starts his examination too long before the time for the men to enter the mine for work.

In Illinois, it was a common thing for a fireboss to start his examination eight hours before the beginning of the morning shift. I found that this was wholly in compliance with the coal mining laws of the state, where the mine examiner is required (Sec. 21) to examine the underground workings of the mine within eight hours preceding the time the dayshift goes on duty.

Let us assume, for example, that a fireboss begins, say at 1 a.m., to examine a section of a mine in his charge. In his examination, we will suppose that he finds a small quantity of gas in several of the places, but not sufficient to render work in those places dangerous.

Now, we will assume that a big cave has been opened by a rockfall, and coal has been exposed in several places. As a result, the circulation is choked and gas accumulates in the section. Believing everything to be safe, the men are admitted to the mine and proceed to their several places. It is nothing strange that conditions such as these bring calamity.

At other times and places where the fireboss starts his examination only two hours previous to the entrance of the miners to work, I have known of places that were found to be clear of gas at the time the examination was made; but a cave occurring a little later would knock down a brattice and short-circuit the air, allowing gas to accumulate at the face in a very short time.

Booster Fans Installed in Mines, Menace to Safety

Again, I have observed gaseous places that were hard to ventilate and required a small blower or booster fan to keep them clear of gas. Let me ask, Who knows when the belt driving such a booster is going to slip or break; or when a cave will tear down the wire that conducts the power to operate the fan? Either is liable to occur at any time and the fan be put out of commission.

In some localities, bumps are frequent, causing roof falls that destroy brattices, airways, and short-circuit the air. This may take place at a time between the examination by the fireboss and the entering of the men for work.

Practice in North of England

Allow me just here, to refer to practice in the North of England, where the firebosses enter the mine only an hour previously to the beginning of the miners' shift. The mine manager is at the shaft bottom to receive the firebosses and give them any orders that might be necessary. He starts the shift together with the fireboss.

The examination by the firebosses being completed, if everything is reported safe for work, the men are allowed to enter the shaft bottom. Every lamp has been examined and locked, and the men are searched for matches before being permitted to enter the mine.

It goes pretty hard with a man who is caught with matches on his person. The officials are sure to make an example of him, by imposing a fine or hauling him to court for imprisonment. At the entrance of each section, the fireboss in charge awaits his men and there is no chance for a man to enter his place when it has been found to be in an unsafe condition for work.

When a fireboss has admitted his men to their respective places, he devotes the balance of the shift to an careful examination of the shots and timbering, in each working place. All shots must be properly mined and tamped before they can be fired.

Improvements in Loading Coal Adopted in Montana Mine

I was pleased to note a reference made in Coal Age, Aug. 24, p. 288, to the improved method of loading coal at the working face, as adopted by the Keene mine management, at Roundup, Mont. It appears that the company has been studying for economical methods of mining and handling the coal at the working faces, in the rooms.

The plan adopted of standing from three to five cars at the face of a room, the cars to be loaded at one time, will expedite the work and reduce the cost of gathering cars in the workings. The new plan has also reduced the investment of several hundred dollars for extra mine cars; but this expense will be more than offset by the reduced cost of operation.

Coal Face Conveyor System

In the mining of a seam of low coal overlaid with a good roof, allow me to suggest that there is much economy in the use of a conveyor system laid parallel to the coal face. Such a conveyor, operated by a small electric motor, will afford easy loading all along the face and will be found a profitable investment.

Not the least of the advantages of a conveyor system is the fact that little or no brushing of the roof is necessary. As the conveyor works along the floor, miners can load commercial coal with the greatest ease. A skip of coal, that requires two men to load it, under the conveyor will generally be carried along without further trouble.

A conveyor system of this kind is generally protected by a series of rods. As the face is advanced, the conveyor line shifted forward, new rods are built and the conveyor is moved along the casing area to save. Whether a conveyor is installed or a track is laid along the face of the coal, there is provided an ideal long-wall system that will prove a source of great
Steel Guides and Buntons in Mine Shafts

Steel cage guides and shaft buntions in use in Europe fifty years ago are described in a modern Belgian coal mine report.

In describing the equipment of the Remondile SHAFTS, in Coal Age, Sept. 1, p. 224, George A. Richardson points to the advantage that the use of steel rails as cage guides in these shafts, is something novel. He calls it a "revolutionary development."

As a matter of fact, steel rails have been used as guides in the deepest coal shafts for well over fifty years. Since such rails have been rolled commercially, and that is, since the early stages of the Bessemer process development, which would put me back fifty years or so in the seventies.

But, even before that time, when iron rails were being used, there were wood rails as cage guides in Belgium. In the sixties, Alphonse Briart, a famous Belgian mining man of those days, replaced iron rails with wood guides in all the hoisting shafts of the Mariemont-Bassompaille area. There were eight or more of those shafts, none of which were deeper than 1,500 feet.

Use of Iron Rails as Shaft Guides Fifty Years Ago

From the beginning, Mr. Briart used steel as the heaviest rails procurable. At that time, there were not many kinds of rails being manufactured, and, consequently, the conditions of the heaviest rail with which we are familiar in this country and the two-headed type, which still survives in the British Isles. Mr. Briart used the former as cage guides, while the latter, placed at the bottom of cages. More than a century ago, therefore, rails were not only used as guides, but for hoisting, as well.

That mining men had their doubts about safety catches being effective on iron guides is proved by a certain amount of literature that flowed its way into the publications of the Mining Engineering Society. However, it was soon demonstrated by tests that guides not only helped a cage more promptly on iron guides than on wooden ones, but that in almost eliminating them. The same kind of catches, acting on wooden rails, always slipped down on them for quite a number of feet, drawing the rolling body with them and making them unfit for further use.

Tests Prove Steel Guides More Effective Than Wood

During the seventies, when steel rails became available on the continent, they were employed as guides in preference to iron, and it was then very promptly and conclusively demonstrated that all the types of safety catches in use were effective on steel as on iron.

In the accompanying sketch (Fig. 1), I have shown how steel guides were sometimes installed in deep shafts, at the time when I gained my mining experience in Belgium, in the early nineties. The drawing is made from memory, the dimensions given are the only ones I am able to remember definitely.

Heaviest Rails Used for Guides: In 1890, shafts 3,000 feet deep were quite numerous in Belgium, and there were a few, in regular operation, at 39.3 lb. per yd., which is manufactured continuously in Belgium ever since the late eighties.

The buntions shown in Fig. 1 were, I think, 30-em. (12-in.) channels. I am certain they were not less than 25 cm. (10 m.). There was nothing cheap about such work. There could not be, considering the speed with which hoisting had to be done, in order to reach the outputs of 800 or 900 tons, in eight hours, from shafts 2,500 or 3,000 feet deep. Hoisting speeds of 10 m. (about 33 ft.) a second were then reached. Today, they hoist at speeds even greater than this, say 19 m. (about 61 ft.) a second being often maintained during 65 per cent of the hoisting operation.

Details of a Modern Shaft in the Belgian Campine Region

In Fig. 2 I have shown how a modern Belgian coal shaft is equipped. The example I have selected here is a shaft in the Campine region. I was in that shaft recently. There are two pairs of four-deck cages and two hoisting engines. Each cage engine carries two cars. The dimensions given are the only ones I have noted, besides the following data:

Shaft is 2,350 ft. deep. The eight cars hoisted in a cage contain a total of 4.8 gross tons of coal. The cars themselves weigh 2.4 tons. A cage weighs 4.5 tons. The rope hanging in the shaft weighs 6.6 tons. The total weight hoisted is, therefore, 18.3 gross tons.

As is usual in Belgium, this shaft is lined with cast iron, being concreted all around as indicated in the figure. The cast-iron lining, in this case, is 220 m. high (700 ft.), because of a corresponding thickness of quicksand which had to be frozen before the shaft could be sunk. The same sinking process has been used for all the shafts of the Campine region, on account of this quicksand formation, which is nearly constant over that part of Belgium.

While I was there, the double hoisting outfit, shown in Fig. 2, made seventy-six hoists, bringing to the surface 658 cars and 364 tons of coal in one hour, from a depth of 2,350 ft. I was told that this was less than the record, which then stood at 5,056 cars and 3,034 tons of coal, in a day of eight hours; or at the rate of 632 cars and 379 tons of coal per hour.

New York City. F. C. CORNIT.

Driving Wide Rooms

Loading contest shows record output, per man, per day—Influence of width of rooms on output—Discussion asked.

In the issue of Coal Age, Aug. 10, p. 216, is given an account of the results of a loading contest that took place between two mines of the Standard Island Creek Coal Co., located at Cora and Taplin, W. Va., respectively.

The account gives the average daily output of two men, working at these
respectively, as being 50.5 tons of coal, per shift, in the one case, and 45.9 tons, per shift, in the other; or, practically, the capacity of a 50-ton railroad car, per day, of each sectional elevation.

This is a record output for a miner working in 4-ft. coal and drilling, shooting and loading his own coal without assistance. It is stated that one of these men was working in a double-track room, 36 ft. wide, while the other was driving two places, each 18 ft. wide.

Reading this account interested me, particularly as I have lately been endeavoring to convince our foreman at Coral, Indiana County, Pa., that he should widen his rooms from 20 to 36 or 40 ft., believing as I do that this would increase the daily tonnage, per man.

We are working coal 78 in. thick and overlaid with from 200 to 390 ft. of cover. The seam which is the upper Freeport seam and is very soft, consists of 26 in. of top coal and 42 in. of bottom coal, separated by 10 in. of binder. The roof is mostly sandrock and taking the mine as a whole, it is considered very good. Occasionally, we strike a "cutter," where the roof will cut or shear from 3 to 10 ft. The floor of the seam is solid and very regular.

I would like to have the question discussed as to what influence, if any, the width of rooms have on the possible daily output, per man. It would be interesting to hear from some of the men of the Standard Island Creek Coal Co., on this question, giving their roof conditions and other data that would bear on the subject.

L. F. KLINGENSMITH,

**Inquiries Of General Interest**

**Triple-Compartment Hoisting and Airshaft**

**Double Compartment Hoistway and Airshaft Combined—**

**Effect of Movement of Cages on Circulation of Air—**

**Suggestions Regarding Design of Shaft and Its Equipment**

HAVING in contemplation the sinking of an airshaft, at a point some distance in advance of our present workings and desiring to design and equip this shaft in a manner that it can be used as the main hoisting shaft, at some later time when the underground development has proceeded to an extent to make that advisable, we solicit the advice of Coal Age and its practical readers, in hopes of gaining information that will enable us to avoid mistakes that might otherwise be made.

In order to make clear the situation, I have prepared the accompanying sketch showing the cross-section of the proposed shaft, and outlining the headframe and hoisting sheaves above the shaft, together with the fan and fan drift connecting with the air compartment of the shaft. Below the sectional elevation is shown a plan of the shaft with its three compartments, comprising two hoistways for the cages and an air compartment in one end of the shaft.

As indicated by the arrows, the two hoistways are made downcast and the air compartment is then the upcast for the mine, the fan being operated as an exhaust fan. In accordance with our best practice, the fan is set back from the shaft a short distance, as a safeguard against its possible destruction by the blast of an explosion should one occur in the mine.

The shaft is to be lined with concrete throughout its entire depth and a 12-in., reinforced concrete curtain wall will separate the air compartment from the hoistway adjoining it. This curtain wall will extend from the top to the bottom of the shaft, thus providing separate intake and return airways in the shaft.

It is assumed that the ultimate quantity of air circulating in the mine and passing through this shaft will be 200,000 cu. ft. per min. It is the intention to operate the cages at a maximum speed of 900 ft. per min. Briefly stated, this shaft will serve the following purposes: 1. Ventilation. 2. Hoisting and lowering men and supplies, and hoisting coal and rock from the mine.

As shown in the sketch, there are three beds of coal cut by the shaft; namely, beds B, D and E. Hoisting operations will include the following: (a) Lowering supplies from the surface to the several levels, E, D, B. (b) Hoisting coal and rock from bed B to the surface. (c) Lowering coal from the two upper levels to bed B. (d) Hoisting and lowering men working in several levels.

Having made this explanation, I would like to ask three questions, as follows: What effect will the presence of one of the cages at either of the upper levels have on the circulation of air in the hoisting compartment? 2. What effect will the travel of the cages up and down the shaft have on the air in the hoisting compartment? 3. What suggestion has any one to offer in the matter of design of the shaft, with a view to realizing the most satisfactory result from a ventilating standpoint?

It should be further stated that of the 200,000 cu. ft. of air, which is the proposed maximum circulation that will pass through the shaft, 130,000 cu. ft. will be required in the lowermost seam, Bed B, while the remaining 50,000 cu. ft. will circulate in the two upper levels, Beds D and E. I trust that this will make the proposition clear to all and hope for many good suggestions.

—, Pa. Chief Engineer.

This is an interesting proposition that we are glad to present to the practical readers of Coal Age, knowing that they will respond by giving many helpful suggestions respecting the design and equipment of this shaft. Before introducing to your readers the most economical and satisfactory results in its operation. By way of opening the discussion, we offer the following brief suggestions:

First, it is not assumed that this shaft is sunk so far in advance of the present working face in the old mine, that connection with the new workings will provide a way of escape in case of accident in the new shaft, which would be necessary to comply with the Pennsylvania mine law.

While it is a common practice to sink a triple-compartment shaft providing a double-compartment hoistway, and airshaft combined in one, there are serious objections to this plan. First, and chief of all, is the fact that an accident occurring in the shaft endangers the circulation of air in the mine.

It is true that, in this case, a 12-in. reinforced-concrete curtain wall separates the airway from the hoistway. But it is a question whether this curtain wall would withstand the terrific force of an explosion in the mine should one occur. In our judgement, a far better arrangement would be to sink two separate shafts, making one a hoisting shaft and using the other as an escapeway in the later operations of the mine.

Answering the question regarding the effect on the air due to one cage being at the upper level and practically closing that compartment of the shaft to the free passage of air, or the effect on the air due to the travel of the two cages up and down the shaft, our experience has been that neither of those conditions have any material effect.
Kentucky Mine Foremen's Examination.  
Lexington, May 30, 1922

(Selected Second-Class Questions)

Question—Explain how natural ventilation in a mine is affected by the change of seasons.  

Answer—In the winter season, the outside temperature is generally lower than the inside air, and the intake air, being heavier than the warm return current, an air column is produced which assists the circulation of the air produced by the ventilator.  

In the summer season, the outside temperature is generally higher than that of the mine.  The result is, then, that the warmer intake air, being lighter than that of the mine, an air column is produced which opposes the circulation induced by the fan.  

In general, therefore, a mine is more naturally ventilated in the winter than in the summer season.

Question—What kind of inrush of air may start a ventilating fan at the face of such working place?  

Answer—At the first place, a visible mass of producing the circulation of air on the mine must be adopted.  

Again, the air must be carried forward by means of well-built shafts, doors, air headers and hitches, that it will be made to move the face of the mine, or raise the place.  Frequent inspections are necessary, but not only to keep them in good condition, but also to remove a constant resistance of air in the workings.

Question—What are the greatest advantages in regard to the distribution of air in mines, and what must be considered in order to get the greatest effect?  

Answer—The total inrush area must be divided into two or more shafts, and the capacity of air in each shaft must be proportioned to the working.  The number of sections must be built in the mine in order to comply with the requirements of the mine law so that the number of men working on a single split will not exceed what the law allows.

Should the current be seriously interrupted, the men must be promptly notified and withdrawn from the mine.  They must not be permitted to return, until the trouble has been removed and the mine examined and found safe for work.

Question—If the velocity of an air current is 75 ft. per min., in an airway 31 x 51 ft., what is the quantity of air passing per minute?  

Answer—The sectional area of this airway is 6.3 x 5.5 = 35.2 sq. ft. The quantity of air passing is then 725 x 55.25 = 40,455 cf. per min.

Question—The air in a mine when the downcast temperature is 60 deg. F., and the upcast 300 deg. F., the barometer being 30 in.  

The depth of both shafts is 300 ft.  

Answer—The weight of 1 cu. ft. of air in the downcast shaft is 1.3273 x 30 = 0.07657 lb.  

Likewise, the weight of 1 cu. ft. of air in the upcast shaft is 1.3273 x 30 = 0.06033 lb.

Therefore, the difference of pressure, for a single shaft of depth in this shaft is 0.07657 - 0.06033 = 0.01624 lb.  

The depth of both shafts being 300 ft., the unit of ventilating pressure, in this case, is 300 x 0.01624 = 4.872 lb. per ft.  

To find the ventilating pressure, or the pressure producing circulation in this mine, it would be necessary to know the sectional area of the airway, which is not given.

Question—What is the pressure per foot of air?  

Answer—The term "absolute pressure" describes the total pressure exerted on the air, which includes the atmospheric pressure (14.7 lb. per sq.in., sea level) and any additional pressure due to the height of the mine.  

Therefore, the unit of ventilating pressure (in feet, lb.) would be either positive or negative, according to the fan is blowing or exhausting air from the mine.

Question—(a) What is meant by ventilating pressure, in mine ventilation?  

(b) What is the unit of ventilating pressure?  

Answer—(a) The ventilating pressure, in mine ventilation, is the total pressure producing the circulation of air, in a mine.  

It is equal to the mine resistance, and is the difference of pressure between the intake and return airways.  

(b) The unit of ventilating pressure is the pressure per square foot of sectional area in the airway or fan drift.  

It is found by dividing the ventilating pressure or mine resistance by the number of square feet in the sectional area of the airway.  

While the ventilating pressure is expressed in pounds, the unit of ventilating pressure is expressed in pounds per square foot.  

The unit of ventilating pressure is sometimes expressed as "ounces per square inch," 1 oz. per sq. in. being equal to 9 lb. per sq. ft.

Question—Explain the difference between ventilating pressure and absolute pressure.  

Answer—Ventilating pressure is the difference between the pressure on the air in the intake airway of a mine and that on the return air, in the same mine.  

It is this difference of pressure that produces the circulation in the mine.

Question—An airway, 16.7 ft. wide and 8.9 ft. high is passing 65,000 cu.ft. of air per minute.  What is the velocity of the air current?  

Answer—The sectional area of this airway is 16.7 x 8.9 = 148.63 sq. ft.  

The velocity of the air current is then 65,000 / 148.63 = 447.3 ft. per min.

Question—If powder smoke requires 2 min. and 17 sec. to travel 149 yd., in an airway 10 x 12 ft., when in position, what quantity of air is passing in the airway?  

Answer—The time, 2 min. 17 sec., is 137 sec. and 149 yd. is 3 x 149 = 447 ft.  

The velocity of the air indicated by this observation is, therefore, 60 (447 / 137) = 195.76 ft. per min.  

The sectional area of the airway is 10 x 12 = 120 sq. ft.  

The quantity of air passing in this airway is, therefore, 120 x 195.76 = 23,491 cu. ft. per min.

Question—With a pressure, at sea level, of 14.7 lb. per sq.in., and the barometer 30 in., how far can you set a pump above the surface of the water, venting and not use rods for pumping?  

Show by example.  

Answer—The theoretical height of water column supported by an air pressure of 14.7 lb. per sq.in. is, 14.7 x 0.434 = 6.4 ft.  

Owing to friction and leakage of valves, it is safe pumping practice to make the vertical height of the pump, above the surface of the water in the sump, not to exceed nine-tenths of the barometric pressure; or, in this case, 0.9 x 30 = 27 ft.
Seven-Hour Day Causes Increase of £30,000,000 a Year in Production Cost of British Coal

A great deal of publicity has been given to the subject of miners' wages in Great Britain. There are other branches of productive activity in Great Britain, however, in which unemployment and short time are so prevalent and earnings so low that a great percentage of employees are compelled to subsist for long periods on the "dole." The latest official figures show that in such great industries as iron and steel, shipbuilding, and engineering, unemployment is much greater and employment itself more broken and paying more than those paid up to the period immediately preceding the war. This is a misconception. The average earnings of miners throughout the country work out at approximately 45 per cent more than the pre-war scale. Piece workers are allowed 14 per cent more than their old rates to enable them to earn as much in a working day of seven hours as they formerly did in one of eight. The miner also is privileged in respect to housing and fuel. At a time when accommodation is still difficult to obtain many miners pay nothing for their dwellings, or receive an allowance in lieu of rent. House coal, which is a fairly substantial item in the miners' domestic economy, is given to them either free of charge or at a price which little more than covers the cost of carriage. These two items have to be taken into account in considering the miner's position in comparison with that of his co-workers in other callings.

Leaders allege that miners' earnings are too low.

The miners' leaders fully recognize that wages absorb the vast bulk of the proceeds from the industry, leaving the owners with a profit much less than the minimum provided for them in the terms of settlement of June, 1921. Nevertheless they persist in the claim that the earnings of the mine workers are below the "subsistence level" and need augmentation.

They now propose that the owners raise prices to the general body of consumers as to provide a sufficient revenue from the sale of coal to afford the miners what they deem a living wage. This can only mean that there be some sort of selling combination by which coal prices shall be maintained at an artificial level. The principle is one diametrically opposed to the present methods and to the traditions of the mining industry, which before the war provided cheap as well as abundant coal. In other words, it is proposed to substitute for healthy competition a system of trufistification entirely alien to the traditions of British commerce.

This expedient is like to find little favor in the eyes of the consumer. It is directed to the same end as the proposal for a government subsidy—viz., the placing of a further burden on the community to extract an unreasonably high wage for the miner at a time when every section of the public is handicapped by high prices and overtaxation.

One of the most serious effects of any arbitrary regulation of selling prices would be the crippling of overseas trade. The coal industry experienced the disastrous effects of foreign competition during and immediately subsequent to the period of coal control. If an artificial price is to be substituted for the open market price in international trade, nothing is more certain than the re-entry of competitors, and much, if not all of the good effected during the past twelve or fifteen months will be undone.

In considering the position of the British miner it is necessary to realize that even in these days of industrial depression he enjoys privileges denied to other workers. Relatively his lot is little worse—in some cases it is distinctly better—than that of workers in certain other trades—railwaymen and municipal workers excluded.

It is a popular assumption that miners are in receipt of wages only 20 per cent above those paid up to the period immediately preceding the war. This is a misconception.

The introduction of the seven-hour day at a time when a return from artificial to economic conditions was foreshadowed was a measure which could not have been recommended had its advocates foreseen results. During this period of bad trade and uneasy markets, co-operation and solidarity have become more necessary than ever before in the annals of the coal trade.

The statutory reduction of working hours has had the effect of increasing the costs of production to an extent which has left its mark on the whole trade. This measure has necessitated the employment of large numbers of extra day-workers, and at the same time it has added to the cost of piece work in wages by 14 per cent. Wallace Thornycroft and other authorities upon coal-mining matters distinctly estimate the greater production cost due to the act at from 2s. to 2s. 6d. per ton. At the present rate of output this saving would produce about £30,000,000 in a twelve-month, of which 83 per cent would be available as a supplement to mine workers' wages under the terms of the existing agreement.

While the relations existing between the mine owners and their workpeople are by no means unsatisfactory, it is obvious that much benefit would be derived by closer co-operation between the two parties. The employers are anxious to restore the industry to economic health and feel that if the men's accredited spokesmen take the long view and join with them in their efforts to this end, the most serious obstacles would be overcome. There are some factors, such as the exchanges and conditions abroad, which are beyond the control of the industry; but others are amenable to control, and if these are approached in the spirit of conciliation much can be done to make the position of the trade more tolerable.

The deliberations of the National Coal Board will have proved valuable if they merely serve to elucidate the truth that better times for the miner and the industry generally are not to be obtained by schemes which are economically unsound and socially undesirable.

U. M. W. International Board Takes Steps to Restore Kansas to Good Standing

Steps to restore the autonomy of the Kansas district, No. 14, United Mine Workers, whose charter was revoked more than a year ago after district officers and a number of members of the district had been expelled from the union, have been taken by the International board of the Mine Workers, which is in control in Indiana. The charter of the Kansas district members has been called for Pittsburg, Kan., Oct. 25.

A constitution for the district will be drawn up at the convention and arrangements made for an election of district officers to take the place of the others. The question of reinstatement of membership in the union is to be considered separately. The charter of the Kansas district was revoked and Howat expelled after he had called strikes in violation of contracts.
## Preliminary Statistics of Production of Coal in 1921

<table>
<thead>
<tr>
<th>State</th>
<th>Coal in Short Tons</th>
<th>Coal in Long Tons</th>
<th>Total Gross Value</th>
<th>Value per Tons</th>
<th>Number of Employees</th>
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### Notes
- Data provided in short tons and converted to long tons for standardization.
- Gross value calculated as per tons.
- Number of employees and coal mines listed for each state.
- Data sourced from the "Coal Age," Vol. 22, No. 7, published on October 14, 1922.
Federal Coal Commission Names Hammond Chairman
And Proceeds to Map Out Program

BY PAUL WOOTON
Washington Correspondent of Coal Age

The first act of the United States Coal Commission at its initial meeting, Oct. 18, was to designate John Hays Hammond as its chairman. The commission immediately plunged into a discussion of a program for its work. No formal announcement has been made as to how the work will proceed, but certain of its policies already are apparent. It is the intention of the commission to keep the public informed as to each step of its progress. It recognizes that in this way the public will be able to absorb more knowledge as to the problems of the coal industry. The commission recognizes that the only chance that it has to accomplish anything is to obtain public support for its recommendations. It is believed that if the public mind goes through the same processes that the minds of the commissioners will go through, they will be prepared to pass intelligent judgment on questions. Frequently when conclusions constitute the first knowledge that the public has, much time must elapse before their real purport is understood. Thinking takes time. Recognizing that fact, the commission hopes to be able to carry the public along with it as the study progresses.

LEWIS INVITED TO INFORMAL CONFERENCE

The problem is so intricate that the commission expects to call to its aid each subdivision of the coal industry. One of its first acts was to invite to informal conference John L. Lewis, president of the United Mine Workers of America; Alfred M. Ogles, president of the National Coal Association; and S. D. Warriner, a leading anthracite operator, and to ask each to appoint a consulting committee, which is to maintain close contact with the commission and assist it by presenting such facts as may be called for from time to time.

Since E. E. Hunt is secretary of the commission, it is reasonable to suppose that he will resort to much the same form of organization that functioned so successfully during the President's unemployment conference—the plan also used at the conference on limitation of armament. At those conferences advisory committees composed of representatives of the varied interests concerned were used with great success. For instance, an advisory committee on storage would be composed of representatives of coal operators and of large consumers—those most likely to benefit or be interested in storage. This plan, if acceptable to the present commission, would be carried out in such a way that an advisory committee would be formed for each of the important problems within the industry. In this way the committee would be saved a large amount of work and would be furnished with much predigested material.

Since the commission must make its preliminary report on Jan. 15, advantage must be taken of all means to expedite the study. It is probable that the commission will call upon those most concerned to lend it some of their specialists. Only in this way can the commission procure the requisite skill necessary to its work.

Now that the commission is in action an opportunity has been given to judge as to its capability and as to the ability of the individual members to work together. The first sessions indicated that President Harding's mixture of two engineers, two lawyers, two economists, and a newspaper man is less discordant than some critics might expect. Apparently they will work well together. Judge Acheson gave early evidence that he is experienced not only in weighing evidence but, as shown too in his packing-house experience, is skilled in obtaining evidence for himself.

Mr. Marshall is so well known for his quaint philosophy and his Hoosier directness that sight frequently is lost of the very practical way in which he reasons on problems which come before him. It already is apparent that any policy to win his support must be 100 per cent American. One of his acid tests is whether or not a man puts his American citizenship first.

Dr. Smith brings to the commission not only his own large store of knowledge acquired from having kept abreast with the coal situation day by day for a long period of years but his knowledge of the federal machinery and his acquaintance with the government personnel in Washington has made it possible quickly to co-ordinate the commission's work with the coal activities of the various federal departments. This is in direct contrast with the experience of numerous new boards and commissions, where there has been an exasperating loss of time before actual work could start.

Mr. Howell has a wide acquaintance with men and has an accurate knowledge as to the part coal plays in the industrial South. He has demonstrated a keen appreciation of the public's equity in coal.

No one could approach a task better prepared to serve efficiently than Mr. Neill. It has been just twenty years since he began his work with the Roosevelt Anthracite Commission. His connection with the anthracite industry has been almost continuous since. He also brings to the commission a knowledge of transportation, but above all he has a sympathetic understanding of each side of labor disputes.

Mr. Hammond, in addition to his understanding of the engineering phases of the inquiry, has a genius for organization which he is applying actively to the plan for the commission's staff.

An analysis of editorial comment in more than one hundred newspapers reveals that the New York Call, a socialist organ, is the only one commenting unfavorably on the personnel selected for the commission.

E. E. Hunt, Coal Commission's Secretary, Has Had Broad Economic Experience

E. E. Hunt, of Springfield, Ohio, has been selected as secretary of the President's coal commission. Mr. Hunt has been in charge of the study of intermittency in the coal industry which the Department of Commerce has been pursuing since last March. For the purposes of that study a sizable contribution was received from the Cabot fund. The study was an outcome of the unemployment conference, of which Mr. Hunt was secretary. Mr. Hunt had been associated with Mr. Hoover throughout the preparation of the report on waste in industry.

Mr. Hunt was graduated from Harvard in 1910. From 1910 to 1914 he did editorial magazine work. With the outbreak of the war in Europe he was sent to Antwerp by the Committee for Relief in Belgium. He was in charge of the entire Antwerp district, in which he superintended the work connected with feeding and providing fuel.
During the recent years the coal industry has been the charge of the Commission and has become a larger task. For this reason an increase of personnel has been necessary, and this has been attended by some difficulties. The Bureau has been under the direction of the Secretary of the Interior, who has been assisted by a staff of experts, including engineers and scientists, and has worked in close cooperation with the Bureau of Mines.

The United States Coal Commission has started to use all the available resources of the Government in its fact-finding work. How large in this supply of authoritative information is in part indicated by the reports prepared by the Bureau of Mines and the Bureau of Standards, the latter being under the direction of Secretary T. R. F. Cook, U. S. Comptroller, and the former being under the direction of Secretary T. R. F. Cook, U. S. Secretary of Commerce and Labor.

The Bureau of Mines has been working on the mining industry for its 12 years, and its chief, W. S. L. Rankin, has prepared a report on the coal industry in the United States. The report covers the history of the industry, including its development, its present condition, and its future prospects. The report is a valuable source of information for students of the coal industry.

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Seven Injured by Slate Fall in Mine at Brownsville, Pa.; Three May Die

Seven men were injured, three probably fatally, in a fall of slate Oct. 10 in the Maxwell mine of the H. C. Friek Coal Co., near Brownsville, Pa. Pinned under the debris of the first fall, the seven men were helpless when a heavier second fall of slate enveloped them.

Fifteen others, injured slightly, were rescued by Rankin, mine foreman; Steve Ritsky, assistant mine foreman, and Edward Queen, all of whom may die as a result of their injuries. Others injured are Peter M'Kenna, Fred Reynolds and two unidentified foreigners.

In a short time the men were dug from beneath the slate and carried to the surface.
A Public Policy for the Coal Industry

BY JAMES A. EMERY†

What does the outsider see in the coal industry today—not the prejudiced, nor the impassioned, nor the embittered, nor the merely selfish observer of your industry, but the citizen who has a sincere interest in the relationship of your great industry to the social and political problems that it is creating? During six months of deliberately suspended production he has perceived upon the one hand a solid, unified organization of workers, so powerful that it has been able to successfully resist not only economic argument but official persuasion and threat. And upon the other hand, he has perceived a great industry of highly intelligent and responsible operators disintegrated and disunited, with no single responsible group or spokesman who could speak the collective thought and the collective judgment and state the collective policy of a great American industry!

Does that not suggest that there never was a more favorable, a more desirable, a more necessary moment in which this great industry should enter upon a highly systematic, organized self-examination, self-analysis and self-declaration of policy for self-government?

All the forms of government that we have had any experience with in this world must live under restraint and authority, and they either take that authority from without or impose it from within; and the difference between popular and autocratic institutions is that the one finds its rule imposed upon the outside and the other imposes its rule upon itself by voluntary self-restraint established from within. Doesn't the coal industry need today a scientific, self-examination of its own facts?

It is essentially in the public interest that the control of private property shall be preserved within the limits of public interest; and these change with the intensity and complexity of public life, because government is no longer a mere maintainer of order. It must, under the circumstances of modern life, undertake to carry out production and distribution against arbitrary interruption, and these high obligations have fallen upon it with an intensifying degree of necessity.

APPOINTMENT OF COMMISSION DUE TO PUBLIC OPINION

The public view of this thing, as I see it today, has been very fairly expressed in the appointment of a special fact-finding committee. Any anxiety is whether it will discover the facts or whether it will merely paint a picture of its theories. But no industry is so well fortified to meet the facts of life today as the one that knows itself, and by a critical examination is prepared to present, as occasion arises, an accurate picture of its own operation. And that is what American industries have been doing.

I would venture to urge upon the coal industry (to urge not only in its own interest but in the interest of the public as well, that ultimately will be the terrible sufferer if a public policy is established for the coal industry that does not correspond with the facts) the establishment of a public policy based upon facts. There is nothing that the American people have paid so terrible a price for, or have suffered for so much in the past ten years of their life, as the substitution of political answers for economic answers to economic questions, and no policy will succeed with the coal industry that is not predicated upon its facts.

First of all the coal industry cannot do better at this time, cannot fortify itself more successfully, than to undertake to organize for its own self-examination in the determination of facts with respect to itself. Until it knows itself, it cannot relate itself to others. And, secondly, it is for the industry to establish its public relations and its economic position by that knowledge of itself, and no policy will succeed with the coal industry that is not predicated upon its facts. It is an easy matter to "cuss" Congress; we all do it, and then we rest ourselves by "cussing" the state legislatures or the local Board of Aldermen. But representative government is a mirror in which we reflect ourselves, because it not only pictures our virtues but it very accurately defines our defects—and the besetting sin of American business has been indifference to politics. God help the man who says that business ought to keep out of politics. Business ought to get into politics, because if this nation is going to endure it isn't going to have its policies determined by a mob, but it is going to continue to be what its founders believed it would be: an aristocracy of intelligence and character, directing a democracy of right and extreme opportunity.

Who can organize and give direction to a public policy for the coal industry better than the men who know it? They will be listened to exactly in proportion to the breadth of enlightened selfishness with which they commend themselves to public attention. Remember, that if you don't sit in the saddle to correct evil and guide the horse of reform, there are many willing riders who think they can ride the beast better than you can.

The country has suffered from the social advice of gentlemen who could not fill pulpits to the satisfaction of a congregation. It has been advised on employment relations by men who never hired a domestic servant except in their wife's name. It has had great public policies established for it by gentlemen who had no responsibility for their utterance except that they were gentlemen, and that the advice was from a gentleman. A people like ours, gentlemen, will live when we meet our public responsibility and take upon ourselves the responsibility to honestly perceive and undertake to accurately define, first, our obligations, and then I say with equal sincerity, and determination to assert and enforce our rights.

ADVISER FACING EMPLOYMENT RELATIONS

I believe that with the coal industry demonstrating its sincere interest in the public welfare, it is in a position to present to the public, and its representatives, through self-organization and self-examination, an accurate picture of what it is and what its relationship to the public ought to be. But, gentlemen, I don't believe that we will ever accomplish for the coal industry what we hope to see accomplished—to preserve it from not only incompetent and unwise but invalid regulation—unless the industry is ready in an organized way to frankly face the problem of its own employment relations. I say that it faces invalid regulation. Why, I think that the field of coal regulation today is the last great battlefield of social self-government, as opposed to the remaining federal control. The people of the United States have had ample warning of the situation that was bound to develop in the coal industry. Year after year the danger signs were lifted in the public sight, and year after year an indifferent and apathetic people refused to heed them. And now we come to emergencies, and emergencies always excite governmen't intervention. The popular pressure and exercise of unusual power. The neglect to establish social controls in the public interest, that would insure the protection of public rights, protected in the person of private agents performing a semi-public service, has led us to the situation in which we are today, but not without considerable assistance from within the industry itself.

Now we can read the history of employment relations in the coal industry, as spread upon the records of the courts of the United States, without perceiving that gentlemen found the miners' union at times a convenient means of equalizing what it termed competition. You will recall that Aesop wrote a fable about the fox who lost his tail, and having lost it he spent a good deal of time in recovering other foals that a tail was a real property in. And these other foals and their operations, under union control and domination, have not only undertaken to persuade others that they needed it and didn't need the freedom that they enjoyed, but encouraged the union, without realizing what it was they were encouraging.

Today the field of employment relations in the coal industry represents a condition that threatens the economic
Retail Margin of Profit on Coal Fixed in Ohio Averages $1.36 Per Ton

Retail margins of profit on each ton of coal sold in Ohio, whether Ohio-mined or imported, have been fixed by Fuel Administrator Neal and approved by Governor Harry L. Davis. The average profit permitted retailers under the schedules is $1.36 and there are approximately 106 different margins fixed. This completes the first entire regulation by the state from the mine to the consumer under the emergency legislation recently enacted. Price margins are effective as of Oct. 20, giving five days for publication of notice to various dealers. The margin applies to the price at the mine plus the freight rate to the dealer's yard. The lowest retail allowance is 65c., in Gallia County, while the highest is $2.75, permitted in Cleveland. Under the new order where the customer makes his own delivery he is to have a reduction of 75c. per ton from the margins allowed.

Prices Ohio consumers must pay for West Virginia smokeless range from $9.99 to $11.34 a ton, in accordance with the official price list given out by State Fuel Administrator Neal. The prices are based on the federal maximum fair price of $6 a ton for West Virginia coal at the mines. Variance in transportation charges to Ohio points is responsible for the range in price, and to be $10.09 to $10.29 a ton. In other cities they are: Cleveland, $10.74@$11.34; Sandusky, $10.64@$10.84; Toledo, $10.54@$10.74; Canton, $10.07@$10.84; Youngstown, $9.99@$10.94; Akron, $10.07@$10.84; Dayton, $10.39@$10.49; Marion, $10.04@$10.24.

Michigan Governor Seeks Aid of Congress To Fix Reasonable Prices at Mines

Legislation designed to regulate distribution and cost of coal and coke in Michigan having been approved by the Legislature and signed by Governor A. J. Groesbeck, the latter has arrived at the conclusion that the most direct way of holding down prices is to be found in establishing reasonable prices at the mines. He is urging the governors of various other states to join him in appealing to Congress for action to that end.

The Governor also is conferring with Conrad E. Spens, Federal Fuel Administrator, in the effort to obtain more reasonable prices on anthracite than are quoted by some of the independent operators, seeking business in Detroit with quotations of $12@$14 at the mine.

Retail coal prices in Wayne County are required to report on the quantity of coal they sold last year, the amount they have sold so far this year and how long they have been in business. This information is expected to supply a basis for computing the fuel requirements of the state and for determining the eligibility of the dealer to be classed as a legitimate coal merchant.

The new Michigan legislation similar to the legislation enacted in New York State, though the Michigan law is said to be less drastic in some of its provisions.

Coal Consumption by Utilities in August Highest of Any Month Since February

Electric public-utility plants consumed 2,814,141 net tons of coal during August, according to a recent report of the Geological Survey. This is the largest tonnage for any month since February and compares with 2,565,607 tons in July. Production of electricity in 1922 has been accomplished through steadily increasing use of fuel power, while water-power production has declined gradually from the high mark of the year attained in May.

Evidently the scarcity of coal has increased the use of oil and gas, as August saw a record-breaking output of electricity, averaging 131,100,000 kw-hr. per day, exceeding the June record by 2½ per cent and July by 5 per cent. The heavier production no doubt was due to the increase in the domestic and commercial lighting load brought about by the activity in the building industry and by the demand by industries who were forced by lack of coal to turn to public-utility plants for power.
German Coal Situation Proves Not as Bad as Pictured

BY H. O. HERZOG
Berlin, Germany

The annual report of the German National Coal Association, dealing with the production, evolution of prices, consumption and supply between April 1, 1921, and March 31, 1922, has just been issued. Of special interest is the balance of loss drawn after the final division of Upper Silesia. Of 75 mines which produced 43,800,000 tons in 1912 and approximately 30,000,000 tons in 1921, representing 75 per cent of the total production, 59 have gone to Poland. Measured by the production of 1913, the loss to the national wealth thus incurred is 400,000,000 gold marks per year. The actual loss of coal to the supply of the interior of Germany is, however, not so large as has been commonly stated in public. The fact that the province itself consumed the third part of the output, while another third part was exported under Entente control to surrounding countries, having more or less been kept from public attention. Actual shipments to the interior of Germany have averaged 12,000,000 tons during the last two years. The output of the mines remaining to Germany may for this year be assumed at 8,000,000 tons. Deducting therefrom the non-greatly reduced local requirements, which probably will be 2,000,000 tons, 6,000,000 tons will remain for the supply of the German interior. The net loss to the latter, therefore, is only 6,000,000 tons per year.

The National Coal Association is an institution called into existence by the law of March 30, 1919, regulating the control of coal; it forms part of the organization provided for that purpose, the other members being the Coal Commissary and the National Coal Council. The first named is the executive and the latter an advisory body, best described as a coal parliament. In this organization the Coal Association represents the producers; it is formed as a joint stock company with a nominal capital of 250,000 marks, in which the coal syndicates of the various districts and the States of Prussia and Saxony in their capacity as mine owners are shareholders. It does not transact business in the proper sense, having nothing to do with sales or distribution. Its object is the adjustment of coal prices in conjunction with the other members of the organization of control, and eventually to assume the function of the coal commissary.

SUMMARIZES COUNTRY'S COAL SITUATION

Although a few representatives of the labor class are sitting on its board of directors and also are represented in the board of managers, the Coal Association is more or less a combine of the producers' interests, wherein lies its chief importance as a public institution. This is reflected in the annual report of the association, which goes far beyond this official object and is a summary on the whole coal situation.

The picture presented by a review of the production at the present rate and that of the past years is not all hopeful. In no mining district has the pre-war average been attained, or the average of the short-handed war time been reached. The best result so far reported is that of Lower Silesia, where the output in 1921 was 81.5 per cent of that of 1913. The next best was Saxony, with 80.6 per cent, and the Ruhr district, with 81.2 per cent. The worst case is that of the Aix la Chapelle fields, with only 64.2 per cent. Upper Silesia, with 67.7 per cent, was only a trifle better. Considering that the output of 1913, upon which these figures are based, is the highest on record, these figures do not make a bad showing.

In nearly all cases, with the exception of the Aix la Chapelle district, a considerable recovery has taken place since 1919; in the Ruhr district, for instance, it was from 61.9 per cent to 81.8 per cent of the 1913 output. When, however, the means whereby this recovery has been achieved is taken into account, these figures have a sinister significance.

Over 1,000,000 men were employed in 1921 in German coal mining, including brown-coal mining, as against 660,000 in 1913. The increase of employees in bituminous-coal mining from 1913 to 1921 was no less than 263,000, or nearly 50 per cent. The output of the inside workers per hour in 1920 dropped to 116 kg. as against 136 kg. in 1913. During 1921 the average was even a trifle lower, showing a slight recovery during the first three months of this year. According to consecutive reports this recovery was only temporary. The efficiency of labor in the Ruhr district is at present about 85 per cent of pre-war standard and in Upper Silesia it is only 77 per cent. When it is considered that 400,000 men employed in coal mining produce now only 80 per cent of what 580,000 men produced in 1913, the standard of efficiency appears to be still lower or approximately only 55 per cent. Almost identical conditions prevail in brown-coal mining.

The quantity of coal at disposal for the supply of the country within the present frontiers, after deducting the Entente tribute and the compulsory export from Upper Silesia and ignoring small quantities of free export, averaged in 1921 75 per cent of that of 1913. The increased production of brown coal, amounting to 36,000,000 tons, is one of the few favorable aspects of the situation. The efficiency of brown coal has been estimated at 2/9 of that of bituminous coal, which is entirely too low, considering the progress made with brown-coal combustion. The report leaves out of discussion how the financial situation of the mines has been affected by the prevailing price policy. In touching upon the evolution of coal prices in comparison with those of other minerals, large increases in both parts of cost and production the report leaves it to the reader to draw his own deductions.

COST AT MINES MOVES SKYWARD

The increase of the net cost price at the mines exclusive of taxes and other levies is 49.76 times that of 1913. The cost of labor for one ton of coal during the same time has increased 51.83 times. It is interesting to learn that in pre-war times the ratio between wages per shift and cost of labor per ton was 5.50 to 6.20 marks, while in April, 1922, the ratio was 177 to 322 marks. The relation has, therefore, charged from 1:1.2 to 1:1.82. Other details of production cost have increased above pre-war prices in a still larger proportion, as, for instance: Rails, 84 times; iron ties, 77 times; oil, 100 times; and 77 times; structural steelwork, 100 times; boilers and piping, 110 times; electro-technical equipment, 65 times.

This demonstrates that the level of coal prices is maintained to a certain degree at the expense of the prosperity of the mines, leaving them hardly any margin for renewal and extension. As a consequence the equipment is largely run down, especially in the case of cooking plants.

While the National Coal Association is loyal enough in public to attribute these unfavorable circumstances to the general unfortunate situation, in private conversation bitter complaints are heard of the short-sighted price policy which prevented the accumulation of sufficient funds for renewal and extension while they were still possible. The time for economy was presumably over. The only way out of the existing difficulties is the reduction of the number of large districts. For instance, the entire production of the miners to overtime has lately ceased, but the concession made lately for three extra shifts of two hours each per week is, unless considered only as a start, entirely insufficient.

To sum up the situation, in 1915 Germany had a surplus of coal, and in 1921 only 6,000,000 tons; in 1913 76,500,000 tons of coal was left for the country's consumption as against 119,000,000 tons in 1914. The total deficit in the supply compared with the latter year, taking into account both bituminous and brown coal, was on 1921 38,500,000 tons, which, when added to the export surplus, shows a total loss of 73,000,000 tons. The deficit in supply has to be made up by imports as long as it is not reversed by increased production. The next few months will show what
Some interesting results of the working of the national wage agreement which has been in force in Great Britain since the first week in April have recently been given out by the Mining Association, which body represents the operators on the United Kingdom.

The first quarter, Co., immediately preceding the great stoppage, resulted in a loss to the owners of £14,984,936. This was the position when the strike began. The cost to the man of the stoppage is estimated at a minimum of £1.15,624. The following table gives the results of colliery operations during the first year (to June, 1922) of the national agreement:

<table>
<thead>
<tr>
<th>Month</th>
<th>Earnings</th>
<th>Losses</th>
<th>Net Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>£14,984,936</td>
<td>£1.15,624</td>
<td>£13,831,312</td>
</tr>
<tr>
<td>February</td>
<td>£13,831,312</td>
<td>£1.15,624</td>
<td>£12,675,688</td>
</tr>
<tr>
<td>March</td>
<td>£12,675,688</td>
<td>£1.15,624</td>
<td>£11,520,064</td>
</tr>
<tr>
<td>April</td>
<td>£11,520,064</td>
<td>£1.15,624</td>
<td>£10,364,440</td>
</tr>
<tr>
<td>May</td>
<td>£10,364,440</td>
<td>£1.15,624</td>
<td>£9,208,816</td>
</tr>
<tr>
<td>June</td>
<td>£9,208,816</td>
<td>£1.15,624</td>
<td>£8,052,192</td>
</tr>
</tbody>
</table>

If the last trading profits are not offset against the loss during the strike it is seen that the net loss was £1,328,962. In the corresponding period of 1913 the profits were £28,000,000.

From last November to June this year the owners have paid out £22,000,123 to make the wages up to 20 per cent above the standard.

During the year under review the tonnage and profit or loss were:

<table>
<thead>
<tr>
<th>Month</th>
<th>Tonnage (in 1,000)</th>
<th>Profit (+ or Loss -) (in £)</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>12,928</td>
<td>-20,407</td>
</tr>
<tr>
<td>February</td>
<td>11,896</td>
<td>+1,403</td>
</tr>
<tr>
<td>March</td>
<td>10,864</td>
<td>-1,909</td>
</tr>
<tr>
<td>April</td>
<td>9,832</td>
<td>-1,402</td>
</tr>
<tr>
<td>May</td>
<td>8,800</td>
<td>+2,098</td>
</tr>
<tr>
<td>June</td>
<td>7,768</td>
<td>-1,707</td>
</tr>
</tbody>
</table>

Engineers to Become Coal Operators.

The Brotherhood of Locomotive Engineers is to enter into the work of the coal operators, according to a statement of Albert F. Cary, editor of the Brotherhood of Locomotive Engineers' Journal. The locomotive engineers are ready with investment in West Virginia and Kentucky for coal for the miners but have not invested capital for the mining of coal. The leading officers of the brotherhood have obtained the United States patents on coal River, in Boone County, Big Spring coal district, near Pittsburgh, Ky.

The Coal River Collieries, as the new company is called, is owned by hundreds of locomotive engineers throughout the country, who have subscribed in small amounts to the capital stock of $5,000,000.

The engineers are not only going into the business of mining coal; they are also planning the establishment of retail yards to sell their coal at reasonable prices to railroads and other workers in the large cities. Locomotive engineers and their friends have already organized these auxiliary coal yards in Ohio and Michigan, and have placed contracts with their coal companies for delivery direct from the mine pits to consumers. It is estimated that the mines will have a capacity exceeding 6,000 tons a day.

Smokeless Output in August Exceeded That Of a Year Ago, Despite Car Shortage.

Notwithstanding the handicap of a car shortage, 2,847,728 net tons of coal was produced in the four smokeless districts of West Virginia in August, according to figures just compiled. Output during the first eight months of 1922 exceeded by six and a quarter million tons that of the corresponding period of 1921. If production can be continued at the same rate during the remainder of the year, there is every prospect that 1922 will eclipse the banner production year of 1916, when 36,000,000 tons was produced. The following is a showing of smokeless production for August and for the eight months of the year:

| District          | 1922 Tons | 1921 Tons |增(-)%
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>August</td>
<td>2,847,728</td>
<td>2,424,524</td>
<td>17.4</td>
</tr>
<tr>
<td>Totals, August</td>
<td>2,847,728</td>
<td>2,424,524</td>
<td>17.4</td>
</tr>
<tr>
<td>Totals, August</td>
<td>2,847,728</td>
<td>2,424,524</td>
<td>17.4</td>
</tr>
</tbody>
</table>

The Norfolk & Western hauled 1,872,875 tons of the August output, the Virginian 432,103 tons and the Chesapeake & Ohio 542,850 tons. The total coal movement in net tons of the three roads during that month is shown in the following table:

| Route              | 1922 Tons | 1921 Tons |增(-)%
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hauled by Norfolk &amp; Western</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polecaton</td>
<td>1,474,170</td>
<td>1,065,450</td>
<td>40.0</td>
</tr>
<tr>
<td>Winding Gulf</td>
<td>1,735,240</td>
<td>1,274,680</td>
<td>36.8</td>
</tr>
<tr>
<td>Total</td>
<td>3,209,410</td>
<td>2,339,130</td>
<td>38.8</td>
</tr>
</tbody>
</table>

Hauled by Chesapeake & Ohio:

| Route              | 1922 Tons | 1921 Tons |增(-)%
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lehigh</td>
<td>764,350</td>
<td>500,430</td>
<td>53.3</td>
</tr>
<tr>
<td>New River</td>
<td>423,060</td>
<td>274,260</td>
<td>53.7</td>
</tr>
<tr>
<td>Total</td>
<td>1,187,410</td>
<td>774,690</td>
<td>53.7</td>
</tr>
</tbody>
</table>

Hauled by Virginian:

| Route              | 1922 Tons | 1921 Tons |增(-)%
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winding Gulf</td>
<td>338,539</td>
<td>235,260</td>
<td>43.5</td>
</tr>
<tr>
<td>Polecaton</td>
<td>4,314</td>
<td>3,340</td>
<td>29.6</td>
</tr>
<tr>
<td>Total</td>
<td>342,853</td>
<td>238,590</td>
<td>43.5</td>
</tr>
</tbody>
</table>

Forty-Eight More Men Indicted for Murder in Connection with Herrin Massacre.

The special grand jury at Marion, Ill., finished its work on the Herrin massacre case Monday, Oct. 23, by indicting forty-eight more men for the murder of Ignace Kubenis, a victim who died of wounds since the jury recessed last month. Circuit Judge Hartwell says the indictments are illegal because returned at a term of court subsequent to the one at which the jury was impaneled. State's Attorney Delos Duty disagrees with him.

Only a few witnesses were heard on Monday, and they are said to have told of wounds inflicted on Kubanis, and which are said to have resulted in his death. This makes 494 persons the grand jury has indicted in connection with the rioting in which twenty-three men were killed.

Most MEN's IDEA of a living wage is about two dollars more than they get.—Portland Oregonian.
Colder weather has strengthened the domestic market. Industrial buyers, however, are as yet unchanged in their attitude of aloofness. Cars are so short and the steam market so weak that the net result is a continuation of the price decline which has been in effect for the last 60 days. Coal Age Index of spot bituminous coal prices receded to 352 on Oct. 23, a drop of 16 points from the preceding week; the average price corresponding to this index number is $4.26—the week before it was $4.45.

Car shortage is prevalent everywhere and poor transportation conditions make deliveries slow and uncertain, but circumstances indicate that there would be a heavy surplus of coal if the carriers were able to give better service. As it is, production is becoming more evenly balanced with current demand, and even the slight upturn in general industrial buying which has been brought about in the last ten days discloses the narrow margin between supply and demand.

**EVEN RAILROADS HAVE DELAYED STOCKING**

The stocking program has not yet started. Even the railroads are not building up any appreciable reserves. The feeling seems to prevail that with the end of the Lake season and more seasonable domestic weather there will be plenty of tonnage then available to care for current needs and to build stocks. Day-to-day requirements constitute the main market activity and prices show a wide range. Some coal, caught on a poor market, sells off, while on the other hand a consumer in need of coal pays the higher quotation without a murmur. There is no complaint heard about the ruling prices, nor is the consumer evincing any apprehension about the state of the market when colder weather may be expected to interfere with the movement from the mines.

New England is deaf to the offerings being made to that market. Large consumers in that territory have sufficient coal on hand to await developments in November and December. The smaller buyer is taking some additional tonnage that he has been considering since last July, but the amount is not sufficient to check the declining current quotations, whether all rail or coastwise. British coal is still a factor along the Atlantic seaboard, but receipts are falling off daily.

The Cincinnati gateway is feeling the competition of coals from outside territory and prices have softened all along the line. Eastern inland markets, however, feel the heavy drain on production made by the Lakes and railroads, and this section presents the firmest market of today. Chicago and Midwestern points are saturated with steam coals, produced in an effort to meet the onrush of domestic orders.

Anthracite domestic sizes are, of course, in heavy demand and the cold weather has brought urgent orders to the retailer. Movement still centers on the East, although Lake business is increasing. Western and more distant points are receiving meager shipments, much of it at high independent figures.

Steam sizes are burdensome. Sales are slow and companies are running these coals to storage, while various railroad embargoes have been placed against their movement, as the congestion of these loads threatens to affect production of the much-needed family sizes.
Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

<table>
<thead>
<tr>
<th>Region</th>
<th>Market</th>
<th>Quoted</th>
<th>Oct. 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midwest</td>
<td>Pliita No. 8 mine run.</td>
<td>$4.60</td>
<td>$4.40</td>
</tr>
<tr>
<td></td>
<td>Cleveland</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6.35</td>
<td>4.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South and Southwest</td>
<td>Big Seam lump.</td>
<td>Birmingham</td>
<td>3.75</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

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

Advances over previous week shown in heavy type, declines in italics.

Coalingage Vol. 22, No. 17

"Complete returns on coal production in the third week of October show an increase of almost 1,000,000 tons of product, says the Geological Survey. The number of cars handled on Monday, Oct. 24, was reported by the railroads at 81,836, marking a new record for this year. On Tuesday holdings declined to 81,029 cars, and on Wednesday to 80,590. These were the highest daily figures of the year and third working days of a week about the close of the month. On Thursday there was a further decline to 80,374 cars. Shipments of Lake coal were 100,130 net tons during the week ending Oct. 28, as compared with 1,090,369 tons in the preceding week. This movement has been steady during the third week being 10,481,130 tons, compared with 10,481,130 for the week ending Oct. 19. The figures for the season to date stands at 10,481,130 tons, during the corresponding period of 1920 it was 10,481,130 tons. The recent heavy receipts of soft-coal cargoes has reassured the Northwest, and while domestic business is strong the supply-demand has fallen off. When navigation closes, the other sources of supply will be drawn on to help out the shortage of the docks. North Dakota lignite and Montana coal on increased production can keep the Dakotas going; southern Minnesota and southern Wisconsin can use Illinois coal, and northern parts of Minnesota and Wisconsin only need be dependent on dock supplies. The utilization of the Western coals may have a lasting competitive effect on the future dock trade.

New England all-rail receipts of soft coal were 3,636 cars during the second week of October, as compared with 3,272 cars in the preceding week. A low price of $3 was offered last week to railroads in this territory, but no takers are recorded. British cargoes and coastwise fuels leave little space in the market.
How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

<table>
<thead>
<tr>
<th>Month</th>
<th>U. S. Total</th>
<th>Alabama</th>
<th>Somerset County</th>
<th>Panhandle, W. Va.</th>
<th>Western</th>
<th>Virginia</th>
<th>West Virginia</th>
<th>Kentucky</th>
<th>Ohio</th>
<th>Illinois</th>
<th>Indiana</th>
<th>Indiana</th>
<th>Michigan</th>
<th>Ohio</th>
<th>Kentucky</th>
<th>Virginia</th>
<th>West Virginia</th>
<th>Tennessee</th>
</tr>
</thead>
<tbody>
<tr>
<td>July to Dec.</td>
<td>45.6</td>
<td>63.5</td>
<td>55.5</td>
<td>53.3</td>
<td>54.9</td>
<td>58.4</td>
<td>53.3</td>
<td>51.7</td>
<td>49.8</td>
<td>48.1</td>
<td>47.6</td>
<td>46.6</td>
<td>45.7</td>
<td>38.2</td>
<td>32.9</td>
<td>54.8</td>
<td>53.3</td>
<td>47.8</td>
</tr>
<tr>
<td>June to July</td>
<td>45.6</td>
<td>63.5</td>
<td>55.5</td>
<td>53.3</td>
<td>54.9</td>
<td>58.4</td>
<td>53.3</td>
<td>51.7</td>
<td>49.8</td>
<td>48.1</td>
<td>47.6</td>
<td>46.6</td>
<td>45.7</td>
<td>38.2</td>
<td>32.9</td>
<td>54.8</td>
<td>53.3</td>
<td>47.8</td>
</tr>
</tbody>
</table>

Car Loadings, Surpluses and Shortages

<table>
<thead>
<tr>
<th>Week ended Oct. 7, 1922</th>
<th>Number of Cars Loaded</th>
<th>Number of Coal Cars</th>
<th>Surplus Cars</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Cars</td>
<td>Coal Cars</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1922</td>
<td>1922</td>
<td>1922</td>
<td>1922</td>
</tr>
<tr>
<td>905,000</td>
<td>898,381</td>
<td>37,619</td>
<td>905,000</td>
</tr>
<tr>
<td>Previous week</td>
<td>1922</td>
<td>1922</td>
<td>1922</td>
</tr>
<tr>
<td>896,169</td>
<td>898,381</td>
<td>1,780</td>
<td>896,169</td>
</tr>
<tr>
<td>Same week in 1921</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>899,681</td>
<td>898,381</td>
<td>1,300</td>
<td>899,681</td>
</tr>
<tr>
<td>Oct. 8, 1922</td>
<td>5,300</td>
<td>3,924</td>
<td>1,376</td>
</tr>
<tr>
<td>Sept. 30, 1922</td>
<td>5,843</td>
<td>3,924</td>
<td>1,919</td>
</tr>
<tr>
<td>Same date a year ago</td>
<td>142,970</td>
<td>82,535</td>
<td>60,435</td>
</tr>
</tbody>
</table>

room for all-rail coal in this apathetic market, and when the present high freight rate from the mines is considered it is realized that Hampton Roads is in excellent competitive position for what little business is offering.

Hampton Roads dumpings have held around 260,000 net tons for the last three weeks. During last week 260,358 tons were dumped as compared with 262,957 tons in the preceding week. Coastwise trade has dwindled of late but coal on hand at the piers is not gaining, as car shortage and transportation troubles have affected receipts. The stage appears set for a considerable resumption of coastwise shipments, both on spot and contract, as soon as the congestion of boats is cleared up at New England ports.

ANTHRACITE

Production of anthracite has passed the 2,000,000-ton mark. The output during the week ended Oct. 14 was 2,075,000 net tons, and early reports for last week indicate that production in that period will again be in the neighborhood of 2,000,000 tons.

All-rail shipments to New England were 3,226 cars during the second week of October, as compared with 2,759 cars in the previous week. The East has fared the best since mining was resumed, and the domestic situation, while still troublesome, shows marked improvement. Western points are taking a little coal, much of it at high independent

Coal Age Index 355, Week of Oct. 23, 1922

COKE

Beckley coke production continues its slow but steady upward trend. The output for the week ended Oct. 14 was 183,000 net tons, as compared with 173,000 tons in the preceding week. The present rate is nearly double that of a year ago, when the business depression was acute.

Connellsville prices continue to break and only an occasional purchaser is coming into the market. Softening bituminous coal prices cause coke buyers to feel that they are due for lower quotations. Pig iron is an uptrend that furnaces are conservative in making arrangements for reopening.

MONTHLY OUTPUT OF BYPRODUCT AND RECEIVED COKE IN THE UNITED STATES

<table>
<thead>
<tr>
<th>United States</th>
<th>1917</th>
<th>1918</th>
<th>1919</th>
<th>1920</th>
<th>1921</th>
</tr>
</thead>
<tbody>
<tr>
<td>By product</td>
<td>1917</td>
<td>1918</td>
<td>1919</td>
<td>1920</td>
<td>1921</td>
</tr>
<tr>
<td>Coke</td>
<td>1917</td>
<td>1918</td>
<td>1919</td>
<td>1920</td>
<td>1921</td>
</tr>
</tbody>
</table>

Lake dumpings during the week ended Oct. 23 were 53,553 net tons.

COKE
Continental Buyers Appear
As American Orders Abate

In recent weeks a temporary setback in the demand from American buyers has been noted, as a result of which the entire British coal trade is more unsettled, though some brightening is evident during the past two weeks owing to a revival of the shipping in American waters, as a result of which the entire British coal trade has improved. The drop in prices following the filling of American contracts has had the effect of attracting Continental buyers, especially Germany, France, and Italy.

The Scottish market is marked by a general upward trend of prices, and round sorts have advanced by as much as 2s. 6d. to 6. 1 tide. per ton. The chief customer is Italy, though some cargoes are still being booked to the U. S. and Canada.

The miners have threatened to strike on Nov. 5 in Wales with the object of forcing the non-unionists into the ranks of the Miners' Federation. Extensive propaganda work is to be undertaken by the Miners' Federation with the object of bringing the non-unionists into line.

Business Slumps at Hampton Roads

Business is generally poor throughout the coastwise trade, with bolder business scarcely holding its own, in the face of continued decline in prices. Export business is practically non-existent.

While the supply of coal on hand is large, it is distributed through the trade in such small amounts that few dealers have any considerable cargoes on hand. The general tone of the market is off, and little prospect of immediate revival is in sight. Dealers are hopeful, however, of better business later in the season, when shipments by rail to the West begin to lessen.

World Production of Coal in First Half of 1922

In spite of the great strike in the United States the world's production of coal in the first half of 1922 was greater than in the corresponding period of 1921. The total output in the six months, January to June, 1922, according to reports collected by the United States Geological Survey, was approximately 858,500,000 metric tons. Continued for twelve months this rate of output would yield a total of 1,157,000,000 tons. Settlement of the strike in this country insures that world output in the second half of the year will be greater than the first, but unless so, it seems unlikely that the total for 1922 will exceed 1,800,000,000 tons. This is an increase over 1921, but a decrease of nearly 140,000,000 tons from 1920.

PRODUCTION OF COAL IN PRINCIPAL COUNTRIES OF THE WORLD, JANUARY-JUNE, 1922

<table>
<thead>
<tr>
<th>Country</th>
<th>Metric Tons of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>South America</td>
<td>5,532,583</td>
</tr>
<tr>
<td>Canada, all coal</td>
<td>189,660,000</td>
</tr>
<tr>
<td>United States, all coal</td>
<td>192,190,000</td>
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<tr>
<td>Other countries</td>
<td>93,400</td>
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<tr>
<td>South America</td>
<td>8,640</td>
</tr>
<tr>
<td>Europe</td>
<td>10,707,880</td>
</tr>
<tr>
<td>Austria, Coal</td>
<td>79,954,379</td>
</tr>
<tr>
<td>Belgium</td>
<td>380,169</td>
</tr>
<tr>
<td>Czechoslovak Republic</td>
<td>5,082,468</td>
</tr>
<tr>
<td>France, Coal</td>
<td>74,792,685</td>
</tr>
<tr>
<td>Germany, Coal</td>
<td>65,605</td>
</tr>
<tr>
<td>Italy, Coal</td>
<td>1,500,000</td>
</tr>
<tr>
<td>Poland</td>
<td>112,642</td>
</tr>
<tr>
<td>United Kingdom, Lancashire and Cumberland</td>
<td>121,664,875</td>
</tr>
<tr>
<td>United Kingdom, United Provinces</td>
<td>21,410</td>
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<tr>
<td>France</td>
<td>12,000,000</td>
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<tr>
<td>Russia</td>
<td>726,000</td>
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<tr>
<td>United States</td>
<td>4,144,521</td>
</tr>
<tr>
<td>Canada</td>
<td>568,600,000</td>
</tr>
</tbody>
</table>

*Estimate included in total. b includes scrap and blast furnace. c includes 1,775,000 metric tons estimated produced during June in Polish Upper Silesia.

German Miners Get Wage Increase

The award conceding an increase of 150 m. per man per shift to the Ruhr miners for October has been made binding by the government, despite the opposition met to accept it.

The Ministry has also decided that the wages of miners under the Rhenish Brown Coal Syndicate shall be increased to the same extent as those of the Ruhr miners, and that the increases for the other brown coal districts shall be in the following proportions of that amount: Duren district, 91 per cent; Mid-Rhenish Brown Coal Syndicate, 92 per cent in the central district, and 90 per cent in the marginal districts; Bavaria, 94 per cent for the large pits and 90 per cent for the small concerns.

It is stated that to the end of September the Westphalian pits had not derived any advantage from the introduction of overtime at the beginning of that month, but only additional financial burdens, as only 52 per cent of the underground men have worked the additional hours. The average daily production is estimated to have increased by only 7,000 tons, or from 305,000 to 315,000 tons, whereas a daily advance of at least 30,000 tons was expected from the overtime system.

Production throughout Germany in August was 10,200,000 metric tons, as compared with 11,700,000 tons in the same month in 1921, which included 1,550,000 tons in East and in Polish Upper Silesia. For the eight months ended with August the output amounted to 89,280,000 tons, as compared with
88,990,000 tons, including 13,890,000 tons in East Upper Silesia. Production of lignite in the eight months was 81,482,000 ton (80,550,000 tons in the corresponding period in 1921); coke 19,500,000 tons (18,500,000 tons in 1921), and lignite briquettes, 19,510,000 tons (18,760,000 tons).

Production in the Ruhr region, including the iron and steel deep wells of the Rhine, during the 26 working days of September is estimated at 8,260,000 tons as compared with 8,300,000 tons during the 27 working days of August and 7,900,000 during September, 1921. Production of coal in the Ruhr region during the week ended Sept. 30 was 1,888,000 metric tons and in the week ending Oct. 7 it was 1,855,000 tons, according to a cable to Coal Age.

Strike of French Miners Is Averted

There continues to be a very active demand in the Nord and Pas-de-Calais fields, both for industrial and domestic coal. The demand for the latter exceeds the supply. In the Loire field there is also a strong inquiry for house coals, but industrials are rather quiet. Lorraine and the Sarre are now in a favorable position.

The strike fears have been dispelled by a letter written on Oct. 7 by the owners to the Nord and Pas-de-Calais to the Minister of Public Works, in which the owners withdrew their previous decision to reduce the wages as from Oct. 15, if in the meantime they had not obtained sufficient relief on their coal prices. The owners state that they will continue to assume the sacrifices in favor of their men, hoping that Parliament will soon amend the Act of June 24, 1919, on working time in mines, as to permit the French collieries to adequately meet the competition of foreign coals.

**FRANCE CONSUMPTION STATISTICS**

<table>
<thead>
<tr>
<th>1st 8 Mths</th>
<th>August</th>
<th>Metric Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>Production</td>
<td>265.137</td>
</tr>
<tr>
<td></td>
<td>Plus imports</td>
<td>17.668.785</td>
</tr>
<tr>
<td></td>
<td>Less exports</td>
<td>1.431.802</td>
</tr>
<tr>
<td></td>
<td>Coal consumption</td>
<td>34.393.575</td>
</tr>
<tr>
<td></td>
<td>Production</td>
<td>52.029</td>
</tr>
<tr>
<td></td>
<td>Plus imports</td>
<td>432.818</td>
</tr>
<tr>
<td></td>
<td>Less exports</td>
<td>3.303.860</td>
</tr>
<tr>
<td></td>
<td>Coke consumption</td>
<td>579.376</td>
</tr>
<tr>
<td></td>
<td>Production</td>
<td>17.668.785</td>
</tr>
<tr>
<td></td>
<td>Plus imports</td>
<td>432.818</td>
</tr>
<tr>
<td></td>
<td>Less exports</td>
<td>3.303.860</td>
</tr>
<tr>
<td></td>
<td>Briquet consumption</td>
<td>293.830</td>
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**FRENCH COAL OUTFIT IN AUGUST**

<table>
<thead>
<tr>
<th></th>
<th>Nort d</th>
<th>Pas-de-Calais</th>
<th>Lorraine (Huney, etc.)</th>
<th>Centre of France</th>
<th>Alsace</th>
<th>Southern fields</th>
<th>Minor fields, West of France</th>
<th>Ronez and Pateau mines (Nancy)</th>
<th>Lorraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pas-de-Calais</td>
<td>64.950</td>
<td>614.962</td>
<td>109.872</td>
<td>122.164</td>
<td>105.260</td>
<td>195.912</td>
<td>18.294</td>
<td>9.087</td>
<td>672.684</td>
</tr>
<tr>
<td>Lorraine</td>
<td>459.376</td>
<td>64.950</td>
<td>679.385</td>
<td>222.184</td>
<td>105.260</td>
<td>195.912</td>
<td>18.294</td>
<td>9.087</td>
<td>672.684</td>
</tr>
<tr>
<td>Total</td>
<td>265.137</td>
<td>1174.875</td>
<td>1031.150</td>
<td>429.626</td>
<td>315.792</td>
<td>679.642</td>
<td>74.484</td>
<td>5.174</td>
<td>1345.428</td>
</tr>
</tbody>
</table>

**THE DECREASE IN COKE SHIPMENTS, WHICH CAUSED SUCH MUCH INDIRECTLY TO THE UNJUSTIFIED REDUCTION OF RUHR COKE DELIVERIES BETWEEN AUG. 19 AND 29.**

According to French Custom's returns, France received from Great Britain in August 854,089 tons of coal, as against 215,872 in July and an average monthly quantity of 663,183 tons during the first seven months of 1922.

**FRENCH IMPORTS IN METRIC TONS**

<table>
<thead>
<tr>
<th>1st 8 Mths</th>
<th>August</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal from</td>
<td>Sarre</td>
</tr>
<tr>
<td></td>
<td>310,479</td>
</tr>
<tr>
<td></td>
<td>Great Britain</td>
</tr>
<tr>
<td></td>
<td>Belgium</td>
</tr>
<tr>
<td></td>
<td>U.S.</td>
</tr>
<tr>
<td></td>
<td>Germany</td>
</tr>
<tr>
<td></td>
<td>Netherlands</td>
</tr>
<tr>
<td></td>
<td>Other countries</td>
</tr>
<tr>
<td>Total</td>
<td>1,766,670</td>
</tr>
</tbody>
</table>

**FRENCH EXPORTS IN METRIC TONS**

<table>
<thead>
<tr>
<th>1st 8 Mths</th>
<th>Coal</th>
<th>Coke</th>
<th>Briquettes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>172,263</td>
<td>1,138,591</td>
<td>7,357</td>
</tr>
</tbody>
</table>

**Coal Paragraphs from Foreign Lands**

**ITALY—The price of Cardiff steam first is quoted at 39s. 6d., according to a cable to Coal Age.**

**BELGIUM—The coal market orders for all domestic description are numerous.**

**AUSTRIA—Widespread cessation of work in the New South Wales collieries has already commenced, but the shipping community is not disturbed.**

**INDIA—The Bombay bunker coal market is dull.**

**BRITISH OWNERS BEAR HEAVY LOSES**

The manner in which the Wage Agreement in the coal industry operates is seen in the certificate of the joint accountants setting forth the financial results of the South Wales collieries for last July, upon which wage rates for September were determined.

It is shown that the costs of production, i.e., the miners' minimum wage, wages, and unemployment payments per ton of coal, were only 3.0s. 6d. in September, and the cost of production including the losses from the miners' disruption, was only 4.6s. 6d. per ton, whereas in April, before the miners' disruption, it was 7s. 6d.

**THE DECREASE IN COKE SHIPMENTS, WHICH CAUSED SUCH MUCH INDIRECTLY TO THE UNJUSTIFIED REDUCTION OF RUHR COKE DELIVERIES BETWEEN AUG. 19 AND 29.**

According to French Custom's returns, France received from Great Britain in August 854,089 tons of coal, as against 215,872 in July and an average monthly quantity of 663,183 tons during the first seven months of 1922.
Large Consumers Active: Others Buy Hand to Mouth

Despite Low Stacks and Car Scarcity, Bargain-Hunting Tactless Are Common—All But Best Coals Sell Off Under Pressure—British and Southern Fuels in Less Demand.

Haying activity is still confined to the railroads and large consumers. Others are still on a hand-to-mouth policy and many have no stacks worth mentioning. Cars are short, but these consumers refuse to worry about the situation and are employing bargain-hunting tactics to procure their current needs. Only the best coals are readily salable—the others are selling off under the pressure.

Late receipts of British coals are still offered at low figures, but with heavier home production these sellers are having a hard time to dispose of their free cargoes. Southern coals also are less in demand. Rail deliveries are slow but enough coal is moving to more than fill all current demands.

BALTIMORE

While the car supply is at present running as low as 18 and 25 per cent, and weekly approaches rapidly, the coal trade here is faced by the rather unusual condition of declining demand, and at times a condition of car supply such as has existed for the past two or three weeks would have dumped the price to $4.50. As it is, there has been a return to $4.75.

The past of the trouble probably lies in the fact that, while these prices were hardening near as high as they have been several weeks, they have not been high enough to make producers hesitate in stocking against fall and winter roads. Thus the shippers have held off the buyers until they have seen a little indication of a more decided movement and the railroads have apparently failed to satisfy them.

This movement on the railroad side is shown by the fact that fuel coal is running near $3.50, and the phraseology at Baltimore has increased on this week and on the 20th, 21st, and 22nd of October, 23rd and 24th of October, 25th and 26th of October, 27th and 28th of October, 29th and 30th of October, 31st of October and November 1st.

PHILADELPHIA

The situation is from every view that the coal supply in the east coast regions is not as low as it has been since the close of last year. At this time the index of assigned cars orders for the loading of railroad fuel is believed to be somewhat higher than in the same period of last year. The demand continues steady and, due to the large number of orders, the price of carload lots continues at $3.25.

COAL AGE

Vol. 22, No. 17

North Atlantic

To the railroads companies have urged the acceptance of these offers, as they realized that the conditions which are confronting the trade. There is no question that the roads realize that the purchase of fuel at the ruling prices in recent weeks is not paying them now sharing in the production with the utility plants and other large consumers.

Prices are still easy, with just the slightest tendency toward a firmer condition. One house which has endeavored to make a survey of the field has reached the conclusion there is at this time not more than a five weeks' supply of coal on the ground in this district. The ships which visit the ports are therefore careful to make it clear to the buyers that the coal is not in excess.

As yet there is no diminution in that class of consumer who prefers to wait for lower prices before trying to accumulate a surplus. It may be useless for such concerns to even try to get stock ahead quickly, as they would only succeed in running up the market.

CENTRAL PENNSYLVANIA

Prices are lower now than they have been for a long time. With the exception of the higher grades, they are below the high prices fixed by the state fuel commission following the termination of the action. Pools 11 and 18 are selling $3.25-$3.50 per ton. Pool 10, $3.50 per ton. Pool 9, $4 per ton. Pool 1 and 71, $4.50 per ton.

Production reached the high-water mark in the week ended Oct. 15, when loadings were 19,900 cars. The operator's associations in the district have asked the C. & O. to place a service agent in the field to investigate the placing of cars by the Pennsylvania. It is claimed that certain sections have not received their share and the operators' associations may have to be straightened out at once.

NEW YORK

Lower temperatures did not result in any improvement here. Buyers held off and a reasonable offer could induce them to increase supplies. Quotations have been reduced to a result of the easiness of coal, indicated a downward tendency.

In this harbor on Oct. 20 there were 1,619 cars, which was a slight decrease from the number on hand earlier in the week. In addition there was considerable British coal which was being fairly offered at $3.45-$3.50 per ton. Although it was reported that some had been offered at lower figures.

Reports of foreign fuel who brought cargoes of coal, without orders for it are finding it difficult to dispose of their holdings. During the week ending Oct. 20 there were reported as arriving at the New York harbor six vessels carrying 37,552 tons of coal and one vessel carrying 3,385 tons of coke.

Just now consumers are getting all the coal they need and are not carrying as large stocks as usual. They evidently feel they will have no trouble in getting whatever coal they will need readily and are not worrying about the future.

Southern coal receipts here are smaller. Quotations run about $7 per ton.

UPPER POTOMAC

From a labor standpoint, conditions are now almost normal in the Upper Potomac and are gradually improving in the Georges Creek field. During the week of October, demand was on a somewhat larger scale than had been the case during the preceding week and that had the effect of hardening prices somewhat.

FAIRMONT

Signs were not lacking at the outset of the third week of October to indicate that demand for coal, both here with railroads seeking larger tonnages. The mines in the northern part of the state as a whole, are still seriously handicapped by a car shortage. Western coal is still being moved by way of Charleston.

South

BIRMINGHAM

There has been no change in general trade conditions. Demand for steam coal is only moderate, the market activity as exists being due to some extent to the restricted supply. Although production is being maintained around 35,600 tons per week, shippers are so gas coals, $5.50-$5.75, and high-volatile slack, $3.00-$3.25.

WASHINGTON

The market is at present showing a slight decrease, but the buyers are still in a steady demand for coal. Prices are steady at $3.50-$3.75 per ton, and are not expected to change.

VIRGINIA

The field has been unable to maintain its production, largely because of losses sustained on the N. & W. and the N. & N. On other roads mines have increased their output somewhat. There is a little stronger demand in Eastern markets.
Anthracite

Congestion of Steam Loads
Now a Disturbing Factor
Production of Larger Sizes Threatened
—Brisker Domestic Demand with Colder Weather, Retailers Hard Put to Maintain Yard Stocks—Independents Forced to Distant Markets to Secure High Prices.

Inability to dispose of steam sizes is a disturbing factor which threatens to affect the production of the larger coals. Some companies are running these to storage and various railroad embargoes have been placed against their movement.

The colder weather has brought about a more urgent demand for domestic coal and retailers are barely able to maintain their yard stocks. Independent coals must seek Western and other more distant markets to obtain figures much above the so-called maximum price, as the East will not absorb much tonnage at exorbitant figures.

NEW YORK

The question of how to keep down the accumulation of steam sizes continues to hold the attention of the trade. The terminals are filled and there is estimated to be nearly 100 loaded boats lying in the harbor. Some of the companies are dumping the small coals at the regular storage yards. Embargoes have also been placed on shipments to some of the local piers.

Retail dealers have been getting sufficiently to keep them busy and nearly all consumers have had at least part of their supply delivered. So far as New York goes, it is believed that there will be no extreme shortage and that everybody will be able to get coal.

Independents are not finding it so easy to unload their product on local retail dealers as they did a few weeks back. Along the line and in the West the problem may not be so difficult.

Pea coal is easier and some dealers who have been willing to take fair-sized tonnages in order to get the larger coals have accumulated quite a supply. Stock of buckwheat are not as large as rice and barley. There were some offerings of large growth coal sizes here during the week on a mine basis of $2.25 for buckwheat, $1.90 for rice and 90c. for barley.

PHILADELPHIA

The pinch of fuel shortage is being much felt at this time, following the arrival of actual fall weather. The yards have less coal than at any time since our first shipments came in after the strike. Some of the larger shippers are no doubt spreading their production around, with territory at a distance now getting their turn. If coal had been kept moving but at the same rate it started there would have been insufficient at least to meet present weather conditions.

Mine prices seem now to be fairly well fixed, the companies continuing at their former figures, and with most of the large independents at $9.25. There are, however, reports that quotations on family sizes up to $12 are yet being made, but the general attitude of the retailer is to go without coal rather than pay extremely high prices.

There is also some annoyance in the car supply, and while it is not believed that any time has been lost the number of the cars delivered for loading is growing.

Steam sizes have not improved, but it is hoped with better weather conditions that the surplus will soon be absorbed. There is still buckwheat offering at $3.50, but the bulk of the excess tonnage is now selling nearer to $3.75. Barley continues troublesome. Should the shortage stocks go as far as continue much longer it is quite likely that a fair quantity of buckwheat will be taken in by the retailers, who up to this time have looked with anything but favor on this size.

BALTIMORE

Appeals for consumers to take bituminous as a substitute are failing to defer ears for the main part. Some of the importers have coal in cellars of houses, but there seems to be a general refusal to take much of the American product. The Maryland committee is pointing out to householders that they should use soft coal when they cannot get anthracite.

The hard coal dealers are up to their necks in work. While some coal is being received it is nothing like enough for urgent demands. Receipts are quickly absorbed and still dealers are putting them on every side by insistent customers.

BOSTON

Low temperatures have caused increasing anxiety over the supply of prepared sizes. In view of the relatively short time since mining was resumed the shippers as a whole have done amazingly well. Conditions have been favorable, both water and rail, for heavy movement and thus far New England has fared well.

Dealers are confining themselves to small deliveries in the effort to make their stock for the season possible. In most city prices have not been advanced over spring figures.

BUFFALO

All distributors and retailers are complaining of no coal and the weather is all that seems to be in the interest of the consumer. The fixing of a price for independent anthracite seems to have caused great dissatisfaction.

All shippers claim to be living up to the price, but there is report of more or less claiming to be out of coal when orders are given. Then the shipper says he can get coal for three or four dollars more. The movement by water has increased considerably, but is not up to normal yet. Shipments last week were 117,600 net tons, of which 53,300 tons cleared for Duluth and Superior and 64,300 tons for Chicago and 23,700 tons for Milwaukee. Freight rates remain at 40c. to Duluth, 50c. to Milwaukee and 50c @55c. to Chicago.

ANTHRACITE FIELDS

Things are still peaceful in the anthracite region and competition seems to be on the increase. There is, however, much difficulty in marketing the steam sizes and some of the companies are making concessions as to price.

The car shortage is not affecting the region as much as it has been in the past and it seems as if this difficulty will soon be done away with.

WEST

KANSAS CITY

It is difficult to understand the coal situation. Demand is strong for all grades and there is a rise in prices for some domestic nut coal. The price for nut has held firm at $6 until recently when it was reduced to $5.50 and mine run, from $5 to $5.50-$6. peninsula is not of much importance to Kansas and the present demand is for small quantities of coal for local use.

Prices are as follows: Kansas lump, $6; Kansas nut, $5.50; Kansas mine-run, $3.50-$4; Kansas slack, $2.50.

DENVER

A price war in Weld County between two small coal companies has reduced lignite coal in northern Colorado 90c. to $1.50 per ton. Some operators declare that coal is selling at $2.25-$2.50.

Wild weather has broken the coal spell which struck Denver and the state for three or four days. The car shortage is still a serious problem, even though the city and surrounding communities have not been suffering on account of a lack of coal, being on the main lines of transportation and using system cars which are never rested out of the state.

SALT LAKE CITY

The coal business is quiet. Operators have nearly caught up on their orders and are no longer looking for business unless the weather turns cold. The general coal price has remained level, and the price is still in session and there is no indication yet as to whether they will bring in any adjustments. Some in the business think they will.

The small companies are getting ready for business and many believe that Coal is in for a big industrial era. Carries have been good this year with fair products and transportation facilities, on the whole.
Steam Market Continues
To Suffer Peremptorily

DOMESTIC DEMAND SLOWLY DAY BY DAY

Domestic demand received no particular note during the week, but the trade continues slow and prices ruling about the same. The week ended February 22nd saw the market fairly steady and prices held about the same as in the beginning of the week. Small sales were made in the district.

There are several large shipments of Newcastle coal to the north, and there is some movement of coal from this district to the east. There is some movement from the east to the west, but the market is generally slow.

Prices are fairly steady, with slight downward tendencies. The market is generally slow and there is little movement. Prices are ruling at about the same level as last week.

RAILROAD TONNAGE

Railroad tonnages from all three fields have been fairly good, but the railroads are not storing any reserves. Many mines in this territory have been forced into suspension on account of no-bill screenings and the condition of the steam market is still poor.

LOUISVILLE

Eastern Kentucky, with a car supply steadily at below 20 per cent., is not having much trouble in disposing of production, which is keeping freight rates fairly firm. The Lake movement along with demand for gas coal, and movement to utility and hydropower plants, is accounting for the bulk of production. Screenings are maintaining values at around mine run prices, due to comparatively small production on account of general lack of lump orders.

It is admitted that with the Lake season nearing a close it will not be long before a larger tonnage will have to be disposed of through other channels, which will have a tendency to break down prices, and force operators to make more lump coal and offer it at lower prices.

Prices are somewhat weaker than they were, especially in western Kentucky. That section is quoting lump, $4.75@$5.25, nut, $4.25@$4.50, screenings, $2.25@$2.50 and mine run, $2.50@$2.75. Type coal is slightly lower, as are most grades. The market is about the same as last week.

WESTERN KENTUCKY

Prices are lower on steam coals, due to slow buying and lack of stock, orders from industries; along with the fact that national production is increasing, and competition for business is beginning to be felt. Freight rates prevent movement at the present time to districts which were large buyers during the period of shortage. Mine run is about a dollar lower, and it is now quoted $2.25@$2.50, and some for less. Nut and slack is $2.25@$2.50, and lump, $4.75@$5.25, but with any large business it would probably advance.

Better time is limiting larger movement of coal by water to the lower river markets. Most of the business of the western Kentucky field is going to the local users. Some buyers are disposing of their stocks, and it is generally agreed that the market is firm.

SOUTHERN ILLINOIS

As the demand for lump and egg increases there seems to be a falling off in the movement of steam sizes. This has been so pronounced that several large coal fields in the Carbondale district have had trouble moving steam coal and have cut the price from $5.50 to $4.25 to steam plants in isolated cases, while screenings were cut from $2.50 to $2.25 in some instances.

Working time averages two days a week, with some mines getting better.

Some similar conditions prevail in the Du Quoin and nearby areas. Egg is in a little more plentiful. In the Mt. Olive territory, the mines are getting about as much coal, but most of the shipments are from smokeless plants. The lower coal is in practically no use, and there is more movement of egg and some of the better grades of bituminous and smaller grades of smokeless. The demand is not sufficient to absorb all the coal on hand, but the market is firm.

DOMESTIC DEMAND IN CHICAGO

Demand continues slow, with little activity. Prices are firm and ruling at about the same level as last week. There is little movement, and the market is generally slow.

CHICAGO

The weather is still very cold, with snow and freezing conditions prevailing. We are very much in sympathy with the severe weather in the northern states, and hope that things will improve soon.

The market is fairly steady, with little movement. Prices are firm and ruling at about the same level as last week.

The demand for egg is not strong, with the market generally slow. The demand for steam is not strong, with the market generally slow.

The demand for smokeless is not strong, with the market generally slow. The demand for bituminous is not strong, with the market generally slow.

The demand for coke is not strong, with the market generally slow. The demand for anthracite is not strong, with the market generally slow.
Industrial Demand Gaining;

Output Matching Demand

Market Still Weak—Prices Steady Save on Domestic, Which Feels Cold Weather Stimulus—Fixing of Retailer's Margin in Ohio Complicates Situation.

Industrial demand is increasing slightly. The market is still weak, but production is becoming more evenly balanced with current demands. Prices are not quotably higher except on domestic sizes, which are feeling the effects of cold-weather demand.

Price fixing by Ohio on coal mined in that state is causing considerable tonnage to be shipped to outside markets. The retail situation also is confused by the state ruling which regulates the dealer's margin.

Lakes and railroads are taking much of the current production and little free coal is available. This is gradually strengthening the market as the shortage is apparent with the slightest upturn in demand.

PITTSBURGH

There is no material change in the rate of production. Supplies appear sufficient to meet regular requirements of the line trade together with the Lake trade. Car shortages are practically universal, circumstances as a whole indicating that there would be a surplus of coal if the railroads were able to supply all the cars ordered.

Coal users are showing no disposition to stock coal and evidently expect lower prices. The great bulk of current requirements are being met by a regular movement between mines and regular customers, subject in many cases to weekly or monthly price adjustment according to the state of the market, rather than by outright sales and purchases. This condition leaves little demand for the open market.

The market is not closely quotable, on account of there being quite a price range, according to quality. Ordinary steam coal is generally at $3@$3.25, with occasional transactions at $3.50. A fair grade of byproduct can be picked up usually at $3.50, while good gas runs up to $4 for mine run, with 50c. extra for screened. Domestic 13-in. lump is $4.75@$5.25, according to grade.

CLEVELAND

The market has begun to stiffen. Prices are higher than 10 days ago. Cooler weather and increasing car congestion have combined to bring about a firmer market. Some of the large coal carriers, which were furnishing a supply ranging from 70 to 100 per cent have dropped to a level of 35 to 50 per cent in the last few days. In view of these things a fuel shortage seems almost inevitable in this district. This is the view of Frank H. Biser, traffic commissioner of the Cleveland Chamber of Commerce, who is serving in the state fuel administrator's office.

In addition to present conditions of the turn in the market is found in the fact that many large dealers and operators report they have more orders for their books than they can deliver in three weeks. The price for $3.50 a ton, fixed by the state fuel commission, for No. 8 mine run, much of this fuel is moving out of the state. There has been a distinct quietening in household demand. The colder weather has caused this. Pocahontas is still scarce and hard coal is coming into the city in driblets. Under the new state regulations retail coal prices will fluctuate daily. In the past dealers have averaged their costs so they could quote prices for future delivery. They no longer do this and are charging the cost at the mine to the day of shipment from which the particular order is filled.

COLUMBUS

With colder weather at hand domestic demand is increasing. Producers and jobbers have many inquiries but since Ohio prices are regulated dealers have to be content with buying West Virginia and Kentucky grades as well as Ohio-produced mine run. Practically no Hocking or Pomeroy lump is going to Ohio dealers, producers preferring to sell outside of the state at higher prices. Retail prices as fixed by the administrator allow a margin of $2.20 to the buyer. The state is still active although car shortage and congestion is reducing the tonnage.

The car supply is growing less and this is reducing the output in all Ohio fields. The supply of cars in the Hocking Valley last week was about 40 per cent and in Crooksville and Cambridge somewhat less.

EASTERN OHIO

While the field is showing some improvement in output yet because of the continued inadequacy of transportation facilities some apprehension has been expressed by some members of the Ohio fuel administration that a famine is in prospect. During the week ended Oct. 14 this district produced 135,000 tons or 58.6 per cent of predicted capacity. With approximately 30 per cent of current output being drawn for railroad fuel and some 60 per cent of the remainder going to the lower traffic point to the Northwest, it may readily be seen that as the restricted rate of operating the volume of rail and mine run entering the area market cannot be of any considerable magnitude.

Steam users are daily becoming more concerned and domestic consumers are beginning to feel more apprehensive. This is due to the demand that has developed. Difficulty is being experienced in satisfying the demand. With the exception of slack, which is still and in abundance because of heavy shipping of 2-in. to the Lake, other grades are scarce in the open market. Other spot prices conform to maximum figures set by the state administration.

Receipts of bituminous coal at Cleveland during the week ended Oct. 14 were 1,471 cars, 360 cars under the preceding week. Of these 1,282 cars were for industries and 251 for retail yards.

DETOIT

Bituminous coal is coming into Detroit in fair amount, though the average daily receipts fail to show the quantity which dealers estimate as necessary to meet the requirements. Industrial plants seem to be releasing orders only when compelled to replenish their supplies.

Retail dealers, also, are inclined to proceed cautiously in the matter of building up yard stocks. The waiting attitude of the consumers impresses jobbers and wholesalers as the fulfillment of the expectation that coal will be obtained at lower prices after a while.

Hocking lump and egg is quoted at $5.50@6.75, mine run, $3.75@4.50, pot, pulp and slack, $3.25@3.50. Fairmont lump is $5, mine run, $4.50@4.75, slack, $4.00@4.25. Hocking lump, 14-in. is $5, mine run, $4.25@4.50, slack, $3.75@3.75. West Virginia and Kentucky lump and egg is $6.25@6.50, mine run and slack, $4.50@4.75. Smokeless lump and egg is handled at about $5.50, mine run, $6.75.

BUFFALO

Some shippers report the market stronger, but it is hard to find any advanced prices. The consumers are buying as they please. No sort of warning of coming storms or still warmer weather supply can scare them.

The price was scaled as varied as it is needed. Mine run coal is quoted as much as over our shortage, but in fact that is all that is saving them from a total collapse of the market.

The weather has done what it could to fix the market. The jobbers know this and confess that it has so far done much toward spoiling their arguments. Quotations are: $8 for Heating; $6.50@7.50 for Gas; $4.50@4.75 for Domestic; $4@4.25 for Allegheny Valley and other mine run; $3.25 for slack.

NORTHERN PANHANDLE

Miners are much handicapped by their inability to ship large cargoes to Western markets or to the market world over. Owners, who are suffering if they can, it has been found possible to get sufficient coal, though not in the quantity被认为。
First Cold Worries Few

Folks Around the Lakes

Considerable Flow of Cargo Coal Both
Hard and Soft Alases Worst Fears
but Fuel is Delayed Out Carefully—
Steam Prices Safest.

The Northwest finds little cause
for worry in spite of the inevitable
domestic rush that was started by
the first cold snap. Prices on
domestic are not hiking even though
the supply does not equal the
demand. Heavy Lake shipments con-
tinue and it is probable they will
until Dec. 1. Rail coal from Indiana
and Illinois is coming in in fair
volumes. The general result is no-
body in contracting and steam prices
are hedged downward.

Hard-coal cargoes already in have
decided not in small quantities
but even that does not cause much
concern over the future. It certainly
has not set a demand keen enough
to take out of dealers’ yards some
low-grade soft coal bought at fairly
high prices last summer. Both deal-
ers and dock men have had as much
experience buying high-priced coals
for protection only to have it left on
their hands at the end of the season
that they are not stocking heavily
now.

MINNEAPOLIS

A flurry of “snow winter” with snow
started a rush of material business by the
coal wing, but with the passing of the
storm, none are end to the rush. The
coal market situation has not changed par-
significantly. The dock men have pledged that a certain
amount will be unloaded at the Northwest.

Minnesota is to get 122,912 tons this
quarter, 63,380 tons last year. St. Paul
has 65,470 tons against 147,450
tons last year. This may be increased
on transportation difficulties, although
it is hoped to move it by Lake and rail
routes. In new openings within the
week, the market will get 21,013,100 tons.

The situation is very active.

There is nothing to show
present and early future need,
and buyers are not at all worried.
When the snow arrives, blow by
blow, it is expected that soft coal
will be delivered. The snow
may set them no end of
trouble. All coal men say that
1914 was a good season
of all-coal business into these
regions, especially between
and Coal City.

Already they are having difficulty
in selling the prices they must ask, and
the future gap in the probability of a
larger tonnage coming on a still
larger exponent.

In October is showing a decline in
charges moving in the docks, as com-
pared with September. Some of this is
various yards. The season’s receipts
by cargo to date now total 87,652
tons of anthracite, and 1,764,371 tons of soft
coal. Last year, during the same period,
185,622 tons of anthracite, and 2,149,410
tons of soft coal were received.

DULUTH

The first snow has fallen and cold
weather seems to have definitely set in.
Householders are straining every effort
to get coal into their bins, and dealers
find it impossible to make local de-
lievements.

During the week forty-two cargoes
arrived at the port. Four were of an-
thracite. Twenty-four are on the way of
which four more are hard coal. This,
it is considered, will relieve the situa-
tion considerably, as the volume re-
ported coming from lower ports indi-
cates that the movement will keep up.
Prices throughout the territory are
excellent. Duluth is in a good way
for cars, as grain shipments to the
harbor leave many empties to take
coal back. Despite this there has been an
accumulation since Oct. 1 of about
600,000 tons more on the docks.

A heavy call for Pocahontas has
about wiped out the supply. Prices on
hard coal remain the same as quoted last
week. The market in bituminous coal
is weakening at the usual point—screen-
ings. These are quoted at $7 for Youghiogheny, and $7.50
last week and Hocking screenings are
50c. below this. Prices for lump and
run of pile remain the same but are
expected to drop. Railroads are not buy-
ing much.

New England

Big Consumers Await Events;
Some Smaller Ones Buying

Business Is Light, Close Canvassing
Being Necessary to Place Tonnage—
Hampton Roads Coals Sluggish—
All-Rail Fuels Quoted Lower to Main
Output.

Only here and there is the cur-
rent market at all responsive to sell-
ing efforts. The larger buyers have
accumulated some reserves and have
settled down to await developments
in November and December. The
various trade factors are enjoying
only light business in consequence,
and what tonnages are placed are the
result of close canvassing.

A few relatively small users have
concluded that present prices are
about as low as they could reasonably
expect, and these are now beginning
to talk on the coal they have been
talking about buying since early
July. Hampton Roads coals are
sluggish and all-rail fuels are quoy-
tly lower in an effort to maintain
production.

The $3 level at the mines has been
reached. Locomotive coal of fair grade
has been offered at that figure per net
ton, but no sales have as yet been
reported. The present all-rail tariff
to New England points is still so high
that coal within reach of Tidewater still
leaves by the water route. Coast-
wise freights are now on what is con-
sidered practically a minimum basis
on present costs, and when the delays
in rehandling at Boston, Portland, and
Pewaukee are cleared up, it is expected
that receipts of Hampton Roads coals
will measurably increase.

Cargoes of British coal continue to
arrive in rather more than smaller number.
A few of the large British cor-
porations have the goods to be well satisfied with their
purchases, and are quoting quality and
reasonable prices of those grades as an
argument to force sales with their
home coals. Some of the high volatiles
that originate on the other side have
given fair satisfaction as railroad fuel,
and renewed shipments have been of-
nounced recently at a range of $6.50@$7
delivered alongside.

Buyers in general seem little
disturbed over the threatened car
shortage. They are not willing to
sell coal the past three months have convinced most consumers that orders will be even more
scarce than cars, provided cars are to
be short as predicted.

In closed circles there is more or
less discussion of “assigned cars.”

There are operators who see in this a
deliberate attempt to force prices to
still lower levels, and without doubt
any new prices would be resisted under
anything like present conditions.
Unsettlement Continues, Due to Diverse Causes

Some Steam Coal Sacrificed to Escape Demurrage—Clog in Movement Reported—Outside Competition a Pressing Factor—Price Fixing Boosts Retail Quotations.

Outside competition, shortage of cars and a soft market have been causing a continuation of the unsettled conditions at the Cincinnati gateway. Rejections have grown to the point where some steam coal is being sacrificed where it had begun to pick up demurrage. These cars in distress have sold down to $3, but that is not nearly as ominous as the reports coming in from Russell, Ky., and Portsmouth, Ohio, to the effect that the quick movement is beginning to clog there.

The outside competition, perhaps, has the greatest effect upon this market and reports that byproduct coal and gas coals from the Pittsburgh belt were being offered 50c.@75c. cheaper than the Kentucky and West Virginia products caused anxiety. On the other hand, reports from companies handling high-grade coals show that the slump has not amounted to more than 25c. a ton on the week.

LOW VOLATILE FIELDS

NEW RIVER AND THE GULF

New River producers were unable to take advantage of the better Western market for prepared owing to an embargo on the C. & O., which for a few days diverted more coal to Eastern markets and to Tidewater, where the demand has been none too strong. Gulf producers also had to ship all their product to Eastern markets, where there was a little better demand, although a surplus was reported at Tidewater. Little tonnage was available for spot sales, due to the large number of contract orders to be filled in the face of the car shortage. Prepared grades were still high, with no prospect of an increase in the supply.

POCAHONTAS AND TUG RIVER

Pocahontas production is still being seriously curtailed by the inability to secure an adequate supply of cars, unless movement is of nearly 400,000 tons per week. The output is not much more than sufficient to take care of regular customers. Little smokeless has been reaching markets in the West but notwithstanding the scarcity of smokeless, prices as a rule have been about on a Hoover level.

Tug River mines are slowly recovering from a slump in production brought about by numerous embargoes and a general shortage of cars. Even making allowance for an improvement in transportation conditions, the supply is still short of the demand, so much so in fact, that producers have not been quoting prices.

CINCINNATI

The smokeless situation continues much as it has been. The Pocahontas producers, however, have finally been able to get smaller equipment to their mines, which will result in a heavier tonnage being shipped to the West. Some producers say that they have caught up with their contract orders.

The situation of the steam coals is the weakest on the list. Customers who were taking anything that looked like coal are now discriminating and demanding quality. Lake buying has been a little better with the end of the season in sight and the automobile and steel people seem to have no limit to their capital outlay.

The retail situation has been muddled by a ruling from the Ohio authorities fixing the price of Pocahontas at $11.71. Dealers were selling this lump activity at $10.50@$11 and mine run at $9.50. Split lump is ordered sold at $10.39@$10.49, whereas the dealers had been selling it at $8.75@$9.60, and the slack, $7.25@$8.50.

HIGH-VOLATILE FIELDS

KANAWHA

Claims of C. & O. officials that they were able to furnish open-tops to the extent of 60 per cent of normal were not being borne out by loadings during the three week of October. Mines were not securing more than 30 per cent supply. The Western market was closed to shippers for several days by an embargo on all coal destined for points west. It is said there was nothing to do but let coal accumulate. The embargo may have had the effect of hardening Western prices. At any rate, mine run increased 5c. a ton and stopped the downward tendency.

NORTHEASTERN KENTUCKY

Claims of railroad officials that the car supply is about normal and the expression of public officials that prices are too high are disputed and resented by mine owners. Under present conditions it is impossible to produce anything like the tonnage for which there is a market, and hence production costs are high.

LOGAN AND THACKER

Severe economy continued to handicap Logan mines. The Western market has shown signs of greater energy. With the Western movement stopped for a few days, the Lake movement ceased also. There was more general inquiry for steam coal, however, than there has been, indicating that supplies are running short in some quarters.

Thacker production was only 30,000 tons as against car shortage losses of 150,000 tons, so that Western shipments were materially curtailed. Producers are hardly able to take care of the requirements of their regular customers, much less sell coal on the spot market.

Coke

CONNELLSVILLE

The break in coke prices which began nearly a fortnight ago brings lower prices almost daily, and finds only an occasional purchaser. The market has been under the double pressure of increasing production and of consumers holding off. There is room for at least $2 further decline in coke without the price going below the market price of the coal involved plus the cost of coking, while sometimes coke has sold at less than the price indicated by the usual formula. Coal, furthermore, may decline, and thus furnacemen have good reason for deferring purchases as much as possible.

The large extent car supply has been the limiting factor in production. At the same time many of the strikers have been quite reluctant to go back to work. At certain plants officials of locals have instructed strikers to return to work while at other plants attempting to resume no such instructions have been given, indicating that the U.M.W. has not yet fully call off the strike and would be content to see the men stay out as long as they will.

The market is quoted at $8 for furnace coke, this being an asking over the bid price, and $10.50@$12.50 for foundry.

The Courier reports production during the week ended Oct. 14 at 98,700 tons by the furnaces and $2,010,000 in the merchant ovens, a total of 140,710 tons, in increase of 14,280 tons.

UNIONTOWN

Furnace coke this week struck a downward strike, joining coal in the low price movement. A number of factors contributed to the lowering of the coke prices, principal of which was a considerably increased production, which temporarily at least is more than the market can readily absorb. Coupled with that feature is the sudden delivery of British coal upon a basis of approximately $8, Connellsville. It is reported that some consumers who placed orders for foreign coke while the Connellsville was at the $13 level are now seeking consolidation in order to substitute domestic fuel.

Coal for some time has been described as soft, due to a great extent to the resumption of operations at mine mines, but the coke market since production was resumed has not the extent of establishing in the Connellsville area. Ton has been strong with an increasingly active demand. That insufficient surplus is now being produced to bear down the market is taken as proof that the union has not its effectiveness in curtailing production.

BUFFALO

The trade is dull, with some report of price reduction. Jobbers quote 72-hr. foundry at $13.50,$13.50 for 48-hr. furnace at $11.00,$11.50 and coke at $11, with $2.50 added for freight.
News Items
From Field and Trade

ALABAMA

The following is a list of all the mines and mine companies from March 1 through March 7, 1917, in the state of Alabama.

COLORADO

The following is a list of all the mines and mine companies from March 1 through March 7, 1917, in the state of Colorado.

ILLINOIS

The following is a list of all the mines and mine companies from March 1 through March 7, 1917, in the state of Illinois.

INDIANA

The following is a list of all the mines and mine companies from March 1 through March 7, 1917, in the state of Indiana.

IOWA

The following is a list of all the mines and mine companies from March 1 through March 7, 1917, in the state of Iowa.

KANSAS

The following is a list of all the mines and mine companies from March 1 through March 7, 1917, in the state of Kansas.

MISSOURI

The following is a list of all the mines and mine companies from March 1 through March 7, 1917, in the state of Missouri.

MISSISSIPPI

The following is a list of all the mines and mine companies from March 1 through March 7, 1917, in the state of Mississippi.

NEBRASKA

The following is a list of all the mines and mine companies from March 1 through March 7, 1917, in the state of Nebraska.

OKLAHOMA

The following is a list of all the mines and mine companies from March 1 through March 7, 1917, in the state of Oklahoma.

OREGON

The following is a list of all the mines and mine companies from March 1 through March 7, 1917, in the state of Oregon.
NEW YORK

Maximum prices in New York City for hard coal sold in quantities less than the producer's monthly quota, subject to an announcement by A. S. Learoyd, district fuel administrator of the Greater New York Coal Exchange, have been reduced to 10c per ton. The prices are said to be 10c, per 100 pounds lower than the previous level.

Charles S. Allen, in association with Karl Knox Gartner, of the firm of Baker & Gartner, has purchased the coal mine by the lease of the Tidewater Coal Exchange, Inc., to purchase and sell coal. The transaction has been completed for $600,000 which have been apportioned against members of the Exchange. Mr. Allen will also take up with the debtor and creditor members the matter of settling the outstanding deficit.

The Astel Coal Co. has been established in Buffalo, managed by William C. Strassburger, a local trader of Tonawanda, and William E. Schmidt, a former city coal salesman.

NORTH DAKOTA

The Haynes Coal Mining Co., of Haynes, has secured a temporary order in the Court of the U. S. District Court, for the reorganization of the mine. The company operated the Central Coal & Coke Co. in that part of the State known as the Haynes mine, which is the object of the present action.

The company has asked for a temporary order in the Court of the U. S. District Court, for the reorganization of the mine. The company has asked for a temporary order in the Court of the U. S. District Court, for the reorganization of the mine.
Traffic News

President W. J. Heineman of the Chesapeake & Ohio and C. J. Murphree of the Southern Pacific and several other lines meet at St. Louis to confer. A new transcontinental railroad was anticipated to be in operation by 1915. The meeting was attended by representatives of the Illinois Central, Atchison, Topeka & Southern, and the Missouri Pacific.

Federal Fuel Control Notes

Amendment No. 1 to Service Order No. 25

The I.C.C. on Oct. 17 ordered that the following amendments be made: (1) All cars for the transportation of coal to points east of the 99th meridian should be covered by Service Order No. 25; (2) All cars for the transportation of coal to points west of the 99th meridian should be covered by Service Order No. 14.

W. J. Heineman, of the Chesapeake & Ohio, and C. J. Murphree, of the Southern Pacific, meet in St. Louis to confer on a new transcontinental railroad.
Co-operating with Hammond Commission

Perhaps nothing has contributed so much to the excellent start made by the U. S. Coal Commission as the very frank admission by its members that they know nothing about the problem they have had thrust upon them and their invitation to both the miners and the operators to jump in and help educate them. Meetings were held last week in order with representatives of the United Mine Workers, the soft-coal operators and the anthracite producers. Each was urged freely to give advice as to how the duties and functions of the commission as laid down by the law should be carried out.

A committee of the bituminous-coal operators seeking to represent not the National Association alone but the industry generally has offered full co-operation. The National Association has levied a special assessment on its members, to which others are to be asked to contribute, to raise a substantial fund to supplement that given the commission by law. That is to say, the bituminous-coal operators propose to contribute the money to finance important research work for the commission, the money to be spent by the operators at the direction of or in accordance with the suggestions of the commission. This, of course, is perfectly proper, for it simply amounts to carrying a step further than the mine office the collection of data requested by the government. The decision to devote its time and money to the assistance of the Coal Commission rather than fight it, to accept it as something that will be of ultimate benefit to the coal industry rather than looking on its activities as detrimental, is the most forward-looking step the National Coal Association has taken.

The United Mine Workers have taken the request of the commission in good faith and have already supplied a 7-page brief expressing their ideas as to the direction that certain parts of the investigation should take. They have suggested, for instance, that careful investigation should be made of absentee ownership, the spread between mine price and delivered price, the possible connection between coal companies and machinery manufacturers, discrimination by railroads in the placement of railroad cars at the mines, thus producing irregular employment, middleman's profits and coal storage.

On the whole, this first document for the record (which we are pleased to note was broadcast to the press) is a series of suggestive questions and implications such as might easily have been compiled by any newspaperman or any citizen who had followed the subject in recent months. This communication and the others that doubtless will follow from the same source will serve to keep the public and the commission posted on what questions should be answered. Its apparent guilelessness detracts none from its interest and value.

The commission has a long, hard task ahead of it, and the very evident willingness of all parties at interest to help without restraint will make its work more certain of success. The friendly spirit that seems to prevail augurs for a happy ending.

Effect of American Demand On the British Coal Trade

Under the caption "The End of the American Coal Spurt" the editor of The Compendium, London, summarizes the effect on the British coal trade of the recent demand on this side for English coal. It is pointed out that buyers on this side did not leave the British long in doubt of their intention of taking only the coal that was urgently needed, and that by the middle of September inquiry was practically at an end and negotiations in progress were stopped.

As has been currently recorded in our market columns, the American demand caused a spurt in British coal production, forcing the weekly output well above 5,000,000 tons from around 4,500,000 tons. Exports climbed from 4,793,000 gross tons in June to 6,146,000 tons in August. Later figures are not as yet available. From practically none in June, the portion of these totals sent to this country rose to 959,913 tons in August. Our own figures show that 606,000 tons reached here during that month.

Prices were affected by the sudden onslaught of American buyers. Increases in quotations ranged from 28. to 6s. 9d. per ton, according to quality. The peak in prices was reached in August, a marked slump being recorded in September. Ocean freight reached their peak in July. When the buying from this side began it soon developed that ships and not coal would be the limiting factor. The charter market responded with jumps of a shilling or more, only to subside when vessels from all over the Atlantic were offered for this trade.

On the whole the British coal industry has much for which to be thankful in the threatened coal shortage on this side inasmuch as it provided a sudden unexpected market for several million tons of coal. The British coal industry had been in the doldrums for many months, wages had sunk to the level common, prices were dropping and as they dropped the usual buyers were holding off waiting for the further. Mines had been closed and the men were suffering—even at the minimum wage the operators could not produce and find a market for their product. But when utilities, railroads and free-lance traders on this side strained off the surplus supplies and called for more, the coal industry in Great Britain took on new life. Continental buyers woke up to demand their share and the trade became brisk.

The impulse has not been lost. The strike on this side not only made a market on this side but rescued the miner on the other side from a winter of dullness.
Excessive Taxation of Coal Lands

ANTHRACITE dealers and consumers, to say nothing of police supervision, would do well to study the evolution of a movement for the excessive taxation of coal lands, reported elsewhere in this issue. There is no desire to alarm, but there are things worse than being an alarmist—for example, being an optimist so cocksure that the most patent signs of the times are ignored or explained away.

The joint issue is that the anthracite industry in the lower hold, where nearly all the reserve lie, is being subjected to the raids of taxation hawks whose program, if carried out, and without underlying philosophy, if generally adopted, will speedily put the hard-coal business on the rocks. The present assault is, in many ways, the most serious of all those directed at the anthracite interests in the accumulating warfare of the last twenty years.

To raise a property for taxation at ten or twelve times what was paid for it or for what it will bring in the open market is nothing short of a levy on capital. It might be heard without emotion as a report from Romeo, but as a report from supposedly conservative Pennsylvania it comes as a shock which should serve as a warning. A precedent which is made in the case of anthracite lands can be applied to other real estate, if not indeed to all other property.

Consumers of anthracite in markets like New York and New England, justly alarmed by the Pennsylvania State tax on anthracite tonnage, should by no means ignore the implications in the Schuylkill County situation. There a community of perhaps 250,000 of which last year collected $2,000,000 from coal-land owners on every dollar raised for general county purposes this year solely proposes to increase the revenue 50 per cent and to collect 11c. from coal lands and only 11c. from the general community. The Schuylkill County proposals involve a much greater amount per ton than does the Williams tonnage tax of 1921, against which public officers in anthracite-consuming states entered a protest.

Consider the cumulative effects of Pennsylvania public policy with respect to the anthracite industry, the only American industry peculiar to that state. As long ago as 1916 Governor Brumbaugh's commission reported that new legislation and continuous investigation were among the causes for increasing coal prices. Yet the Pennsylvania Legislature has not only put a tonnage tax on the anthracite—the only Pennsylvania product as treated—but it has burdened hard coal with hampering legislation like the Kehler act and the Fowler act, purporting to prevent mine taxes, and raising millions, by another tonnage tax, to make good cave damage. Frankly discriminatory legislation of this character has heartened all those like the commissioners of Schuylkill and Northumberland counties to put all the traffic with bear on the backs of the coal companies in the shape of taxes.

One producing company in the upper region gives a rough estimate that its total tax bill—federal, state and local—amounts to about $8 per ton of production. One producing company in Northumberland County last year paid, as county and municipal taxes alone, an amount equivalent to at least 25c. per ton. The new idea in taxation, if carried out, would double that figure this year.

These things are bad enough, but there is an even more dangerous idea buried in this systematic bleeding of anthracite owners. It is the implied, and even expressed, determination to tax the present, potential wealth which should be, and is being, conserved for the future. If adopted, it means farewell to the sound policy of conserving natural resources, adopted by the federal government less than twenty years ago.

Anthracite is a stabilized industry. In normal times a year's production, working at approximately full time, merely meets the year's demand. There is normally no shortage in supply and no carry-over to speak of. If the hope of the shortsighted, with respect to excessive-taxation, is carried out, and lands now held as reserves are forced into premature operation, the result will be too many mines, too many men employed, broken time, wildly fluctuating prices and alternate dearth and plethora of supply. In short, the tendency in this taxation scheme, whether deliberately intended or not, will be to bring about in the hard-coal industry the exact condition of overdevelopment which is considered one of the main faults of the bituminous industry.

When the President's investigating commission gets around to anthracite it might with profit delve into this matter of taxation as exemplified in Schuylkill and other hard-coal counties.

No Assigned-Car Decision

NO IMPORTANT significance is attached to the action of the Supreme Court in the Corona coal case. Acting on the precedent of the Lambert Run case, the court affirmed the decision of the District Court of northern Alabama in dismissing the suit of the Corona Coal Co. against the Southern Railway. No action was taken by the Supreme Court which in any way passes on the merits of the question involved in the practice of assigning cars. The court's action involved only the matter of jurisdiction. An effort had been made to bring the Corona case to the Supreme Court in such form that the country's highest tribunal could deal with the merits of the question, but the case reached the Supreme Court with exactly the same points involved, and the court in its ruling simply applied its action taken in the Lambert Run case.

The case arose during the car shortage of 1920 following the Interstate Commerce Commission's order modifying Rule 8 to define private cars and cars for railroad coal as assigned cars and all others as unassigned cars. The Corona company filed suit in the State Circuit Court at Birmingham, alleging discrimination against it in not being given a pro rata of assigned cars under the rating system after the company had offered to sell coal to railroads at a competitive figure. A temporary injunction was issued by the state court. The railroad company obtained a transfer to the United States District Court. This court dissolved the injunction and dismissed the suit on the ground that relief should have been sought from the Interstate Commerce Commission; that the attack was against the assigned-car rule and not against its application, it not having been alleged that the railroad delivered assigned cars contrary to the rule or that the order was unequally applied. The District Court held in effect that the railroad had not discriminated because it had delivered assigned cars according to instructions and had distributed unassigned cars among the mines in proportion to their ratings, although the supply was insufficient to meet fully the ratings.
How Rearrangement of Track Raised the Tonnage Of an Anthracite Colliery

By Dever C. Ashmead*
Kingston, Pa.

After Track Revision and Other Provisions Legitts Creek Coal Co. Dispenses with Five Men and One Mule and Quadruples Tonnage—Savings in a Year's Running Pays for All Reconstruction

Does your track hold down your tonnage? Are you wasting effort in trying to hold up your output under unfavorable circumstances where a slight revision of the trackage as to line, grade and position of switches would not only make it unnecessary in handling trips to have close supervision and a nice co-operation between the men by whom the cars were being handled but would afford an increase in tonnage in a manner almost automatic? Wherever delays are occurring the subject is one worthy of consideration. An ounce of planning of a new track layout may save a full pound of effort in handling a badly adjusted track and give better service into the bargain.

The neck of a bottle determines the quantity of liquid that can be poured from it, or rather it determines the rate of discharge. The shaft or drift mouth, whichever it may be, together with the track arrangement at the bottom or the top of the shaft, constitutes the real neck of almost any mine.

Obstructions or ill-conceived track arrangements may limit the output of a colliery beyond hope of betterment, for no more coal can be prepared and shipped than can be delivered to the outside or to the breaker. A mine may be able to produce and load into mine cars 2,000 tons a day, but if the track arrangements are such that only 500 tons a day can be sent to the surface then the capacity of the mine is limited to that quantity.

About three years ago the Legitts Creek Coal Co. purchased the mine at Scranton, Pa., that it is now operating. At the time of purchase the output was about 200 mine cars of coal and forty of rock. The mine was awaiting the happy thought as to surface tracks that would bring its tonnage to a profitable figure, for a small tonnage means a heavy cost. Previous foremen had labored in vain against the insuperable difficulties of a faulty layout.

The coal was brought up through three openings—two shafts and one slope. One of the shafts is right at the foot of the dragline conveyor which leads to the breaker. The other is about 200 ft. distant. The slope mouth was about 400 ft. from the second shaft and its top was about 50 ft. lower than the elevation of the top of the shaft. The coal from this slope was taken on the surface to a short tunnel and through this tunnel to the shaft, where it was hoisted 50 ft. to the surface.

From the shaft to the foot of the dragline conveyor that feeds the breaker is about 200 ft., as has already been stated. About 100 ft. from the shaft the rock track left the main roadway. The grade on this track was insufficient to cause the rock cars to clear the coal cars, and the rock cars collected on the track between the junction point and the top of the shaft. The map shows at this point only the new tracks and the old rock switch consequently is not visible, but it was located at the point marked A on the plan. This layout naturally caused congestion and reduced the quantity of coal that could be hoisted, as no more coal could be handled on the surface than could be passed over the track to the dump. At No. 2 shaft no rock at all could be hoisted, as there was no connection between this shaft and the rock dump. Therefore all this rock had either to be hauled underground to No. 2 shaft or unloaded by hand underground, which latter was a slow, expensive operation and one that caused congestion of the mine tracks.

At No. 2 shaft the distance from the shaft to the

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*Anthracite Field Editor, Coal Age.
track was laid from the rock bank to No. 2 shaft for the return of the empty mine cars, and the way it connects with the cage track likewise is shown in the accompanying plan.

Another cause of congestion was the handling of ashes from the boiler house. In order to meet the difficulty a dragline conveyor was built to remove the ashes from the ash pit and convey them to an ash pocket which will hold as much as will accumulate in two days. These ashes can now be handled when there is not much rock, and their handling does not interfere in any way with the production of coal. This ash arrangement has another advantage in that it is not necessary now to handle ashes during Sundays and nights, for the ashes can be stored in the ash pocket, and thus it is not necessary to pay men to haul ashes on those occasions.

Another important change was in the empty track from the coal dump to No. 3 shaft. Here the car haul was raised 3 ft., and the gradient from the top of the car haul to the shaft thus increased, so that the cars move more freely. The curves were taken out, and the services of a driver and mule were eliminated.

The method of handling the cars from the slope to the surface also was changed. Instead of bringing them all the way to the surface through the slope they came only to the Four-Foot bed. They are then taken underground to No. 3 shaft and then hauled to the surface by that shaft. This has saved a surface haul such as interferes with operation in the winter. It also saves a mule and a driver on the surface.

The method of handling supplies to the mine also was changed. Instead of sending them into the tunnel that has been mentioned a new track was laid to connect with the empty car track to No. 2 shaft, the supplies being hauled to the shaft level by a small hoist.

The changes that have been outlined were, on the whole, inexpensive, but they saved five men and one mule. Therefore the saving in labor alone in a year's time would amount to the cost of the changes, but not only is money being saved but the obstruction to the neck of the bottle was removed, and the output of the mine could be increased.

After three years of operation the output of the mine has risen from 200 cars of coal and forty cars of rock to 800 cars of coal and 100 cars of rock.

**Improved Mine Car Decreases Costs**

BY L. C. CREWE

EVER since mining began mine cars have been mine cars, yet each succeeding year witnesses improvement in this type of mine equipment. The interest manifested in underground transportation clearly denotes the importance of this phase of coal production.

In the accompanying illustrations Fig. 1 shows the car used until recently by the La Follette Coal & Iron Co. The Rex coal bed worked by this firm averages 12 in. in thickness and, as may be seen, this car was 28 in. high above the rail and held an average of 1.840 lb. Its weight was 1,640 lb.

Fig. 2 shows the new car designed by this company's engineers and now used in place of that shown in Fig. 1. In gage, wheelbase and length over bumpers the new car is identical with the old; its over-all height, however, is 3 in. less and its width 2 in. greater. The new car weighs 1,820 lb. and its capacity is 2,540 lb.

Notwithstanding the increased size and weight of the
The car is only 28 in. high and it has the flare which for many years satisfied those who departed from the wagon-type box car which preceded it. The inside width on top is only about 3 ft. 5 in. and at the bottom only 2 ft. 3 in. These facts account for its meager capacity.

**FORMER CAR OF LA FOLLETTE COAL & IRON CO., FOR USE IN A 12-IN. RIG**

**PRESENT CAR OF LA FOLLETTE COAL & IRON CO. WITH 16-IN. GAGE**

In this car the wheels are placed so that their center is 6 ft. 11 in. above the original floor of the car, which is nearly over the wheels on cars in this department. As a result, the height is raised 4 ft. 8 in. and about the same as in the present car. This makes the length of the car 30 ft. 6 in.

Wheel tines are incorporated into the car, making it a common standard car.
Coal from Behring and Chickaloon Fields, Alaska, Will Be Used on Battleship

RECENTLY the naval collier Jason started on route from Alaska with 6,000 tons of washed coal from the Chickaloon mines and 600 tons from the mines of the Behring River Coal Co. This coal is to be given a test on a battleship. John Bissell, one of the fuel engineers attached to the U. S. Bureau of Mines, will assist in the tabulation of the results.

An application of gold-mine practice has been reported to us washing the Behring River coal. Gold sluices have been put to this purpose and are giving splendid results. They are built in parallel, so that while one is being cleaned the other is in service. The plan is so effective that even the fine coal, which settles in the bins, shows no more than 4 per cent ash. Much of the coal thus far mined has run only 2 per cent in ash. The coal is sacked at the foot of the sluice and then transferred by truck to a canoe landing 41 miles away.

The truck runs over a type of plank road that has been used so successfully that the plan is being adopted elsewhere in Alaska and may play no inconspicuous part in the expansion of motor haulage in the territory. The road is laid directly on the tundra. Heavy slabs are laid down for cross-ties. In lieu of rails a 3-in. plank 12 in. wide is spiked to the cross-ties on each side to form the track for the trucks. Guide rails have been found unnecessary and even in wet, slippery weather no difficulty has been experienced in keeping the trucks on this type of roadway. This particular road has been in service for three seasons and it has been found that the cost of maintenance is insignificant. The original cost was $6,000 per mile. A plank road in the Katala oil fields nearby was built twenty years ago and still is in service.

Some Hoisting!

SEVERAL months ago Coal Age requested information concerning hoisting and production records. Many replies were received and published and much interest was manifested in the results. One great difficulty in considering such data is that it is seldom that the lengths of cage travel in any two cases are the same or even closely similar. This renders a basis of equitable comparison difficult.

Charles F. Sherman, general superintendent of the Groveland Coal Mining Co., Peoria, Ill, writes that on Oct. 16 at Groveland No. 2 mine 274 hoists were made in 60 minutes. The total length of hoist or cage travel at this operation is 202 ft. and the cars hold a net weight of 3,000 lb. of coal.

With cars holding only 1½ tons of coal each, Groveland No. 2 can hardly expect to compete in output with some other operations regardless of the excellence of its hoist or the skill of the engineers that drive it. So far as Coal Age is aware, however, the above figure stands as a record so far as actual number of hoists performed in one hour is concerned. If any mine can beat or has already bettered this number, we would be glad indeed to hear about it.

Inspector Exonerates Lake Creek Miners

IN A RECENT letter W. L. Morgan, State Mine Inspector of the twelfth inspection district of Illinois, writes saying that the unofficial report on the explosion at the Lake Creek mine of the Consolidated Coal Co., near Johnston City on Friday, Sept. 29, in which five were killed and two injured was wrongly ascribed to two miners who were alleged to have been smoking pipes. Mr. Morgan has reported to the Director of the Department of Mines and Minerals that the explosion was due to the surveyors igniting a body of gas in entries that had not been working for two or three years. These entries were in about 300 ft. from the main entries. Owing to a chain of circumstances the ventilation had been short-circuited in these headings. The explosion that ensued ignited a cartridge of powder and then a keg of powder, part full. The explosion occurred just as one miner was loading his car and the other sitting on a pile of coal. The miners were not in any way to blame.
The Mine Blacksmith's Tools and How He Uses Them

Mounting the Anvil—Three Cutting Tools—Flatters and Set Hammers—Fullers and Swages—Punches and Tongs—What They Are Made Of—How They Are Tempered and How Kept in Condition

By Gustav A. Radebaugh*

Urbana, Ill.

EVERY official around the mines should know something about blacksmithing, for much of the successful operation of a mine depends on the prompt and efficient performance of this department.

In Fig. 1 is shown the various parts of the common anvil. The best anvils are made with a wrought-iron or soft-steel body and a face of tool steel about 1 in. thick. The horn and table are not so faced, however, and they are said consequently to be "dead." They do not wear nearly as well as they would if they were faced with tool steel. The size of the anvil is not rated by its dimensions, as being so many inches long or wide, but by its weight, and this weight is marked on the face of the anvil in three numbers. The first records the weight in even hundredweights, the second the excess in weight in quarter hundredweights over the nearest lower even figure and last the excessive weight in pounds over the nearest lower even figure for quarter hundredweights. The usual weight of an anvil for shop use is between 100 and 150 lb. The pritchet and hardie holes are used to hold tools in place and also serve for the making of bends.

The anvil is mounted on a solid wooden block, preferably of oak, hedge* or ash. It should be cut square

*Osage orange.

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Note—The headpiece shows a blacksmith shop at the Delaware Colliery of the Indiana Coal Co.—a regular governor hammer and a makeshift, two forged, a grindstone and a water hammer. Published by courtesy of Ingersoll-Rand Co.
The hot chisel should not be used on cold work for it does not have that sort of edge will harm in use. Cold chisel in much earlier than the hot chisel on its cutting end. As a rule it is removed together with

on each end and should be about 20 in. long. The anvil should be at such a height that a man standing erect and doubling the knuckles of his hand could just touch the face. It should be set 5 ft. from the center of the forge and directly in front of the fire and the floor should be well leveled before the block is placed in position. A piece of 2 x 11-in. soft steel is secured and kept around the waist of the anvil as shown in the illustration. After this steel has been shaped to the outline of the anvil a 1-in. hole is drilled in each end to receive the holding-down spike.

The anvil should be placed in the center of the block, and the strap should be spiked to the block. Though one of the simplest methods for securing the anvil it is one of the best. A wooden block is the best mounting for an anvil, as it gives the necessary cushion for the solid mass of steel. It helps to liven up the tool and makes it much easier to work on. The anvil should be placed so that the horn is to the left of the operator.

Three cutting tools are commonly used about the forge and anvil. The "hot chisel" is used for cutting hot metal. As shown in the view, the tool is held by the smith and the helper strikes the tool with the sledge. When cutting hot metal the chisel should be dipped in water after receiving several blows from the sledge. This is done to prevent the cutting edge of the tool from becoming heated to such a degree that all the temper will be drawn from it and the chisel become so soft that the edge will bend over. Under ordinary treatment the hot chisel does not hold its temper and this is why it should never be used on cold work.

For Heavy Cutting Dip Cold Chisel in Oil

The cold chisel shown in Fig. 4 is used in the same manner as the hot chisel, but the cutting edge is of a thicker cross-section. It is designed so that heavy blows from the sledge can be delivered without injury to the cutting edge. Compare the two chisels as shown in Figs. 4 and 5. It will be noted how much shorter and thicker the cold chisel is on the cutting end. In using this tool in cutting heavy sections the edge should be dipped in oil, which will assist in keeping the edges keen.

The hardie, Fig. 5 A and B, is set in the anvil by inserting its stem in the square hardie hole. It should fit the hole loosely enough so that it will not stick or wedge tight. It is used for light cutting and for trimming hot or cold work. The hardie for hot work is drawn out to a thin edge, but that which is used for cold work is much thicker. The edges are designed somewhat like those of hot and cold chisels, respectively.

In illustration A is shown how a piece of stock is placed on the hardie to be struck by the hammer. When cutting stock a deep cut should be made around the material. The stock is then placed on the edge of the anvil as shown in illustration B. A few blows with the hammer will then break the stock. It will be understood that the material in this operation is worked cold.
The hardie, it will be noted, is a one-man tool, but though it has this advantage over a hot or cold chisel it has the disadvantage that it cannot be used for large work. All three cutting tools are forged from 0.7 to 0.8 per cent carbon steel. The temper should be drawn to a light straw color. When the cutting edges become worn or blunted they can be ground and redressed and tempered. The spoke of an old buggy wheel makes excellent material for the handles of all forging tools that are to be made of wood.

In forging work many tools are needed if a job is to be properly finished. The fuller and set hammer (see Figs. 6 and 7) are used for practically the same purposes—smoothing and flattening work. By using these tools when the material to be forged is at a dull red heat and dipping the tool in water before it is applied to the work, all the rough scale can be removed from the surface, thus leaving a smooth, finished appearance. When making a stock-gate hinge a right-angled bend is made, as shown in Fig. 6. It is good practice in this instance to use the fuller instead of a hand hammer. A more even bend can be made and the surface of the stock will not be made uneven by hammer marks. Fullers for general work have a face from 2 to 3 in. square. The edges of the face are slightly rounded, and because of that provision the tool will leave no marks on the work.

The set hammer is shown in Fig. 7 making an offset on a strap iron. When an offset of the thickness of the stock is desired a piece of the latter is placed on the anvil, and the strap iron is laid over this piece as shown. The work thus offset is then forged into shape by the aid of the set hammer and sledge. The set hammer is useful also when squaring up right-angled bends. These hammers are made with faces from 2 to 2½ in. square.

The top and bottom fullers and top and bottom swages (Figs. 8 and 9) are made in pairs. The bottom parts of these tools are designed to fit in the hardie hole and the tops are provided with handles. As shown in the view, the forging blow is delivered by a sledge, the tools being held in a stationary position. Fullers and swages are both sized by the curved edges. A fuller with a curved edge of ¼-in. radius would be termed a ¼-in. fuller, as the curved edge would be the same shape as one-half of a 1-in. bar.

The fuller is made in several sizes. The top and bottom fullers are used for forming depressions or shoulders on opposite sides of materials, as shown in Fig. 8. They will also be found useful when drawing out metal between shoulders or projections. The top fuller is sometimes used singly in making scars for welds, forming grooves, smoothing fillets or forming shoulders on only one side of the forging.

The swage (see Fig. 9) is used for rounding up work or forging round shapes to a smaller size. When forging stock to a circular section the swages are conveniently used for smoothing up after the stock has been drawn to the correct size. After welding a rail the swages are used to smooth up the weld.

**When Tool Mushrooms It Should Be Redressed**

If an extra-smooth job is desired the top swage can be dipped in water occasionally. The operation is known as "swaging." These tools are not tempered and the best grades of them are made from drop forgings out of 0.8 to 0.9 per cent carbon steel. After these tools have been in severe service the head of the tool mushrooms, and chips of steel may fly when the tool receives a blow from the sledge. This can be avoided by redressing the head of the tool. To redress these tools, remove the handles and work the steel at a cherry-red heat. After the operation is complete, permit the head of the tool to cool slowly by placing it in ashes.

The small repair shop uses two methods of punching holes in hot metals—the hand punch and one of a heavier type, as shown in Fig. 10. This latter punch is provided with a handle and driven by a sledge. The hand punch is made from octagonal or round tool steel and is about 8 in. long. The end is forged as a taper...
When the handling is important the hole in the stock should be bored and a few punch holes turned out the exact length of the jaw of the tongs. Note how carefully the last hole has been made in this stock. A bit turned from the handle will form a part of the stock, and all the backgrounds will have to be ground to prevent the stock from falling.

When punching, as shown in Fig. 10, the hole is started by boring the work flat on the anvil and driving the punch almost two-thirds through it. The work is then turned over and the punching is continued from the other side. The hole can be located easily by the bulge in the metal caused by the punching already accomplished. When the punch is driven through, the work is held directly over the round hole, as illustrated in Fig. 10. If the hole is punched in this manner it is left clean and to size.

When punching thick stock, after the punch is started the rod is removed and the hole filled with powdered coal. This prevents the punch from welding. Tools of this kind are tempered and they should never be left in the heated work any length of time, as the end will become soft and will enlarge in the hole, which makes it nearly impossible to withdraw it. This enlargement is called "pitting." The size of these tools is determined by the size of the hole which the punch will make.

When an irregular shape, such as is shown in Fig. 11, is to be forged, it is necessary to take a pair of hollow-bit tongs and heat the short to a bright red. The jaws of the tongs are then forged to fit the piece of stock which is to be held. Sometimes the rivet in the tongs tightens up in this operation. This may be relieved by first cooling the tongs and then delivering several blows with the head of the hammer on the head of the rivet, which is held over the harden part of the anvil.

The best method of holding square stock is shown in Fig. 12. The tongs have been heated and hammered to fit the stock. In holding stock it is important that the tong jaw fit throughout its entire length. This type of tong is used to hold round stock as well as square. In holding the larger sizes of stock a link can be slipped over the handles. This will relieve the workman from the work of gripping the tongs tightly and allow him more freedom in handling the material.

When welding a head on the end of a rod to make a bolt, the stock is held in the hollow-bit tong, as in Fig. 13. The tong jaws should fit down on the stock snugly so as to insure easy handling of the piece while it is being forged. To make a special bolt, first cut the stock to length, then heat and round up the end of the stock, fit on the blank nut and then weld the nut and rod together. After this operation is complete, cut the thread and the bolt is complete. Using the proper tongs for a welding job of this kind makes the operation much easier and insures a better weld.

The link tong, shown in Fig. 14, is an essential when welding chain links. It is made in such manner that its jaws can be heated and fitted to the link that is to be welded, for only a well fitting tong will hold the link securely. When heating the link to a welding heat, hold it in the fire with a small rod until that heat is reached. The link tongs should be used only to remove the piece from the fire when the weld is to be made and

FIG. 14—SPECIAL TONGS MUST BE USED FOR LINKS
These tongs are carefully fitted to the link that is to be welded. They are not used to hold the link in the fire because they would get too hot. When the broken link is at the right heat, it is seized by the tongs and rapidly hammered into a continuous ring.

FIG. 15—FORGING THE HANDLES FOR READY HOLDING
Sometimes when the tong jaws are not properly offset the handles are so far apart near the ends that no human hand could grasp them. In that event the handles must be bent so as to correct that failing. The illustration shows this being done.
In bending a short piece of steel to make a wagon-bed brace the stock is held while being heated and forged with the flat-jawed tongs (see Fig. 15). These tongs are made in various sizes to hold different thicknesses of stock. In using tongs the handles should be far enough apart only to permit the smith to grip the handles without unnecessary reach. When the tong jaws are not sufficiently offsetted and so are too close together for the stock to be securely held the handles are so far apart that it is impossible to hold them with one hand. This can be adjusted by placing the tong handles on the horn of the anvil as close to the rivet as is permissible and bending the handles to the center until the proper distance is obtained.

When forging a short piece of stock it should be securely held if the best results are to be obtained. The box tongs shown in Fig. 16 are found useful in many repair jobs, as they are designed to hold square or round stock so that it will not slip when being forged. It is important always that tongs should have and maintain a firm hold on the material forged.

Suggests Standard Shatter Test for Coke

COMPARISON between the strengths of coals and the determination of the strength a coke must have to serve for certain purposes make it necessary to standardize the shatter test. To this the Committee D-5, on Coal and Coke, of the American Society for Testing Materials, of which W. A. Selvig, of the U. S. Bureau of Mines, is secretary, has addressed itself.

The committee suggests that the box for holding the coke in this test shall be 18 in. wide, 28 in. long, approximately 15 in. deep and shall hold about 50 lb. of coke. It shall be supported above a rigidly mounted cast-iron or steel plate not less than 1 in. in thickness, 38 in. wide and 48 in. long. The inside of the bottom of the box shall be 6 ft. above the plate.

The bottom of the box shall consist of two doors hinged lengthwise and latched so that they will swing open freely and not impede the fall of the coke. Boards about 8 in. in height should be placed around the plate so that no coke will be lost. To prevent breaking the material when filling the box, the latter shall be constructed so that it can be lowered to a convenient level, which is best done by means of a pulley and counter-weight. For determining breakage of coke, square-mesh screens with the following openings shall be used: 2 in., 1 1/2 in., 1 in. and 1/2 in. Circular screens 2 ft. in diameter are satisfactory for this purpose.

For byproduct coke when determining its freedom from breakage in handling, about 75 lb. of representative pieces of coke, none of which would pass in any position through a 2-in. square-mesh screen, is to be selected from the coke wharf for each test. This is best accomplished by dividing the coke on the wharf into approximately equal areas and selecting an equal number of pieces from each area. Each piece selected shall be approximately equal in length to one-half the width of the coke ovens and should show a "cauliflower" and produced at the walls of the ovens, and an "inner" end produced at the center of the ovens.

For beehive coke, when determining freedom from breakage in handling, about 75 lb. of representative pieces of coke shall be selected for each test as the coke is drawn from the ovens. This is best done by selecting full-length pieces, or their equivalent, as the coke is being drawn from previously determined points in the oven, so that they include pieces from the front, sides, center and back. If the individual pieces as taken from the ovens are too large and bulky, the 75-lb. sample shall be collected by removing three small pieces from each large piece—one from the top, the middle, and the bottom. The sample finally collected should be composed of an equal number of pieces showing top, middle and bottom. None of the pieces comprising the sample shall in any position pass through the 2-in. square-mesh screen.

For byproduct and beehive coke, when determining their fitness for furnace or cupola use, the sample is best collected as the coke is delivered from the railroad cars into the bins. This may be accomplished by inserting a scoop of 10 to 15-lb. capacity in the coke stream at regular intervals during the period of unloading. The sample collected shall be large enough to give about 75 lb. of coke pieces, none of which would pass in any position through a 2-in. square-mesh screen.

As it is difficult to collect a representative sample from coke exposed in bins and cars, care should be taken to take pieces representing the entire exposed area, if sampling must be done in this manner. This is best accomplished by dividing the exposed surface to be sampled into approximately equal areas and selecting an equal number of pieces from each area. Approximately 75 lb. of representative pieces, none of which would in any position pass through a 2-in. square-mesh screen, shall be collected.

About 50 lb. of the sample shall be placed in the shatter-test box, the coke leveled, the box raised, and the coke dropped four times on the plate, the small material produced being returned each time to the box with the large coke. After the fourth drop the material shall be successively run through the screens described.

In screening, care should be taken to prevent breakage of the coke pieces. The screen shall be shaken gently until all of the pieces are in direct contact with the meshes. The coke remaining on each screen, and that which passes through, shall be weighed separately. If the sum of these weights shows a loss of more than 1 per cent the test shall be rejected and another made.

As the average probable error of a single shatter test is approximately 2 per cent it is advisable to make several tests and report the average result.
Gear Economics Effected by Use of New Tooth Shapes*

By E. B. BOWTIELE

From many years stress was laid almost exclusively on improvements in the quality of the steel used in locomotive gears, but in recent years more emphasis has been laid on tooth shape and on the possibility of constructing better gearing through appropriate design. Any fault of incorrect profile will give satisfactory service when new, but we must concern ourselves mostly with the service that the tooth will afford when, in course of time, its face is partly worn.

Until recently practically all locomotive gears had the Brown & Sharpe 141-deg. standard tooth, which operated smoothly, was of a full depth and therefore had more wearing surface than the stub teeth. Being comparatively straight-sided, it showed less tendency to push gear and pinion apart. This 141-deg. tooth is a general standard, easily interchangeable and almost universally used for industrial machinery. The chief objection to it is the fact that when pinions thus formed have a small number of teeth the teeth are undercut in the flank, making them thin and likely to break near their roots. Furthermore, this fault, objectionable as it is in new teeth, tends to accentuate as such pinions wear.

The first improvement used in the railway field was the 23-deg. stub, a tooth which is not so deep and which, therefore, gives the teeth on the opposing gear less leverage at the root of the tooth if driven or by which it is driven. It has accordingly less tendency to break, its sides, moreover, are more slanting and it is provided with a broader base. A 23-deg. stub tooth, therefore, has great strength and, because of its lesser depth, the pinion is strengthened somewhat against bursting, particularly where the bore is large and the pinion small.

The next development was the long- and short-addendum tooth, a type of gearing that for years has been used extensively for railroad service in European countries, particularly Germany and Switzerland, and has been adopted in America for many years in bevel and automotive gear. For application to the electric-locomo-
tive field it was desired primarily because it lacked interchangeability with teeth cut to the old standards.

This type of tooth usually is made with a 20-deg. angle, which broadens the base and increases the strength. Furthermore, by shifting the adden-
dum, one can get teeth, usually the weaker member of the train, in considerable strength added, and this is done without weakening the gear. In making the diameter of the pinion correct the quantity of metal between the root of the tooth and the bore is increased and then it is strengthened at a point where it is most needed, and least be worn. This type of tooth when cut deep or rather thin at the top, and not unusually for this the tooth is some-
times stubbed. The stubbing process removes metal that would otherwise be worn away in service, hence it has a tendency to decrease the life of the pinion, but it makes a more pleasing appearance.

To understand the significance of the long- and short-addendum tooth, we will need to go slightly into theory. The involute curve is the base of practically all our modern gearing, as it represents the ideal curve of contact when two gears are in mesh. Fig. 1 shows three left-hand involutes generated from the same base. The section between the right- and the left-hand involute is a gear tooth, needing only to have the top trimmed off and the bottom shaped up to continue into adjacent teeth.

The farther apart the involutes, the coarser the pitch and the less teeth in a gear of any fixed diameter. The full involute, however, is too long for practical use, so a section is taken out of it for the individual gear tooth. If this section is close to the base circle, as at A, Fig. 6, we have practically the straight-sided tooth of very low pressure angle, which is used where there must be no thrust between gear and pinion. Coming up higher on the curve, as at B, we have the 141-deg. pressure angle, heretofore standard. Higher up, as at C, we have the 20-deg. tooth, and to illustrate by an extreme case, as at D, we could build a gear with about a 30-deg. tooth and yet one which would work smoothly but with a heavy thrust and which would be of no value at all when considerably worn or used with bad bearings. High pressure angles therefore mean forming a tooth on the upper part of the involute curve, farther removed from the base circle. In a gear with many teeth slight changes in pressure angle are hardly measurable, but in a pinion with few teeth they are quite noticeable.

The dimension chosen as the standard depth of tooth is purely arbitrary. In Fig. 3 we have the full involute, which runs to a point at the top. We first decide the pressure angle we prefer to use, and this choice determines how high up we shall locate our pitch line on the involute curve. If we take a comparatively long section above and below this line, we have the full-depth standard tooth. If we take a lesser section above and below, we have the stub tooth. If we take a greater section above the pitch line than we take below the pitch line we have a long-addendum pinion, and when we build the
In standard gearing the relative size of the tooth and slot is the same on each member. In long-addendum gearing (Fig. 4) the teeth are made much longer on the pinion and project further beyond the pitch diameter. On the gear the slot is deepened proportionately. Likewise on the gear which mates with this pinion the tooth projection is shortened and the slot in the pinion is correspondingly shallow.

The amount of diversion in extra length and depth is optional with the manufacturer, and he can build around any formula he desires. The longer the addendum on the pinion the more pointed it will be at the top of the tooth. In Fig. 4 the addendum of the pinion is made of extreme length so as to make the contrast between long addendum and standard gearing the more noticeable. The long-addendum pinion is preferable to the standard for the reason that it is a stronger pinion at the base and a thicker or "fatter" pinion at the pitch line. In actual service twice as much steel may be worn off the side of the tooth with safety before rejection with the long addendum than is permissible with the standard 141-deg. shape. This is illustrated in Fig. 5. When worn out it is still a strong tooth at the base, whereas with the old shape the root tends to weaken more rapidly as the result of wear.

This means that if a long-addendum pinion and a standard pinion of equal quality are operating under identical service, the long-addendum pinion, because of its tooth shape, will have approximately twice as much life. The gears running with these pinions will have about equal durability; in fact, only by accurate measurement can you distinguish between the forms of the short-addendum and the standard gear tooth. There is no question whatever as to the desirability of the long-addendum pinion for any service where gears and pinions are to be completely worn out before they are discarded. The only drawback is the seriousness of changing over from the old standard to the new.

The "wisdom-tooth" pinion was recently brought out to overcome this difficulty and to present the operating man with a practical opportunity to realize all the advantages of long- and short-addendum gearing without making any radical change or expending much money. The wisdom-tooth pinion (Fig. 8) is in every way a long-addendum pinion and partakes of all its advantages. It is, however, so designed and generated that it can be operated with the standard Brown & Sharpe 141-deg. gear.

Hence it can be installed without any gear change, and the operator can go over to the true form of long- and short-addendum gearing with all its advantages by merely renewing pinions with those of the wisdom-tooth shape. There is no dark secret about this profile; it is purely an involute generation of a standard tooth on an oversized-diameter blank. Its use, however, involves one slight change—that is, a slight reduction in the ratio as one tooth is dropped out of the pinion when the wisdom tooth is adopted. The changes in speed and acceleration caused by the different ratio are so little noticed that for instance, street cars in railroad work equipped with "wisdom teeth" are running on the same schedule as cars with standard pinions and even in one case are running in multiple-unit trains interchangeably. In another instance wisdom-tooth pinions have been put on motors on one end of the car and standard pinions on the other with reports from the mechanical department that this gives thoroughly satisfactory service.

Wisdom-Tooth Pinions Stop Breakage Trouble

To illustrate the close similarity between the wisdom-tooth and the standard long-addendum tooth Fig. 8 (a) shows the one superimposed on the other. The oldest wisdom-tooth pinions have been in service more years than comprise the average life of standard pinions and still are only one-third worn out. In several cases they have completely stopped what was otherwise serious breakage trouble.

A still further and successful innovation is the "oversize" pinion of either standard, wisdom-tooth or long-addendum design. Whether this shall be used is also purely a practical problem. When an automobile cylinder and piston rings become slightly worn they are replaced with new oversize piston rings. Likewise, when a gear is badly worn it can be mated with a pinion having thicker teeth than the normal standard. This takes out the major part of the backlash and uses the old gear under much better operating conditions than normal.

At the same time, as the oversize pinion has thicker teeth at the start, more material can be worn off them before they are reduced to the scratching point. The
teeth, being thicker, are stronger at the root, both when new and worn out. The advantages therefore are that the pinion wears longer and has greater strength and less backlash. The only disadvantage is that care must be exercised not to mesh oversize pinions with unworn gears. The manufacturer guards against this mistake by marking them with three peripheral grooves, illustrated in Fig. 7, and by using a wear gage to ascertain whether the gear tooth is worn sufficiently to work satisfactorily with the oversize pinion.

An Argument in Favor of the Steel Grid*

BY A. F. PILCHER
Parkersburg, W. Va.

Operating conditions in the coal-mining industry are perhaps more trying to resistance boxes than those found in any other work in which they are employed. To meet these difficulties experiments into the possibility of using rolled steel resistors instead of cast grids were started some ten years ago and have continued down to the present day. Tests have been made in the best area to be sued for that purpose, the best method of supporting the grids, the best kind of insulating tubes, the preferable method of ventilation and other problems relating to the construction of such grids.

Coal-iron grids, being made of small cross-section, are liable to break when subjected to rough use, and sudden changes of temperature also are likely to fracture them. It has been said that more failures arise from the latter than from any other cause. It is easy to see that this latter defect cannot exist in a rolled-steel grid of any reasonable construction, and even when broken by violence a steel grid can readily be repaired at the mine.

A large company in West Virginia which had one hundred locomotives spent more than $20,000 in one year repairing cast grids whereas the rolled-steel resistors, of which it had several, needed no repair in the same period. Originally designed solely for mine locomotives, they are now used for street cars, hoists, cranes, large alternating-current motors, railroad turntables, steel-mill motors, coal-cutting and coal-loading machines and as ballast resistance for storage-battery locomotives—in short for all machines subject to severe operating conditions.

Hard Steel Only is Used

Rolled-steel grids are made of Hadsonite steel and have a resistance of 400 ohms per mil-foot. This steel has a high-alloy and a high-carbon percentage and is so hard that blades are punched in it only with difficulty. The method of punching having been developed after years of experimental work.

The rolled-steel grid has been so completely standardized that it is said, the repair parts that have to be carried are only 15 to 20 per cent of those needed when cast grids are employed. What is equally important, the 6x6-in. grid is adapted for use with all locomotives. The grid has no loose ends or loops and has seven supporting rods which not only hold the grid but prevent its buckling. Mica tubes are used for insulating the grids. Each rod is insulated from the end frame.

In considering the use of grids of more expensive construction it must be remembered that a grid is a part and only a part of a large and expensive machine and that it is not a wise economy to use a grid that may cause a machine to be laid off. Furthermore, as the grid is but a part of the machine so a locomotive is a part of the equipment of a mine, and the laying off of the locomotive may be a source of much contingent expense and reduction of output. The electrician tries to avoid this loss by cutting out part of the resistance or by working the locomotive after the resistance is in part cut out, but that is not a safe way of operating. When the resistor is kept in condition a real saving is effected on armatures, controller parts and gears, and one company has found that with steel grids, armature burnouts were reduced 50 per cent.

That Elusive Proximate Analysis of Coal

EVERYBODY knows that the constituents of coal are ill-named in the proximate analysis. What is termed fixed carbon, says the American Society for Testing Materials in its book of Tentative Standards, 1922, "is made up principally of carbon but contains also appreciable quantities of sulphur, hydrogen, nitrogen and oxygen." Some of these elements do not appear in the volatile matter or in the moisture yet are lost to the ash and so are grouped with the fixed carbon.

Volatile matter does not include moisture and whatever else may pass off below 105 deg. C. but does include incombustible matter given off in further stages of heating. Much of this is moisture. Ash consists in part of oxygen not contained in the coal and does not contain some of the constituents of the true ash of coal such as the water of constitution in clay. As the same authority declares, "The ash as determined" in the standard methods "is less in quantity than that of the actual constituents of dry coal owing to chemical changes which occur in these by burning."

" Sulphur in coal," quoting again the authority just mentioned, "although commonly reported with the proximate analysis, is not correctly a part of it, being elementary and of definite composition. Sulphur, moreover, is distributed in the proximate analysis as a constituent of two or more of the ingredients thus determined." It is not impossible that in some cases it is found in all four.
Some of the Surprises Which American Mining Congress Exposition Held for the Operating Coal Man

Hudson Company Shows Loree Breaker Model—Bearing Ball in Perfect Balance—Rough Way of Handling Shovels—Weighing Coal on a Running Belt—Box-Car Loaders, Fans, Pumps, Cages, Gears and Drills

COAL mining was the major theme, running through not only the program but also the machinery exposition, at the twenty-fifth annual convention of the American Mining Congress which was held in the New Public Auditorium at Cleveland, Ohio, Oct. 9 to 14. This was so marked that one or two exhibitors who were not making any effort to reach the interest of coal-mining men were moved to say that the exposition was a wonder—for coal. Locomotives, drills, shovellers and loaders, cars, pumps, ventilating systems—practically the full equipment of a coal mine was on display in about 150 booths both on the main arena floor and in the broad basement of the magnificent building. Never had the annual mine equipment exposition held forth in such handsome surroundings. The attendance was reasonably heavy but gave the impression of being less because of the vastness of the building.

The usual number of striking features drew the popular as well as the technical eye—and ear. The Hudson Coal Co.'s model of the Loree anthracite breaker occupied its usual spotlight location, attracting much attention as it went through the operations of handling hard coal. A cross-section of the mine itself, illuminated within, showed interesting points at each mine level, giving the uninitiated a good idea of the way a hard-coal mine would look if the earth were sheared down to the mine and one side of the section removed. This display weighs 12,000 lb., fills an express car and is attended by a crew of five men.

Smaller by 11,999 lb. 15 oz., but almost as memorable, was a single Atlas ball from an SKF ball bearing. Shot upward through a tube by air pressure the glistening little steel globule descended upon a 10-in. steel plate and bounced there for two minutes—always striking the same spot, thus illustrating its perfection of form—until inertia settled it upon the plate, when a gentle air blast rolled it into a trough which directed it into the air gun for another flight. This unique exhibit was much discussed.

Proving Resilience of Molybdenum Steel

Noise makers in the exhibition were the General Electric hard-rock drill working industriously on two 1,000-lb. blocks of stone and a glass-sided shovel-testing machine shown by the Wood Shovel & Tool Co. Shovels clamped to stout spokes on a rimless wheel revolving inside a drum incessantly dug their way through a pile of cobbles, putting over the idea that Wood molybdenum steel shovels stand a tremendous amount of racket, wear down uniformly and do not crack under frequent reverse bendings. The rattling roar of Westinghouse and General Electric gathering motors with their wheels mounted on rollers, the occasional shrill of Federal electric sirens for mine signaling and the lesser clank and whirr from lighter exhibits lent a busy sound to the exhibit from first to last.

One of the outstanding exhibits was that of a Merrick conveyor weightometer in action. One of the machines of standard size for the continuous automatic weighing of conveyor-handled materials was exhibited and was inspected by a steady stream of men who ascended a flight of steps to a small platform beside the "integrator box" containing the sensitive mechanism which was recording the weight of gravel passing on a belt. The weightometer can be installed on any belt conveyor, thus eliminating weighmen. A section of the belt is supported on a floating platform hung on compound levers, balanced by an iron float in a cylinder of mercury. The movement of the float is a direct measure of the weight on the conveyor belt. The float tips a roller-edged disk whenever a load goes over the belt. This disk is a part of the integrator, which multiplies the weight by the speed. A belt driven by the conveyor rubs against the rollers at the periphery of the disk. When this disk is perpendicular to the plane of the belt (the no-load position) the rollers revolve and exert no turning effort on the disk. When the disk, which is carried in a swinging frame, is tipped a component of motion of the belt acts to turn the disk. The greater the weight on the conveyor, the greater the tip and the faster the disk revolves. A simple mechanism records this motion after the manner of a gas meter. The weightometer is made by the Merrick Scale Manufacturing Co., of Passaic, N. J.

Rubber Insulation for Mine Power Cables

"Made like a cord tire," is the phrase that stuck in visitors' minds after they had seen the cable exhibit of the Rome Wire Co. Rubber insulated cables of nearly all sizes both in that booth and the display space of the Simplex Wire & Cable Co. were of interest because they had not been seen previous to a year ago. Heavy rubber insulation applied under pressure was put to all sorts of abrasion and kinking tests to show that cords and cables thus protected are built for heaviest coal-mine service whether used on a drill, a cutting or loading machine or a cable-reel locomotive. The coat may be twice that of ordinary braided cable but the service—many a mining man went away from the show with a new idea of the toughness and serviceability of good rubber insulation.

A lesson in quick loading of box cars with a minimum of coal breakage was taught at the Otterwoc Box Car Loader Co.'s display, where a model of an electrically driven pusher type loader was shown in action, illustrating the ease with which coal can be delivered clear into the end of box cars without benefit of shovel and without the machine delay incident to the entry of a scoop gang into the car.

Modern ideas as to ventilation were not forth by the American Blower Co. and the Buckeye Blower Co. by an exhibit of reversible mine fans capable of either blowing or exhausting, and lessor fans to be used deep in the workings of a mine and especially with flexible
With such tubing blood streams and working parts can be thoroughly and quickly cleaned where otherwise much time would be lost waiting for smoke and gases to clear.

Though masks were chosen by several companies, it remained for the Dravo Co., showing a triple horizontal & a 15,000, pump taking only 30 in. of headroom, to remember the pump maintenance man by featuring a tube cap hinged at one side and clamped down on the other by an eyebolt attached to the valve shell. Thus the cap can be lifted for pump cleaning and inspection without dropping a nut or washer into the mask.

A new type of all-steel self-closing cage, which can come down in the shaft, was shown by Robert Holmes & Brothers, Inc. It is a type now being built for its first installation early next spring. The cage is heavier than most others on the market and is built to withstand severe service. The bed of the cage is supported on 12-in. structural steel beams, the rocking arrangement being made of heavy cast steel. With a 7-ft. platform such a cage will weigh 6,000 lb. Larger sizes will be made upon specification.

New equipment for handling coal in and out of storage with greater speed and less installation and operation expense than that incurred in the use of the average bridge crane attracted considerable attention in the exhibit of the Railway & Industrial Engineering Co., which now makes the Harrington Rocking Cableway. The construction is similar to that of any other standard cableway except in one important feature—its haul and tail masts can be rocked in unison through an arc of 120 deg. Thus if the carriage is operating a rectangular bucket, it can pick up or deliver coal over a wide area instead of merely along a single line, which is all that can be done when the masts are vertical and the cable line stationary. With 100-ft. masts the field of operation may be 150 ft. wide. The power consumed in rocking under load is greatly reduced by counterbalance weights.

**Worm-Gear Speed Reducers Safe and Economic**

An adventure in gears into the coal-mining field got its start at the exhibition in the Dravo-Coyle's exhibit of Cleveland worm-gear reduction units. These worm-gear drives, designed for other uses, are now being applied to power transmission on picking tables, conveyors or any other comparatively slow, steady-moving machinery. Operating in an oil bath exactly on the principle of a worm gear in the rear transmission of a motor truck these units are expected to gain a foothold in mining because they occupy only about one-tenth the space of spur gears or belting and, being enclosed in a coal-dust case, they are protected against dirt and grit and do not permit workers to leave off the safety glasses which are supposed to be bolted over trespass of gears but which seldom stay there.
Utah's Only Coal-Retarding Conveyor Lowers Output Of Spring Canyon Mine, Two Hundred Feet

By Charles M. Schloss
Denver, Colo.

THE retarding conveyor as a means of lowering coal from mine openings on the mountain sides to tipples in the valleys, though common in West Virginia and Kentucky, is unusual in the Rocky Mountain region, despite the fact that many mines are so situated that this would be the simplest solution of the lowering problem.

Utah boasts only one retarding conveyor. In the Spring Canyon field the coal beds outcrop a considerable distance above the railroad tracks. The Carbon Fuel Co. has spanned this distance by a two-strand conveyor 375 ft. in horizontal and 200 ft. in vertical projection. The inclination of the major part is at over 34 deg. with the horizontal. Coal is dumped on the shelf or coal bench by a single-car rotary dump into a hopper, from which it is fed by a reciprocating plate feeder to the retarding conveyor. The conveyor discharges onto the shaker screen.

The construction cost of a conveyor system is about the same as that of a gravity plane, but the conveyor has the better of the argument from that point on. First, the service to which mine cars are subjected on the steeply pitching planes may roll up during the year a maintenance charge of nearly $50. Second, the track on an incline can be maintained only with difficulty and at much expense. Third, more cars are required when they are obliged not only to haul coal to the head house but to make the trip down the incline and back again. Lastly, with the plane it is necessary to have a terminal on the shelf and one at the bottom, and this demands a crew at each terminal. With the conveyor and dumping cars on top, the dumping crew only is necessary. This in itself is no inconsiderable saving.

It is interesting to hear the opinion of an engineer prominently identified with the design of plants for the handling and preparation of coal:

"Take the history of the coal industry in West Virginia, where almost every known device has been used to take coal down the sides of the mountains—inclined plane, monitor dumping the coal at the top and lowering it to the bottom and rope retarder. In every modern instance you will find that the two-strand conveyor is being used exclusively; as a rule installations with small tonnages are using other devices, and it will be only a question of time until they change. This has been the history of the industry in the Kentucky district. I have never known a retarding conveyor which had been built right to cause any serious delay, but every so often you hear of a trip getting away on an inclined plane. I was told that one wreck in Utah cost $12,000 besides all the incident delay; mine cars were threaded onto railroad irons like buttons on a string, and they were steel cars at that!"
Coal Reserves in Fayette County, Pa.,
Contained in Seven Beds
BY JOHN F. BEER

FAYETTE COUNTY, Pennsylvania, has seven coal beds that may be considered of economic value at the present time. In order of importance, so far as production is concerned, these are the Pittsburgh, Sewickley, Upper Kittanning, Lower Kittanning, Upper Freeport, Waynesburg, and Redstone. Extensive development of the Pittsburgh bed and its outcrop throughout the county have furnished many measurements of its thickness, making possible an accurate and reliable computation of the quantity available. For some localities no information is at hand as to the size of mined-out areas, and an estimate of probable depletion has been based upon the age of development and the size of surrounding operations in those particular sections or on the difference between original areas and statements of areas unmined.

The outcrop and development of the Sewickley coal bed have given many reliable measurements of its thickness. This bed is considered of value as a shipping coal in eight townships. Many mines have been opened in this bed in recent years, and its economic value as a producer of fuel for industrial purposes is second only to that of the Pittsburgh coal.

A fair amount of data regarding the thickness of the Upper Kittanning bed has been gathered from the mines and outcrop along the Youghiogheny River in the Confluence-Indian Creek region. It has been considered as being of economic value and the contents calculated only in Stewart, Redcliff, and Henry Clay townships. Future development and prospecting, however, may show that it is mineable in other localities west of Chestnut Ridge.

Development and prospecting of the Lower Kittanning coal in the Confluence-Indian Creek region have furnished a fair number of measurements of its thickness. It has been computed as of economic value in four townships, namely, Redcliff, Springfield, Stewart and Henry Clay, but further prospecting may show that it is mineable in other townships.

The Upper Freeport bed contains the greatest reserve in the county. Its extensive outcrop along Chestnut and Laurel ridges gives numerous opportunities for measurements, making fairly reliable computation of quantity possible. It is assumed that the continuity of this bed is uninhabited from the west slope of Chestnut Ridge to the Monongahela River. Core drillholes along the river prove its existence in this region. The tonnage calculations are based on many measurements along the outcrop and on an assumed thickness of 42 in. under the townships bounding the river.

A fairly reliable estimate of the quantity of Waynesburg coal available is made possible by the number of measurements along the extensive outcrop of this bed. Because of its accessibility the Waynesburg coal is mined at many places throughout the county for local use. This bed is badly broken by partings, but where the thickness is fairly uniform, there are several mines that are shipping this coal for industrial purposes. Because of the character of the bed, however, it will not become a great producer of shipping coal and will be of less economic value than any of the beds whose quantity has been computed.

Outcrop and shaft sections of the Redstone bed give a fair idea of the extent and thickness of this coal. It is not mined for shipment but is used for domestic purposes in several localities.

Other coal beds than these are mined for local use, but as they are not important and little is known of their extent and thickness, they have not been included in the computation of the reserves.

The result of computing the coal reserves in Fayette County based on the latest maps, engineering data, and methods is shown in the accompanying table.

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<th>Coal Reserves in Fayette County</th>
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<tr>
<td><strong>Bed</strong></td>
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<td>Pittsburgh</td>
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<td>Freeport</td>
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<td>Redcliff</td>
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<td>Waynesburg</td>
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<td>Upper Kittanning</td>
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<td>Lower Kittanning</td>
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<td><strong>Total</strong></td>
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*The total area of Fayette County is 824.0 square miles.*

Detailed tables of the coal reserves in each township have been prepared and will appear in printed form in a report now being written on the bituminous-coal fields of the State of Pennsylvania. They can be consulted in the office of the Topographic and Geological Survey, or figures for a single township will be sent on request.

INVESTIGATION OF THE OCCURRENCE and distribution of the forms of sulphur in coal has been continued during the recently ended fiscal year at Urbana, Ill., by the U. S. Bureau of Mines, in co-operation with the Illinois Geological Survey and the University of Illinois under two general heads: (1) The distribution of the forms of sulphur in the coal bed, and (2) sulphur forms in coal. Both are closely co-ordinated with coal washing. The steadily decreasing reserves of low sulphur-coal in certain sections renders it essential to have information on the occurrence and distribution of the forms of sulphur present in coals higher in sulphur, so that intelligent efforts may be directed toward reduction of sulphur and its utilization. The distribution of the forms of sulphur in coal beds was investigated at two mines in southern Illinois. A similar though less intensive investigation was made at a mine operating in the Pratt seam in Alabama. Since this work was done, one mine has materially reduced the sulphur content of both raw and washed coal by developing their lower sulphur areas. The work on the sulphur forms occurring in coal is being conducted with the object of correlating the occurrence of sulphur forms with the washability of various coals with respect to sulphur reduction. During the year all the raw coal upon which washing tests were made and the washed products have been examined for the various forms of sulphur. It has been found that the organic sulphur content of a raw coal plus its content of finely disseminated pyrite sulphur fixes a limit below which no reduction in sulphur can be effected by ordinary coal-washing methods.

PROBLEMS THAT DEVELOP in the mechanical preparation of coal in the Central and Eastern coal fields are being investigated at the Central experiment station of the U. S. Bureau of Mines at Urbana, Ill., in co-operation with the University of Illinois and the Illinois Geological Survey. Work on coal-cleaning methods is being continued, as the problem of cleaning coal is receiving more attention in the bituminous-coal mining industry. A study has been made of the methods of examining a coal as it exists in the raw state, in order to determine the practicability of improving it by coal-cleaning processes.
Problems of Operating Men

Finding the Way to Industrial Peace

Solving the Labor Situation by the Golden Rule
—Spirit of Goodwill and Co-operation Needed
—Mutual Dependence of Capital and Labor

WITH much interest I read the excellent article of M. J. Facemeyer, entitled "Peace and Harmony," in the Age, Sept. 29, p. 493. I was much impressed with the truth of his opening statement, which reads as follows: "Just now, nothing is of more interest and importance than suggestions looking to the promotion of peace and harmony in the general rank and file of the coal-mining industry."

Reading this article recalls the statement made by Roger W. Babson, in his report on the social, economic and political problems that confront the American people. As quoted in "Coal Age," Vol. 17, p. 364, Mr. Babson says, "The need of the hour is more religion. The solving of the labor situation is wholly a question of religion."

As I understand it, the report of Mr. Babson seems to show that the recognition of God, in the financial affairs of men, is the only basis for industrial peace and lasting prosperity. It is, I believe, the only hope of a permanent settlement of the present industrial disturbances.

OUR GREATEST NEED TODAY

We all realize, today, that the suggestions of this student of social and economic conditions have not been put into practice by either capital or labor. Controversies between the ambition factors of industry still continue, paralyzing business and bringing ruin to more and more innocent and helpless people, as the days go by.

To the thoughtful man, the greatest need of our country, today, is not the heralded mountain wave of prosperity; but, instead, a gentle wave of goodwill and co-operation in the hearts and minds of men, whether they labor with their hands or with their capital and brains.

Too often the question of right and wrong has not been mentioned as a factor in the adjustment of industrial differences. Instead, higher wages and larger profits have confronted each other in a hopeless struggle for ascendency. It is victory or defeat, for one side or the other, regardless of the cost. How different would be the aspect, if greed, hatred and selfish ambition were to give place to the practice of the Golden Rule, which is the only solution to these problems.

No wisdom is required to perceive that our present industrial controversies can never be permanently adjusted if capital and labor continue to seek to humiliate each other. Capital can never overcome labor by force and reduce it to starvation wages. On the other hand, labor cannot force capital to concede unjust demands that would destroy the country's business.

PREVAILING DISREGARD FOR LAW

Prosperity can only be permanent when it smiles alike on both capital and labor. It is not new laws or legislation that is needed; but the spirit of goodwill and co-operation must dominate. Never, in the history of our country, has there been so little regard for the supremacy of the law and its enforcement as there is today.

There is no need to rehearse those wanton acts of murder and destruction at which the world has so recently stood aghast. What is most discouraging is the evident approval given to such dastardly deeds by local organizations and communities.

There is no mistaking the fact that dangerous un-American principles are present with us. Certain elements among our laboring classes have spread their poisonous doctrines, to such an extent that the fires of hatred and selfishness now smolder in the hearts of their helpless victims. It stands in hand for the better element of all classes of workmen and citizens alike, to be loyal in the preservation of those American principles of justice and individual rights, or these will soon be destroyed forever.

CAPITAL AND LABOR PROBLEMS

The problems that confront industry, today, have grown to proportions that require level-headed judgment in the recognition of individual rights. All labor should receive something more than a living wage, in return for efficient service. Labor is entitled to a profit on its toil, as truly as invested capital demands a reasonable return for its use. Labor must provide against the personal "lay-off day." Capital can only safeguard its interests against the fluctuations of trade.

When one considers the mutual dependence of capital and labor, the one on the other, it is hard to understand why labor should want to embarrass capital, or capital desire to humiliate labor. So akin are their interests that one is as much bound to promote and protect the welfare of the other, as though it was their own.

Both capital and labor are important in their respective spheres; both are indispensable factors in the industrial enterprises of the country. In my opinion, the time has fully come when the old order of things will be exchanged for the new. A more humane and Christian spirit must assert itself and prevail, while the old weapons of boycott, strike and labor warfare are forever laid aside.

In closing, let me say there is only one remedy that can be applied with any assurance of permanent success. It will be found in a return to the teaching of the Man of Nazareth, on the part of both labor and capital. There can be no disposition to do anything but right in the treatment of another, and the problem will be solved.

Dayton, Tenn. 

John Rose.

Keeping the Mine Safe

Humidifying mine air with steam—
Broadcasting salt in the airways—
Removing all accumulations of dust—
Spraying systems not effective—
Preventive measures more reliable.

READING the article of F. C. Connet, Coal Age, Aug. 3, p. 189, dealing with the question of humidifying air currents by steam, leads me to offer a few comments on this and other methods of keeping the mine safe.

In regard to this method of humidifying mine air, I naturally assumed that the main airways are the return airways, although it is not so stated in the article. It seems where the main airways are made the intake airways, the use of steam would be objectionable, as it would necessarily inconvenience the drivers and men working on the bottom.

HUMIDIFYING THE MINE BY STEAM

Assuming an intake airway, however, I can heartily recommend the use of steam for humidifying the air current. Whether a straight line of pipe is installed for that purpose or a radiator system is employed in the shaft, as either method can be made effective.

In the future, I would suggest a general breakup of all roads and air-courses, removing any accumulations of dust and leaving it out of the mine. If a steam line to heat the pipes should be tapped at short intervals, by drilling small holes in the return, the steam of the
Continuous Car Supply in Rooms

Flow of Water in Pipes Under Equal Heads

HAVING been for several years somewhat of a dabbler in hydraulics, I was interested in the question of an Ohio student, appearing in Coal Age, Oct. 5, p. 551. While the answer given to the problem is entirely correct, it seems to me that the inquirer is left in the position of simply accepting it without knowing the reason.

In reply to this question, the editor has shown that this is the only for an equal velocity. He states, "A more practical view of the question, however, is to consider the flow of water in these pipes as under a constant head, or pressure," which is true.
Then, he adds, "owing to the frictional resistance in the pipes, a constant head will not produce the same velocity or quantity in pipes of different diameters," and goes on to explain by reference to the well-known formula for the unit pressure producing a flow of any fluid in a conduit.

Would it not have been better to have explained the situation somewhat as follows: Experiment has shown that the resistance of the flow of water in pipes is, approximately, proportional to the square of the velocity of the flow and also to the area of wetted surface of the pipe. The total pressure applied to overcome this resistance is equal to the unit pressure (lb. per sq. ft.), multiplied by the sectional area of the pipe, expressed in square inches.

Now, the unit pressure corresponds to the head, which is the same for all the pipes. Again, the sectional area of a single 12-in. pipe being equal to the sum of the areas of sixteen 3-in. pipes, the resistance to the flow is the same in each case; and we can write

\[ p = \alpha v^2, \]

where \( p \) = unit pressure; \( \alpha \) = total sectional area, in each case; \( v \) = velocity of flow; \( s \) = total wetted surface in the pipes, in each case.

Then, assuming equal lengths for all the pipes, and expressing the values of \( p \) and \( s \) in terms of the diameter \( d \), remembering that \( v = \sqrt{2gh} \), we have

\[ \frac{p}{d^2} \text{ varies as } \frac{q^2}{d^2} \times d. \]

But, the unit pressure \( p \) being constant, we have by transposition \( q^2 \) varies as \( d^2 \); and, finally, \( q \) varies as \( d \).

In other words the diameter of the 12-in. pipe being four times that of a 3-in. pipe, the flow of water in the former, under the same head, will be \( \sqrt{4} = \sqrt{16}/4 = 32 \times 4 = 128 \) times that in the 3-in. pipe. Therefore thirty-two 3-in. pipes will be required to give the same flow as one 12-in. pipe, under the same head.

Charleston, W. Va.

T. L. F.

[Another letter of a similar nature to the foregoing was received from Thomas Anderson, Barnesboro, Pa. Neither of these gentlemen appear to have turned over the leaf and read the conclusion of the reply to this inquiry on page 552, as their letters contain nothing different from what is there stated.—Editor.]

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**Interchange of State Certificates**

Certificates of Competency Granted by Examining Board in One State Honored by Similar Board in Another State

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**The Practice of Interstate Certificates Growing Rapidly**

A subscriber to Coal Age, kindly permit me to ask for a little information regarding a certificate of competency granted by one state, being accepted by the examining board in another state. For example, I hold a first-class certificate granted me by the state examining board, in Alabama. For certain reasons, I now desire to remove to Illinois and have been wondering whether my certificate would be of any use to me in that state. If not, what are the requirements, in Illinois, in order that a man can take the examination for a certificate authorizing him to act as miner manager (foreman)? Is a first-class certificate granted in Alabama equivalent to a miner manager's certificate in Illinois? Any information on this subject will be greatly appreciated.

R. FORTUNA

Nauvoo, Ill.

This is the old question of interstate certificates, which has been so frequently discussed in mining papers and at meetings of mining men. While the practice of accepting certificates granted candidates in another state is by no means universal, the custom has been growing during the past few years; and many state examining boards now are willing to accept such a certificate when presented by a candidate coming from another state, provided the examinations are of the same grade and importance.

The question of accepting such certificates on the part of the Illinois Examining Board was recently put up to the director of the Department of Mines and Minerals, Robert M. Medill, Springfield, III. In his reply, Mr. Medill states that since his appointment as Director of the Department of Mines and Minerals he has taken the position that the department should honor a certificate from another state where the candidate was required to pass an examination similar to that given by the department in Illinois. Director Medill adds that such a candidate, however, would be subjected to a slight oral examination to determine his fitness for the position desired and confirm his acceptability by the Illinois Mining Board.

It is needless to say that the practice of interstate certificates, properly safeguarded by subjecting a candidate to a sufficient oral examination to confirm the certificate he presents, is in accord with what has been advocated in Coal Age, for a number of years.

The subject of interstate certificates of competency will be discussed at a meeting of the Mine Inspection Institute of America several years ago. The consensus of opinion at that meeting was in favor of such certificates being given due consideration by state examining boards when presented by candidates applying for examination.

To what extent the certificate can be accepted will, of course, depend on the respective standards of examination in the two states, and this can only be determined by the examining board in considering a candidate's application.

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**Size of Pulley Required**

Ratio of diameters of pulleys on motor and fan same as the inverse ratio of their respective speeds.

In the operation of a booster fan having a 24-in. drive wheel, what size of pulley will be required on the shaft of a motor running at a speed of 1,500 r.p.m., in order to drive the fan at 600 r.p.m.? MINE FOREMAN, Barnsboro, Pa.

Assuming there is no slippage of the belt connecting the fan with the motor, the ratio of the diameter of the pulley on the motor shaft, to the diameter of the drive wheel on the fan shaft, must be equal to the ratio of the required speed of the fan to that of the motor.

In other words, the diameter ratio is equal to the inverse speed ratio. Then, calling the required size of the pulley on the motor shaft \( x \), we have

\[ \frac{x}{24} = \frac{2}{1.5} \]

\[ x = \frac{24 \times 2}{1.5} \]

Estimating Available Tonnage

Approximate rule for computing available tonnage of coal underlying a given tract—Allowance per foot-area varies with quality of coal—For inclined seams divide estimated tonnage by cosine of angle of inclination.

A discussion has recently arisen among some coal men, in this locality, concerning the available tonnage underlying a 1,000-acre tract, the seam being flat and averaging 80 ft. in thickness. Allowing 1,000 tons per acre, the estimated tonnage of coal, in this seam, would be 1,000,000 tons. This amount being divided by 60, it was decided to use Coal Age, if it is correct.

ENGINEER, Meeker, Ola.

An approximate rule of thumb that has been often used in computing the weight of coal underlying an acre of land, assuming a flat seam, is to multiply the coal of average quality, to base the estimate on 1,000 tons per foot-thickness.

Later, however, when the extraction of coal becomes more complete, this rule was discarded and the estimate based on 180 tons per 1,000 acres, or 0.18 ton per sq. ft. Most of these rules had reference to bifacial coal, in a flat seam. Anthracite will average 1...
**Examination Questions Answered**

**Miscellaneous Examination Questions**

*(Answered by Request)*

**Question:** What is the best method of humidifying dusty mine air?

**Answer:** The most practicable method of humidifying the air current in a mine is to introduce steam into the current, on the intake airway, after heating the air by causing it to pass over a system of radiators or steam coils. The waste steam of this heating system is then permitted to escape into the warm air current, through perforations in the pipes. The escaping steam should be made to impinge on baffle plates or canvas curtains, for its better distribution.

**Question:** Find the mine resistance when the water gage reads 2.5 in., in an airway 6 x 10 ft. in cross-section.

**Answer:** A water-gage reading of 2.5 in. indicates a pressure of 2.5 x 52 = 13 lb. per sq.ft. The sectional area of this airway is 6 x 10 = 60 sq.ft., and the mine resistance is, therefore, 60 x 13 = 780 lb.

**Question:** What pressure and water gage reading will be required to pass 60,000 cu.ft. of air per min., through an airway 8 x 10 ft., 4,000 ft. long?

**Answer:** The perimeter of this airway is 2(8 + 10) = 36 ft.; and the rubbing surface is, therefore, 36 x 4,000 = 144,000 sq.ft. The sectional area of the airway is 8 x 10 = 80 sq.ft. The pressure required to circulate 60,000 cu.ft. per min. through this airway is, therefore,

\[ P = \frac{144,000 \times 60,000}{80 \times 80} = 20.25 \text{ lb. per sq.ft.} \]

The corresponding water gage is, then, 20.25 x 52 = 3.2 in. nearly.

**Question:** What will be the diameter of an upcast shaft necessary to pass 20,000 cu.ft. of air per minute with a velocity of 100 ft. per min.

**Answer:** Dividing the air volume, in cubic feet per minute, by the velocity, in feet per minute, gives the required sectional area of the shaft; thus 20,000 \( \div \) 100 = 200 sq.ft. The required diameter of the shaft is therefore \( d = \sqrt{\frac{200}{\pi}} \approx 12.25 \text{ ft.} \)

**Question:** A certain mine has two shafts, each 500 ft. deep. The temperature of the downcast is 60 deg. F. and that of the upcast 150 deg. F.; what is the motive column?

**Answer:** The motive column can be estimated in terms of either the downcast or the upcast air. The downcast air being the heavier will give a shorter motive column than the upcast air. The calculation is as follows:

Down cast air, \( M = \frac{(T - t) D}{420 + T} \)

where \( T = 60 \text{ deg. F.} \) and \( t = 150 \text{ deg. F.} \)

Up cast air, \( M = \frac{(T - t) D}{420 + t} \)

\( D \) being the depth of the shaft.

**Question:** How is it possible to divide the air proportionately between two or more splits?

**Answer:** Regulators must be placed in those splits that are passing more than their desired proportion of the air. The opening in each regulator must then be adjusted to give the desired results.

**Question:** What is the law regarding the method of approaching abandoned mines?

**Answer:** The Indiana Mining Laws (Chap. 285, Sec. 14) require that places being driven toward an abandoned mine shall not exceed eight feet in width; and a borehole shall be kept in the center of each place and not less than three yards in advance of the face. Also, sufficient flank boreholes must be kept on each side of the place so driven.

**Question:** What are the causes of mine fires? How would you proceed in case of a fire in a mine of which you had charge? Give full details of the steps necessary to seal off the fire by building air-tight stoppings. The advisability of this proceeding can only be determined on the ground. Only as a last resort should recourse be had to the flooding of the mine, in order to extinguish the fire.
Critics of British Coal Strike Settlement
Charge Juggling of Production Costs

BY C. H. S. TUPHOLME
London, England

Some critics of the British coal strike settlement of June, 1921, contend that the proportion of profits to wages is unduly high and that the ratio will have to be adjusted in favor of the men; others profess to believe that the scheme lends itself to figure "juggling" by the owners. Vague charges have from time to time been brought against the colliery companies in respect of "rigging" the cost of production. It has been alleged that "other costs"—i.e., items other than wages, stores and material—have been piled up in order that the employers may benefit at the expense of the men. It is true that none of the responsible leaders of the workmen has made such an accusation, but there is some evidence to show that others have not scrupled to sow the seeds of suspicion among the men with the object of stirring up discontent and arousing hostility against the pact of last year.

In the circumstances it is necessary to emphasize the fact that the independent chairman of the National Board has laid down categorically every item which is to be treated as a working cost other than wages, while he has further carefully laid down the basis upon which items are to be calculated. In addition to timber and stores, the following have been admitted as "other costs": (1) Depreciation and renewals; (2) freehold coal royalties; (3) surface damage and restoration of service at end of lease; (4) workmen's compensation payments and insurances; (5) national health and unemployment insurance (owners' proportion of contributions); (6) remuneration of owner managers; (7) fire brigade, rescue, and aid services, etc.; (8) welfare levy payable under the Mining Industry Act, 1920; (9) allowance to make up subsistence wages; (10) local rates; (11) remuneration of directors, mine manager, general manager, and secretary; (12) remuneration of clerical and administrative staff other than No. 11; (13) pensions; (14) general expenses; (15) coal and water purchased and consumed; (16) repairs and renewals of colliery wagons; (17) schedule A assessment of workers' houses and occupiers' rates borne by owners and not recoverable; (18) wagon charges; (19) other debits.

The accountants acting in the men's interest, have access to all accounts bearing on these costs and they are, therefore, in a position to check every item and satisfy themselves that everything is as it should be. The men themselves are now able to obtain much fuller and more detailed information that was available when the argument was first put into operation, and so they are afforded ample safeguard against any undue inflation of costs.

Overhead Expenses in American Coal Mines
Considered in Relation to "Rigging"

BY W. B. REED
Washington, D. C.

Mr. Tupholme's article on the possibility of "rigging" or padding the cost of coal in order to increase the actual profit to the operator or owner under the British system of a division of profits between the owners and the miners gives us an opportunity to compare "overhead expenses," as we designate what the English accountants term "Other Costs." A comparison of the items of overhead and other operating expenses set out by the British National Board with the generally accepted items in this class as recommended by the cost accounting committee of the National Coal Association shows considerable similarity of treatment. There are several items embraced in the British plan which do not appear in the accounting practice here. For instance, "surface damage and restoration of surface" does not appear specifically as an item of cost in our cost sheets, although such items are properly chargeable to operation. The American practice is to set up a fund for mining hazards and to charge the cost of such contingencies to this account when they occur. Our accounting practice does not recognize any specific account of national health and unemployment insurance; our nearest approach being group life insurance as carried by some concerns. We have no legal liability such as is termed "welfare levy," the welfare work, where it obtains, being the voluntary contribution of the operator, while in Great Britain it is apparently obligatory on the owner to finance to an extent such activities. Neither do we have "allowance to make up subsistence wages." The item of pensions is one which we would ordinarily consider as a charge against income rather than a direct item of cost.

It may be profitable, perhaps, to examine our own generally accepted method of cost determination to see if it is open to the charge of "rigging" or padding of the items indicated in the English mind. The accounts which lend themselves most readily to the abuse mentioned are the depreciation account, the accounts carrying officers' salaries and the supply accounts. Of these, the depreciation account is the most difficult to police, for when based on a rate per cent it is a matter of good judgment as to the value of the coal and as to the replacement of the coal lost by depreciation, and the maintenance of the policy of the management as to maintenance and replacements, and the life of the coal all have to be taken into consideration. When based on exhaustion, or, in other words, on the depletion plan, a more even measure of the consumption of capital by depreciation may at times be obtained. But the Internal Revenue Bureau has held that depreciation may be forestalled and "sound value" maintained by a policy of the management in keeping machinery and equipment up to its productive capacity.

UNDUE INCREASE IN OFFICERS' SALARIES UNLIKELY

With respect to officers' salaries and expenses there is little likelihood of their being increased unduly during the case of closely held corporations, in which the dissemination takes the form of a dividend. The Internal Revenue Bureau is continually on the lookout for the method of distributing earnings and it cannot long pass unchecked. The same "policeman" is always on the lookout for the former item of depreciation and for the abuse of the practice of charging of additions and betterments to the same account.

In the last-named item the line of separation of the past few years has been quite clearly drawn. If the item purchased or installed will materially increase production or materially and permanently decrease production cost, it should be capitalized; otherwise after the development stage is passed there should be no capital additions, but everything of this nature treated as operating cost.

The studies made by the engineers' association of the United States Fuel Administration and by the Federal Trade Commission with respect to coal costs are interesting as showing the small difference between "reported costs" and "adjusted costs" during the period in which the coal industry reported to these bodies. These adjusted costs were used by the Fuel Administration engineers in their cost studies for the purpose of determining the item to the item of salaries of officers and management as well as to deduct from others, that a representative showing might be made. The engineers committee reported that in their first study on a production of nearly 70,000,000 tons of coal the average cost was "adjusted" exactly 10, and that they increased the cost by the adjustment.

The Federal Trade Commission in the report on production of Pennsylvania coal in 1919 said that it was impossible to determine the cost of producing the coal reported from a given field area. However, they generally they operated to reduce costs. In some instances they increased the cost. Most of the reductions occur under "general expenses." Some of the reductions were found to have taken place.
Preliminary Statistics of Production of Coal in 1921

<table>
<thead>
<tr>
<th>State</th>
<th>Average Number of Employees</th>
<th>Average Number of Days Worked</th>
<th>Number of Employees</th>
<th>Average Number of Days Worked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohio</td>
<td>28,784</td>
<td>154,913</td>
<td>26,803</td>
<td>164,858</td>
</tr>
<tr>
<td>North Dakota</td>
<td>84,686,500</td>
<td>1,651</td>
<td>86,403</td>
<td>1,649</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>8,239,500</td>
<td>149</td>
<td>8,429</td>
<td>149</td>
</tr>
<tr>
<td>Montana</td>
<td>18,346,500</td>
<td>124</td>
<td>18,300</td>
<td>124</td>
</tr>
<tr>
<td>New Mexico</td>
<td>18,996,500</td>
<td>128</td>
<td>18,988</td>
<td>128</td>
</tr>
</tbody>
</table>

Union Mines in Washington State Resume: Open-Shop Operations Unaffected

The mine owners in eastern and southern Washington, who have been working under the agreements reached by the Western Federation of Miners, have at last been able to get their men back to work because they have made a new agreement with the miners. This agreement provides for the payment of $1.50 per day to the miners, with an additional $1.50 per day for the duration of the contract. The miners have also agreed to work for 90 days, with an option to extend the contract for another 90 days.

With the union properties again operating, the state's normal flow of coal will doubtless soon be available, and until further interruptions occur, any danger of a shortage to either industry or household is past. The danger rather is that because of the most severe competition of low-priced fuel, the mining of foreign coal, the commercial mines may have difficulty in securing sufficient market to keep steadily working.

"It is fair to assume, however, that because of their more dependable basis of operation and because of having been in a position to supply and keep a continuous hold on their markets during the recent crisis, the western Washington mines will be in the most favorable position to retain those markets.

"The Pacific Coast Coal Co. takes this opportunity of again stating that its policies have not been in any way affected by the recent union settlement, nor will they be by any future developments."
Valuation of Anthracite Lands for Taxation Purposes; Schuylkill County Makes 650 Per Cent Raise

Systematic efforts to burden the anthracite industry with taxation amounting to a levy on capital are creating an issue of the highest importance to all coal-land owners in Pennsylvania and to all consumers of coal. With due regard to all the complications arising from the recent strike and to all the possibilities contained in the investigation by President Harding's commission, this matter of taxation is in some phases the most important question before the coal-producing and coal-consuming public.

The basis of the present tax movement is in Schuylkill and Northumberland counties, comprising the southern and western middle anthracite fields. The Schuylkill County commissioners, in making their triennial assessment this year, have marked up county valuation for all tax purposes from $99,935,909 in 1921 to $497,510,263 for 1922.

The great bulk of this increase has been placed upon anthracite lands, which were valued at $55,997,496 in 1921 but which are placed at approximately $422,000,000 for 1922, the increase being more than 650 per cent. As the tax rate for 1922 has been placed at 2.75 mills for county purposes, the total tax yield on a basis of 100 per cent collection would be $1,368,153 on the 1922 valuation, and of this $1,160,500 would be taken from coal-land owners.

As matters stood under the 1921 assessment, coal-land owners paid about 65 per cent of the total county taxes collected. Under the proposed valuations coal-land owners would have to pay about 89 per cent, allowing for exonerations and non-payment by individuals.

Up to this point only county taxes have been considered. There remain school taxes, road taxes in townships and the ordinary municipal taxes in the boroughs and the City of Pottsville. The new schedule of valuations means that a burden of some $25 per diem, with expenses, the contentions of the coal-land owners, made in the equity case before the Schuylkill County Court, was that the commissioners did not take the reports of the assessors, who are the only valuation officers known to the law, but set aside the returns and had new ones made out. In general the valuations, they further contend, were made under the ad valorem tax law, which requires that the market value, actual or as nearly as may be determined, shall be the valuation for tax purposes.

The contention with respect to the latter point is unquestionably well founded. For example, 241 acres of coal in the Pottsville coal reserve changed hands this year. This is nothing but a mineral right, carrying no surface rights. The character of the geological measures in this tract is such that probably as much as 250 ft. of surface support must be maintained. As a practical mining proposition this means that this particular acreage cannot be utilized until mining adjacent to Pottsville gets down below 250 ft., so that this 241 acres can be reached through workings whose extent is beyond the city limits. There is no respect of any such development for 40 or 50 years and maybe longer.

This property was offered at public sale, two holders appearing and the whole area being sold for $113,000. The valuation for tax purposes last year, averaged $250 per acre. In the face of this bona fide transaction, however, the commissioners, this year, made their valuations at $4,700 per acre for almost all taxed for as much as the actual sale price shown in the funds received within the last few months.

The Lehigh Coal & Navigation Co., which owns workings in the Pottsville basin, is offering at public sale a tract of 574 acres, partly in Pottsville and partly in the two Northumberland townships and the borough of Mechanicville, in Port Carbon. This is a homogeneous property, being of the same general character throughout and containing the companies is a good thing for you. It is true we have increased your valuations a little, but we have cut your rate, so that you will pay less money in taxes on the 1922 valuation than you did in 1921.”

The result is an almost entire absence of public opinion against what is in its essence a grave assault against the fundamental industry of the region. The expression “soaking the coal companies” is literally exact, for the county, with coal-estate tax revenue last year (100 per cent basis, 9 mill rate, $99,935,909 total valuation) was $999,423, this year proposes to collect, on the 100-per cent basis, $1,368,153.

The following list embraces most of the important towns and townships within the Schuylkill County measures, and shows how the County Commissioners have marked up valuations:

<table>
<thead>
<tr>
<th>District</th>
<th>1921 Valuation</th>
<th>1922 Valuation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashland Borough</td>
<td>$284,300</td>
<td>$1,160,500</td>
</tr>
<tr>
<td>Coalville Borough</td>
<td>755,400</td>
<td>2,751,000</td>
</tr>
<tr>
<td>Girardville Borough</td>
<td>563,700</td>
<td>750,000</td>
</tr>
<tr>
<td>Nescopeck Borough</td>
<td>1,444,267</td>
<td>2,750,000</td>
</tr>
<tr>
<td>Nescopeck Borough</td>
<td>655,400</td>
<td>2,750,000</td>
</tr>
<tr>
<td>Tamaqua Borough</td>
<td>3,122,550</td>
<td>3,150,000</td>
</tr>
<tr>
<td>Paradise Country</td>
<td>628,700</td>
<td>2,750,000</td>
</tr>
<tr>
<td>Pottsville City</td>
<td>1,387,903</td>
<td>2,750,000</td>
</tr>
<tr>
<td>Huguenot Township</td>
<td>3,553,895</td>
<td>3,750,000</td>
</tr>
<tr>
<td>West Mahantongo</td>
<td>4,894,125</td>
<td>4,750,000</td>
</tr>
<tr>
<td>New Castle Township</td>
<td>750,000</td>
<td>2,750,000</td>
</tr>
<tr>
<td>Norwegian Township</td>
<td>597,000</td>
<td>2,750,000</td>
</tr>
<tr>
<td>East Norwegian Township</td>
<td>425,000</td>
<td>2,750,000</td>
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<tr>
<td>New Castle Township</td>
<td>2,750,000</td>
<td>2,750,000</td>
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<tr>
<td>Norristown Township</td>
<td>7,927,000</td>
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<td>Kirk Township</td>
<td>2,750,000</td>
<td>2,750,000</td>
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<td>Trumbull Township</td>
<td>3,127,903</td>
<td>3,750,000</td>
</tr>
<tr>
<td>Rhyll Township</td>
<td>3,127,903</td>
<td>3,750,000</td>
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<tr>
<td>Wyoming Township</td>
<td>3,985,500</td>
<td>3,750,000</td>
</tr>
<tr>
<td>Union Township</td>
<td>1,160,500</td>
<td>2,750,000</td>
</tr>
<tr>
<td>West Union Township</td>
<td>2,750,000</td>
<td>2,750,000</td>
</tr>
</tbody>
</table>

The County Commissioners retained as “expert” engineer a man named William H. Monroe, of Scranton, paying him $25 per diem, with expenses. The contention of the coal-land owners, made in the equity case before the Schuylkill County Court, was that the commissioners did not take the reports of the assessors, who are the only valuation officers known to the law, but set aside the returns and had new ones made out. In general the valuations, they further contend, were made under the ad valorem tax law, which requires that the market value, actual or as nearly as may be determined, shall be the valuation for tax purposes.

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Coal Commission Seeks Aid of Experts to Complete Task at Time Appointed

As the President's Coal Commission draws nearer to the date on which it has been assigned to do the investigation of the coal industry, a few experts are beginning to arrive in Washington to give their aid in the work. Several have been here for the past week, and a number of others are expected to arrive in the next few days.

The President has been told that several experts have been engaged by the commission to assist in the work. The experts are to be selected on the basis of their qualifications and experience in the coal industry.

In addition to the experts, the commission is also engaged in the examination of a number of other experts. The experts are to be selected on the basis of their qualifications and experience in the coal industry.

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order to give to Congress and the public complete information necessary to the proper understanding of the conditions in the coal industry?

"(d) To what extent are you in position to cooperate with the commission in securing necessary data in such manner as will eliminate in the largest possible degree any basis for criticism of the accuracy or the validity of the data which have been secured?

"In addition to the above, the commission further desires you to advise it in writing at some date in the near future, tentatively:

"(e) What in your judgment are the elements that have caused and are causing the acknowledged demoralization in the coal industry and which are working hardships alike upon the parties engaged in the production of coal and the consuming public?

"(f) What in your judgment are the practical remedies that would eliminate any or all the elements that you feel are responsible for the condition?"

J. D. Rockefeller, Jr., Says Miners Should Have Voice in Working Conditions

John D. Rockefeller, Jr., who is resting at Battle Creek, Mich., telegraphed F. Ernest Johnson, secretary of the research department of the Federal Council of Churches, New York City, last week that the grievances of the coal miners in Somerset County, Pennsylvania, are "well founded." "I have urged with all sincerity and vigor at my command," he added, "that the present labor policy of the operators, which seems to me to be both unwise and unjust, be radically altered."

Mr. Rockefeller's telegram was sent in response to a letter sent by Mr. Johnson to the former calling attention to the strike in parts of central and western Pennsylvania and particularly in Somerset County. "As I understand it," wrote Mr. Johnson, "two large companies in particular, namely, the Berwind-White Coal Co. and the Consolidation Coal Co., have been represented that any remedial policy adopted by them would be likely to have a far-reaching influence. Is it not possible for you as a stockholder to take some effective action with regard to the distressing conditions which now exist in Somerset County?"

In replying to the letter Mr. Rockefeller said that he was not now and never had been a stockholder in or in any way connected with the Berwind-White Co., but was a stockholder with a minority interest in the Consolidation Coal Co. As a minority stockholder Mr. Rockefeller said he had no legal power, even if he were so disposed, to dictate the policies of that company. Moreover, he said, "I must concede the administrative rights of management within certain limits of authority and responsibility. Apart from these usual and recognized limitations, whether legal or administrative, I am now and long have been, a believer in the moral responsibility of stockholders."

"In this special case of Somerset County," continued Mr. Rockefeller, "I have not hesitated to accept my personal responsibility or to record my own position. This I have done directly and through competent representatives. I believe that the underlying grievances of the miners in this district are well founded, and I have urged with all the sincerity and vigor at my command that the present labor policy of the operators, which seems to me to be both unwise and unjust, be radically altered.

"It is my understanding that the operators in the Somerset County coal mines have hitherto denied their employees all voice and share in determining their working conditions and any adequate machinery for the discovery and adjustment of grievances. The day has passed when such a position can justly be maintained by any employer, or group of employers, in a country like ours. I have long advocated, and never more earnestly than now, a labor policy which concedes to the employees in every industrial unit what I believe to be a fundamental right, namely, the right of representation in the determination of those matters which affect their own interests."

The Committee of City employees appointed by Mayor John F. Hylan to go to Windber to investigate conditions left New York City on Saturday, Oct. 28. The committee is headed by David Hirshfield, Commissioner of Accounts. Before going, James Mark, vice-president of District No. 3, United Mine Workers of America, who was in New York City with the Somerset County miners' delegation, sent a letter to Commissioner Hirshfield in which he said:

"By holding public hearings in Windber you may soon obtain facts of the un-American conditions under which coal for your city subways has been mined and you can form your own conclusions as to whether the citizens of New York really want to profit by the suffering of whole communities of coal diggers. We are frank to express our belief that the results of any fair investigation should lead the New York City government to lay down the following policy for the public utilities partly owned by it:

"That a steady supply of good fuel, mined under American conditions, is possible only where operators and miners have arrived at a union agreement."

Declaring Strike Off in Mingo, Union Prepares to Move Tent Colonies

Officials of the United Mine Workers began preparations Oct. 27 to move hundreds of miners and their families quartered in tent colonies to union coal fields, as a consequence of the official abandonment of the bituminous strike in the Mingo field.

The tent dwellers number approximately one thousand men, women and children, according to R. D. White, international organizer. "We do not intend that these people shall spend a third winter of hardship," said Mr. White.

Decision by union executives to call off the strike was reached at Indianapolis several days ago. It was reported. First announcement was contained in a letter from John L. Lewis, international president, pointing out that the strike has cost the union approximately two million dollars. During the twenty-eight months of the strike there were thirty known deaths and fifty persons were wounded. Mining equipment destroyed by dynamite and fire was valued at a quarter of a million dollars.
Distribution of Lake Cargo Coal Loaded at
Lake Erie Ports to Oct. 15*  

<table>
<thead>
<tr>
<th>Port</th>
<th>Total</th>
<th>Bituminous</th>
<th>Anthracite</th>
<th>Bituminous %</th>
<th>Anthracite %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lake S.</td>
<td>3,266,844</td>
<td>2,141,606</td>
<td>1,125,238</td>
<td>65.07</td>
<td>34.93</td>
</tr>
<tr>
<td>Buffalo</td>
<td>638,121</td>
<td>359,833</td>
<td>278,288</td>
<td>56.03</td>
<td>43.97</td>
</tr>
<tr>
<td>Cleveland</td>
<td>1,765,089</td>
<td>1,052,348</td>
<td>712,741</td>
<td>59.38</td>
<td>40.62</td>
</tr>
<tr>
<td>Chicago</td>
<td>2,980,923</td>
<td>1,539,924</td>
<td>1,440,999</td>
<td>51.49</td>
<td>48.51</td>
</tr>
</tbody>
</table>

*Figures compiled by the Chicago and Lake Erie Coal Association.

Pittsburgh and Ohio Operators Cut Price of Bituminous for Domestic Use

Reductions in price for domestic sales of coal produced in certain bituminous districts in Pennsylvania and Ohio are announced in the following statement, issued Oct. 27 by the Federal Fuel Distributor.

"Conferences were held in Pittsburgh on Monday, Oct. 25, between the principal operators in the Pittsburgh district, Pennsylvania, the Southern districts of Ohio (which includes the so-called Hocking districts), and the Pittsburgh No. 8 district, Ohio, and the Federal Fuel Distributor and his assistant, F. R. Wadleigh, to discuss the question of maximum prices for at mines on prepared sales of bituminous coal for interstate shipment for housing purposes.

"The operators signified their willingness not to exceed a maximum price of $4.30 per ton in the Pittsburgh district, Pennsylvania; $4.00 per ton in the Southern districts of Ohio, and $4.50 per ton in the Pittsburgh No. 8 Ohio district, the higher price in the Pittsburgh district, Pac. that in the No. 8 Ohio district being due to the fact that a larger proportion of the domestic production in the Pittsburgh district is gas coal, coupled with an alleged greater cost of production, as compared with the production in the No. 8 Ohio district.

"The previous prices on interstate shipments of household coal have ranged as high as $4.80 in the Pittsburgh district, Pac. at $7 in the Southern districts of Ohio, and $4.55 in the Pittsburgh No. 8 district. It may be noted that the new price constitutes a reduction in the previous figures of $1.50 per ton in the Pittsburgh district, Pennsylvania; $2.50 in the Southern districts of Ohio, and $1.50 in the No. 8 Ohio district.

"These prices were voluntarily established by the operators in the various fields referred to, in recognition of the present emergency and to assist the Federal Fuel Distributor in the accomplishment of the purposes of the act.

"While the representation at the conference was not complete as to each district, we have a percentage of the entire production was represented that we have been assured of uniform observance of these maximum prices."

A group of coal operators representing the producers of northern West Virginia will confer with the Federal Fuel Distributor in Washington on Nov. 2 relative to the price situation in that territory.

Numerous favorable responses have been received by Federal Fuel Distributor Spens as a result of his invitation to Illinois and Indiana coal operators to confer with him in Chicago on Oct. 30 and 31 respectively. At these conferences the matter of prices on Illinois and Indiana coals moving in interstate commerce will be considered.

In view of the lateness of the date at which, due to strike conditions, it was feasible to begin the movement of anthracite to the upper Great Lakes region, it has become evident that it will be necessary to supplement the water transportation of this product by all-rail shipment of hard coal in box cars to the Northwest. With this object in view, a conference of anthracite operators is being arranged, to be held in New York within the next few days. F. R. Wadleigh, assistant to the Federal Fuel Distributor, and Donald D. Conn, of the American Railway Association, will participate in this conference. The program for the movement of anthracite up the Great Lakes, on a basis of 60 per cent pro rata of last year's tonnage would approximate 2,000,000 tons, to move which would have required weekly shipments of about 250,000 tons.

Advices received by Federal Fuel Distributor Spens from St. Paul are to the effect that, with the advent of freezing weather in that general region, very little anthracite is in the dealers' bins. As a result of recent heavy shipments of bituminous coal to the Northwest, the soft-coal situation in that region is much easier, and so far as it is possible to judge by market demands, steam-coal supplies would seem to be assured. The fact that the maximum transportation of anthracite to this region to be expected is 60 per cent of the 1921 tonnage makes it seem inevitable that housekeepers must, to a considerable extent, substitute bituminous lump for the hard coal usually employed for domestic heating purposes.

*Illinois Producers Reject $4 Level for Lump

In conference Monday and Tuesday, Oct. 30 and 31, in Chicago with Illinois and Indiana producers the Federal Fuel Distributor asked that a maximum of $4 be adopted for lump, the price of which now is $5@$.50. Illinois groups would not agree, but will reply soon, possibly making other propositions. Indiana men were in conference as this issue went to press. Producers of both states have many no-bills on track among smaller sizes. Mr. Spens said he realized no prices could be fixed on other than lump.

Utah Grand Jury Indicts Coal Producers; Recommends Price-Fixing Legislation

The district grand jury which was impaneled Sept. 25 to probe the $1 raise in the price of coal in Utah has brought a true bill against twelve prominent operating companies. Some of them are indicted on two counts. In the report to the court the jury declared the increase in wages following the settlement of the strike did not cost the operators $1 a ton.

The jury said it did not believe the testimony of the operators in which they said they were unable to obtain a fair return on their investment and figures were quoted against the defendants. The jury recommended that legislation be passed empowering the Governor to fix a fair price for coal and making a sale in excess of that price a criminal offense. It was declared that coal is one of the necessities of life and more important as a public utility than gas, telephones, electric lights, street cars and the like, all of which are now controlled by public bodies.

In recommending that the Governor be empowered to fix the price of coal the jury declared the Public Utilities Commission already is overloaded and that this matter should be in the hands of an official directly responsible to the people.
The inherent weakness of the bituminous-coal market is indicated by the wide range in prices. Prices of good grades are still firm while on off grades and the output of small mines quotations are low—that is to say, the market is extremely spotty. In a strong market coal is coal, and it all takes the ruling price. Today the range of prices on the product of mines in the same field varies a dollar or more per ton, depending on quality. Coal Age Index of spot bituminous prices receded to 346 on Oct. 30—a decline of 6 points for the week. This corresponds to an average mine price of $4.19. The curve of prices, which since reaching the peak of $6.73 the last of July has been falling sharply, is flattening out. The decline appears to have been largely arrested, partly accounted for by seasonal domestic orders, but also due in part to the firm selling tactics of the largest houses. There is a “take it or leave it” note to the sellers’ canvassing today—and good grades are not left stranded.

**Market Sensitive to Transportation Conditions**

The margin of supply in excess of demand is at a point where any sudden dislocation of transportation has an immediate effect on the market. Thus prices at the Cincinnati gateway were markedly stimulated last week by an embargo placed against the westward movement of coal by the Chesapeake & Ohio. Steam prices quickly rallied to the level of gas and byproduct coal, while domestic fuels skyrocketed. Facilities of the L. & N. and N. & W. were pushed to the limit to meet the emergency and congestion appeared at once.

Federal Fuel Administrator Spens has obtained the cooperation of representative Smokeless, Pittsburgh and Ohio operators in holding down their domestic prices. The market range is narrowing down to this level, but slowly, and with intermittent relapses in such emergencies as the Cincinnati occurrence of last week.

Warm weather has cut the Middle West steam market into ribbons. Producers are eagerly taking domestic orders and sacrificing their resultant coals in an effort to maintain production. Competition is so keen in that section that local producers have crowded West Virginia and Kentucky coals from that market. Improvement in rail conditions is slow and not yet indicative of any general betterment.

Ohio price regulatory laws are proving a burden to the trade. Coal produced in that state is seeking outside markets and a heavy tonnage is moving to the Lake and Michigan points. Ohio retailers are forced to buy outside coals at fancy prices. This involves longer hauls and further taxes railroad facilities and car supply.

Heavy shipments to the Northwest have lulled the consumer to a sense of security and dock sales are slow, despite lowered quotations made in the past ten days. Tonnage is piling up at the Head-of-the-Lakes and there is little buying activity shown, aside from a few large consumers who are stocking.

Domestic sizes of anthracite are in great demand and retailers are unable to maintain their yard stocks. The complaint is heard in the East that concentration of tonnage for the Lakes is reducing receipts to the

**Weekly Production**

<table>
<thead>
<tr>
<th>Year</th>
<th>Weekly Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>1921</td>
<td></td>
</tr>
<tr>
<td>1922</td>
<td></td>
</tr>
</tbody>
</table>

**Estimates of Production**

<table>
<thead>
<tr>
<th>Net Tons</th>
<th>BITUMINOUS</th>
<th>ANTHRACITE</th>
<th>COKE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct. 7</td>
<td>1,575,000</td>
<td>600,000</td>
<td>200,000</td>
</tr>
<tr>
<td>Oct. 14</td>
<td>1,348,000</td>
<td>500,000</td>
<td>150,000</td>
</tr>
<tr>
<td>Oct. 21</td>
<td>1,296,000</td>
<td>450,000</td>
<td>125,000</td>
</tr>
</tbody>
</table>

*Calendar year 1921*
danger past. Storage tanks are moving a little faster and producing companies are still using their mine storage space for the small coal. Those without storage facilities are getting their coal.

Prominent quotations have softened, as dealers report a balance at the high figures recently quoted. Ohio and Western buyers are classing for coal, but are getting little leverage.

**BITUMINOUS**

*Preliminary reports on coal production in the fourth week of October indicate a total of 12,269,000 tons, up from the Climatological Survey, of which about 10,300,000 tons is bituminous coal and 3,000,000 tons anthracite.*

Receipts for the third week show 9,000 tons of bituminous and 1,750,000 tons of anthracite. A slight increase in the total coal raised is thus shown for last week as compared with the week before, which increase is practically entirely in the output of anthracite.

The number of cars of bituminous coal loaded on Monday, Oct. 18, as reported by the railroads was 48,248 cars, a new high record for the year. On Tuesday loadings declined to 45,224 cars, and by Thursday loadings declined to 41,730 cars. Full returns on loadings for the week are expected to show a total of 100,000 cars and indicate a production of 10,400,000 tons. 1,000,000 tons of coal reached the Head-of-the-Lakes during October, of which 90,000 tons was anthracite. If this rate is maintained the season's total will approximate one-half of last year's receipts. An acute shortage of cars is reported by the dock trade. Storage space is rapidly being filled and prices have softened. All-rail tonnage is already an undermining factor in dock prices. Buyers are apt to build up a few large

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

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Pittsburgh</td>
<td>$5.75</td>
<td>$5.75</td>
<td>$5.90</td>
<td>$5.90</td>
</tr>
<tr>
<td>Cleveland</td>
<td>$5.25</td>
<td>$5.45</td>
<td>$5.65</td>
<td>$5.75</td>
</tr>
<tr>
<td>Pittsburgh</td>
<td>$5.25</td>
<td>$5.45</td>
<td>$5.65</td>
<td>$5.75</td>
</tr>
<tr>
<td>Cleveland</td>
<td>$5.25</td>
<td>$5.45</td>
<td>$5.65</td>
<td>$5.75</td>
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</table>

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

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<thead>
<tr>
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<tbody>
<tr>
<td>Pittsburgh</td>
<td>$7.50</td>
<td>$7.75</td>
</tr>
<tr>
<td>Cleveland</td>
<td>$7.50</td>
<td>$7.75</td>
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</tbody>
</table>

**Market Quotations—Spot Prices, Independent Companies**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Pittsburgh</td>
<td>$7.50</td>
<td>$7.75</td>
</tr>
<tr>
<td>Cleveland</td>
<td>$7.50</td>
<td>$7.75</td>
</tr>
</tbody>
</table>

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*This table shows the latest independent company prices for select markets. Note that some markets are shown in heavy type, indicating recent changes in prices.*
November 2, 1922

COAL AGE

How the Coal Fields Are Working
Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey (in Table V of the Weekly Report).

<table>
<thead>
<tr>
<th>Field</th>
<th>% of Full-Time Operation</th>
</tr>
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<tbody>
<tr>
<td>U. S. Total</td>
<td></td>
</tr>
<tr>
<td>Alabama</td>
<td></td>
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<tr>
<td>Somerset County</td>
<td></td>
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<tr>
<td>Pahokee, W. Va.</td>
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<tr>
<td>Wicomico</td>
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<tr>
<td>Virginia</td>
<td></td>
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<tr>
<td>Harlan</td>
<td></td>
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<tr>
<td>Hazard</td>
<td></td>
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<tr>
<td>Pohonoah</td>
<td></td>
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<tr>
<td>Tug River</td>
<td></td>
</tr>
<tr>
<td>Logan</td>
<td></td>
</tr>
<tr>
<td>Cumberland-Virginia</td>
<td></td>
</tr>
<tr>
<td>Mason-Dixon</td>
<td></td>
</tr>
<tr>
<td>Winding Gulf</td>
<td></td>
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<tr>
<td>Rinove-Thacker</td>
<td></td>
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<tr>
<td>N. E. Kentucky</td>
<td></td>
</tr>
<tr>
<td>New River</td>
<td></td>
</tr>
<tr>
<td>Oklahoma</td>
<td></td>
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<tr>
<td>Iowa</td>
<td></td>
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<td>Ohio</td>
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<td>Missouri</td>
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<td>Illinois</td>
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<td>Kansas</td>
<td></td>
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<tr>
<td>Indiana</td>
<td></td>
</tr>
<tr>
<td>Pittsburgh</td>
<td></td>
</tr>
<tr>
<td>Central Pennsylvania</td>
<td></td>
</tr>
<tr>
<td>Fairmont</td>
<td></td>
</tr>
<tr>
<td>Western Kentucky</td>
<td></td>
</tr>
<tr>
<td>Pittsburgh</td>
<td></td>
</tr>
<tr>
<td>Kansas</td>
<td></td>
</tr>
<tr>
<td>Ohio, Southern</td>
<td></td>
</tr>
</tbody>
</table>

*Rail and river mines combined
†Rail mines.
(0) No report.

Car Loadings, Surplusages and Shortages

<table>
<thead>
<tr>
<th>Week ended Oct. 14, 1922</th>
<th>Coal Cars</th>
<th>All Cars</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000,000</td>
<td>1,000,000</td>
<td></td>
</tr>
</tbody>
</table>

Preceding week: 1,050,000 1,050,000

<table>
<thead>
<tr>
<th>Week ended Oct. 15, 1922</th>
<th>Surplus Cars</th>
<th>All Cars</th>
<th>Coal Cars</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,275</td>
<td>4,275</td>
<td>152,000</td>
<td></td>
</tr>
</tbody>
</table>

Oct. 8, 1922: 5,500 5,500 126,250 126,250

Same date in 1921: 120,000 120,000

260,358 tons in the previous week. The Sewalls Point pier registered an increase, while the Norfolk & Western tonnage dropped. There is less coal on hand, although it is likely that the Chesapeake & Ohio embargo on westbound movement will throw more tonnage to Tidewater. Coastwise business is still the mainstay of the Roads, and the low prices prevailing afford Southern fuels an excellent competitive position in New England with all-rail grades. There is little activity in that market, however, aside from contract movement.

ANTHRACITE

Estimates of production of hard coal for the week ended Oct. 28 place the output at 2,100,000 tons, as compared with 2,005,000 tons during the preceding week.

Domestic coal is moving out to householders as rapidly as it is received by retailers. Canada and the West are clamoring for coal—-and receiving but little. Lake movements is being pushed during the short remainder of navigable weather this season. This has caused a diminution of receipts at Eastern points and while there is no actual suffering, federal authorities are understood to have been telegraphed to the Allegheny rooms for New York State. Rail deliveries to New England were 1,477 cars during the week ended Oct. 21, as compared with 2,250 cars in the preceding week.

COKE

Production of beehive coke was 241,000 net tons during the week ended Oct. 21, an increase of 3,000 tons when compared with the preceding week. The largest increase occurred in the Connellsville region.

Contract offerings are higher than bid prices, to cover transportation difficulties to be expected here. With increasing output the market is buoyant on the position of the consumer, whose outlook, while not worse, is uncertain. The market for pig iron is sluggish. With increasing production it is no longer a question of insufficient coke and bloom furnaces may have to burn out because of a lack of market.
Good Export Demand Aids British Market; Production Sets New High

The prospects of the Welsh coal trade are now bright, the only fly in the ointment being the threat of a strike on the miners' general controversy. It is believed that the Miners' Federation will hold off for the present the proposal for a threatened strike. The export trade continues strong, especially to South American, European and Mediterranean countries, despite the other fact that exports to the U.S. and Canada have declined from around 250,000 to 40,000 tons per week. The chief market is found in steam coal sales which are going to Germany. France and Italy. These countries will be the most likely to absorb the exports from America, and the demand from these countries is expected to rise in the near future.

The trade during the past week ended Oct. 14 and the preceding week's output was 4,300,000 tons. The situation in North England enables sellers to hold firm and advance on current quotations. The present coal situation in Wales has greatly benefited the Northumberland and Durham area, and the demand for coal in these regions is increasing.

French Coal in Better Demand

North and Pas-de-Calais coal is now in demand in the U.K. and Ireland, and orders are active with dramatic increase in the production and small tonnages are being taken from stocks. The demand for domestic coal, stirred up by the government's policy of encouraging domestic coal use, has led to an increase in the price of coal. In the next few weeks, we can expect a further increase in demand and prices.

Coal Prices from Foreign Lands

GERMANY—Production in the Ruhr region during the week ended Oct. 14 was 1,572,000 metric tons, according to figures released to a cable to Coal Age, as compared with 1,855,000 tons in the week preceding.

ITALY—Genoa quotations on Cardiff steam first are now around 30s. 6d., according to a cable to Coal Age. Last week's price was 30s. 6d.

BELGIUM—The market is becoming more firm and orders are of extraordinary size. After a year of crises, the Belgian coal basins are enjoying a period of exceptional prosperity. The foreign demand for classified descriptions is growing.

British Coal Exports in September

<table>
<thead>
<tr>
<th>Country</th>
<th>Gross Tons</th>
<th>Gross Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1920</td>
<td>1921</td>
</tr>
<tr>
<td>Russia</td>
<td>12,859</td>
<td>12,907</td>
</tr>
<tr>
<td>France</td>
<td>51,802</td>
<td>38,084</td>
</tr>
<tr>
<td>Poland</td>
<td>9,217</td>
<td>21,521</td>
</tr>
<tr>
<td>Germany</td>
<td>7,963</td>
<td>6,900</td>
</tr>
<tr>
<td>Belgium</td>
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QUANTITY AND VALUE

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<td>Value</td>
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Pier and Bunker Prices, Gross Tons

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<thead>
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<th>Pier</th>
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<tr>
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<tr>
<td>Bristol</td>
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<tr>
<td>Liverpool</td>
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<td>Manchester</td>
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BUNKERS:

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<tr>
<td>Price</td>
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Current Quotations British Coal f.o.b.

<table>
<thead>
<tr>
<th>Port, Gross Tons</th>
<th>Quotation</th>
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<tr>
<td>Cardiff</td>
<td>Oct. 21</td>
</tr>
<tr>
<td>Adurley, large</td>
<td>27s. 6d.</td>
</tr>
<tr>
<td>Stearn, small</td>
<td>10s. 6d.</td>
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<table>
<thead>
<tr>
<th>Quotation</th>
<th>27s. 6d.</th>
</tr>
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<tbody>
<tr>
<td>Gost</td>
<td>27s. 6d.</td>
</tr>
<tr>
<td>Gasferry</td>
<td>27s. 6d.</td>
</tr>
<tr>
<td>Bunkers</td>
<td>27s. 6d.</td>
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Receipts Overabundant;
Market Conditions Muddled

Higher Grades Well Sold Up—Prices
Easy on Other Qualities—Heavy
Users Active, Average Consumer
Still “Lying in Wait.”

Prices are easy, except on the
higher grades, which are not in over-
supply. Receipts are still more than
adequate, but the consumer insists
on quality coal, with the result that
good fuel is well sold up. The mar-
etic is badly muddled and a wide
range of prices is quoted, especially
for medium- and low-grade fuels.
Heavy users are the most active and
are still the saving feature in the
situation, as the average consumer
remains on a hand-to-mouth basis.

British coal receipts are diminishing,
but some heavy consignments still seek an outlet. Southern coals are coming forward in good volume,
but only on order.

NEW YORK

Demand was spasmodic toward the
end of the week, situation changed
as frequently as the temperature
and cool weather caused a slight stiffening.
The general trend indicated little change from the previous week, al-
though quotations in some instances were lower and the range wider.

The tendency of buyers to stay out
of the market continues but most deal-
ers look for considerable activity the
early part of November. One feature
of the market was the apparent unwill-
ingness of some operators to book
orders although given the order at the
quote they had made. While this
action may have been due to heavy
orders already booked or otherwise no
reason was given to the middle houses
offering the orders.

Receipts of British coal are growing
less each week, but it is said there is
considerable here still unsold. Southern
coals are coming in good volume and
on order.

There were upward of 1,500 cars at the
various piers on Oct. 27 with no
large surplus of the better grades.
Boat rates in the local harbor are
stronger, due to the many boats loaded
with anthracite steam coals.

PHILADELPHIA

The situation continues to be badly
muddled on account of the average con-
sumer’s attitude toward ordering. On
the other hand there are actual in-
stances of consumers who are short
of coal and have come into the market
great haste to replenish supplies.
Often these are the highest grade
coals and they have not been plentiful
at any time. Car supply is
still a severe handicap on production.

but there are some signs of improve-
ment.

The users of heavy tonnages are still
in the market and are really the saving
factor in the situation. The producer
is still inclined to criticize the ordinary
consumer, because in the shortage that
all feel sure is to come before mid-
winter, with the consequent upward
bound of prices, it is the man without
coal who cries the loudest, yet is short of
coil on account of his own short-
SIGHTEDNESS.

Each week seems to turn up consum-
ners who have adopted oil as a fuel,
who are partially, although the in-
stallations to date are not sufficient to
make any impression upon coal con-
sumption.

Prices have eased off a bit, and the
slight firmness evident ten days ago,
has vanished. High-grade coals con-
inue to lose the least ground, as the
loss of this tonnage is applied on con-
tacts and very little reaches the spot
market. Recently some cheap offerings
have been made, likely the output
of wagon mines.

Baltimore

Bituminous coal demand is weak and
prices have softened, although. Consum-
ers are buying on a current basis only
although some of the large users are
continuing to take advantage of the
ruling prices and are putting in re-
serves.

Pools 9 and 71 are quoted $3.75@3.80,
et mines; Pools 10 and 11 are $3@3.75; Pool 64, $3.25@3.50, and
Pool 63 is $3.50@3.75.

Car supply is very short and deliv-
eries slow and uncertain. Despite this,
however, sufficient coal is being received
for most all spot demands. Good grades
move the easiest; lower-quality coals
are often in distress on the present
sluggish market.

Fairmont

Operations are limited to about one
or two days a week and many mines
are unable to operate on that much.
Some are forced to go without loading
equipment for more than a week at
a time owing to the general practice
of the roads in assigning cars for rail-
road loading. There has been
little or no change in the market
situation. The prevailing price on
steam mine run for Western delivery
is $3@3.25. In Eastern markets it ranges
$3.50@3.60.

Upper Potomac

Managing to secure a more regular
supply of empties, plants in the Upper
Potomac are operating with less in-
terruption than is the case elsewhere
in the state. Production is on a smaller
scale in the Georges Creek region, not
because of a shortage of cars but be-
cause of the fact that the strike
trouble has not been entirely elimi-
nated. There is still lack of pronounced
activity in buying in the East although
mines are not falling behind any on
that account.

Central Pennsylvania

Prices show a further decline. Prices
to local consumers in the district are
due for a drop because of an order
issued by the I.C.C., effective Oct. 25,
which does not permit the placing of
open orders or hoppers on sidings for
operators unless delivered within 24 hours. This order will force
many wagon mines out of the market
as many of them cannot load a car
within the specified limit.

Pool 18 is now quoted $3@3.25, f.o.b.
mines. Pool 10 ranges $3.75@4.

West

Kansas City

Snappy temperature stimulated the
demand for domestic coal and dealers
are unable to take care of orders. The
demand was also aided by orders from
customers who changed to oil-burning
equipment that failed to perform as
expected and were looking back to coal.

Demand for steam coal is gradually
building up and all are being supplied. Aside from
delay in transportation the coal busi-
ness in this section is in a more active
situation than before.

Prices are too low to yield any
revenue to either the operator or re-
tail dealer. At the same time the pub-
ic is kicking about the price being too
high. The strike put a lot of new coal
operators in business. Most of
them run small mines, and as they
keep no cash accounts, they will not
know that they are broke until they run
out of money to meet their pay-
roll.

Salt Lake City

Mines are working on an average of
less than three days a week. Coal
shortage is steadily growing worse and
the market is also weak. The coast
trade is falling off, while the demand
from neighboring states is very slight,
compared with what it was. The usual
weather which prevails, together with
the reopening of the Wyoming mines,
is largely responsible for this.

Salt Lake City yards have about
15,000 tons now, which is less than in
former years. Consumers have been
hoping for the Grass Jury to finish
its investigation of high prices. Now
that it recommends price fixing by the
governor, they will no doubt wait for
that though lump is in better call al-
ready. The demand for slack is weaker.

Denver

Instead of cars being delivered in
Colorado mines may not work on a per-
centage basis at all from two to
three hours a day. The Union Pacific on
Oct. 23 started distributing cars to
a certain number of mines so that the
balance of the week after they
next day. This enables the operators to
reduce the cost of production during the
coal shortage.

Business on first grade lignite is prac-
tically at a standstill as most of the
dealers are buying second-grade lump
at $3 per ton. First grade is quoted at
$4.25. Many operators are getting inquirers from Omaha dealers
for quotations on lignite slack. This
would indicate from this point that
there is an unusual shortage in the
supply of cars in those areas.
Anthracite

Domestic Business Brisk:

Receipts in East Lower

Bituminous Hard Put to Main Yard
Supplies—Efforts Being to Get Coal
by Northwestern—New York May Ask
Increased Abatement.

Domestic business is very active
and retailers are unable to maintain
their yard supplies. Eastern centers
complain of diminished receipts,
which probably will be the case until
the close of Lake navigation, as every
effort is now being made to send coal
to the Northwest in the few remaining
weeks of the season. Canadian
buyers are unable to place orders
for a satisfactory tonnage except at high
prices.

So much of the coal received at
New York terminals is transshipped
to New England that there is a
rumor that the federal authorities
will be requested to increase the allot-
ment for that state. Steady business
has been aided by the cool weather,
but mine-storage space is still being
utilized.

Philadelphia

Market receipts have increased
the movement of the situation. Dealers
are being heavily pressed for fuel, and
it is necessary to ask the buyer to take
what is on hand.

The shippers, especially the companies,
have not the one answer for the short
shipments, that being the movement to
the North and to the Lakes, before
winter sets in. This year, on account of
no summer shipments, dealers are
induced to criticize the action of the
shippers. The outlook cannot be said to
be encouraging.

There is some tendency in a strengthen-
ing of retail prices. While most sales
are still being made at $15.50, some
shippers have increased in value the var-
ious charges are now more particular.
Steam coal has not improved, with
the exception of one or two of their
main yards to a limited degree, and the
other shippers citing same coal off
price.

Buffalo

Demand is, of course, heavy, but it
is not as considerable as it sometimes
has been. Distributors will say they
cannot keep up with the orders that come
from people who have no coal
anywhere. That will not stop anyone
when a steep rise is in the market.

Some of the smaller traders strug-
gle to get enough to sell even to get a
few cents ahead.

New York

While the Metropolitan District may
to all appearances be receiving its share
of domestic sales, it is rumored that ap-
peals will be made to the Federal Fuel
Administration in Washington to in-
crease its allotment. Consumers, while
not yet suffering from a lack of fuel
are becoming anxious, especially those
who so far have not been able to get
enough of the seasonal supply allowed by
the New York State Fuel Administrator.

Some of the independents and their
sales agents are refusing to take orders
unless it is understood that shipments
cannot be expected inside of at least
three weeks. Demand from the West
and Lake ports, as well as New Eng-
land, remains heavy and efforts are be-
ing made to get as much coal as possi-
able into those sections before winter
sets in.

Retail dealers are taking compara-
tively little of the unpricesd indi-
vidual coal. Some of the smaller oper-
ators are asking around $12, but the larger
independents are quoting $10.50.

The steam coal situation is easier.
Stirring continues but there is a heavier
consumption because of the cool
weather. Hard tonnage is also being
bought by retail dealers, and so are
able to secure deliveries of the larger
coal.

British coal is being featured as a
substitute for anthracite. The Con-
solidated Coal Importers, Inc., is offering
"dry semi-anthracite Welsh coal" in the
New York market at $14.50 per
net ton, delivered to consumers, and
advertising for salesmen to handle this
fuel at a liberal commission.

Coke

Uniontown

The coal market appears to have
touched rock bottom with the $3 figure
which has been prevailing for several
weeks. Demand continues uncertain but
operators have successfully resisted any
further price inventory.

A distinct development of the week
was the F. C. C. order which closes the
transportation lines to wagon mines.
The order, which affects open-top cars
to be effective May 1, had not been
issued as of last week.

The coke market continues a bit slipp-
ery but its softened condition has not
yet reacted against production. There
is, however, a firm resistance to prices.

Indications are that contracting for
coke tonnage will be resumed again
Jan. 1 after suspension of practically a
year—when the opening of last year's
contracts were completed the first three
months owing to the contemplated strike
on April 1. There were no further contracts
shipped as the strike was not permitted
and recovery from the strike was too late to
permit last quarter contracts.

Connellsville

Connellsville furnace coke, after
breaking from $12 to $8 in less than
a fortnight, has merely weakened a tri-
flle during the past week. The figures and
weakening naturally took buyers out of
the market, while the sharp price de-
cline seems to have brought them in again.

Odd lots can usually be picked up at
$7.50, but a good-sized tonnage, par-
cularly if distributed over a week or
two in point of shipment, would proba-
ble command $8 without much difficul-
ty. So far as concerns the views of
operators, an important point is that
with prompt coke at not over $5 oper-
ators are quoting $10 on contracts run-
ning to the end of the year. Their
explanation is that there is likely to be
a fresh and additional car shortage
throughout the summer, which would advance
the prompt market.

With the steadiness in increased pro-
duction, it is plain that the future
prices depend chiefly upon the position
of consumers, whose outlook may not
be poor, but is plainly uncertain.

There is very fair production of mer-
chant pig iron now, and while recently
the whole situation appeared to be sim-
ply one of each furnace getting into
blast as soon as it could secure coke, it
is now not certain but that some of the
furnaces may have occasion to blow out.

The Carrier reports that by the end of
April 21 at 101,310 tons by the furnace
ovens and 45,410 tons by the merchant
ovens, a total of 146,720 tons, an increase of
6,010 tons.

Buffalo

Some of the local byproducts are
crowding their ovens past the needs
of their furnaces and selling the sur-
plus for domestic use at about $12 for
furnace grade. Consumers feel that
all coke is held too high, and so do
not buy except as a necessity.
Chicago and Midwest

Market Weakness Spreads
Into Bigger Sizes Also

Hold-Out of Steam Buyers Lowers
Steam, Egg and Some Mine Run, with
Screenings—Domestic Firmness Stays
—Car Service Unimproved.

Continued summer weather during
the past week in this region con-
spired shamelessly with the big
steam buyers to keep the market in
most centers of the Middle West low
and uninteresting. Even domestic
demand, while good, is not rushing,
and the difficulty which many pro-
ducers found in disposing of every-
thing but lump drove them to lower
quotations on steam egg and mine
run as well as screenings, which have
been sliding for weeks. Competi-
tion between fields of Illinois and
Indiana for skimpy markets is having
the inevitable effect and little coal from
outside is getting into the Middle
Western states.

Kentucky is less afflicted by these
conditions because its own local mar-
kets are a bit stronger and the call
from the Lakes continues good
enough to absorb much of the slim
production permitted by a 20 to 30
per cent car supply. Gas and by-
product coals have dropped some,
however. The railroad service of the
whole Middle West is about what it
was a week ago.

WESTERN KENTUCKY

While some of the operators are kick-
ning about the buyers' strike, as a mat-
er of fact production is as heavy as car
supply will permit, but prices are not
what the operators would like to see
them. The Illinois Central is supplying
about 34 per cent of the normal number
of cars and the L. & N. 20 to 25 per
cent.

Steam coal is a little stronger due
to cooler weather and development of
small steam plant demand for heating
use along with better demand for mine
run from domestic consumers. Screen-
ings are $1.75@$2.25, including pea and
slack as well as nut and slack. Mine
run is stiff at $2.75@$5, but is per-
haps shad a little under that price,
although there is no change in quoting
as high as $3.25. Lump is quoted from
$2.75 for poorer grades to $5.50, but
not much coal moves at the top price.

ST. LOUIS

Warm weather has brought an easy
market with everything in surplus.
Even Carthage coal seems to be plentiful
and the dealers are not buying for
storage. The public seems to have a
feeling that coal will soon come down
and are buying only in small lots and
they feel that the dealer, who is not putting much coal in
storage.

The public seem to think that
the retail price of $9.50 on Carthage as
against the next lower grade, which is
Mt. Olive, at $7.50, is too much and the
demand is for Mt. Olive. Standard at
$6.75 is not popular. A few cars of
anthracite are moving in, but no smoke-
less and nothing from Arkansas. Coun-
try domestic is also quiet and the call is
principally for the cheaper coals.

Locally steam is easy. Large users
are not buying beyond actual require-
ments, and this is true to a great ex-
tent of country business. Railroad ton-
nage is a little light and with the number of restrictions
against switch roads which are prac-
tically embargoes and transportation
west of the river is far from being
good. Collier weather is the one hope
for any improvement in this market.

SOUTHERN ILLINOIS

The warm weather has put a cramp
in business as far as smaller sizes of
coal are concerned in the Carterville
field. This has also affected the nut
sizes, which is between $2 and $2.50 as
toheavy as screenings. There are no-
billed screenings and nut at many mines
and screenings have dropped to $2 while
puts are quoted as high as $2.25.

The average car supply throughout
the field is three days at minus two or
more connections, while it runs from
1 to 2 days at minus one or one
connection. Railroad traffic is
light and the bulk of the movement
seems to be North and Northwest, in
the DuQuoin and Jackson County field
conditions are similar.

In the Mt. Olive district steam sizes
are causing idleness. Railroad ton-
nage is good and up until the last few days
domestic movement has been fair but
the hopper-bottom equipment and the
warm weather put a quietness on the
movement of domestic, especially to
the Mt. Olive market.

In the Standard district conditions
are beginning to look bad. Steam sizes
are heavy and many mines are carrying
cull. Embarages on the lines west of
the river have caused some trouble, but
generally speaking, there is no demand
for steam coal and right now the dom-
estic business is easing up. Railroad
tonnage is fair to good and in the Mt.
Olive and Standard districts average 3 days a
week.

INDIANAPOLIS

There has been little change in the
Indianapolis market. Jobbers, con-
tacts and retailers all vogue in the
assumption that demand to lighten from
the retailer's viewpoint since the warm weather is
undecisive.

The coal market is showing no
improvement for steam coal from
industries. Prices show little change, but
there has been a littleunker movement
in some of the grades. Coal quotes from all sec-
tions of the state for domestic coal
are:

Indianapolis

LOUISVILLE

While prices are a little softer on
general steam coals this week demand
for gas and byproduct has abated
somewhat, and gas coals are selling at
$2.00. The full run straight steam coal which is quoted
as low as $1.30 for eastern Kentucky,
while the gas coal is quoted at $4.50.

Lump is firm at $6.50@7, while
screenings are commanding the mine
run price, because of small production
and steady demand from consumers who
use automatic stokers.

It is reported that there is better
buying from eastern Kentucky for rail-
roads in Ohio and the North. While the
market is firmer, it is not materially
better. It is reported that there is not much coal on
tracks, and with car supply between 20 and 30 per cent,
production continues small. Some move-
ment is going South, to the textile dis-
tricts which are slow. Lake move-
ment continues fair.

Western Kentucky prices are quite
firm in the local market, at $1.75@$2.25
quantity, with some operators at
mine run $2.75@$3, and screenings, $1.75
@2.25. Most western Kentucky coal
is moving either South or to Louisville,
but production is low due to a car sup-
ply of from 20 to 34 per cent on the
various lines.

Industrial lines are active and
plants are busy, and apparently consuming
fuel, but even with present small pro-
duction there appears to be no short-
age.
Eastern Inland

Meager Spot Offerings

Absorbed at Firm Prices

Marketing Orderly, Dependent on Car Supply—Domestic Market Active—Steam Trade Improves—Conditions Modified in Ohio—Lake Landing More Difficult.

Correlated production is being marketed in an orderly manner, regulated by the short car supply. Prices are firm, demand being sufficient to absorb the meager spot offerings.

The domestic market is very active and there is a little more life to the steam trade.

Ohio's price-fixing regulations have caused a serious domestic situation in that state. Ohio-mined coals are selling at high prices. The longer haul involved in further taxing the transportation conditions and shortening the car supply. Loadings at Lake ports were hampered by last week's weather conditions.

CLEVELAND

One direct consequence of the fuel shortage in Ohio has been a steady flow of Ohio-mined coal into the market, from other states dealers they are buying quantities of Ohio coal at $5.50-$6.00. This explains why Ohio dealers can get little Ohio coal and at the rates of $5.50-$6.00 for prepared sizes, as fixed by the Ohio Fuel Administration. As a result Ohio retailers are compelled to buy Missouri and West Virginia coals.

 Dealers are complaining that the price of $5.25 a ton in Cleveland and $5.00 a ton in Pittsburgh is too high to enable them to sell at a profit.

The local market has improved. Retailers are buying more coal and are reselling it for cash. The price of Anthracite has been raised to $5.75 a ton for delivery Oct. 15 and up.

COLUMBUS

A low tonnage sale of 41,500 tons of anthracite coal was sold on the New York Coal Exchange. The sale was made to the Federal Power Company. The price was 50 cents a ton, bringing the total sale at 1 cent a ton less than the previous closing. The sale was made by Anthracite Sales Company.

The anthracite dealers report that prices have been unchanged for the past week. The anthracite market continues to be active, with sales reported in substantial quantities.

The anthracite producers report that production has been steady, with no significant changes in the market conditions. The anthracite dealers continue to be active, with sales reported in substantial quantities.

NORTHERN PANHANDLE

Mines still find it a difficult matter to secure an outlet for tonnage, particularly the Lakes, owing to freight congestion. There is a somewhat better demand in the West. Prices in the fields are not as clear as they were a few weeks ago, but a large part of the product loaded being for the railroads, with mines loading that class of coal securing a somewhat better supply than others.
Northwest

Docks Are Jamming and Buying Continues Slow

Lake Shippers Now Fear Trouble When Cold Weather Starts a Rush—Fewer Cargoes En Route—Temporary Slump in Bituminous Prices.

Markets are sluggish bituminous coal with the result that the heavy cargo shipments of the past six weeks have piled the docks fairly high. This condition, which appeared about a week ago, is getting troublesome. Prices in some cases have softened further, especially on a few large deals in steam sizes, and are expected to drop within a week or so on coals that cannot stand storage. This general situation is shutting off shipments from lower ports to an extent and is expected to cause trouble when the first stiff cold comes, as the fuel supply for this region can hardly be ample if shipping does not continue heavy until Dec. 1.

Considerable quantities of anthracite are reaching the docks. There is no such public apathy over hard coal. Instead, the scramble to obtain it has grown almost exciting. Prices generally remain firm with a slight upward tendency, though there is no skyrocketing.

DULUTH

More than 3,000,000 tons of coal now lie on the docks at Duluth-Superior harbor because consumers are slow and coal men are beginning to fear that the docks will be full before the close of navigation. The capacity of the harbor docks is but 7,500,000 tons. Shipments will slowly drop off. Last week forty-eight cargoes were received of which eight were of anthracite, but only eighteen are reported on the way of which two are hard coal. A week ago more than thirty cargoes were on the way here. Not enough coal has gone out to insure a plentiful supply, and coal men believe there may be a $2 increase in bituminous before Feb. 1. Consumers, of course, are waiting for a drop in prices, and base their hopes upon the unloading of the docks, which usually indicates plenty.

Despite the prediction of increased prices, at least one dock cut $1 a ton to move run of pit and public utilities on an aggregate contract of about 15,000 tons. The run of prices for both bituminous and anthracite is firm, with the exception quotations on Hocking screenings which are weakening because of the danger of fire in large stock piles.

The anthracite market is chaotic. Those with orders placed are getting coal as best they can. It is thought.

though, that the emergency will have passed in a week or two. Bituminous inquiries are beginning to leak in from independent iron mining companies on the Mesaba range that are slow to order. The steel corporation is receiving much coal indicating that the mining season will be active.

MINNEAPOLIS

The market here is sagging and weaker under the arrival of good stocks at the docks, and a lack of support from buyers. Another undermining factor is the showing from the all-rail trade, in placing a considerable tonnage here. As a result dock interests have begun to make concessions.

Indications are that the docks at Duluth and Superior will have perhaps 5,000,000 tons of coal in another five weeks. That quantity is not equal to any normal winter's needs. But this is not a normal winter in demand so far. The railroads cut down consumption during the late summer by taking off about seventy trains, some of which were out of service for three months. Industries have been running cautiously for some time, and have made their fuel last longer.

The car situation has cut down the movement from the mines or there would be a much larger movement, both from the docks and from the all-rail fields. But despite this handicap, there has been a large amount of all-rail coal moved into the Twin Cities from the Illinois fields. Around 100,000 tons of hard coal have been received on the docks so far, and the Northwest may count upon perhaps 40 per cent of a normal winter's needs of hard coal. Some of this may have to be moved all-rail.

MILWAUKEE

Mild weather seems to soften the popular clamor for coal, but dock men remain under an uneasy condition. Fifteen cargoes of anthracite, aggregating 117,904 tons, reached port in October. This coal is being rationed out to retailers, who are restricting deliveries so as to spread the supply. The price of anthracite continues unchanged.

There has been a slight check in the movement of soft coal, due to the fact that receivers have not been buying much during the past two weeks. The docks are fairly well filled. October will show up well in coal receipts. The fair tonnage cargoes of anthracite and sixty-three cargoes of soft coal have been unloaded, the soft coal tonnage aggregating 560,416 tons.

Cable receipts for the season thus far aggregate 118,614 tons of anthracite, and 1,831,371 tons of soft coal, against 842,550 tons of the former, and 2,573,602 tons of the latter during the same period last year.

The City of Milwaukee remitted a penalty of $2,700 imposed on the Callaway Fuel Co. for coal furnished which did not come up to the standard of all-rail units. The company claims that the pooling system makes it impossible to guarantee the quality.

New England

Little Change in Market: Inquiry from Small Users

Certainty of Car Shortage Causes Many to Realize Prices Are Near Bottom—Receipts of British Coal Wane—Adverse Criticism Heard.

November shows little change in the current market. Inquiry is still scattered and confined generally to small users who figure that with possible car shortage present prices are about as low as can reasonably be expected, at least for the near future. Receipts of British coal are steadily diminishing and by another fortnight, it is reported, the last cargoes will have been received. There is much complaint over some of the grades shipped, in fact delays on certain of the railroads out of Boston have been attributed to the character of the coal.

Apparent none of the corporations is buying spot coal, except in small amounts, and persistent canvass does indicate very little prospect for comprehensive purchases the next thirty days. The number of steam chutes tied up at this end is one indication of the outlook for spot coal the balance of the season. A fair amount of coal is coming forward on contract, but almost none at all on current purchases.

There is a little buying of Pennsylvania grades all-rail, although prices are at what would have been considered a few weeks ago a very low point. A few quality grades are being moved at remunerable rates and are offering in the range of $4.50-$4.75 per ton f.o.b. mines. Among the medium coals there are some of very good reputation that are available purchased at $5.00-$5.75.

Pocahontas and New River still show large accumulations at Hampton Roads. Judging from the market here they will continue to be heard through the month. There are reports of our shortage on the Southern roads, but not as yet has the lack of equipment in any way affected the coal market in that section.

While Navy Standard at Newport News and Norfolk sold at the $6.00 to $6.50 per gross ton f.o.b. vessel, a week ago, there is a feeling of a stronger trend at both, with a $7 fare average price for high-grade coal.
Cincinnati Gateway

Prices Spurt with Embargo

To West on C. & O. Coal

Eating up Fuel from Southeastern Kan-
sas and Off N. & W. Grain—Steel Mills, Utilities and Lake Buyers

Knock Interest—Smokeless Has Odd

Prices Range

Prices took a decided spurt when increased laying of southeastern Kentucky coal as well as that of the N. & W. resulted from the embargo placed on the western movement of coal originating on the C. & O. Immediately there was scrunching by
used mills, public utilities and large consumers that had been using C. & O. coal. Besides this Lake buyers showed added interest and the whole combination raised the price up a
stantial amount within the space of three days.

For the first time in weeks the steam coal was selling within the range of the gas and by-product. Smokeless, due to the Species ruling, presented
some addictions in the price range.

L. & N. reports show that the move
power on this line is still in the same stage and the movement is slow.

CINCINNATI

Although there has been an over-
increasing offering of domestic coal the demand still exceeds the supply and there has been little price recession. However, the quotations have narrowed somewhat. Railroads, however, are still holding it at a fancy figure.

There is little or no competition in the prices of the coal being shipped to
Canada or at Portsmouth as it is despised upon the ability of the C. & O. to ship making it a cheaper material than the others.

When a market moves away from
the coal has been dropped by 10c. and 15c. or more in some cases.

Low-Volatile Fields

Kanawha

Kanawha mines are working just about one-fifth of the time and there does appear to be any improvement in sight. Railroad fuel mines, in many instances, are now taking precedence.

The car shortage with its resulting idleness is creating much dissatisfaction among the miners. Prices in the West for high volatile exceed the eastern market. Congestion has been making it difficult, however, to get coal through.

Northeastern Kentucky

With more cars available, the improvement has not been pronounced, and mines in the aggregate are not making as much as 40 per cent of their potential. Coal is not abundant in this section.

Low-Volatile Fields

The Erie and the Gulf

Maritime coal markets in the
New England field are still quiet as is the situation in the eastern markets. Steady ruling in the western markets.

$3.75

Steam mine run averaged $3.75, with gas coal somewhat higher.

Owing to the car shortage the Kenova-Thacker mines are not producing more than 40 per cent of their capacity or little more than 100,000 tons a week. There has been a slight improvement in the situation, however, within the last two weeks. The limited production is not sufficient to meet the market requirements, for Western demand has increased. Most producers are able to handle contract orders only. So far as spot sales are concerned the prices ruling during the week ended Oct. 21 were $3.75@$4.

South

BIRMINGHAM

The situation in regard to car supply has grown more acute within the last week and is reflected in a slump in production. It is likely that the output will not go over 325,000 tons, a gradual decline being noted for several weeks. Mines on the L. & N. and the Frisco have suffered, especially for lack of equipment.

Despite the difficult movement and the fact that there is little surplus supply for the spot trade, demand is not at all urgent and the amount of business being taken on is comparatively small. Customers appear to be little interested beyond current requirements where contracts do not exist, but where fuel agreements are in effect there is an effort to expedite shipments and secure fuller compliance with contract deliveries.

The situation as regards domestic coal is one of much concern, as the output, measured to a great extent as it is by the demand for steam fuel, is far below the needs of the trade. The cool weather has rejuvenated to some extent the retail coal market.

There has been no change in prices the past week, the minimum quotations on steam running 25c.,@35c. under the fixed schedule, while maximum prices prevail for all domestic grades.

VIRGINIA

The output in southwest Virginia
is ranging from 62 to 66 per cent and in some parts of the field, notably on the Southern, the output is as high as 84 per cent. Coke production too is on a larger scale. Coal car orders are sufficient to absorb the greater part of the output so that there is really little spot coal available.

Canada

TORONTO

Cool weather has brought a rush of orders for anthracite which are being filled as far as possible from the limited supplies received, deliveries being restricted to one ton.

The demand for bituminous coal continues light and prices are variable, with quotations for 1-lb. lump in carload lots for delivery, $8.75@$10.25. Pennsylvania smokeless is about $9 wholesale and $12 retail. The city has received further supplies of Welsh coal which is being distributed in small lots.
News Items
From Field and Trade

ALABAMA

The Black Creek & Valley Coal Co. is the
merger of two companies organized in Jeffers-
on County for the purpose of engaging in the
coal mining business. The new company is
owned by C. H. Williams, of Black Creek, and
J. C. Reed, of Valley. A. C. Cray, president,
O. J. Lynn and S. M. Jernell, secretary and
vice-president. The capital stock is $100,000.

Under the direction of the federal fuel
distributor, Lieut. E. P. Eldredge, of the
United States National Resources Board
Birmingham, and is receiving from coal pro-
ducers in Alabama daily reports of coal
shipments on blanks which are provided. An
effort will be made to induce operators to
make shipments to nearby territory only or
within the territory normally supplied from
this field in order that equipment may not
be unloaded and returned for reloading as
quickly as possible and thus relieve to some
certain the coal shortage now existing.

The suit of the state against the Mont-
valle Mining Co., of West Union, charging
restitution proceedings of the early part of
the year, charging under a contract for
furnishing the contract for the hire of state
convicts, has been withdrawn by the state;
as a result, the company has paid in full
some amount due for hire of the convicts and
is now ready to pay the balance of the state
yards under a new agreement.

COLORADO

Development of the largest known con-
secutive body of coal in the United States is
the forecast to be inferred from the an-
ouncement that surveys have been com-
pleted for a railroad spur leading from
Denver to the properties of the Colorado
Mountain Coal & Coke Co. on Colorado
Creek, near人性化 mining center.

This is the company's first contract
floor, but it has been found feasible at a grade of
2.3 percent. The nearest terminus on the
branch line of the D. & R. G. near North Park
branch of the D. & R. G. near the Colorado
Creek, where the coal will be mined.

IDAHO

Towns around the Teton basin in this
state have been in a state of increased
price of coal to such a degree that they
have begun to make long hauls of coal as
their immediate source of fuel. Many
consumers in upper Snake river towns, such
as Blufflock, St. Anthony, Idaho Falls,
Pocatello, Shoshone, Riggins, Tetonina,
and Sullard are making contracts with
trucking concerns to haul their coal from
the mines of the neighboring .consumers are
doing in their own towns at high rates.

This is giving the Teton basin a consider-
able boom.

ILLINOIS

Announcement has been made of the re-
organization of a new coal company
which expects to sink a shaft in northern
Williamson County. The concern has
incorporated as the Southern Illinois
Blowout Coal Co., Inc. with headquarters
at Marion, according to the officers who have
been elected President, W. P. Parnell; vice-
president, E. E. O'Neill; secretary, C. E.
Reid, and treasurer, C. F. Gray.

The O'Gara Coal Co. of Chicago, has
reopened its No. 12 mine at Harrisburg. The
mine was closed last April when the mine
had been operated since that time. The
mine is one of a dozen or more operated by the company in that dis-

The mine of the Kohn Colliery Co. at
Dolores, Washington County, is now run-
ning full blast. The mine is now being
operated for the first time in about 15
months.

P. Titus, general manager of the
Chicago, Illinois & Indiana Coal Co., has
resigned to accept the vice-presidency of the
Chicago, Joliet & Indiana Coal Co., located in
Springfield and Chicago. Mr. Titus went to the
C. & A. in 1912 as general building engineer.
Since the coal passed into the hands of receivers, he had been chief operating officer.

The Rex Coal Co. has begun construc-
tion work on a 10-mile tract of land half a
mile west of Warmar, near the Orton and
Coal Valley districts. The company has
incorporated for $12,000. The first vein of
coal was discovered at a depth of 25 feet
with a thickness of 25 feet.

The Central Illinois Public Service
Co. has started the construction of the 14,000-
foot long tunnel from the mouth of the
mines in Jackson, Franklin, Perry, Wil-
motn and Saline Counties. Fuel distribution
will begin in October, 1923. The main line
will be to West Frankfort and will carry
a complete coal supply plant, located in the
Mississippi River Valley. Power may be
achieved from

J. W. Byrnes, formerly with the
Southern Coal & Coke Co., has been
applied for the sales' force of the Broer Coal & Mining Co.,
Chicago.

W. K. Rutledge, president of the Security
Coal & Mining Co., Chicago, recently spent
several days on a hunting expedition in
Louisiana.

Coal mining companies in Cambria
County, Pa., have been named by the county
commissioners from the triennial assess-
ment on the grounds that the real estate
has not assessed at the actual value therof,
being assessed without due regard to
the value and expense of the improvements
in the properties. The following companies
have been assessed by the county:

The Illinois Consolidated Coal Co.,
Richland and Adams townships and Scull Level
borough. The company was incorporated
at Kansas City, Mo., 1917, and is

The Illinois Consolidated Coal Co.
has installed a generator at the mines at
Kokokum, which will furnish power for the
operation. The estimated coal is 12,000

The Service Fuel Co., of Kentucky, has
filed incorporation papers in Springfield and
will establish headquarters in Chicago. The
capitalization is $100,000. J. J. Rodgers,
president and J. R. Terhark, secretary.

INDIANA

A special judge in the Gibson Circuit
Court at Princeton, recently fixed the oak-
land Coals Co. of that city, an order to
obey a court order of May 31, restraining
the coal company from purchasing coal
from its wells on the land of Robert D.
Wilson. The judge emphasized the coal con-
tractions and said he was sorry the order
was necessary, but felt it was necessary for
defendants in the suit of which the restrin-
ting order is a part.

A petition for the reorganization of the
mining laws of Indiana to be presented for
the consideration of the legislature. The
petition tentatively approved by the legis-
lation commission at a recent meeting of
the Indiana State Coal, Clay and
Lime Company has been presented to the
general assembly and is being heard under
the

The mine at the Muncie Steel Co.'s
mill, Muncie, Ind., was shut down last week
and will remain closed until further notice.

The B. E. Black & Company Co., incor-
porated at Muncie, Ind., is the newspa-
per.

MISSOURI

From Joplin have come reports that the
Coal Age is being published in St. Louis.

Oliver W. Johnson, librarian of the
Library of Congress, has been active in
pursuing the subject of coal mining in the

It is the purpose of this company to
exhaust the seams of coal which are

KENTUCKY

For perhaps the first time in coal history
in Kentucky, the companies operating east of
the Ohio River, have secured a lease of
land just across the Ohio River.

The Elkhorn Coal Co., of Elkhorn, has
been incorporated with capital of $5,000.
Herbert A. Huffer is the president, H. J.
Ross, vice-president, and W. E. Barthman,
secretary-treasurer.

It is reported that teams of men have
been formed for the purpose of finding,
and the work will go forward immediately.

The town of Elkhorn has been
incorporated to carry on the work, and
the territory is expected to be

NEW YORK

<table>
<thead>
<tr>
<th>Corporation</th>
<th>Capital Stock</th>
<th>Authorized Stock</th>
<th>Owners</th>
<th>Officers</th>
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<tr>
<td>M. E. Potter Co.</td>
<td>$100,000</td>
<td>$150,000</td>
<td>10</td>
<td>John M. Potter</td>
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<tr>
<td>The Valley Coal Co.</td>
<td>$50,000</td>
<td>$75,000</td>
<td>5</td>
<td>William M. Jones</td>
</tr>
<tr>
<td>The Elkhart Coal Co.</td>
<td>$25,000</td>
<td>$37,500</td>
<td>3</td>
<td>John H. Elkhart</td>
</tr>
</tbody>
</table>

Oklahoma

At the winter session approaches the number of orders being distributed among the mines is very large and several financial reports. Reports from the Crow Valley coal field indicate that more orders than ever before are coming in. The Winter Coal Field is now running full time, and the Winter Coal Company is making great strides towards modernization of its plant and electric lighting. The company is operating under a new management, and a large amount of capital has been invested in improvements during the past year.

Pennsylvania

The raw power and output in the Commonwealth are on the increase, and the number of strains returning to work also shows a marked improvement. The Commonwealth Coal Company is expanding operations during the year.

Ohio

The Secretary of the Bureau of Labor and Industry reports that the number of Railway fires is decreasing, and the number of cases is being reduced. The Ohio Coal and Coke Company is making great strides in modernizing its plant and improving its methods of operation. The company is making a large investment in new apparatus and machinery.

The Black Diamond Coal Company is making rapid progress in modernizing its plant and increasing its output. The company is operating under a new management, and a large amount of capital has been invested in improvements during the past year.

The Valley Coal Company is also making rapid progress in modernizing its plant and increasing its output. The company is operating under a new management, and a large amount of capital has been invested in improvements during the past year.

The Elkhart Coal Company is making rapid progress in modernizing its plant and increasing its output. The company is operating under a new management, and a large amount of capital has been invested in improvements during the past year.

The Muncie Coal and Coke Company is making rapid progress in modernizing its plant and increasing its output. The company is operating under a new management, and a large amount of capital has been invested in improvements during the past year.
TEXAS

A new wage scale, subject to ratification by miners and operators in Texas next week, was agreed upon at a joint meeting in Fort Worth. The agreement, if it is accepted by the miners, will take the place of that expired on January 31, 1923. By that time, it is expected the majority of Texas miners will have reached an agreement. Only 300 of the 50,000 miners are affected by the agreement. It is estimated the wage scale will cost the operators $2,500,000 in settlement of the differences.

Henry Zweifel, United States attorney for the Western District of Texas, has lodged a complaint against the alleged discrimination against coal miners in the state. The federal government is seeking to have the coal operators and the state regulatory board convene to discuss the matter.

Distribution of coal supplies in Texas during the coming winter months will likely be taken in charge by the Texas Railroad Commission, as a moderate amount of coal is being brought about a serious shortage, according to C. C. Goldman, secretary of the West Texas Railroad Commission.

The Coal Co. of San Antonio has recently been organized with a capital stock of $1,000,000, to conduct a general wholesale and retail coal dealers' business in San Antonio. Incorporating: C. J. Flory, J. T. Hall and A. L. Moon.

UTAH

The Democratic party declares it will repeal the Public Utilities Commission Act if elected. The Democratic platform suggests no legislation to take the place of the act.

The state land office has denied the coal land lease application of A. J. Mayes at 150 acres, in the mesa lands—nearly 700 acres—at 1230 royalty.

The coal deposit to be opened by the Columbia Steel Co. is being tested for its coking possibilities. The deposit is a large deposit, and various contracts are being let.

VIRGINIA

The Chesapeake & Ohio's new steel coal pier at Newport News will be under construction next spring, according to plans at $2,500,000, and will be one of a dozen piers that will extend the construction on the entire system of this road. The completion of this pier will increase the handling capacity of the Navy Yard by 500,000 to 750,000 tons per year, as 12-lift coal-dumpers are expected to begin about the same time on the construction of a $5,000,000 steel coal pier to supplement the Newell's Point facilities, while the Norfolk & Western is electrifying the line for operation, with 12-lift dumpers. In this manner, 121-lift dumpers are expected to make Hampton Roads one of the largest coal stations in the world.

WEST VIRGINIA

The J. E. Henry Estate, of Charleston, has been incorporated with an authorized capitalization of $1,000,000 for the purchase of large coal holdings in the New River field which the estate has one of the pioneer companies. Under the act of incorporation, the estate is permitted to hold mineral lands, etc. The incorporators are H. E. Holtz, Harry H. Couch, A. H. Abbott, and T. H. Mahood, all of Charleston.

Further development of Monongalia County coal lands is promised by the organization of the Parkersburg, Morgantown, and New River Coal Co., with headquarters at Morgantown. This company will provide for possible development and the financing figures in the new concerns are: A. L. Coor, J. H. H. Woodruff and W. H. Bragg.

The state of West Virginia has included in its new law the establishment of a code of standards for the mining of coal. The code is to be enforced by the state mining board, and the state commission for the regulation of mining operations.

The West Virginia Gas Co. has completed its organization with the election of: P. F. Reif, president; E. M. Reif, vice-president; T. W. Reagan, secretary, and J. Howard Henderson as general manager. The company is capitalized at $750,000. The company owns 3,000 acres of high grade Pittsburgh seam, and 20 acres of land in the new coal Creek in Wibaux County. Development work will be begun within a few weeks.

WISCONSIN

The first car of coal for the Brotherhood of Locomotive Engineers at Larimer arrived at the place recently. The company owns extensive coal fields in Larimer, from which it will be able to supply its members with coal. All supplies will be sold to friends of engineers at cost.

CANADA

BRITISH COLUMBIA COAL OUTPUT DURING SEPTEMBER, 1923

Vancouver Island District

Mine Net Tons
Western Fuel Corp., Nanaimo 30,152
Canadian Collieries, Comox 38,085
Canadian Collieries, Nanaimo 13,822
Middle Island Coal Co. 2,245
Nanaimo Wellington Collieries, Ltd. 9,961
Old Wellington Nanaimo 1,729
Total 57,095

Nissho-Prince Rupert District

Nissho Collieries, Mabelthorpe 3,179
Kokanee Collieries, Mabelthorpe 1,927
Coalminers Collieries, Cranbrook 4,174
Monarch Collieries & Land Co., Prince Rupert 10,450
Total 19,730

Total, all districts 256,825

The Dominion Coal Co., coal pocket at St. John's, N. B., was recently opened. The employees has been disabled in the last few days. The company is preparing for the opening of a new coal pocket.

The city council of St. John's, N. B., has scheduled a meeting for the next Tuesday to pass an order for the purchase of a new water and sewerage plant. The meeting will be held on Tuesday, June 17.

WASHINGTON, D. C.

The personnel of the committee of locomotive engineers is as follows:

W. D. Ord, head of the Emery Coal & Coke Co., with headquarters at Washington, D. C.

The Baltimore & Ohio's new branch of the Indian River & Northern Fuel & Transportation Co., is expected to complete its construction soon.

The personnel of the committee of locomotive engineers is as follows:

The department of mines of West Virginia has recently completed a study of the coal resources of the state. The study shows that the coal resources of West Virginia are estimated at 5,000,000,000 tons of recoverable coal.

It is estimated that the coal resources of British Columbia and the Northwest Territories are over 75,000,000,000 tons of recoverable coal.
Traffic News

Federal Fuel Control Notes

H. C. Bolt former freight traffic manager recently appointed as an assistant for the matter of coal in the enterprises of the various companies. In preparing his recommendations, Mr. Bolt pointed out that the lack of coal was most critical in the matter of steam consumed in the larger cities. The report of the American Fuel Control Commission for the first quarter of the year, as well as the information given by the furnaces that have already received their fuel supply at the present time, indicates that a large number of the furnaces in the city will be out of operation. Mr. Bolt also pointed out that there is a need for more control over the distribution of coal, which is essential in order to assure a more equitable distribution. He was also present at the meeting of the Pennsylvania and Maryland Coal Association, where a discussion was held on the matter of coal control. Mr. Bolt is a member of the association, and was present at the meeting.

At a conference held with the Federal Fuel Control Authority and the members of the National Coal Association, H. B. Smith, chairman of the association, outlined the present situation as it affects the different districts and the methods of coal distribution. He also pointed out the need for a more equitable distribution of coal, and the importance of the cooperation of all parties concerned. The Federal Fuel Control Authority assured Mr. Smith that all reasonable measures would be taken to ensure a more equitable distribution of coal. A. L. Humphreys, president of the Western Fuel Company of Pittsburgh, has been appointed as a member of the advisory committee to be named by the federal fuel district to assist in the management of the present fuel emergency.

Lieutenant Commander E. A. Coley, C. S. N., who presided over the meeting of the federal fuel distribution committee in Pittsburgh, said that the committee, as a result of the general counsel, will have considerable power in the control of the coal distribution. E. P. Fnes, his assistant in general statistical work, will fully carry out the cooperation of coal in the Great Lakes region.


Apparatus for Raising Coal or Other Material: Thomas A. Good, St. Louis, Mo., 1,129,643;Filed Aug. 31, 1917, serial No. 914,389.

Automatic Rolling Dump: E. H. Stout, Woodard, Ohio, 1,129,643;Filed Nov. 27, 1917, serial No. 965,616.


Safety Device for Mine Cages: George M. Johnson, Mount Carmel, Ill., 1,129,643;Filed Feb. 17, 1917, serial No. 846,756.


Art of Treating Coal: Frank J. Root, Chicago, Ill., 1,129,642;Filed April 7, 1917, serial No. 857,357.


Coming Meetings

The Illsins Mining Institute will hold its annual meeting at Urbana, Ill. Secretary, Martin Bolt, Springfield, Ill.

Pittsburgh Wholesale Coal Association will hold its annual meeting at the Hotel Commodore, Pittsburgh, Pa. Secretary, W. A. Crowthers, Pittsburgh.

West Virginia Coal Mining Institute's annual meeting will be held Dec. 5 and 6 at Huntington, W. Va. Secretary, R. E. Parsons, Kanawha Bank Bldg., Charleston, W. Va.

Harlan County Coal Operators' Association will meet Nov. 15 at Harlan, Ky. Secretary, R. R. Clayton, Harlan, Ky.

The National Industrial Traffic League will hold its annual meeting Nov. 15 and 16 at the Hotel Commodore, New York City. Secretary, J. H. Beck, Chicago, Ill.

Coal Mining Institute of America will meet Dec. 12 and 13 at Pittsburgh, Pa. Secretary, H. D. Marson, Jr., 211 Chamber of Commerce Bldg., Pittsburgh, Pa.


Canadian institute of Mining and Metallurgy, annual Western meeting Nov. 14-15, at Vancouver, B. C. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Can.

Recent Patents

Process of Collecting and Purifying Minerals and Ores: Harry M. Bell, of Cape Girardeau, Mo., assignor to the Missouri Pacific Company, Cape Girardeau, Mo., 1,129,642;Filed May 10, 1917, serial No. 842,149.

Inverted Fuel Furnaces: Albert B. Benson, 1112 South Grand Blvd., St. Louis, Mo., 1,129,642;Filed May 10, 1917, serial No. 842,149.

Apparatus for Washing Coal and Separating It from Its Impurities: Henry P. Henry, Halifax, N. S., assignor to the Canaport Coal Co., Halifax, N. S., 1,129,642;Filed May 26, 1917, serial No. 854,457.

Process of Collecting and Purifying Minerals and Ores: Harry M. Bell, of Cape Girardeau, Mo., assignor to the Missouri Pacific Company, Cape Girardeau, Mo., 1,129,642;Filed May 10, 1917, serial No. 842,149.

Inverted Fuel Furnaces: Albert B. Benson, 1112 South Grand Blvd., St. Louis, Mo., 1,129,642;Filed May 10, 1917, serial No. 842,149.

Apparatus for Washing Coal and Separating It from Its Impurities: Henry P. Henry, Halifax, N. S., assignor to the Canaport Coal Co., Halifax, N. S., 1,129,642;Filed May 26, 1917, serial No. 854,457.
Car Shortage and Costs

IRREGULAR operation of coal mines, from whatever cause, increases costs of production. Lack of orders at times is the main cause for irregular daily operation; today it is lack of railroad cars in which to load the coal. Proper distribution of cars will do much to lessen the cost of operation even on short turns.

In the East it is the general practice of the railroads to seek a daily distribution of a short car supply equally among the mines served. If the cars available on a given division are sufficient to satisfy half of the orders for cars, then the car distributor seeks to give to each mine one-half its rating. Quite often the supply of empties comes in small lots; a few may have been shunted in late the night before and throughout the morning additional cars be spotted. The mine superintendent seldom knows when he starts with the few cars whether or not more will be forthcoming. He must keep his men on the job if there is any expectation that more cars will come, for if he shuts down and fails to load such cars as are put in later in the day, these cars are counted against his allotment twice—once for the day delivered and again the next day.

This daily uncertainty plays hob with costs. During the waits for cars the main haulageways become choked with loaded trips. The tipple men stand around with nothing to do. The whole force draws pay with no work to do.

In some of the Middle Western fields the operators and railroad officials long ago got together to remove this irritating and unnecessary trouble. They agreed that the best interests of both parties were served when a mine was supplied with cars for a full day's operation. Accordingly when the car supply was sufficient for but, say, two days per week, the mines would be served in turn with a full run of cars for two days each week, and would stand idle the other four days. The superintendent thus is able to tell the men in advance when the mine will run and the men know that when they turn out they will get a full day's work. Inequalities arising in the distribution are equalized each month, so that each mine knows that it got its full share of the cars supplied the district. When the mine is going all are busy, not sitting around part of the time wondering whether more cars will appear.

The compelling reason for this development in parts of Illinois and Indiana, for instance, is not present in the East. In this Western territory the mine workers for the most part live in towns at a distance from the mines and ride to work on trains. They long ago rebelled at the early rising and trip from town to mine only to find no work or but part of a day's employment.

In the East the mine workers for the most part live in close proximity to the mine and suffer only the early rising should there be no cars and easily make their way home when the supply fails. But the operator has relatively higher payroll cost in the East than in the West because of the difference in practice. Why can't the Eastern operators get together with their railroads on such a basis for car distribution and save themselves money and their mine organizations much trouble?

The Value of Time

IN ANCIENT Rome no paid or voluntary fire forces kept guard over the city. Every man waited till he had a fire; then he organized his own force—himself, his wife, his family, his slaves (if he had any), the passing mechanic or the expectant beggar. Now it happened that Cassius noted this defect and sought to make money from the remedying of it. Note this from the historical author Charles Oman:

Still more astonishing was his amateur fire brigade and the way in which he used it. He got together a body of five hundred workmen—carpenters, masons and the like—provided them with ropes, buckets, ladders and tools. Whenever there was a fire (and fires were as common as they were dangerous in the crowded city) he went down to the head of his gang and called on householder whose property was in the immediate neighborhood of the conflagration. He then offered to buy their houses as they stood at a very low figure. If the terrified owner congratulated the fire brigade was turned on and the mansion generally preserved. If he refused, Cassius went away with his men and let the fire do its worst.

A bad bargain when every minute meant immense loss, yet is it not true that many a bargain is made today under a like stress even where it is not felt, especially by the purchasing agent who is making it? Many a mine foreman in a large company, seeing a clear profit in a new piece of machinery, is obliged to wait while the requisition is held up by the indifference of the chiefs above him and then finds that the purchasing agent delays the placing of the order in the hope that by shopping around he may be able to save a saving of a few dollars. Meanwhile the cost in mounting around the mines, arithmetical methods are demanding their toll of unnecessary expense, the output is badly restricted and the uncompleted work is jeopardizing life. The change proposed must be made, and the sooner the better—the sooner the machinery is installed, the more loss will be avoided. The old Roman who disputed careft with Cassius when his house was burning was little more foolish than the modern American who disputes dollars while the losses from inefficient labor, reduced output and danger are piling up.

Prudence in buying, a little shopping around, if done diligently, may be excused, but day cars should be taken, lost the loss by delay exceed many times the sum to be attained by circumspection and even many times the whole investment to be made. A tendency among purchasing agents is to hurry orders for replacements, rightly believing that such re-establishment materials are indispensable, but often a new piece of machinery that will afford economies in operation is of equal or even greater importance.
Are Income Tax Returns Significant in Company Profit?

Two of the subjects to be studied by the fact-finding commission appointed by President Harding are the cost of producing coal and the profits of the operators. The commission is directed to extend its studies over the last ten-year period. Data accumulated by the various government departments will be utilized by the commission. If conclusions drawn from these data are to be of value it is essential that the data be comparable so that the differences in the bases for different periods be understood and explained.

The statement is frequently made that in the period prior to the war coal-mining and mining companies lost money. How much the industry lost as a whole can be determined to some extent by a compilation of the figures from the income tax returns of coal-mining corporations since the mineral tax has been a feature of government reports—since 1913—and by taking into consideration the excise tax of 1909. If figures (taxable) had been uniformly defined during that period, similar values might be attached to figures obtained from that source and with the changing laws this comparability has been destroyed. Figures from that source lose value for purposes of comparison again from the fact that statistics of the Internal Revenue Bureau are built up on the basis of the state in which the corporation's charter was obtained rather than of the state in which the mining operations are carried on. So, from the standpoint of results comparable with the information collected by the Geological Survey, the Federal Trade Commission and the Fuel Administration the figures will have to be eliminated.

Although eliminated from the standpoint of statistics, the income tax figures cannot be ignored because of the effect of the laws and regulations on the accounting methods of the coal operator as a taxpayer. Following the line of least resistance, he usually has adopted the bookkeeping in the requirements of the tax law in form, although, because of the slender margins obtaining in the early part of this period and the low tax rate, he frequently did not take advantage of the privilege accorded him of proper deductions for depreciation and, after 1920, depletion. Books were frequently kept merely with an idea of forcing a profit for the purposs of the stockholder than of showing true production costs.

A discussion elsewhere in this issue of Coal Age of the federal tax laws of the past ten years as they bear on the question disclosed marked differences in the method of arriving at the bases of taxable income, which is the basic figure required by reports to the Internal Revenue Bureau. Taking into consideration the additional volume to be set up by retention of mineral, commercial, and plant and equipment, the differences may be marked instances run in excess of 25c. per ton for periods prior to and after 1919.

In the session of 1917 the Federal Trade Commission issued its first form for the collection of costs. In general it followed closely the accounting practices of those companies that had made any considerable study of production costs. It made provision for the making of funds for sales returns, or "contingencies," as the account was designated. A similar provision was made for the payment of extraordinary expenses through the establishment of a "maintenance reserve" account. In the compilation of these reports the Federal Trade Commission and the engineers' committee of the Fuel Administration found considerable difficulty with the two accounts mentioned and it is understood that an arbitrary allowance of several cents per ton was made by the latter for contingencies.

The form of report adopted for 1918 took maintenance and repairs of structures and equipment out of the detailed operating classification and set up separate figures for them. Miscellaneous profits or losses incident to operation of the mines also were taken out of the schedule of miscellaneous income and made debits or credits to cost. With these exceptions the results obtained were, generally speaking, comparable with the 1917 figures.

The Federal Trade Commission attempted a very elaborate form for 1919 costs in which it was sought to make separation as between operation and maintenance throughout the operating schedules. The commission was never able to put this form into effect because of lack of appropriation and lack of support of the Fuel Administration.

They revamped their scheme of cost forms for 1920 and sought to provide for inclusion in labor cost under maintenance and repairs of the repairs on miners' houses, which had heretofore been carried as a debit to the rent account and the net result shown as a miscellaneous profit or loss. Supplies were handled in the same manner. They also contended that the value of the coal produced at the operation and used under the boilers should be excluded from power costs.

The tendency of the Trade Commission has been away from the general policy of the Treasury. The differences were pronounced and eventually caused the split between the National Coal Association and the commission. The Treasury permits such charges as do not materially increase the production to be deducted as expense. The Trade Commission, where the items could be identified, is understood to have eliminated them or to have spread the charges over a period sufficiently long as to not distort the general average. Doubtless many such items were of necessity passed without change, because of the impossibility of positive identification.

The Treasury Department permits the depletion charge to be based on March 1, 1913, valuation. The Federal Trade Commission provided that such charges must be made on the basis of cost. The same rule would naturally apply to the amortization of the value of leases.

In the case of depreciation, the same differences of application would necessarily follow. The instructions of the Trade Commission were to the effect that plant and equipment were to be depreciated at a rate per cent, and did not countenance deduction on the basis of depreciation or a rate per ton, while the Treasury Department allows either method at the option of the taxpayer, and in addition the deduction of composite depletion and depreciation, if the taxpayer so elects. The cost of fuel is permitted by the Treasury Department. The later forms of the Trade Commission do not permit its inclusion in cost.

The 1920 forms of the commission instructed that the cost to the present owner of development of the main tunnel, shaft, slope or drift plus the estimated future cost of such work should be amortized pro rata with the exhaustion of the coal recoverable through such development. The Treasury Department does not permit the deduction of prospective costs.
Work Longwall by Machine Loaders as Long as Roof Will Stand, Then Shift to More Costly Room-and-Pillar Plan

Speedy Extraction of Coal Will Increase Safe Working Span—Goaf Is Not Expected to Fall Till Weakened Further by Room-and-Pillar Mining—Loader Works Its Way Under Shot Coal Face

BECAUSE room-and-pillar mining is the form of operation most in use in America, the thought and efforts of designers of underground-loading machinery have been directed toward perfecting a machine that will operate successfully and economically in a mine thus laid out. Experience has proved that the success of, and economy in, machine loading hinges directly on the car supply to the loader, and unless a machine is given many more than a miner's turn of cars, it cannot and will not be a success.

In room work, unless the face is turned on an angle of, say, 45 deg. (the degree of the angle may, of course, be greater or less), only one car at a time can be supplied to the loader, which means that while the load is being taken away and an empty is being supplied the machine must be shut down. The manner in which this is accomplished, whether by motor, mule or man power, would be an item of expense that would detract considerably from the saving made by machine loading. Another item of expense involved is the time lost in "flitting" the machine from one narrow place to another.

WHY LONGWALL HAS OFTEN BEEN A FAILURE

To obviate these and other objections inherent in the loading of cars at one end some method must be adopted that will provide a long working face, so that the machine can be supplied uninterruptedly with cars. Longwall, where it has been attempted in this country over any large area, has not been successful for the reason that we cannot bring ourselves to the painstaking and, as we view it, expensive methods of building packwalls behind the working face to protect the overlying strata. The use of posts or timber chocks does not serve the purpose sufficiently well, and the result is that longwall working in the regular sense has proved unsuccessful. It might be added that uncertain labor conditions have had as much to do with the failure as any other one cause. Machinery, of course, will reduce that difficulty considerably.

Longwall, or block mining, in the United States, where packwalls or gob stowage are not used, has followed two general lines. One method is to form blocks and commence the mining either inward or outward on one side of the block, proceeding until from 10 to 25 per cent of the block remains. This much is left for protection, because if it were raised out in its entirety...
and the work continued to the next block, the distance between the two supports of the beam would be so great that the weight of the roof would break it down.

Once broken, it would be impossible to regain the face by mine without driving another entry through the coal, providing a pillar large enough to support the overhanging roof at one end of another beam. The other method is to come on the end of blocks that lie parallel with the entry, proceeding to a definite point, stop, or break, and picking up the mining on another end, leaving a block of coal to support the end of the beam over which the mining is being carried on. Lack of recognition of these principles has been the cause of many failures in blocks or modified longwall mining. Either of the two methods just mentioned may and should be continued severely because with them much coal can be had.

In certain sections of West Virginia the method of mining adopted must be such as will convince the lessor of the coal land that as much coal as possible will be recovered. And when such land-selling companies can show that from 50 to 55 per cent of their workable seams are being recovered by their approved room-and-pillar methods, it is not likely that they will consent to a change in the system of mining until convinced that the same high percentage of recovery can be obtained by the system replacing it. It is also true that where the lessee is existing to his requirements as to the method followed, the result is better and more economical mining.

The plant of mining outlined in Fig. 3 is believed such as will assure as high a recovery as, if not higher than, can be obtained by room-and-pillar methods. Vary-

![Diagram of mining layout](image-url)

**FIG. 2—DETAIL OF LONGWALL AND ROOM WORKING**

As the triangular area gets to have a span which, with the particular roof and overburden, may be regarded as approaching a limit, the longwall face is abandoned and the work of drawing the blocks is pursued from rooms where there is less opportunity for rapid, cheap, and effective operation.

This plan of mining was designed and description given me by P. A. Grady, general superintendent of the A. J. King group of mines, Huntington, W. Va.
ing conditions may determine the length and width of the blocks as well as the pillars, though the greater the length, the larger the production and degree of concentration attainable.

For explanatory purposes the driving of entries and rooms to form the blocks will be called the first mining. Just as soon as the first block is formed mining can be started to draw it back. This will be termed the second mining. The angle at which this mining is done is a matter of choice and conditions. An angle of 30 deg. will provide a much longer working face than will an angle of 45 deg., as shown in Figs. 2 and 3.

The distance that mining can be carried on the end of the blocks is unknown. However, mining men who have had much experience mining a longwall face away from a barrier pillar, as is done in this instance, where the roof becomes a supported beam with one end resting on a barrier pillar, the other on the end of the adjoining block, know that it is possible to draw the block a long distance before the first great fall takes place. It is a well-known fact that if a large number of men are put to work on a face of this length, the retreat will be quite rapid and the work can proceed a great distance before the roof makes its first break. By reason of this fact we know that through the use of mechanical loaders it is entirely possible to extract the whole block so rapidly that the roof does not have time to break down until it is entirely worked out. To accomplish this some timbering must be done, though, for obvious reasons, this is not shown in the drawings.

If after taking the face back a certain distance it is found that the roof will break, making it difficult to maintain the long face, then the roof can be obtained by driving rooms as indicated by dotted lines, drawing the pillars as in ordinary room-and-pillar work advancing. This is called the third mining and it need be used only where the longwall face can be maintained for only a limited distance away from the barrier pillar.

The track arrangement as shown provides for a continuous advance of the block sections. The room switches have to be reversed before the second mining of any block. At the mouths of rooms Nos. 9 and 10 the switches are already turned and are waiting for the longwall to reach them. From room No. 12 is shown the track layout for the first mining of rooms and entries. Much sidetrack is shown in the haulway rooms from the main entry or B-panel entry, and at a great distance from the producing faces. This B-panel entry, once started, is continuous to the end of the property, and once the development has reached the point shown the maximum production can be maintained during the entire life of the mine, as only one-half of the coal is taken out on the advance, the other half to be recovered by the same method on the retreat. In laying out a new mine on this plan, it would be well to have the main entries removed far enough to the right of the property to permit a certain quantity of coal on the left to be recovered by room-and-pillar methods, until the coal

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**Fig. 1—Plan and Elevation of Loader at Work at Buffalo Eagle Colliery by J. E. Pearson, M.I.C.**

On the right can be seen the position the machine occupies when setting in loading another conveyor extending along the face, the upper surface of the main conveyor being at the highest point 292 lb. above the floor of the mine. The box enclosing the lower Conveyor is described for setting the box on the floor and rest of the machine. The main conveyor is provided with a double drive, consisting of two sets of 8.75 in. fan belts, running in reverse and turn around.
the height of the motor on the machine will be the determining factor. A drop-front truck is provided, the machine loading and unloading under its own power. The truck is not self-propelled, however, but has to be drawn by a locomotive whenever it is necessary to move it from one place to another. Such transfers do not often have to be made when a system such as the one just described is used. The conveyor has a rated capacity of 120 tons per hour. The actual capacity, of course, is determined by the speed at which the machine is fed into the coal, the height of the seam, and the depth of the undercut.

An actual stop-watch test made by disinterested parties at the mine of the Buffalo Eagle Colliery Co., Braefool, W. Va., gave the following results:

**TEST OF LOADING MACHINE AT BRAEFIELD, W. VA.**

<table>
<thead>
<tr>
<th>Number of cars loaded in test</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level full capacity of cars, tons</td>
<td>2.75</td>
</tr>
<tr>
<td>Height of coal, feet</td>
<td>6.4</td>
</tr>
<tr>
<td>Depth of undercut, feet</td>
<td>0.6</td>
</tr>
<tr>
<td>Time required to load 20 cars</td>
<td>31 min. 40 sec.</td>
</tr>
<tr>
<td>Time of one planting jack</td>
<td>1 min. 40 sec.</td>
</tr>
<tr>
<td>Average time per car</td>
<td>1 min. 30 sec.</td>
</tr>
</tbody>
</table>

Conditions for this test were much the same as shown in Fig. 5; a motor was in constant attendance pulling the cars past the loading machine. Three men operated it, one man controlling the movement of the machine, another breaking down any coal that adhered to the roof (caused by small binder in the coal), and the third man topping off the cars. This machine is manufactured by the American Coal Loading Machine Corporation, of Huntington, W. Va.

**MINE OFFICIALS SHOULD KEEP ABREAST OF UP-TO-DATE SAFETY PRACTICES.** — The safety of coal mines and miners cannot be assured if the men in charge are not familiar with safe methods. The following recommendations, therefore, are offered by the U. S. Bureau of Mines:

1. All persons in responsible charge of the direct operation of coal mines—including superintendents, foremen, fire bosses, and shotfitters—should be required to have certificates of competency issued by the state, showing that the applicant has passed an examination clearly establishing his knowledge of what constitutes up-to-date safe practices in the branch or branches of mine operations under his jurisdiction. All such certificates should be revocable by the state for cause, should expire after five years, and should be revoked only upon taking an examination. The latter requirement would compel all operating mining men to keep conversant with progressive safety practices.

2. Mining companies should require superintendents, foremen, fire bosses, and shotfitters to keep thoroughly familiar with requirements of state laws, as well as with up-to-date practices in regard to ventilation, dust, electricity in mines and explosives. If possible, this information should be conveyed by lecturers or specialists conversant with the best current practices, otherwise the companies should provide for sending current mining literature to its mine officials.

3. Each mine should make a special study of its gas and dust condition. It might be advisable to enlist the services of the U. S. Bureau of Mines, whose coal-mining division has made and is making extensive studies as to the prevention of explosions in coal mines.

**AT THE PITTSBURGH (PA.) EXPERIMENT STATION OF THE U. S. BUREAU OF MINES A COMPLETE STUDY IS BEING MADE OF THE BURRELL GAS INDICATOR AS APPLIED TO THE ANALYSIS OF AIR MIXED WITH METHANE, HYDROGEN AND GASOLINE VAPORS.**

Both the theory on which its operation is based and its practical uses are being considered and a few improvements will be recommended.
Power Used at Twelve Collieries and Its Distribution
For Eight Separate Operating Purposes

Company Uses Watt-Hour Meters to Determine Power Consumed for Each Purpose at All Collieries—Haulage Is Largest Item—Breaker and Compressed-Air Machinery Where Installed, Are Leading Current Consumers

BY G. M. KENNEDY*

Lansford, Pa.

As has often been stated, it is rather difficult to take the total steam-power cost and distribute it with any degree of accuracy among the various engines in the plant, whereas by means of the watt-hour meter an accurate record can be kept of the electrical power consumed by each motor or group of motors.

Realizing some years ago that many advantages were to be obtained by the use of watt-hour meters one of the engineers of a large anthracite company decided to order them as part of the electric equipment to be installed at the several mines. In consequence all the electrical installations of the company are well equipped with watt-hour meters. It must not be assumed from this that each unit of electrical apparatus was purchased with a watt-hour meter as if it were an integral part of the unit, but the various groups of electrical equipment, as will be defined later, were supplied with this integrating device. The cost of a watt-hour meter is insignificant as compared with the cost of the equipment with which it is to be used, and its purchase is, therefore, entirely justifiable.

The method of grouping the apparatus for power measurement is quite flexible and depends much on the method of accounting adopted as well as on the individual opinion of the person in charge of the equipment.

However, one satisfactory method for dividing the power consumed into groups, and it is that which has been introduced at the twelve plants described in this article, is as follows:

(1) Transportation, or Haulage  (5) Lighting
(2) Breaker Machinery      (6) Hoisting
(3) Ventilation            (7) Compressed-Air
(4) Drainage               (8) Charging Stations

The order in which they are arranged is immaterial.

For the past twelve years records have been kept of the tons prepared per month, here marked "tonnage," and the kilowatt-hours consumed per month arranged according to the headings given above. These records cover ten collieries designated in the following tabulations as A, B, C, D, E, F, G, H, J, and K, also two washeries as L and M. The tabulations are taken from an average month in the year just past.

Item I shows the power used in the haulage of ten collieries and, of course, all hauling done during the month is recorded, including all work on which the electrical locomotives were used. The variations in the kilowatt-hours consumed per ton at the various collieries is accounted for in the differences in the gradients, in the lengths of haul, in the yields per car, etc.

Item II shows the power used in the preparation of the coal and includes the power consumed at night time, on Sundays and holidays in making repairs to machinery. The washery designated as M in this table shows a high number of kilowatt-hours per ton because much

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### Table: Consumptions of Power at Ten Collieries and Two Washeries Distributed for Eight Purposes For Which It Is Used

<table>
<thead>
<tr>
<th>Item I—Haulage</th>
<th>Item II—Breaker Machinery</th>
<th>Item III—Ventilation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Colliery</strong></td>
<td><strong>Tonnage</strong></td>
<td><strong>Kw-Hr.</strong></td>
</tr>
<tr>
<td>A</td>
<td>51,223.0</td>
<td>34,600.0</td>
</tr>
<tr>
<td>B</td>
<td>37,000.0</td>
<td>37,000.0</td>
</tr>
<tr>
<td>C</td>
<td>17,500.0</td>
<td>17,500.0</td>
</tr>
<tr>
<td>D</td>
<td>20,436.0</td>
<td>20,436.0</td>
</tr>
<tr>
<td>E</td>
<td>24,368.0</td>
<td>24,368.0</td>
</tr>
<tr>
<td>F</td>
<td>36,475.0</td>
<td>36,475.0</td>
</tr>
<tr>
<td>G</td>
<td>13,030.0</td>
<td>62,700.0</td>
</tr>
<tr>
<td>H</td>
<td>31,851.0</td>
<td>62,700.0</td>
</tr>
<tr>
<td>J</td>
<td>38,805.0</td>
<td>62,700.0</td>
</tr>
<tr>
<td>K</td>
<td>6,424.0</td>
<td>6,424.0</td>
</tr>
<tr>
<td>L</td>
<td>301,887.0</td>
<td>663,020.0</td>
</tr>
<tr>
<td>M</td>
<td>310,378.0</td>
<td>663,020.0</td>
</tr>
</tbody>
</table>

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*Electrical engineer, Lehigh Coal & Navigation Co.*
Blows or Sucks Dust from Electric Motors.

Preventing Short-Circuits

Many mining plants have no compressed air with which to remove the dust from motors and generators and in other cases there are substations where compressed air is not available. Consequently need is felt for equipment in portable form that will blow away the dust that collects on the various parts of electrical machinery and switches. The Premier Handy, manufactured by the Electric Vacuum Cleaner Co., Inc., of Cleveland, Ohio, is such an appliance. It has the further advantage that it can be used as a vacuum cleaner when that is desired.

The illustration shows how the apparatus is used to draw dust from the generator or motor. By detaching the dust bag and the hose and by attaching the latter to the orifice from which the bag has been removed, the vacuum cleaner is changed into a cleaner operating by compressed air. The machine designed for mine service has an air-cooled motor and weighs 6 lb. The motor is universal and will operate on either alternating or direct current. The mouth of the cleaning tool is made of soft rubber that cannot mar or scratch anything and will not be broken if struck by a moving object.

In many cases where compressed air is readily available it does not pay to pipe it to every motor. The vacuum cleaner can readily be attached to an electric lamp socket and in this way will be made available without wiring, piping or preliminary expense. Then too, when using it as a blower, dry air is furnished. The air from compressors often is wet and the moisture not only rusts the machinery but short-circuits it.

Taking Dust

from

Commutator

By using an electric motor it is unnecessary to pipe compressed air to machines for dusting purposes. Furthermore the dust is not blown off, to settle elsewhere, but can be sucked into a bag.
By Washing Only a Part of the Coal Mined, Lowest Ash and Sulphur and Largest Yield Are Attained

Standardized Screening Methods Make Comparisons Possible—How Coal Was Screened in Practice—Only Coal Passing Over Four-Mesh Screen Will Be Washed—Finer Coal Will Be Added to It Untreated

By G. R. Delamater
Harrisburg, Pa.

The washery at which the tests described in this article were made was originally intended to deal with the coal coming entirely from certain mines in Pennsylvania all operating in the same bed. At that time 92 per cent of the coal fed to the washery appeared in the cleaned product, and the ash content in the refuse was always above 50 per cent. Even then a certain quantity of fine material found its way into the refuse.

During the late war, when coal was confiscated by the government and replaced by other coal from all over the states of West Virginia and Pennsylvania, we found ourselves facing a difficult problem, for there were never two consecutive days during which the coal mixture would be alike. In fact, each day's mixture usually contained coal from six to ten mines and the product of as many as 129 mines was represented in the washery feed during a single thirty-day period. To adjust the plant to such a variable feed so as to attain maximum efficiency naturally was difficult, but, all circumstances considered, it was regarded as fortunate that results as good as those attained were obtained.

Tests from which the data here presented were obtained represent a plant operation covering three months during the year 1919. Samples of the raw coal, washed coal and refuse were carefully taken daily, and screen tests made of each, the data herein given representing the composite results of this work.

TEST SCREEN GIVES COAL STANDARD TREATMENT

In making these screen tests it was desirable that great accuracy be obtained, and, realizing that in order to be comparative such tests should be conducted as nearly as possible under identical conditions, it was decided to use a Ro-Tap shaker screen set manufactured by the W. S. Taylor Co., of Cleveland, Ohio. Fig. 1 shows this apparatus, which is one in which the sieve pans at all times are given identically the same rotary movement, the same number of revolutions and taps per minute and, by means of an automatic clock-controlled electric switch, each test is carried on for exactly the same length of time.

As will be noted from the charts and tables, eighteen screens were used and they ranged from 1.05-in. clear opening down to 200 mesh. After studying the various screens used for work of this nature it was decided to adopt the Tyler standard screen set, which has as its base a 200-mesh sieve made from 0.0021-in. wire having a clear opening of 0.0029 in., which is that adopted as standard by the U. S. Bureau of Standards. The 100-mesh and the 20-mesh sieves in this screen scale also meet the specifications adopted by that bureau, so three of the sieves are in accord with its standards.

The ratio between the different sizes of this screen scale has been taken as 1.414, or the square root of 2, as recommended by Rittinger. Thus the width of opening in each successive sieve is exactly 1.414 times that of the preceding sieve, making the area of opening in each successive sieve just double that of its predecessor. When desirable, every other sieve may be skipped or taken out. This results in half the screens being used, but the ratio of width of opening will be 2 to 1.

By skipping two sizes a ratio of 3 to 1 will result and by skipping three sizes a ratio of 4 to 1 will be obtained. At the time these tests were started it was my belief that the results probably would show that nothing coarser than 16-mesh coal could be bypassed around the washery except possibly in the low-sulphur coals such as those of the Rocky Mountain district, where high ash is the only undesirable feature and in which it was probable that 8-mesh would be the limiting size. I was, therefore, much surprised in finding plus 8-mesh to be the permissible size and that a screen with about 5/8 in. of clear opening could be used in actual plant operation.

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*Second of two articles by G. R. Delamater. The first appeared in Coal Age Oct. 26 and was entitled “Problems of Eliminating Coal Washing and Measures Now Being Taken for Their Solution.”
effect of this was to modify the moisture content of the coal. It should be noted that the data represented a full year's test and so enabled us to study all the many coal mixtures which were delivered to the washery. The result of this one year's demonstration was so gratifying that the entire plant was finally equipped with screens of this type, not, however, without careful consideration of all the other available screening equipment.

It was found that this machine, which had a total screen area of 30 sq. ft., would efficiently handle from 80 to 110 tons of coal per hour, depending, of course, upon the moisture content, the maximum of which slightly exceeded 10 per cent. The power consumption was 1 hp. The screen cloth was such as to give the equivalent of a 5-in. clear square opening.

Figs. 2 and 3 show the type of screen used. Simplicity, accessibility, high capacity, low power consumption and ability to operate without lubrication are its chief advantages.

The vibrator is a simple solenoid magnet operating on a 15-cycle alternating current. A small motor-generator set converts the available power (which in our case was 25-cycle) to that required by the machine. All the screens used in this plant combined required 4 hp. of electric energy.

No movement whatever is imparted to the frame of this machine, only the screen cloth being moved and this at the rate of 1,800 vibrations per minute. This cloth is normally stretched up at drum-head tension yet is quickly adjustable. Also by means of the small hand wheel on the top of the vibrator the strength of vibration may be instantaneously adjusted while the screen is in operation.

Though the rapid vibration of the cloth would alone result in effective screening, another feature of this machine undoubtedly has much to do with its high capacity. In hand screening simply shaking the sieve pans is a slow process. Anyone who has performed this work well knows the result of shaking the sieves over a table where they may be frequently bumped meanwhile. The result is much greater rapidity of screening. The armature of the machine here illustrated at each upward stroke strikes suitably arranged blocks, thus imparting to the screen cloth an effective impact.

Prior to the installation of these screens, when all the
The strength of the vibration is regulated by the bandscrew. The low-frequency current is generated by a small alternator operated by a high-frequency circuit. The piece across the poles of the magnet—"the armature," as it is termed—goes back and forth as the strength of the magnet increases or decreases.

Coal was washed, twelve jigs, three settling tanks with Luhrig dewatering elevators and three Elmore centrifugal coal driers were employed. The washed coal yield ranged from 86.12 per cent to 89 per cent when good grades of coal constituted the mixture. The moisture content of the finished washed-coal product was 8 per cent whereas the ash and sulphur contents were 6.73 per cent and 1.15 per cent respectively. The washery operation was such at all times as to maintain these figures with but slight variation.

After installation of the screens only six jigs, one settling tank with dewatering elevator and one Elmore drier were used. The ash and sulphur content of the finished product remained the same, or 6.73 and 1.15 per cent respectively, and the moisture content was reduced to 3 per cent or less. The yield ranged from 92.5 per cent to 95 per cent, there being three straight months during which the higher figure was obtained. This, of course, was because of improvement in the quality of the raw coal coming to the washery.

The accompanying charts are designated by letter and the tables by number. The tables are somewhat lengthy but are submitted so that those desiring to make a more detailed study of this problem may have all necessary data available. The charts are, of course, a more convenient form for the same data, bringing out with greater clarity, if with less accuracy, the results obtained.

In making screen tests as well as analyses of the raw coal, washed coal and refuse, it has always been my experience that it is impossible to obtain results throughout which will check to exact figures. I mean by this that, theoretically, the ash and sulphur content of the washed coal and refuse when combined should equal the amounts of the ash and sulphur in the raw coal. The best safeguard against unreasonable variations from the theoretically correct figures is to take large samples with great care. This procedure was followed in this work.

The raw coal was—rightly, I think—taken as the base of all calculations in making corrections, and for this reason the tonnage of this raw coal and its ash and sulphur contents are charged against the washery and must be accounted for. Likewise, the washed coal is the resulting plant product which is invariably carefully sampled and weighed, and the samples analysed. It was, therefore, considered in this work that the figures resulting from the screen tests and analyses of the washed coal must be accepted at their face value and be left uncorrected.

**Some Coal Always is Broken**

Because some of the coal is sure to be broken as it passes through the washery the percentages of sizes in the washed coal and refuse when combined cannot be expected to equal exactly the percentages of the same sizes in the raw material. For an entirely different reason the ash and sulphur content as determined in an analysis of the washed coal may rightfully be accepted as binding and not subject to correction, as are those of the refuse, for whatever is not found in the refuse that calculations of the content of the washed coal would show should be there is nevertheless properly chargeable to the refuse or waste product of the plant.
analyses were calculated. Then, using the raw-coal data and the corrected washed-coal figures, the percentages of sizes in the refuse and their ash and sulphur contents were calculated.

This method, of course, resulted in corrections to nearly all the percentages of sizes in both the washed coal and refuse as well as to some of the analyses for ash and sulphur content of the various sizes in the refuse. However, none of these was radical.

Referring now to the diagrams, chart A sets forth quite clearly the unexpected result disclosed by this work. It was found that both a lower ash and sulphur content will be found in the finished product if only a portion of the coal be washed, the remainder being bypassed around the washer and mixed with the washed product from the other portion.

On this chart each vertical line represents an individual scheme of washing, being entirely independent of each of the others set forth by the other lines. This chart arrangement will hereafter be called class $X$.

Whereas those wherein each vertical line represents an individual screen size will be called class $Y$. For example, the fourth line from the left on chart $A$ represents the 3-mesh screen with 0.263 sq. in. clear opening. The curves intersecting this line designate the percentages in each instance that will result if all the coal retained on that screen be washed and the washed product resulting be mixed with the unwashed raw coal passing through this screen.

The lower portion of this chart depicts the proportions of raw and washed coal in the final mixture. It will be noted that the yield curve for the finished product declines steadily as the percentage of coal washed is increased.

It will be seen that with the 20-mesh screen the lowest sulphur percentage was obtained whereas it was with the 10-mesh screen that the percentage of ash in the product reached its minimum. The 14-mesh would therefore be the ideal size for the screen if a balance were struck between maximum ash and sulphur reductions. However, in our instance (and I think the same will apply to most of the washeries where the coal is...
November 9, 1922

COAL AGE

resulted in a washed-coal yield of 91.5 per cent with a sulphur content of 1.15 per cent. After making a complete screen installation at this plant, because of some improvement in the quality of the raw coal and of a feeling that we could operate with reasonable safety when aiming at a finished product containing 1.20 per cent of sulphur the 4-mesh screen with 0.185 in. clear opening was adopted. This resulted in a normal washed-coal yield of 93.13 per cent, but, as previously stated, at times a yield of 95 per cent was actually obtained.

In explanation of this rather unexpected result atten-
TABLE 1—PERCENTAGE OF VARIOUS SIZES AND ASH AND SULPHUR CONTENT IN EACH SIZE FOR RAW COAL.

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>Ash Content</th>
<th>Sulphur Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-40</td>
<td>2.80</td>
<td>0.0008</td>
</tr>
<tr>
<td>40-70</td>
<td>2.40</td>
<td>0.0015</td>
</tr>
<tr>
<td>70-100</td>
<td>2.10</td>
<td>0.0020</td>
</tr>
<tr>
<td>100-150</td>
<td>1.80</td>
<td>0.0025</td>
</tr>
<tr>
<td>150-200</td>
<td>1.60</td>
<td>0.0030</td>
</tr>
<tr>
<td>200-250</td>
<td>1.40</td>
<td>0.0035</td>
</tr>
<tr>
<td>250-300</td>
<td>1.20</td>
<td>0.0040</td>
</tr>
<tr>
<td>300-350</td>
<td>1.00</td>
<td>0.0045</td>
</tr>
<tr>
<td>350-400</td>
<td>0.80</td>
<td>0.0050</td>
</tr>
<tr>
<td>400-450</td>
<td>0.60</td>
<td>0.0055</td>
</tr>
<tr>
<td>450-500</td>
<td>0.40</td>
<td>0.0060</td>
</tr>
<tr>
<td>500-550</td>
<td>0.20</td>
<td>0.0065</td>
</tr>
<tr>
<td>550-600</td>
<td>0.01</td>
<td>0.0070</td>
</tr>
<tr>
<td>600-650</td>
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<td>0.0075</td>
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<tr>
<td>650-700</td>
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<tr>
<td>700-750</td>
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<td>750-800</td>
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<td>0.0090</td>
</tr>
<tr>
<td>800-850</td>
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<td>0.0095</td>
</tr>
<tr>
<td>850-900</td>
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<td>0.0100</td>
</tr>
<tr>
<td>900-950</td>
<td>0.00</td>
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</tr>
<tr>
<td>950-1000</td>
<td>0.00</td>
<td>0.0110</td>
</tr>
</tbody>
</table>

TABLE 2—PERCENTAGE OF VARIOUS SIZES AND ASH AND SULPHUR CONTENT IN EACH SIZE FOR WASHED COAL.

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>Ash Content</th>
<th>Sulphur Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-40</td>
<td>2.80</td>
<td>0.0008</td>
</tr>
<tr>
<td>40-70</td>
<td>2.40</td>
<td>0.0015</td>
</tr>
<tr>
<td>70-100</td>
<td>2.10</td>
<td>0.0020</td>
</tr>
<tr>
<td>100-150</td>
<td>1.80</td>
<td>0.0025</td>
</tr>
<tr>
<td>150-200</td>
<td>1.60</td>
<td>0.0030</td>
</tr>
<tr>
<td>200-250</td>
<td>1.40</td>
<td>0.0035</td>
</tr>
<tr>
<td>250-300</td>
<td>1.20</td>
<td>0.0040</td>
</tr>
<tr>
<td>300-350</td>
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<td>0.0045</td>
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<tr>
<td>350-400</td>
<td>0.80</td>
<td>0.0050</td>
</tr>
<tr>
<td>400-450</td>
<td>0.60</td>
<td>0.0055</td>
</tr>
<tr>
<td>450-500</td>
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<td>0.0060</td>
</tr>
<tr>
<td>500-550</td>
<td>0.20</td>
<td>0.0065</td>
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<tr>
<td>550-600</td>
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</tr>
<tr>
<td>600-650</td>
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<td>0.0075</td>
</tr>
<tr>
<td>650-700</td>
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<td>0.0080</td>
</tr>
<tr>
<td>700-750</td>
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<td>0.0085</td>
</tr>
<tr>
<td>750-800</td>
<td>0.00</td>
<td>0.0090</td>
</tr>
<tr>
<td>800-850</td>
<td>0.00</td>
<td>0.0095</td>
</tr>
<tr>
<td>850-900</td>
<td>0.00</td>
<td>0.0100</td>
</tr>
<tr>
<td>900-950</td>
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<tr>
<td>950-1000</td>
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<td>0.0110</td>
</tr>
</tbody>
</table>

TABLE 3—DATA FOR THE DETERMINATION OF FINAL COAL MIXTURES.

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>Ash Content</th>
<th>Sulphur Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-40</td>
<td>2.80</td>
<td>0.0008</td>
</tr>
<tr>
<td>40-70</td>
<td>2.40</td>
<td>0.0015</td>
</tr>
<tr>
<td>70-100</td>
<td>2.10</td>
<td>0.0020</td>
</tr>
<tr>
<td>100-150</td>
<td>1.80</td>
<td>0.0025</td>
</tr>
<tr>
<td>150-200</td>
<td>1.60</td>
<td>0.0030</td>
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<tr>
<td>200-250</td>
<td>1.40</td>
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</tr>
<tr>
<td>250-300</td>
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<tr>
<td>300-350</td>
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<td>0.0045</td>
</tr>
<tr>
<td>350-400</td>
<td>0.80</td>
<td>0.0050</td>
</tr>
<tr>
<td>400-450</td>
<td>0.60</td>
<td>0.0055</td>
</tr>
<tr>
<td>450-500</td>
<td>0.40</td>
<td>0.0060</td>
</tr>
<tr>
<td>500-550</td>
<td>0.20</td>
<td>0.0065</td>
</tr>
<tr>
<td>550-600</td>
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<td>0.0070</td>
</tr>
<tr>
<td>600-650</td>
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<td>0.0075</td>
</tr>
<tr>
<td>650-700</td>
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<td>0.0080</td>
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<tr>
<td>700-750</td>
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<td>0.0085</td>
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<tr>
<td>750-800</td>
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<tr>
<td>800-850</td>
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<td>0.0095</td>
</tr>
<tr>
<td>850-900</td>
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<td>0.0100</td>
</tr>
<tr>
<td>900-950</td>
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</tr>
<tr>
<td>950-1000</td>
<td>0.00</td>
<td>0.0110</td>
</tr>
</tbody>
</table>

This table represents the combination of the coal ash which remains after washing with the raw coal which has been removed by washing.
### Table IV—Percentage of Sizes and Ash and Sulphur Content in Each Size—For Refuse

<table>
<thead>
<tr>
<th>Retained on Openings</th>
<th>Diameter of Wire, In.</th>
<th>Ash Content Per Cent</th>
<th>Sulphur Content Per Cent</th>
<th>Yield of Refuse Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In.</td>
<td>Mm.</td>
<td>Mesh</td>
<td>Commutation of Each Size</td>
</tr>
<tr>
<td>1 050</td>
<td>26.670</td>
<td></td>
<td>0.1490</td>
<td>6.70</td>
</tr>
<tr>
<td>0.742</td>
<td>18.850</td>
<td></td>
<td>0.1350</td>
<td>5.15</td>
</tr>
<tr>
<td>0.525</td>
<td>13.330</td>
<td></td>
<td>0.1100</td>
<td>3.20</td>
</tr>
<tr>
<td>0.371</td>
<td>9.423</td>
<td></td>
<td>0.0900</td>
<td>3.00</td>
</tr>
<tr>
<td>0.253</td>
<td>6.600</td>
<td></td>
<td>0.0700</td>
<td>2.95</td>
</tr>
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<td>0.185</td>
<td>4.699</td>
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<td>0.0500</td>
<td>2.90</td>
</tr>
<tr>
<td>0.131</td>
<td>3.122</td>
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<td>0.0300</td>
<td>2.85</td>
</tr>
<tr>
<td>0.093</td>
<td>2.362</td>
<td></td>
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</tr>
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<td>0.065</td>
<td>1.651</td>
<td></td>
<td>0.0100</td>
<td>2.75</td>
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<td>0.0328</td>
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<td>0.0025</td>
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<tr>
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<tr>
<td>0.0164</td>
<td>0.417</td>
<td></td>
<td>0.0006</td>
<td>2.55</td>
</tr>
<tr>
<td>0.0016</td>
<td>0.295</td>
<td></td>
<td>0.0003</td>
<td>2.50</td>
</tr>
<tr>
<td>0.0008</td>
<td>0.208</td>
<td></td>
<td>0.0002</td>
<td>2.45</td>
</tr>
<tr>
<td>0.0005</td>
<td>0.147</td>
<td></td>
<td>0.0001</td>
<td>2.40</td>
</tr>
<tr>
<td>0.0003</td>
<td>0.104</td>
<td></td>
<td>0.0001</td>
<td>2.35</td>
</tr>
<tr>
<td>0.0002</td>
<td>0.074</td>
<td></td>
<td>0.0001</td>
<td>2.30</td>
</tr>
<tr>
<td>Solid</td>
<td>Solid</td>
<td></td>
<td>Solid</td>
<td>0.0001</td>
</tr>
<tr>
<td>Total</td>
<td>100.00</td>
<td></td>
<td>100.00</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

sizes. Thus any reduction of ash or sulphur accomplished in these sizes has a marked effect in decreasing the quantity of these substances in the total product.

Note that the last four small grades, which carry the highest sulphur of any of the sizes separated, amount to only 4.7 per cent of the total raw coal.

Safe Handling of Railroad Cars at Mines

Brakes on railroad cars often are in poor condition, making it necessary for the car dropper to use extreme care to keep the cars from getting out of control and being wrecked. Sometimes the brake sticks and it is necessary for the car dropper to kick it off in order to start the car. Many accidents have been caused by the car dropper leaving the brake stick in the wheel and going below to kick off the brake. Often it releases its hold suddenly and in turning throws out the brake stick, hitting the car dropper on the head. A brake stick should be made with a hook on the end to prevent it from slipping off the brake staff and also to permit its being hung on the ladder, as shown in Fig. 1. In this way the brake stick will not fall on the car dropper and will be convenient for him when he climbs up to set the brake again. There are many cases on record where car droppers have been seriously injured by being hit on the head with the falling brake stick, which, made of iron, may easily knock a man senseless.

Another common source of danger is the practice...
of standing on the brake platform to set the brake in the manner shown in the right half of Fig. 4. Men standing in this position have no way to save themselves in case the brake stick should slip; quite frequently have men fallen from the car and been run over as a result of this practice. The safe way is to apply the brake as shown in the left half of Fig. 4—with one hand on the brake of the wheel and the other applying the pressure to the brake stick. Then if it should slip or break, the man will not lose his balance, as he has a firm hold on the breakwheel itself.

Another danger, which is so apparent that it may seem almost foolish to mention, is shown in Fig. 3. Here the car is not centered far enough on the switch to clear, and a second car coming down on the other track is about to bump into the corner of the first car. A fatal result resulted recently when a man riding on the brake platform was caught and crushed between the corner of his own car and a second car which did not clear on the switch.

Car drivers become so expert, and sometimes gain so much confidence in themselves, that they often walk along the edge of the car in going from one end to the other. There are a number of accidents recorded caused by men falling and sustaining serious injuries (see Fig. 2).

**Scene from Colliery on Brownies Creek**

To Ivor Livingon, of Paint Creek, Ky., we are indebted for the illustration of a mine car and its colliery surroundings at Brownies Creek, Bell County, Kentucky, about twelve miles from the railroad station which is located at the mouth of the creek. No railroad runs up the valley. The mine is operated by farmers for their own coal supply. The gage of the car track is 24 in. Every part of the car is of wood except for the few nails in the bed. The rails also are of that material.

**Specifications Proposed for Tool Steel**

A TENTATIVE specification for carbon tool steel has been prepared by the American Society for Testing Materials and has just been submitted to industry. The specification requires that the steel shall be made by either or both the crucible and electric processes, with the exception of class C, which may also be made by open-hearth methods. It shall conform to the following requirements as to chemical composition:

<table>
<thead>
<tr>
<th>Elements Considered</th>
<th>Class A(\text{Per Cent})</th>
<th>Class B(\text{Per Cent})</th>
<th>Class C(\text{Per Cent})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon</td>
<td>0.60</td>
<td>0.60</td>
<td>0.50</td>
</tr>
<tr>
<td>Manganese, maximum</td>
<td>0.04</td>
<td>0.04</td>
<td>0.04</td>
</tr>
<tr>
<td>Phosphorus, maximum</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>Silicon, maximum</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td>Sulphur, maximum</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
</tr>
</tbody>
</table>

The carbon percentage shall be as ordered, the specifications varying by ranges of 0.10 per cent, with rejection limits plus or minus 0.025 per cent. As an illustration, tool steel may be ordered with a carbon range from 0.60 to 0.70 per cent, with rejection limits of 0.575 and 0.725 per cent, or from 0.75 to 0.85 per cent, with rejection limits of 0.725 and 0.875 per cent. The permissible variations in the size of the material ordered shall be determined by agreement between contractor and purchaser. The material shall be free from injurious defects and have a workmanlike finish. The analysis shall be made in accordance with methods for testing carbon tool steel contained in the Book of the American Society for Testing Materials, Standards of 1921. Criticism of these specifications should be addressed to G. H. Woodroffe, secretary of Committee A-1 on Steel, Parkesburg Iron Co., Parkesburg, Pa.

In the steel gallery used at the Pittsburgh (Pa.) station of the U.S. Bureau of Mines in conducting experiments regarding the explosibility of coal dust, the following determinations have recently been made: (1) The explosibility of standard Pittsburgh coal dust in atmospheres of methane varying from 1 per cent to 8 per cent; (2) the explosibility of standard Pittsburgh coal dust in atmospheres of carbon dioxide varying from 1 per cent to 33\% per cent; (3) the effect of varying percentages of moisture upon the explosibility of standard Pittsburgh coal dust.
Practical Advantages Gained in Use of Double-Conductor Cables

Room Tracks Seldom Well Bonded—Single-Conductor Cables of Little Use Under Certain Conditions—Possible Short-Circuit in a Double Conductor Offset by Its Many Advantages

KINDLY permit me to offer a few suggestions in regard to the use of single and double cables for electric gathering locomotives. This question was asked by an Ohio electrician, Coal Age, Oct. 12, p. 594. In the excellent reply given to this inquiry, the several types of cables used by gathering locomotives have been described, and the conditions explained under which single and double conductors should be used.

The fact is well known that the use of a poorly bonded return rail, not only causes a great loss of time by reason of burned-out armatures, but also results in a loss of power, making the locomotive unable to pull its load.

Practically, this condition is most frequent in roads and cross-entries where the same attention is not given to keeping up the roads, as on the main headings. In many cases, corroded fish-plates have been used and these have not been securely bonded to the rails. It is easy to see that there is every chance for an armature to be burned out, or for the locomotive to be short of power when a single-conductor cable, which is dependent on a rail return, is used.

ADVANTAGES AND DISADVANTAGES OF DIFFERENT TYPES OF CABLES

Another great disadvantage, in the use of a single-conductor cable, occurs when a locomotive is badly derailed, which will happen at times. Much time is then lost in trying to get a sufficient return to enable the motor to operate and assist in putting the locomotive back on the rails.

Although there is a considerable disadvantage in a two-conductor cable, by reason of a possible short-circuit occurring within the cable, I believe that the saving of armature burn-outs and delays caused by insufficient power, due to poor bonding of the rails when using a single conductor, will more than offset any liability to possible short-circuiting of the wires in a double-conductor.

Also, it is my opinion that the advantages gained in the use of a double-conductor largely outweigh the difficulties of splicing this conductor, in the event a splice has to be made. We must not forget, also, that where a change of track is necessary, the use of a double-conductor cable obviates the necessity for securing good bonding on the rails in making such changes.

These advantages give me a decided preference in favor of double-conductor cables, which should be of the concentric type mentioned in the reply to the inquiry.

Linton, Ind. JOHN R. LUXTON.

Eliminating Expense of Packwalls, Longwall-Panel System

Face headings replace the gateways maintained by building packwalls—Single face headings, however, provide no means of ventilating when drawing back pillars.

In an effort to eliminate the expense of building packwalls for the maintenance of roads or gateways to reach the working face, in the longwall-advancing system of mining, M. L. O'Neale described a method of driving face headings, keeping them a little in advance of the longwall face. (Coal Age, Vol. 21, p. 877)

These headings were to be driven three abreast and, while affording an easy means of reaching the longwall face, also provided for maintaining good ventilation when drawing back the pillars after the headings had reached the limit of the panel. In reviewing this improved method of longwall work, W. H. Luxton, in his letter, Sept. 21, p. 455, suggests driving a single, face heading instead of employing the triple-entry system proposed by Mr. O'Neale.

PROPOSED PLAN TO AVOID PAYING ENTRY YARDAGE

Mr. Luxton expresses the opinion that the proposed system can be simplified and the cost of its execution much decreased, by avoiding the large expense for yardage due to driving these face headings, once the longwall advance is dramed. Evidently, he has not stopped to think how his plan of driving single headings would work out when drawing back the pillars flanking the heading.

No doubt, it would save yardage to drive a single heading, and the plan appears to provide for the longwall stage; but how would it serve when it became necessary to draw back the pillars. If I am not mistaken, the geaf would then have closed tight against the pillars on the sides where the coal had been taken out.

It has been my experience that, in work of this kind, it is impossible to provide the necessary circulation of air to permit the pillars to be withdrawn. I believe that, if the pillars are to be taken out, at least one air-course must parallel the face heading. While this air-course would be of no particular advantage in the advancing stage, it is essential for circulation, in the work of robbing out the pillars.

It is possible, of course, to maintain a fair circulation of air along the worked-out side of the face-heading pillars, by building good packwalls a few feet from the solid coal forming the pillars. However, if I understand rightly, the purpose of the proposed plan was to eliminate the necessity of building and maintaining the packwalls. In my opinion, the cost of maintaining such airways would exceed the cost of driving an extra heading in the coal.

ORIGINAL PLAN OF FLANKING PLACES INCREASES TONNAGE

Referring, now, to the original proposition presented by Mr. O'Neale, I see no objection to his idea of flanking the face headings, on each side, with a place running parallel to it. I believe these places would be driven wide, where it would involve no yardage expense.

Driving such flank places would have the immediate advantage of increasing the tonnage obtainable from each face-heading system, which would have a tendency to decrease the general cost of production.

One practical advantage gained by keeping these flank places a yard or so ahead of the longwall face is that they provide convenient places for the machine to start and finish a cut along the face. Also, these places provide needed room for the machine, where it will be out of the way when heading out a cut.

The advantage of these flank places is even greater when chain machines of the so-called longwall type are employed. I was recently in several Belgian mines, where they are using these machines, manufactured by a well-known American firm. The results obtained are surprisingly good. In these mines, it was found not only advantageous, but necessary to provide all longwall faces with flank places of the kind suggested and for the reasons I have mentioned.

V. C. CONWAY,
Consulting Engineer,
New York City.

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Occurrence and Causes of "Bumps" in Coal Mines

The occurrence of "bumps" in the mining of coal is a familiar and well-known occurrence that poses a threat to the safety of the miners. These "bumps" are caused by the sudden release of gas, water, or coal from the coal seam, and they can result in injury or even fatality if not properly addressed.

The term "bump" is used to describe a type of mass movement that occurs in coal mines. These movements are often characterized by the sudden release of gas, water, or coal from the coal seam, and they can result in injury or even fatality if not properly addressed.

In the coal mining industry, bumps are a common occurrence. They can occur when gas or coal is released from the coal seam, either due to natural causes or as a result of mining activities. These bumps can be classified into two main types: those that occur in the coal seam and those that occur in the roof or floor of the mine.

The causes of bumps can be attributed to a variety of factors, including the presence of gas, water, and coal in the coal seam. The composition and structure of the coal seam can also play a role in the occurrence of bumps. The mining process itself can also be a factor, as mining activities can cause changes in the pressure and stability of the coal seam, leading to the release of gas, water, or coal.

Testing a Safety Lamp With a Carbide Lamp

Testing a safety lamp with a carbide lamp is a critical aspect of mining safety. The lamp is tested to ensure that it will not ignite any explosive gases that may be present in the mine. This test is conducted to prevent accidents and to ensure the safety of the miners.

The test involves the use of a lamp that produces acetylene gas, which is then passed through the lamp and allowed to burn. The test is conducted in a controlled environment to ensure that the lamp will not ignite any explosive gases that may be present in the mine.

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The coal mine or safety inspector, where a company is operating several mines, appears almost a necessity.

A recent writer in *Coal Age* has drawn attention to the lack of interest displayed by foremen who drift from place to place, such men—seldom remaining in one place longer than they are able to get out cheap coal by robbing the mine. In every such case, the loss to the company is hardly realized until the damage to the mine has been done.

My observation, in going from place to place, has shown me more clearly than ever before, the need of employing good foremen. In several instances, I have observed where the employment of a supervising inspector would easily save his wages in many ways.

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**Inquiries Of General Interest**

**Locking Car on Self-Dumping Cage**

Self-Dumping Cage Equipped with Sidehoops and Lugs to Hold Car in Place—Trouble Caused by the Lugs Failing to Work at Times When Needed—Some Form of Additional Lock Desired

**WE HAVE** a problem that we are minded to present to *Coal Age* and its practical readers, hoping that they will be able to offer suggestions that will solve our difficulty. The proposition is as follows:

At one of our mines, we are using what is known as the Bond cage, manufactured by the William Ellison Machinery Co., St. Louis, Mo. This cage is equipped with two steel loops or hoops that fit over the wheels of the car, on each side of the cage. Their purpose is to hold the car on the rails when the cage is dumping. Besides these loops at the sides of the car, there are also two upright lugs that catch the wheels in front and prevent the car from running across the cage.

Now, our trouble is that these lugs, at times, fail to work, with the result that the car is free to run across the cage far enough to be caught between the loops or hoops and the curbing of the shaft. When this happens, there is sure to be a wreck that tears out the guides, before the engineer is aware that anything is wrong. We have tried to figure out some way of putting in an additional lug on the platform or some other place on the cage, for the purpose of giving additional security against accident. We shall very much appreciate any suggestions that will accomplish the desired result.

—III. SUPERINTENDENT

The correspondent has not stated the precise position of the upright lugs, or given other information that would make clear the exact situation in hand. If cars are to be caged from both sides of the mine, at the shaft bottom, the upright lugs mentioned would have to be movable to permit cars to enter the cage from either side. On the other hand, if cars are caged from one side of the shaft only, these upright lugs would be permanent or fixed in position at the back of the cage. The statement that these lugs, at times, fail to work suggests that they are movable; but how their movement is actuated is not explained.

Different forms of devices are used to lock cars on a self-dumping cage. The most common and probably the most serviceable device consists of two movable hoops, one on each side of the cage, and actuated by a lever that automatically engages a projecting lug in the shaft, as the cage rises to the point where it is dumped. Instead of a hoop reaching over the tops of both wheels, four movable hooks are sometimes employed, two on each side of the cage, one hook holding each wheel firmly in place as the cage is dumped.

We have seen a fixed hook or strap so arranged as to project over the tops of both wheels. These are fixed in a position not to interfere with the car running on and off the cage, while holding the car on the rails as the cage is dumped. In this case, however, the car is locked on the cage automatically by a carriage spring fixed firmly to the floor of the cage beneath the car. This spring is made to engage a lug on the bottom of the cage.

At other times, a heavy iron rod is attached to the floor of the cage, the end of the rod being bent at right angles so that it can be turned upward to a position that will prevent the cage from running forward when the cage is dumped. This arrangement, however, is not recommended. Many readers will probably have other forms and devices to suggest for securing the car to the cage when dumping, and we shall be glad to learn of the most satisfactory means employed.

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**Three-Brothers Problem**

Problem to find radius of circle circumscribing a triangle—Prove a triangle when the sides only are given.

KINDLY permit me to ask for the solution of a problem over which I have puzzled vainly for some time. The problem has a practical bearing, as it relates to the central location of a well, for three brothers whose homes form the vertices of a triangle, the sides of which are 10, 11 and 12 chains, respectively. The problem is to locate the well at an equal distance from each brother's house.

Evidently, this is a question of finding the radius of the circumscribing circle of this triangle. I have endeavored to solve the problem graphically, by erecting perpendiculars at the middle point of each side of the triangle. The intersection of these perpendiculars should give the center of the circumscribing circle.

The correspondent has stated his problem correctly. The location of the well is at the center of the circle circumscribing the triangle formed by the lines joining the three houses. Referring to the accompanying figure, this location is at $O$, which is the intersection of the three perpendiculars $Ox, Oy, Oz$, erected at the middle points of each respective side of the triangle $ABC$.

The problem reduces to the solution of a triangle having its three sides given. The first step is to calculate the angles at $A$, using the formula:

$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

In this formula, the sides lying opposite the respective angles $A, B, C$ are indicated by the corresponding small letters.
Examination Questions Answered

Mine Managers' Examination

Nova Scotia, 1922

Question:
If 10 hp. produces 20,000 cu.ft. of air per min., in a mine, what horsepower will be required to produce 50,000 cu.ft. per min. under the same conditions?

Answer:
In mine ventilation, the horsepower producing circulation in a given mine, under like conditions, varies as the cube of the quantity of air produced. In other words, the horsepower ratio is equal to the cube of the quantity ratio. Then, calling x the horsepower required to produce 30,000 cu.ft. per min., where 10 hp. produces 20,000 cu.ft. per min., we have:

\[ x = \left(\frac{30,000}{20,000}\right)^3 = \left(\frac{3}{2}\right)^3 = x = \frac{27}{8} \]

\[ x = 4.303 \text{ hp.} \]

Question:
Many explosions have been caused by blowout shots. Describe fully the precautions that a manager should enforce to prevent explosions occurring from this cause.

Answer:
Blowout shots are chiefly caused by overcharging a hole; insufficient tamping; locating the charge too deep on the solid; or failing to properly prime or ignite a shot before firing the charge. A blowout shot is sure to result when the line of least resistance extending from the charge to the free surface of the coal, corresponds more or less closely with the axis of the hole. This is called a deadlock. Blowout shots may result from using too quick a powder or different grades of powder in the same hole. In order to prevent these occurrences, the mine manager should make and enforce strict regulations, in regard to the loading of coal and the use of explosives. Only permissible explosives should be used, and all shots should be examined, charged and fired by competent persons, authorized to perform this work.

Question:
A mine ventilated by three splices of air. A, B, and C: A is 500 ft. long and 6 ft. 6 ft. in section; B is 700 ft. long and 9 ft. 9 ft. in section; C is 450 ft. long and 8 ft. 8 ft. in section.

Finally, in the right triangle AOE, the hypotenuse AO, which is the required radius of the circumscribing circle, is equal to the square root of the sum of the squares of the two sides:

\[ AO = \sqrt{241 + 6} = 64 \text{ chains} \]

Therefore, the desired central location of the well is 64 chains from each of the three houses.

COAL AGE

Vol. 22, No. 19

1922
Commission's Fact-Finding Machinery Taking Form; Technical Experts Drafted to Assist

BY PAUL WOOTON
Washington Correspondent of Coal Age

The fact-finding machinery being set up by the President's coal commission is now taking definite form. While the commissioners expect to obtain much of their information from the broad conclusions of outstanding men engaged in coal production, distribution, wholesaling and retailing, a vast amount of data must be collected by a technical staff. That portion of the work which deals with costs of production will be under the immediate direction of David L. Wing, whose title is to be expert investigator. As the work progresses Mr. Wing will gather other statistical facts. C. E. Lesher, editor of Coal Age, has been drafted to direct the engineering investigations which the commission will conduct. Coal specialists from various bureaus will be transferred to the commission.

Assurances of co-operation have been given by each national association connected with the coal business. A statistical program is being worked out which it is believed will cause little discussion. It is being arranged so that those engaged in the business can furnish the information in the way it is carried on their books. Roderick Stephens, president of the Retail Coal Merchants' Association, has conferred at length with members of the commission, as has a committee representing the public utilities. More formal conferences are in contemplation. The one with the retailers is to be held the latter part of November. There is every evidence that the commission will have the whole-hearted co-operation of the whole coal business.

Where statistical and other information is furnished by one branch of the industry, arrangements are being made whereby the other branches concerned and the commission itself can check the figures as they are being compiled. In this way it is hoped to compile statistical data the correctness of which will be admitted by each branch of the industry.

Since the government's law officers decided that Dr. George Otis Smith may not lead a double official life, it became necessary for him to resign his position as director of the United States Geological Survey. After having discussed the matter personally with the President, Dr. Smith presented a formal resignation in which he, among other things, said: "Some plans I have had in mind for the betterment of the Geological Survey's contributions to the public are unfinished, even after my fifteen and one-half years as director. I, therefore, regret this break in my work, yet, while I hope I may have an opportunity for further service with the Geological Survey, I appreciate so keenly the importance to the nation of the task you have entrusted to the coal commission that I am willing to make any sacrifice needed to enable me to devote all my energies to that special work for the next eleven months."

In his reply and in a statement issued at the White House the President explained that Dr. Smith's resignation is of a temporary character and that he will be reappointed as director of the Survey when his duties with the coal commission shall have been concluded.

The same provision of law bars Judge Alschuler from serving in two official positions. The President will ask Congress to make an exception in this case, but until such a law is passed Judge Alschuler will not qualify as a member of the commission. He will work with the commission, however, in an informal capacity.

The Geological Survey came in for praise in a recent editorial in the Philadelphia Public Ledger. In discussing the coal commission the editorial said: "The appointment of George Otis Smith was an act for which Mr. Harding cannot be commended too highly. The Geological Survey is purely scientific, non-political, magnificently efficient and brilliantly administered."

The coal commission has been endeavoring since its organization to arrange for the appearance before it of both Secretary Hoover and Secretary Davis. Other duties of these secretaries, however, have made this impossible.

Coal Commission Unable to Undertake Work Outside of Main Investigation

Although the mandate from Congress to the United States Coal Commission was to procure information on all problems connected with the coal industry, the purpose of the commission's investigations as set forth in the law is to aid, assist and advise Congress in its efforts to help the industries of the country and the people generally and to maintain the uninterrupted flow of commerce among the states. To these general instructions Congress attached specific orders for reports and recommendations, the first of which is required not later than Jan. 15 next. The scope of the task laid upon the commission recently appointed by President Harding is plain as well as its urgency, so that it is evident that no work outside the main investigation can be undertaken.

Already the commission has received complaints regarding insufficient local supplies of coal, exorbitant prices demanded by dealers and other evidences of unsatisfactory functioning in the coal business. A telegram just received from an Oklahoma citizen, for example, calls for immediate investigation of a mine-labor dispute, undoubtedly a distressing condition which affects consumers as well as producers of needed coal, yet the requested action by the coal commission is not possible. The commission could easily dissipate its energies in following up such complaints, and without results, for the law gives it no executive functions, and the commission therefore would be without authority to act in relief of these individual instances, which after all are but localized symptoms of the disorder affecting the whole industry.

Nine-Tenths of Coal Industry's Troubles Laid to Inadequate Transportation

If adequate transportation could be had for coal it would remedy nine-tenths of the trouble within the industry. A statement to that effect is being assented to in official circles in Washington. Unless some step is taken to provide more transportation for coal, the difficulties of the industry will increase, especially those which pertain to labor, until strikes become annual occurrences. A prediction to that effect has been made by a high administrative official. Intermittently, he contends, may be charged almost entirely to lack of transportation, while overvanses, may be attributed largely to the same cause. In the opinion of this official, unnecessary mines would be closed if the transportation for coal were sufficient and efficient properties could rely upon a constant coal supply. As it is, the well-equipped and off-coal mine is penalized each time there is a car shortage. Each serious emergency costs the public a greater sum than the entire cost of the new cars that are needed to straighten out the situation.

In that connection it is pointed out that the country has come through this emergency at much less cost than some of the larger ones. One reason for this is that the average price of coal during the emergency growing out of this year's strike is figured as having been 32c, compared with 32c during the preceding emergency. With far fewer, it is asserted, there has been no complete case in which a public utility has been forced to suspended operations or pay
Philip S. Smith to Head Geological Survey: David White Retires as Chief Geologist

Resignation of Dr. George Otis Smith as director of the United States Geological Survey, so that he could qualify legally as a member of the President’s coal commission, will place the full responsibility for the conduct of the Survey during the next eleven months in the hands of Philip S. Smith, who has been serving as the Survey’s assistant director. The new director has spent practically his entire career on the staff of the Survey and is thoroughly conversant with its work. While his outstanding accomplishments have been in geological and mineral studies in Alaska, he has had wide experience in every phase of the work done in his bureau. He is widely known as an unusually capable geologist, with which he combines great executive capacity.

Coincidentally with Dr. George Otis Smith’s resignation came the announcement that David White will retire as the Survey’s chief geologist to become his successor. He will be succeeded in the chief of the chief geologist by W. C. Mendenhall. Mr. Mendenhall has been a member of the Survey staff for 20 years. His geological and field work has extended from the southern Appalachian to Alaska. For more than ten years he has served as geologist in charge of the Land Conservation Board. This latter place will be filled by the promotion of Herman Cooper. In connection with Mr. White’s retirement, as chief geologist, Dr. George Otis Smith contributes this comment:

“On Nov. 16 David White will have completed ten years’ service as chief geologist. This contribution to the administration of the Survey has been at the expense of his own scientific work, even though he has thereby increased the scientific value of the work of his associates. It seems fair that his oft-repeated request for permission to return to his own geological studies should now be granted, not only to gratify the natural desire of an investigator who has laid aside research problems one after another but to promote the advancement of our science.

“The return of Mr. White to productive research suggests anew the sacrifice involved in the administration of scientific work. Administration by scientists is the keynote of the Survey’s policy, yet the intellectual cost item involved in this drafting of our best investigators must be kept down to minimum. Had I been free from other demands on my time this past summer, I would have taken this occasion to start a somewhat radical reorganization of the geological branch, the chief purpose of which would be to reduce its administrative overhead—too many geologists are giving valuable time to work for which they were not trained. Necessarily now this task of simplifying the organization must be left to the new chief geologist and acting director, but I ask for them a sympathetic acceptance of the proposal for a less elaborate but more elastic grouping of the activities of the branch. Not machinery, but product, is the measure of efficiency in a government scientific bureau.”
How the Coal Strike Affected Bituminous Coal Stocks Shown by Government Report as of Oct. 1

By W. F. McKenney, F. G. Tryon and E. E. Fink

The government's report on coal stocks, just issued, places the total bituminous in the hands of commercial consumers at 22,000,000 tons on Sept. 1, and 28,000,000 on October 1.

To many observers of the coal market who were matching up the statistics of production with their own estimates of consumption during the strike, it will appear surprising that there could be anything like 22,000,000 tons left in the possession of consumers when the settlement came.

This article attempts to show how the country adjusted itself to the shortage in supply, and how the deficit between production and consumption was met. Details of the present condition of stocks will be found elsewhere.

There are two elements in the above-ground reserve of coal. The first element is the stocks in the hands of consumers. The second element is the coal in transit, coal on docks, in intermediate storage yards, on route in cars or vessels, and also for convenience coal stocked by the producer at the mine. Both of these elements may be drawn upon to meet a deficit in supply and they will be considered in turn.

Bituminous Stocks in Hands of Consumers

It is not feasible to collect statistics of the stocks of domestic consumers nor of the smallest steam buyers. Statistics of stocks must, therefore, be commercial consumers' stocks, including retailers.

The total quantity of soft coal in the hands of commercial consumers on Sept. 1, 1922, was between 20,000,000 and 24,000,000 net tons—probably 22,000,000 tons. The quantity on Oct. 1 was about 28,000,000 tons. This does not include coal in the cellars of domestic consumers, concerning which statistics are not available, nor steamship fuel, nor coal on the docks at the head of the Lakes, which is classed as coal in transit.

From the following table and Fig. 1, which shows the same data graphically, the coal history of the past year may be read. In anticipation of the strike, consumers began stocking up in January, and when the storage questionnaire was circulated on March 1, one month before the strike, their replies indicated stocks of 52,500,000 tons. The work of building up reserves continued through March, and from the facts of production it may be safely assumed that by April 1 stocks were at least 63,000,000 tons, although the figure cannot be given accurately because no questionnaires were circulated on that date. Then came the strike. For five and a half months consumption exceeded production and the deficit had to be paid out of stocks. There was much speculation as to how long the reserves would hold out. Early in August the disturbed state of the market plainly showed that the danger line was near. The experience of 1920 had indicated that when stocks fall to 20,000,000 tons,

![Graph showing coal stocks](image)

**FIG. 1—TOTAL COMMERCIAL STOCKS OF BITUMINOUS COAL, OCT. 1, 1918, TO OCT. 1, 1922**

Figures represent million net tons and include coal in hands of railroads, industrial consumers, public utilities and retailers. Coal for steamship fuel, on lake docks, and in transit in 1918 included.

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The surplus in anticipation of a shortage, and all of them tend to draw on their reserves and postpone fresh purchases when coal is scarce and dear. This process no doubt facilities raising a crisis in coal supply, though the extent of the result may not be stated in tons.

**Bituminous Coal in Transit**

"Coal in transit" includes all coal mined and brought to the surface not yet delivered to the retailer or consumer. It resembles all in a pipe line or material in process in a manufacturing plant; it has inventory value but it cannot be fully realized upon without stopping the process. The quantity in transit has never been measured but, it evidently runs into many million tons. It fluctuates within wide limits and may be drawn upon to meet a deficit in supply. During the 1922 strike there was evidently a net reduction of about 11,000,000 tons in the coal in transit, which went into fill the deficit in supply.

There are several items in the aggregate of coal in transit which will be discussed in turn.

No one knows how much coal is moving by rail or water at any given time. There is some evidence that normally it is something like the total output of the two weeks immediately preceding. If so, the quantity en route on March 1, 1922, would be 23,000,000 tons and the quantity en route on Sept. 1, 1922, 14,000,000 tons. The difference—5,000,000 tons—would have gone to fill the deficit. However far from the mark the factor of two weeks may be, it is clear that here is a source capable of supplying some millions of tons in the event of a suspension of production. Failure to recognize this fact led to much less training about the wastage of consumers' stocks last summer.

Coal at the Lake Docks is considered as in transit because most of it cannot be shipped away from the docks before it reaches the consumer. It is the largest factor in the fuel reserve of Western Mines, the Dakotas and northern Illinois. In March 1 and Sept. 1, 1921, stocks on the docks decreased from 3,000,000 to 200,000 tons. The difference, 1,000,000 tons, must be in correct consumption during the period of the strike. In the month of September receipts by the Lake operators at far removed shipments that their stocks increased to 1,581,000 tons on Oct. 1. In spite of the increase the stocks are lower than at the corresponding season of any year covered by the published record. In comparison with 1921, when stocks were unusually heavy, they show a decrease of about 7,000,000 tons. The following statistics are supplied by courtesy of the Northwestern Coal Dock Operators' Association:

**Bituminous Coal Stocks at Upper Lake Docks**

<table>
<thead>
<tr>
<th>Week ended</th>
<th>Unbilled</th>
<th>Equivalent</th>
<th>Bituminous</th>
<th>In Tons</th>
</tr>
</thead>
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<tr>
<td>March 4, 1922</td>
<td>14,126</td>
<td>700,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 8 (back)</td>
<td>30,250</td>
<td>1,530,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>August 19 (lowest)</td>
<td>412</td>
<td>20,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>September 2</td>
<td>559</td>
<td>27,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>October 1</td>
<td>1,535</td>
<td>77,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The number of bituminous operators who store their product is very small, but is apparently increasing. A careful inquiry by the Geological Survey last March, before the strike began, showed a total of 753,000 net tons in producers' storage. Of this 502,000 tons was at or near mines in southern Illinois, central Pennsylvania, West Virginia (particularly Logan County), eastern Kentucky, Virginia, Tennessee and Alabama. The remainder—251,000 tons—was stored in yards at intermediate points.
Illinois and Indiana Producers Decline Invitation to Cut Domestic Prices

Chicago, Ill., Nov. 6.—The conferences in Chicago last week which Fuel Distributor Conrad Spens held with both Illinois and Indiana coal producers did not produce quite the effect Mr. Spens hoped for. His suggestion that lump prices be dropped from $5@$5.50 down to about $4 was refused frankly by the Indiana men who declared they could not agree to such a thing for fear Federal Judge Anderson in Indiana will swoop down on them again for price fixing. Illinois men made no written answer but are giving Mr. Spens the unmistakable impression that they cannot agree to reduce prices a bit. However the continuance of warm weather which followed the public announcement that Mr. Spens was trying to cut prices so softened the domestic demand that there were signs of sharp quotations in the Midwest markets. The principal southern Illinois producers stuck to their previous lump price of $5.50, central Illinois did its best to stay above $4.75 and Indiana coals that had been selling for $5 and $5.50 were held right there, with only occasional variations.

The whole Midwest is counting on a cold snap to remedy the present strained situation.

When Mr. Spens suggested that reducing the price from $5.50 to $4 would be a satisfactory thing for the producers of the Midwest region to do, the general reply was that since mine costs had mounted 50 per cent or more with the 50 per cent or greater drop in car supply, domestic sizes were the only salvation of the coal business. If it costs almost $4 today to produce a ton of coal in Illinois, and more than half the coal produced is screenings and must be sold as a fuel at $2@$2.25 and advanced to Mr. Spens as obvious that a maximum of $4 could not be fixed for lump or the business of coal mining would collapse amid a large puff of bug dust.

When the point was raised that West Virginia had cut the price from $7.50 to $6, thus apparently arguing that Western mining companies should effect a similar reduction, there was no hesitancy in asking if Illinois and Indiana coals are now to be penalized for not setting their prices up to $7.50 at the end of the strike. A hint that Mr. Spens has power to shut off car supply to recalcitrant Western mines and can permit amenable West Virginia mines to have enough cars to flood the West with competitive coal did not scare the Westerners. The attitude of many of them was: “We’re ready to do battle in the courts any time cars are cut off, and anyway West Virginia coal can’t possibly flood the West with coal even if it got all the cars in the United States.” Mr. Spens could not set a minimum price, so the operators would not set a maximum.

While the conferences at Chicago bred little ill feeling, thanks to Mr. Spens’ tact and good judgment, they did not make much progress and it is understood among Western coal men that the Fuel Distributor is disappointed. The feeling among them is that a good solid cold snap would go a long way toward relieving the tension.

Expert observers feel that Mr. Spens’ activity at Chicago will have a wholesome effect. It at least gave the government a chance to indicate that it can take a hand if prices do any ground and lofty tumbling, and this is expected to have a restraining influence even if a cold snap comes down and sets the domestic market all agog.

Washington, D. C., Nov. 2.—Results of a conference between Federal Fuel Distributor C. E. Spens and a delegation of coal operators from the northern West Virginia bituminous field, at which a reduction of $1.25 per ton in the maximum price of domestic coals mined in this field was arranged, are given in the following statement, issued today by Mr. Spens:

“A conference was held in Washington, Nov. 2, between the coal operators from the northern W. Va. coal field, which includes the Fairmont district, and the Federal Fuel Distributor, to discuss the question of maximum prices f.o.b. at mines on prepared sizes of bituminous coal for household purposes.

“The operators signified their willingness not to exceed a maximum f.o.b. price at mines of $4.50 per ton. Previous prices having ranged as high as $5.75 per ton, the new basis, therefore, constitutes a reduction in the previous maximum figure of $1.25 per ton. This arrangement was naturally established by the operators in the northern West Virginia field in recognition of the present emergency and to assist the Federal Fuel Distributor in the accomplishment of the purposes of the act establishing this office.”

Spens Urges Anthracite Producers to Help In Elimination of Speculation

Producers of anthracite have been requested by Federal Fuel Distributor C. E. Spens to market their coal only through legitimate trade channels, in order to eliminate intermediate speculation, which has tended to increase unduly the price of hard coal in some sections. Mr. Spens’ communication, addressed to all hard-coal operators, under date of Nov. 4, is as follows:

Complaints are reaching the Federal Fuel Distributor from a great many sources that higher fuel prices prevail there than those already agreed upon with the Fair Practices Commission of Pennsylvania as basic mine prices are being based on antediluvian coal, and investigation has developed that this is due in great part to the employment of too many intermediate dealers between the producer and the consumer.

The condition of trade can hardly be surmounted by the producers themselves, by confining their sales to legitimate wholesalers to legitimate retailers, and to legitimate consumers.

In view of the current “normal” level of domestic prices and the intense demand due to anticipated reduced production, “intermediate speculation” savor of cronyism, and the Federal Fuel Distributor invites the co-operation of all producers, to the end that the activities of this parasite on normal exchange may be more quickly eliminated or at least be reduced to a minimum.

The continuance of such practices reflects on the entire anthracite industry, which is most unfortunate, since we have a great deal of the representation of that industry in all walks of life, with all interests in a splendid manner in coping with the present emergency.

Blast Enombs 90 Miners at Spangler, Pa.

An explosion in the Reilly Mine of the Reilly Coal Co., at Spangler, Pa., early Monday morning, Nov. 6, caught between ninety and one hundred miners who had gone to their work shortly before. The extent of the explosion has not yet been determined, but at the office of the company, it was said its effect was “pretty bad.”

The mine rescue section of the Bureau of Mines at Pittsburgh ordered a rescue car to proceed to the mine without delay. Another car, which is now in New York State, also was ordered to Spangler.

The Reilly Mine is in a shaft some 200 feet deep, and normally employs about 120 men. It is owned by the Joseph H. Reilly Coal Co., of Philadelphia, and produces about 135,000 tons a year.

Bituminous Operators About to Draft Suggestions to Coal Commission

A draft of the suggestions which the National Coal Association will make to the President’s coal commission as to the scope of its work will be submitted to the committee today by J. C. Tilford, who is to be called on to testify before the commission, according to statement to be released in Washington, Nov. 9. While no information is available as to the specific form in which the committee’s work will be conducted, it is known that they will ask only for the consideration of the broad questions involved rather than the presentation of detailed matters, which otherwise would consume more time than is available.

The members of Mr. Brandt’s committee are J. G. Bradley, L. W. Galbraith, Joseph Gallagher, H. N. Taylor, George Harrington and E. F. Malvern.

The anthracite operators have as yet made no formal reply to the request of the coal commission for recommendations, although it is understood they are considering the matter and may make a reply to the commission on this subject.
Federal Income Tax Returns in Relation to
Investigation of Operators' Profits

The suggestion in the law creating the Bureau of Internal Revenue that the coal operators pay an additional amount equal to the difference between the "fair market value" at March 1, 1913, and the "market price" if the property was acquired prior to that date. The 1912 law places a maximum tax of 2.5 per cent on capital gains.

Under the 1912 tax law dividends received were taxable at the rate of 20 per cent. The 1916 law taxed dividends in the manner when received or ordered to be paid. The 1916 and the 1917 laws both specifically attempted to tax stock dividends, if paid out of surplus and not distributed subsequently to 1913. The 1917 law taxed them at the rate of 6 per cent in the year when earned, or in the second year at the rate of 2 per cent. Under the present law the dividends received by corporations are not subject to income tax.

Allowance for Depreciation Allowed in 1916 Law

The 1909 law did not allow deductions for depletion. With the passage of the 1913 law recognition was given in part only to the loss to the mining company by reason of the mining out of the mineral, and deduction for depletion was allowed "not to exceed 5 per cent of the gross value at the mine of the output for the year." With the 1916 law full recognition is given to the right to depletion allowances based on cost or the fair market value at March 1, 1913. It is a fact that because of the low tax rate under the 1916 laws the trouble over the expense item in the 1914 laws specied operators took advantage of the privilege of placing a value on their mineral at 1913 and continued to make deductions on the basis of cost. With the high rates under the Income and Excess Profits Tax laws of 1917 an additional number of taxpayers accepted the opportunity to revalue, but because of the difficulty of finding a basis on which real values could be proved many have not yet obtained the values to which they may be entitled. In the period preceding 1913 few coal properties changed hands, and not until the acceptance by the Internal Revenue Bureau of the principle of fixing values on the principle of the "present value of eventual earnings" has it been possible to gain much from this provision.

There seems to have been no doubt as to the right of the taxpayer to amortize the cost of obtaining a lease under the new owners prior to 1912 and the question was not decided by the courts. The Internal Revenue Bureau held that the "leashold" on 1912. The question of whether the leasehold as to the lessee of the leases of articles 1 and 2, in the letters of the government authorizing them to be paid, while the taxpayer agrees to pay the lessee in such amount as shall be agreed upon. To arrive at a reasonable value of the property the courts required it to be treated as an leasehold. To arrive at a reasonable value the courts required it to be treated as an leasehold.
Production
and the
Market

Weekly Review

Despite steadily increasing production the spot market indicates signs of firmness. Current offerings are being absorbed quietly and as production is now above current consumption it is apparent that the general run of consumers are accumulating reserves. Because of contract and railroad requirements the meager car supply permits little increase in the volume of spot coal and the gradual re-entry of buyers has further checked the descent of prices.

Coal Age Index of spot bituminous prices was 344 on Nov. 6, as compared with 346 on the previous Monday. This corresponds to an average mine price of $4.16, a decline of only 3c. in the week as compared with a drop of 7c. in the previous week and 19c. in the seven-day period just preceding. High-grade coals are scarce and prices are firmly held.

Present Situation a Reversal of 1917 and 1920

Market conditions are the easiest in the North Atlantic and New England section. The situation today is just the reverse of 1917 and of 1920, when Eastern industrial activity taxed rail facilities to the utmost to provide much-needed fuel. Eastern coal stocks are not heavy but there has been such an influx of British fuel and the coastwise trade has been so active that this market is comparatively weak.

Heavy Lake shipments and a healthy Western demand have resulted in congestion at the various gateways. An embargo on the westward movement of C. & O. coals, which lasted for a week, failed to clear this congestion, but instead choked mine sidings with the current week’s loads which could not find a ready market in the East. Movement through the Cincinnati gateway is now stupendous, but the three carriers are hard pressed for cars because of the slow return of empties.

Domestic demand is still the most attractive for Middle Western fields. So much prepared coal is being made that the resultant sizes are a drag on the market. Ohio’s law fixing a maximum price on coals mined and sold within that state caused such a heavy movement to other markets that the fuel authorities called a conference of producers last week to remedy the situation. Although no formal announcement was made following the meeting it is understood that the operators promised their co-operation in providing tonnage within the state, thereby avoiding the necessity of longer hauls from other producing fields.

The Northwestern territory will need approximately 3,000,000 additional tons of Lake coal before the close of navigation. With dumpings at the lower ports being maintained at their present rate it is expected that this program will be accomplished. All-rail coal from Indiana, Illinois, etc., will of course be drawn on more heavily for this section during the winter than in normal times. Federal Fuel Distributors Spence believes that by Nov. 15 the peak of the autumn movement of grain and other commodities will have passed, thus releasing more transportation for coal.

Many buyers are relying on the close of the Lake season to release a flood of coal and weaken the prices. It is not unlikely, however, that their entry into the spot market will come too late.
market at one time will offset any temporary market condition. Retail demand for anthracite is pressing. Dealers are
holding in their deliveries and are urging consumers to accept substitute fuels, at least for immediate needs. The Lake program is being given preference, but this measure must be supplemented by a considerable all-
round movement to safeguard the Northwest's requirements this winter. Dumpage at Buffalo last week were
84,200 net tons, as compared with 120,500 tons in the preceding week. High independent quotations are now
rarely heard, as dealers hesitate to pass on excessive pressures to their customers.

The steam sizes of anthracite are still heavy, although buckwheat is better taken than the shortage in
domestic grades. Rice and barley are still soft and pressure, wherever possible, are running these coals to
storage.

BITUMINOUS

Preliminary returns on coal production in the week ended Nov. 4 indicate a total of 12,800,000 net tons of which
about 10,700,000 tons of bituminous coal and 1,500,000
tons is anthracite," says the Geological Survey. "Revised
estimates for the fourth week of October show 10,681,000
tons of bituminous coal and 1,773,000 tons of anthracite.
Thus a slight increase in the total coal raised is shown for
the present week as compared with the week before.

"The increased rate of production during the past three
weeks is due principally to improvement in transportation,
which is reflected in the reports on operating conditions
summarized in this review and also by revised figures of
loading for the week Oct. 23-28, which show that following
the Monday-to-Tuesday drop the rate of loading declined
here from Tuesday to Friday than in earlier weeks."

Despite reassuring statements from the Department of
Commerce and from the Federal Fuel Distributor, repre-
sentatives of the public utilities contend that the coal situa-
tion, so far as their plants are concerned, is getting worse
instead of better. The figures of the American Railroad
Association also are attacked as being inaccurate. The
belief held in public-utility circles is that there are duplica-
tions in the figures as to car loadings. While the utilities
are hampered by fixed incomes in bidding for coal against
manufacturers, they believe nothing short of the re-establish-
ment of priority No. 2 will enable them to build up the
reserves necessary to carry them through the winter.

Eastern and Middle Western utilities have been asked to
await the closing of the Lakes before attempting to build

<table>
<thead>
<tr>
<th>Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines</th>
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<tbody>
<tr>
<td><strong>Low Volatile, Eastern</strong></td>
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<tr>
<td><strong>Market</strong></td>
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<tr>
<td>Pittsburgh</td>
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<td>Scranton</td>
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<td>New York</td>
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<table>
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<th><strong>High Volatile, Eastern</strong></th>
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<table>
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<th><strong>South and Southwest</strong></th>
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</tr>
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<td>Big Seam</td>
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</tr>
<tr>
<td>Short</td>
</tr>
<tr>
<td>Lignite</td>
</tr>
<tr>
<td>Illinois</td>
</tr>
<tr>
<td>Kansas</td>
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</table>

*Gross tons, F.O.B. vessel, Hampton Roads
*Advances over previous week shown in heavy type, declines in lighter type.
curtailing the chances of the public utilities to obtain preserved sufficient to insure the proper margin of safety.

All-rail shipments to New England declined to 2,830 cars during the week ended Oct. 28 as compared with 3,002 cars in the preceding week. Strenuous efforts are necessary in places as competition as competition from the eastern trade is very keen.

Hampton Roads dumpings were 214,874 net tons during the week ended Nov. 2, the lowest since early last January and 80,000 tons less than in the previous week. Only at the C. & O. piers registered any gain in dumpings. Tugboat prices are weak but the meager offerings have prevented much of a drop.

During October 2,688,024 net tons of soft coal and 287,744 tons of anthracite passed through the "Soo." Back supplies of bituminous are piling up as consumers are slow to place orders. The southern end of the track territory is being canvassed actively by all-rail shippers who seek an immediate outlet for their tonnage. Some mines, produced in an effort to meet the domestic demand.

**ANTHRACITE**

Production of anthracite was reduced by the continuance of holidays during the last two weeks. The output for the week ended Oct. 28 was 1,773,900 tons and for last week approximately 1,768,000 tons.

Domestic demand is pressing and dealers make only partial deliveries, urging consumers to use substitute fuels wherever possible. Every effort is being made to push the Lake program but it is apparent that considerable all-rail tonnage will have to be shipped in the fall to meet the northeastern winter requirements.

**COKE**

Production of bituminous coke was 225,000 net tons during the week ended Oct. 28 as compared with 198,000 tons in the preceding week. The principal movement was in the Connellsville region. That market has remained in strength and some last quarter brilliance has been somewhat diminished. It appears satisfied with the recorded decline in price and more of them are processing for the balance of the year.
Foreign Market
And Export News

British Prices Gain Strength. Output Makes New Record: French Market Improves

Recent production of British coal has continued to be on a satisfactory market. Black coal supplies increasing, with a comparatively easy outlet. The output of the Sarre mines in August was 1,019,000 metric tons, with stocks at the end of that month amounting to 545,000 tons. In August, 187,000 tons were sent to Germany.

The French Higher Railway Board has decided in the general revision of railway rates will have to keep within a maximum limit of three times the pre-war transportation costs. At the same time it fixed May 1, 1929, as the latest date by which the revision should be completed. Coal rates will, of course, be included in the general revision of the schedule.

Hampton Roads Pier Situation

<table>
<thead>
<tr>
<th>Week Ended</th>
<th>Oct. 26</th>
<th>Nov. 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>N &amp; W Pier, Lambert's Point</td>
<td>937</td>
<td>521</td>
</tr>
<tr>
<td>Cars on hand</td>
<td>60,322</td>
<td>32,791</td>
</tr>
<tr>
<td>Cars on dock</td>
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<td>6,117</td>
</tr>
<tr>
<td>Tonnage waiting</td>
<td>13,875</td>
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</tr>
<tr>
<td>Cars on hand, O'Henry Bros., Barnegat Point</td>
<td>725</td>
<td>723</td>
</tr>
<tr>
<td>Cars on dock</td>
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<tr>
<td>Tonnage waiting</td>
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<tr>
<td>Tonnage waiting, 6 &amp; 4 O'C</td>
<td>7,319</td>
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<tr>
<td>Cars on hand, Commercial News</td>
<td>348</td>
<td>422</td>
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<tr>
<td>Cars on dock A</td>
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</tr>
<tr>
<td>Cars on dock B</td>
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<td>40,887</td>
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<tr>
<td>Total</td>
<td>250</td>
<td>1,470</td>
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</table>

Hampton Roads Supplies Dwindle

Short supplies, with extremely dull business, featured the week at Hampton Roads. Stocks were dwindling to the lowest point in the year while dumpings were also at a low ebb.

The low supply narrowed the price range and put temporary strength in the market. The tonnage awaiting cargo cleared the level of stocks at the pier.

The steamship Arcadia cleared for Casco during the week with 3,956 tons cargo.

Coal Paragraphs from Foreign Lands

Company — Ruhr production was 1,990,000 metric tons during the week ended Oct. 21, according to a cable from Coal Age, as compared with 1,972,000 tons in the previous week.

BELGIUM. The coal market is still very firm. Consignments are in full swing for domestic consumption. Sized kinds and anthracite are high and difficult to obtain. Industrial sorts find a ready sale either to the home iron and steel works or for export. Much feeling has been aroused in industrial circles by a decision of the Joint Committee to raise miners’ wages by 8 per cent. The owners have announced a corresponding advance in the price of Belgian coal. While German coal supplied under the Treaty of Versailles has been increased in price by about 10 francs for all qualities.

COAL AGE  Vol. 22, No. 19

Current Quotations British Coal f.o.b.

<table>
<thead>
<tr>
<th>Port, Gross Tons</th>
<th>f.o.b. London</th>
<th>f.o.b. Antwerp</th>
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<td>Liverpool</td>
<td>13s. 6d.</td>
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<td>Stockport</td>
<td>13s. 6d.</td>
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<td>Darlington</td>
<td>13s. 6d.</td>
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<td>Leeds</td>
<td>13s. 6d.</td>
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Current Quotations British Coal f.o.b.

### Imports of Coal and Coke

<table>
<thead>
<tr>
<th>Gross Tons</th>
<th>Sept. 1921</th>
<th>Sept. 1922</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>137</td>
<td>17,234</td>
</tr>
<tr>
<td>Bituminous</td>
<td>117,272</td>
<td>1,133,188</td>
</tr>
<tr>
<td>Inland Coke</td>
<td>856</td>
<td>511,650</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1,395</td>
<td>950,037</td>
</tr>
<tr>
<td>Canada</td>
<td>84,466</td>
<td>93,367</td>
</tr>
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<td>Australia</td>
<td>7,280</td>
<td>28,950</td>
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Pier and Bunker Prices, Gross Tons

<table>
<thead>
<tr>
<th>PIER</th>
<th>Oct. 28</th>
<th>Nov. 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pool 9, New York</td>
<td>5.75</td>
<td>5.75</td>
</tr>
<tr>
<td>Pool 10, New York</td>
<td>5.75</td>
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<td>Pool 11, New York</td>
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<td>Pool 17, New York</td>
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### BUNKERS

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<th>Oct. 28</th>
<th>Nov. 4</th>
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<tbody>
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<td>Pool 9, New York</td>
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<td>Pool 16, New York</td>
<td>5.75</td>
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<tr>
<td>Pool 17, New York</td>
<td>5.75</td>
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### Coke

Coke prices were:

- 1.450
- 3.423
Firmness Pervades Market

Due to Meager Car Supply

Big Buyers Prevent Further Price Slump—Receipts Readily Absorbed,
Though Average Consumer Bides Time — High-Grade Coals, Now Scarce, May Disappear with Seasonal Weather.

Extremely poor car supply kept the market firm last week. Big buyers are all that hold prices from slumping further. The light receipts are, however, absorbed with but little difficulty, but the average consumer is content to rest on his oars. Some of them have accumulated sufficient reserves to enable them to await heavier receipts, which it is felt will soften the spot market.

High-grade coals are very scarce. Any seasonable weather will hasten their disappearance from the market. Southern coals are moving in slowly and British receipts are now only occasional. Much complaint is heard from the mines over poor commercial loading time, while railroad fuel loadings are being given preferential car supply, it is asserted.

PHILADELPHIA

The consumer continues to be perfectly satisfied under present conditions, while the producer complains that the limited production makes mining extremely expensive at present prices.

Everyone still talks of shortage of cars, although some roads take exception to this statement, and maintain that the market is being well taken care of. The transportation lines point out that they are carrying the heaviest tonnage of general freight for many years, and that coal shippers cannot expect to get all the cars.

The big buyers continue to be the railroads, steel plants and power concerns, and it is this buying that is keeping the market up. Quite a few of the private plants have already accumulated supplies in excess of normal, although the railroads are much behind.

The best market has been in the high-grade coals, with Pool 1 very scarce. While Pools 9 and 71 are in better volume the prices at this time are inclined to become a trifle more firm.

The steamship Nordfjord cleared for Havana last week, the first cargo in some time.

NEW YORK

There has been a slight improvement in the Titelwater market and more activity exists in the line trade. At times the improvement has been reflected in the quotations but the market is still spotty.

Buyers showed a little more interest but were cautious about placing orders. In some quarters quiet buying is reported which has been spread over considerable territory. In this manner it is thought many consumers are better prepared for the fall price than its general known. The railroads have taken good care of themselves, contracts being reported under $3 for assigned cars.

There were at the local terminals on Nov. 2, 1,480 cars of coal, nearly all of Pools 9 and 10. This was approximately 500 cars less than there was on hand the first day of the week.

Firmness in the demand from New England for Pennsylvania coals after strong efforts made to regain some of the business lost to Southern coals during the strike. In this market Southern coals are being received in smaller quantities while British coals are arriving only occasionally.

Pittsburgh gas run of mine was quoted locally $4.50@$4.75, and lump, $5.50@$5.25 early in the week. Other quotations included Shamwauk district around $3.25; Allegheny Valley, $3.30; B. R. & P., $3.25; Westmoreland gas, $4.15; Westmoreland black, $3.75, and Broad Top smokeless, $4.50@$4.75.

CENTRAL PENNSYLVANIA

The car shortage is becoming more acute as cars are being diverted to the hard-coal regions. In many instances, even box cars are being sent east. On the other hand, but little coal is bought, the market being exceedingly dull. The output during the week ended Oct. 27 was 18,885 cars, against 20,249 for the week previous. At some places mines were without cars all week and in order to keep the men busy, large quantities of anthracite were being stored.

The lower grades are selling at $3@$3.25, while Pool 10, which is extensively mined, ranges $3.25@$3.60; Pool 9, $2.50@$2.64, and Pool 71, $4@$4.75.

UPPER POTOMAC

Conditions in the Upper Potomac more nearly approximate normal in so far as production is concerned. In the George Field report the strike in certain sections such as Frostburg and Lompton are still holding out in the hope of forcing a recognition of the union. In neither region is the demand particularly stiff.

BAITMORE

The striking feature of the market continues to be the light demand and the holding of the old prices. This is made quite plain when it is pointed out that the average spot price of all grades of soft coal at the end of September was around $3, while the present price averages $1.50 lower. There is enough coal at present to go around in easy fashion despite the poor run of cars, which has now been a feature for several weeks.

Some increased demand is noted from retail dealers who are persuading housewives that they must burn soft coal in light of anthracite. This element of demand has been quite firm but has had any material effect on the price list, which is as low as it has been for a number of weeks past. The importation of English coal is not brisk at this point.

FAIRMONT

Transportation conditions appear to be improving slightly yet mines are hardly getting more than 25 per cent car supply, with those having railroad fuel contracts being given the preference. Lessened movement in Western markets because of additional embargoes only forced more tonnage to the East coast. A lot of coal in the Allegheny district has been consigned to Western points except by way of the Charleston gateway and those over the K. & M.

SALT LAKE CITY

Operators indicated by the district grand jury last week have appeared in court and given bonds. Individuals indicted are all well-known in the industry. There is practically no public interest in the proceedings.

West

DENVER

The lack of production in Colorado, due to car shortage and railroad unavailability during the week ended Oct. 27, necessitated further reduction in operations here, which are now estimated at 47 per cent or 87,600 tons. Mine disability for that period was only at the rate of 915 tons. Losses of production on account of no rails or 2,873 tons. The actual production amounted to 78.4 per cent at 118,147 tons.

In spite of the car shortage, production in Colorado from Jan. 1 to Sept. 30, 1922 shows an increase of 557,106 tons over the same period in 1921, there being 618,151 tons of coal mined and 54,701 tons of coal delivered. The consumption of coal has been softer and the demand somewhat less. Of the few consumers are ready to buy.

KANSAS CITY

Warm weather has no effect on coal sales for fall grades. Kansas and Missouri buyers are at the present and it is understood that there are 400 cars of coal on this territory.

Retail demand has diminished along with the wholesale, but buyers are still eager and demand for coal is up well when supplied, with prices unchanged.
Anthracite

Operators Booked Way Ahead:
Receipts Decline in East

Retailers able to fill only part of urgent demand—Lake business—Independent coal offered freely, but dealers are backward in ordering it.

Producers are heavily booked ahead. Eastern receipts are so low that retailers are unable to fill more than a partial portion of their urgent consumer demand. Lake business is given as the reason for the decline in Eastern movement. During October 392,100 tons cleared from Buffalo, but the movement is now declining.

Independent coal is more freely offered, but dealers are slow to place orders for the high-priced tonnage. Substitute fuels are not finding a ready market, thereby adding to the volume of unlisted anthracite business on retail books. Buckwheat is in somewhat better call, but other steam grades are slow and companies are still running to storage.

NEW YORK

There is an urgent domestic demand. Dealers—wholesale and retail—are being prodded for delivery with the result that producers nearly without exception, are heavily booked ahead.

Price to remain for several weeks. The sluggishness of the market continues. Sales are being made at wholesale prices even when producers are selling at wholesale prices even when producers are willing to accept coal in cash.

State Fuel Administrator Waddill issued an order on Oct. 27 and until further notice all coal, above and subst., while stopped at the railroad station for delivery to dealers in Greater New York, or arriving here at the dealer's store, shall be charged at established rates and delivery in any reasonable time. Orders to deliver must be received from dealers by noon of next day.

Prices are steady at $12.50 per ton. Quality is about the same as during the summer.

PHILADELPHIA

The amount of coal delivered here since last week is the same as last week and the grade of coal is the same or better. Dealers have been haunched up with business and the dealers have been bringing up prices at the furnace.

There have been instances of local where retail men have actually closed their doors against would-be purchasers.

There is just the slightest hope that relief will be forthcoming a little earlier than Dec. 1, which latter date has been the usual time for the speeding up of deliveries by the producers. Many dealers are already taking in a little bituminous coal, as well as coke, and an even larger number have purchased a car or two of buckwheat. The consumer, however, when he is confronted with the fact that there is a shortage of anthracite now intimate that it is artificial and that everything will be alright soon.

Steam coal is little changed, although buckwheat may be said to have made some gains. Rice and barley are plentiful, and all sizes continue to be sold off company prices.

BOSTON

Householders are still proceeding comfortably on the assumption that somehow they will have enough coal to keep them warm through the winter. Receipts are discouragingly low, especially with the small companies, although the largest companies have not been able to make one-ton deliveries on more than a fourth of their orders and are wondering what will be the outcome.

At wholesale coal lags notably. A suspension of miners' holidays is one cause, and a developing car shortage is another.

BUFFALO

The supply is coming in so slowly that consumers are in despair. Dealers are wondering how they are going to stand the pressure when cold weather sets in.

Lake movement is rather light although for October the loading was 25,000 tons v. 24,100 tons in Oct. Last week loadings were 34,200 tons, of which 97,400 were for Chicago on freight from Lake, 93,000 for Milwaukee and Green Bay, and 56,000 for Illinois.

COKE

CONNELSVILLE

The market is fully as strong as a week ago, from the price viewpoint, and a close analysis might show it a little stronger. In this trade coke, on track and requiring to be moved, is at about $7.50, while for shipment over a few days or more the market is steady at $8.

Current buying appears to be light, while production has been increasing continuously. Prevention of further strikes means more coke, and a number of furnaces concluding to buy to the end of the year on the drop from $12 to $8, not waiting for any further decline, and insuring themselves against an advance in December, which might occur on account of railroads being affected by bad weather.

The pig iron market is very dull and it seems improbable that any more idle furnaces will go into blast in the near future. Furnaces consider $8 altogether too high for coke, when they can buy it cheaply in selling, and have to make iron on old orders at considerably less. Foundry coke remains at $10 to $11, with only a moderate demand.

The Courier reports production during the week ended Oct. 28 at 109,110 tons by the furnace ovens and 50,670 tons by the merchant ovens, a total of 159,780 tons, an increase of 13,000 tons.

UNIONTOWN

Clearing up of congestion at the Lakes together with a railroad jam in the Eastern market were responsible for the strengthening in the Eastern and Lakes market this week in the Connelsville region. As soon as the jam at the Lakes was relieved buyers there commenced sending orders into the region.

Foundry coke moved strongly, and the price has tended to absorb much of the surplus furnace tonnage to the point now where coke is again becoming scarce. On top of that is renewal of contract negotiations, the first of any importance this year, indicating that some furnaces at least prefer to have their fuel supplies come in regularly than to take chances on a temporary advantage in special supplies.

Steam coal is quoted at $3@$3.50 and byproduct, $3.50@$3.75.

The strike situation remains unchanged. The union is continuing the erection of barracks at the various coke plants replacing the tents occupied by strikers during the summer.

BUFFALO

Coke is not active so far as the big smelting trade is concerned and is quoted by jobbers at $10@$10.50 for foundry, $8.25@$8.75 for furnace and $7.50@$7.75 for old grades. The big byproduct plants are increasing their own activity on account of the domestic demand, selling their screened product at $12 at the ovens.
And Now Domestic Sizes

Lose All Their Buoyancy

Producers Decline to Drop Prices but
Demand Slacks in Hope That Spens
Will Lower Market—Nut and Egg

Are Suffering with Screenings.

The main struggle going on all last week in this region was to prevent the slump of prices on domestic sizes. It cannot be denied that demand for domestic egg and nut and even for lump slacked off noticeably after Fuel Distributor Spens' visit to the Illinois and Indiana producers Monday and Tuesday, Oct. 30 and 31. He asked that domestic prices be cut. The producers of both states declined, but the market sagged anyway and the only thing expected to save it was a cold wind from the North.

Steam demand continued to be absent. Almost every car of screenings that was not shipped under an ironclad contract had to be forced. Southern Illinois sank as low as $2.25 when it had to go on the open market though a good deal was shipped at as high as $3 on contract. Car supply did not improve in any field but the weakening of the market made it impossible, for the first time, for some of the fields to use all the cars that were allotted them.

Practically all the business the Western Kentucky field gets is day-to-day trade, which is unsatisfactory. Lump there is quoted at $4.50 @ $5.25 but there is shaving of the price occasionally to get all the output started away from the mines. In eastern Kentucky a few big buyers, concluding that Jan. 1 will see the market upset, are beginning to contract for the entire output of certain operations from now until April 1, at a figure a little above the present mine run market.

Chicago and Midwest

Up to the end of the week the principal Franklin County producers published no concessions on their lump price of $5.50. Central Illinois lump ranged $4.50-$4.90 whereas some of it had previously sold a little above $5, and Standard district lump had held steady at $4.75. Indiana lump maintained its level of the week before.

Egg and nut sizes weakened some and screenings continued to be a sodden drug on the market.

A small volume of Pocahontas kept reaching here at 6@6.25 and enough hard coal was in the market to supply a part of the demand, though most of this anthracite, as usual this year, is shipped here by one concern. Old line company mine prices on the larger sizes range $6.92@$8.25 but occasional shipments of independent coal averaged around $12.50-$13 with an offer on a small quantity now and then running much higher.

Trade in everything has been getting lighter day by day for the entire week. The coal fraternity is still watching the Northwest skyline and the weather reports for hopeful signs of frost and coal such as drifted down into Utah and Wyoming. When it comes, they say, the abnormal coal situation will remedy itself in large measure.

ST. LOUIS

Buying of both steam and domestic is practically at a standstill. Contracts are being held up and almost no coal is moving except that which is forced in anticipation of lower prices. Dealers have a pretense of standing and transit and are afraid of being caught in the event of a decrease. This same condition applies to the country.

A summing up of coal men's opinions here is that a price on southern Illinois domestic size will be somewhere around $4.25-$4.50. This would mean a cut of up to $1.25 under present prices. Figureing the Ohio and Reading basis, Mt. Olive field contracts for country shipments would be about $4 and for St. Louis shipments would range about $3. This is almost impossible. Stating the proposed reduction in the price of southern Illinois, would be $1.50 under southern Illinois, which would be about $3 for domestic sizes.

Recent prices, Nov. 1, for sideway delivery, were: Standard, $8.75; Mt. Olive, $7.90; Carterville, $9.50; Anthracite, $15.50; Coke, $12.50; Smokeless, $14.

Anthracite receipts recently cumulated show up to Sept. 30, 3,000 tons were shipped to St. Louis; 1,900 tons were delivered Oct. 7 and 3,000 tons ended Oct. 14.

WESTERN KENTUCKY

The field is getting a slightly better coal market, and part in part to short hauls, cars getting back to mines more rapidly, a dozen or so factors that are being made to slightly disabled equipment more readily now that the railroad shops are speeding up.

October car supply can already be better than 66 per cent on the L & N, and about 34 per cent on the L & N. The was a better showing than in September. Production has been maintained on car-supply basis.

It is reported that some western Kentucky production has been loaded out by water to Memphis and Southern river points, by loading barges one-third to one-half full, and using light draft towboats. With a very poor runs of water in the Ohio, river movement has been necessarily small.

General prices appear to be a little weaker though best coals have held their own.

SOUTHERN ILLINOIS

Continued mild weather has prevented the speculative buying that was expected about this time. While lump and egg from the Carterville field is moving fairly well, nut coal and screenings some of the utility, and some screenings are carrying no bills. The tendency to put off buying until something definite is known as to what the Government is going to do about prices.

In the Mt. Olive district there has been a surplus of all kinds of coal the past week. One reason that domestic coal does not move is an account of hopper-bottom cars. Steam is unusually slow. The Chicago market for this coal has been easy and very little is moving to Omaha and Kansas City, with the situation of the Standard field is bad. Screenings are down to $1.25, while 2-in. lump has dropped from 3.75@$4 to $3.25 and the steam nut has gone as low as $2.50.

Railroad tonnage out of both the Mt. Olive and Standard fields is fairly good. Mt. Olive district screenings are holding at $1.50-$1.75, while Carterville are down to $2.50. There have been occasional breaks in the prices of other sizes, but as a coal the Carterville and Mt. Olive fields are maintaining their domestic prices pretty well.

Movement of coal out of the Standard field has been extremely bad account of embargoes. The railroads are evenly divided on the two and they just put the coal on a side track and there it stays.

LOUISVILLE

A considerable volume of day-to-day business is being done in the open business where dealers are given instructions to ship all they can secure at bottom prices. It is reported that there has been a small amount of the local market has been placed a few contracts for production of mines, or part production, to April of next year. Some producers are unwilling to contract as they are in higher market and market prices are very uncertain concerning the market from January forward.

Some coal men at the present time are arguing that this may create a big demand, and that prices will jump fast, and that another mixed coal railroads will be able to take more. Lake movement steps it will form present shipments to the Lake to help for the business, and will result in much higher rates. peeled the mines of the important district have of coal, although car loadings on the St. Louis, railroads will go on a long way toward exaggerating industrial demands. Low rates on the St. Louis coal, on hand and only about half loaded cars of rail supply. Undoubtedly more are coming in, but the nature of this paper is everything but everything.
Last-Minute Lake Business
Checks Declining Prices

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EASTERN OHIO

Operations during the week ended
Coal were scale diminished by car
charge. Output was less than any
year, being only 18,000,000 tons
sent to 24,000 or about
7 percent of rated capacity. Produc-
tion of all grades for the five
weeks of the calendar was sub-
tantially equivalent to the
24,000,000 tons of the
first week in September. In
the calendar the output
of the first five weeks of the
month was up 12 percent.

PICTURE BOOK

Receipts at the lower docks are
averaging around 2,000 cars per day
and landings around 2,500 cars daily.
The railroads had 8,871 cars at the
Lake front on Nov. 1 and 4,800 cars
in transit.

CLEVELAND

The market has turned definitely up-
ward. Demand for industrial fuel is
stronger than for some months. There
is still no sign of buying for stock piles,
however. That hand-to-mouth buying
still prevails is evident from the fact
that dealers report numerous pressing
inquiries for delivery within 24 or 48
hours. Such prompt delivery is diffi-
cult to obtain and as a consequence
consumers are beginning to realize
that they have stayed out of the market
too long.
The car supply is still scarce and
much Ohio coal has been going out of
the state because of the low fixed prices.
As a result of the intervention by
Federal authorities, Ohio operators
have agreed to load more fuel
for consumers within the state in
return for the assurance of more cars.
The approach of cold weather, however,
is expected to increase the demand
sufficiently to keep the market strong.
Prices are up on an average of 50c.
A ton for most grades over two weeks
ago. A 10-in. is bringing $1.75
against $1.25 two weeks before. No. 8
slack is quoted at $3.50. Middle
district mine run is quoted at a range of
$3.50–$3.75; screenings are $3.50–
$3.75.
Up to Nov. 1 a total of 14,000,000
tons of coal had been sent by Lake to the
Northwest. This compares with 20,000,-
000 tons to Nov. 1 in 1921. It is
expected that at least 3,000,000 and
4,000,000 tons more will be shipped.

PITTSBURGH

Coal prices on the whole are decidedly
higher than a week ago and the market
in general may be said to have advanced
about 25c., with the exception of domestic lump to $4.50, ruling earlier in September. In
the West Virginia system it is suggested
that the winter attitude on other grades is
due to the dominance made on domestic
lump and that supplies continue far below
capacity, but are as good as at any time
recently. There is a heavy movement
in Lake coal with some purchases being
made in the trade appears to be well
taken care of as to current consumption.
There have not been any disposition
to discount coal at this time.

BUFFALO

Some shippers call the prices a little
stiffer, some do not. It all depends on
the temper of the consumer. At the
same time the buying is fairly good.
The number of sellers has increased
considerably of late, here at least, and
that gives the consumer the upper hand.
Bad storms will, no doubt, stiffen up
coal prices, but more cars will put the
prices down. It is a stand-off which
idea is to prevail. Only scarcity of
cars is keeping prices up at $4.50.
While there does not seem to be much
coal moving that has not been sold,
if shipments fail to come in the
consumer will pay more for a quick ship-
ment. Northern coal is quoted $4.75
for Youghiogheny gas lump; $4.75
for Pittsburgh and No. 8 steam lump;
$4@$4.50 for Allegheny Valley and all
mine run; $3.25@$3.50 for slack. To
this add $2.25 per ton for Pomona
$2.25 to other coals to cover freight.

COLUMBUS

With comparatively warm weather
still continuing there is a slight rece-
sion in the domestic trade and prices
have fallen slightly. Western stocks have been gradually increased
during the past few weeks and some
are not buying any more coal until they
have disposed of what they have on
hand.
Retail prices are steady at former
levels. Hocking lump is not plentiful
as a large part is still going out of
the state. West Virginia grades are self-
quoted at around $10 delivered and Pem-
hontas even higher.
Steam trade is rather good. Prices
at the mines are firm at state fuel ad-
ministration levels with $7.50 the usual
figure. Screening is selling slightly
lower than the levels provided by the
administration.

DETOIT

With moderate temperatures
continuing, buyers are expressing
the degree of interest that jobbers believe is
necessary. Bituminous coal is coming
into Detroit in moderate supply, but
the quantity arriving apparently just
about equals the current sales in the
hand-to-mouth system of buying.
Most of the receipts are coming from
mines in Ohio. Hocking lump and egg
are quoted $5.50 @ $5.85; mine run is
$1.75 and egg are $3.75 and
with the price of rum. The
quarter lump from the Fairmont
district is offered at $4.50; mine run, $4;
slack, $3.50. Pittsburgh No. 8
is quoted $4.50; mine run is quoted at $4.50; mine run, $3.40. Four-inch domestic lump
from West Virginia or Kentucky is
held at $3.55, with egg at about
the same price; mine run and slack are $4.
No improvement in movement has been
noticed. The demand for anthra-
cite supply. Shipments are equal
to perhaps one-third of the normal
daily requirements.

NORTHERN PANHANDLE

Mines were somewhat handicapped
by the difficulty of getting coal through
the Holloway yards of the B. & O. but
with other outlets available Western
prices are firm. Northern shipments were
affected to the same extent as in other
regions of northern West Virginia.
Although the demand for steam coal
is not particularly keen, yet buying is
on a somewhat larger scale than it has been recently.
Dull Market May Precede Storm When Cold Comes

Bituminous Demand Is Just as Soft as Weather—Prices Weaken in Spots—Only 9% Is for Hard Coal—All-rail Competition Causes Concern.

Soft weather prevailing for more than a week is depressing the market and even though receipts from the Lakes are not tremendous, yet soft coal continues to pile up on the docks with consequent worry on the part of dock men and some shaving of prices here and there to move it. This is not true of hard coal, however. The demand in most quarters has grown stiffer as the days pass and prices, especially at Duluth, show an upward tendency. As much as $1 has been added on all sizes above buckwheat, which, as usual, is a drug. In Milwaukee the increase has not made any progress.

The volume of rail coal going into the Northwest is worrying many dock men. Illinois and Indiana mines are shipping steadily into southern sections of this territory, finding there a chance to expand a steam market that is almost dead in their own states. On the whole the situation is quite unsatisfactory for everybody concerned.

DULUTH

Anthracite is by far the most prominent feature here. With the advent of cold weather there was a general rush of hurry-up orders which has increased until by now dealers are at their wits end and are supplying lots of one and two tons. Two companies have advanced the price of anthracite $1 at the dock. Others may follow suit at once. Egg is selling at $13.50, nut at $14.50, stove at $17.75. pea at $12 and buckwheat remains at $7.50 as before.

A firmer trend is noticed in bituminous prices, but there has been no upward change as yet, with the exception that the 25c. differential between Hocking and other soft coals has been eliminated.

Forty-four cargoes arrived during the week, of which seven were anthracite. On the way from lower ports are twenty-four of which four are hard coal. Vessel owners here have given assurance that there will be sufficient bottoms to carry all available supplies until freeze-up.

Official figures have not been released, but it is estimated that 1,600,000 tons were brought up during October. The majority of this was bituminous. According to C. P. White, federal administrator for the Northwest, this section will receive plenty of soft coal, but will only get about 30 per cent of needed anthracite by water.

Dock men here fear they are losing lower state customers to Illinois rail coal shippers.

MILWAUKEE

Mild weather has a soothing effect on the market. Demand is only fair, and there is an absence of concern as to the winter's fuel supply, notwithstanding disturbing newspaper reports predicting a big anthracite shortage. Reports of reduced prices in the Ohio and Pennsylvania tend to check buying of soft coal to some extent.

The yards are filling up with soft coal under heavy receipts by Lake. Coal will have to move to the interior much faster than it has if room is to be provided for the final rush before the close of navigation. Anthracite is coming slowly, and it is evident that dealers are wary about stocking up at present prices. There has been no change in prices of either coal or coke. Any raise in prices is bound to be scrutinized very closely by the state marketing commission.

October receipts by Lake, not including carferry receipts, aggregate 141,414 tons of anthracite, and 654,345 tons of soft coal, making the season's receipts 142,114 tons of the former, and 1,945,300 tons of the latter. Last year the receipts during the same period aggregated 855,780 tons of anthracite, and 2,519,716 tons of soft coal.

MINNEAPOLIS

The fall situation is a contest of endurance, with buyers holding out as long as they dare, and seemingly a great deal longer than usual would dictate. The buyers have forced various concessions in prices on soft coals, both dock and all-rail even though the volume of fuel available or in prospect does not equal the implied requirements.

If the prolonged endurance test works out to the advantage of the buyer again this year, it will be obvious that the wholesale trade will have a difficult task ahead of market coal in normal seasons—if there is ever to be such a period again. Buyers were in two or three endurec tests and feel their ability to overcome any situation that they may encounter.

There is left only about three weeks of navigation on the Great Lakes, and despite the excellent tonnage moved to the docks, the output for the season shows a sharp decline. Even after deducting the carry-over of last spring and figuring the tonnage consumed during the year, the present season's totals are low. On any reasonable comparison of the two seasons the present winter will not have enough coal. And the chances are that the buyers will have to be filled out with all-rail coal. Doubtless there will be a somewhat what better showing from the Illinois mines than a year ago, but the tonnage will have to be filled out with all-rail coal.

New England

Buying Falls off Again;
Spot Prices Are Uncertain

Little Interest Evinced in Current Market—Wide Variation in Quotations and Only Scattered Tonnages Placed at Lowest Figure—Consumers Supplied in Advance.

Buying has again dropped off. There is so little interest in the current market that it is hard to say for just what prices spot coal is selling. Pocahontas and New River are being offered all the way from $8.50 down to $7.20 on cars, Boston or Providence, for inland delivery, but even at the lower figure only scattering tonnages are being placed.

The smaller consumers entered the market for moderate purchases ten days or so ago, but, having arranged for their requirements for the balance of the calendar year, they see no reason for buying still further in advance. The larger users have comfortable reserves, due chiefly to heavy receipts of British coal, and apparently there is no disposition even to sound the present market.

At the Virginia terminals a few cargoes are received, but the great bulk of coal is coming in on early contracts. Most of the agents have not seen any of the harvest, but so far as reported their efforts showed only small results. In every case the expected tonnage in price and quantity was not realized.

The anthracite tonnages are being held at $6.75-$7 per ton. The coal yard at the Hampton Roads port was not reduced, nor is it likely to be cut down much, if at all, despite the decline in demand. All the coal yard sorts have decreased in demand at this port, but probably will not be cut down as much as at the iron and party stores. Too many of last year's invention of better coal was done in.

The trade all along Eastern coast has a nervous look about it. The trade all along Eastern coast has a nervous look about it. The trade all along Eastern coast has a nervous look about it. The trade all along Eastern coast has a nervous look about it. The trade all along Eastern coast has a nervous look about it.
Cincinnati Gateway

Indecision Is Outstanding

Feature of Spotty Market

No Notable Price Concessions with Lifting of C. & O. Embargo—Recen-
tly movement of Inland—Great Movement of Loads, but Return of Empties Falls Behind.

The lifting of the embargo which the C. & O. enforced during the week ended Oct. 31 brought about another spotty market that has been more largely marked with indigestion than prices concessions. Evidences of coming drop in prices can be observed in rejections of coal shipped through the Cincinnati gateway to the steel interests in the neighborhood of Chi-
tago as well as the industrial centers around Detroit and Toledo.

Car movement over the Ohio River bridge has again climbed to stupen-
dous figures although the superin-
tendent of terminals here pointedly remarks that there has not been a corresponding return of the empties.

All three of the coal carriers using the New River Coal Company as a connecting point are in distress through lack of motive power and shortage of cars. Most of the Hazard and Harlan mines report that they are lucky to get 1 to 2 days supply of cars.

HIGH-VOLATILE FIELDS

KANAWHA

An embargo imposed by the C. & O. on the outward movement of Kanawha coal during the first two weeks of October forced the Kanawha market to the barest minimum during the last week of October. The entire product of this field found its way into Eastern markets where there was no competition of any nature and to which previous buyers of Kanawha coal had been making efforts to ship. The Kanawha mines have not been in a position to force reductions in the sales price. The Kanawha coal trade is not sufficient to close a price of $4 in Western mar-
kets, with which Kanawha coal is competing a process which production of smaller coal had been making more effort to ship. The Kanawha mines have the effect of forcing Eastern research in Western markets.

LOW-VOLATILE FIELDS

NEW RIVER AND THE GULF

Embargoes diverting coal from northern channels and a shortage of cars dis-
arranged conditions in the New River field during the last week of October. All C. & O. coal was being moved eastward, with regard to whether it was produced in high or low volatile terri-

tory. The additional coal shipped to Tidewater and Eastern territory in gen-
eral only caused further price reces-
sions. In the Kanawha No. 1 mine run, particularly at Tidewater, was little more than $3. Lump could have been sold at $6@$6.50 but most of the smoke-
less coal producers have adjusted their points to between $5.00 and $5.50.

POCAHONTAS AND TUG RIVER

Inasmuch as the N. & W. was the only real handling much smokeless coal for a point west of the Ohio River, the Poca-
hontas region handled only a very small amount of coal in Western markets than other smokeless regions. The N. & W. was not encouraging a large Western movement owing to the difficulty in the return of empties. The average mine is working two days a week. A run of mine for Western deliv-
ery is bringing about $6 a ton as against $2.50 at Tug River. Lump coal being quoted at $5 a ton although produce could secure practically any price they desired if so disposed.

Tug River production is being grad-
vably increased, but still ex-
in the road to producing a great deal of difficulty in acquiring all the cars they need. The New River Coal Company is sent to the West, and hence only a certain class of equipment can be used. The demand for hypersthene is fairly active. High low runs commands a price of $8 which

that Thacker mines were able to pro-
duce 40 per cent of normal. Prices for hipping in the West are fully $1 a ton higher than in the East, and the entire product continues to move westward.

NORTHEASTERN KENTUCKY

Production in the section supplied by the C. & O. was upset during the clos-
ing week of October. The embargo bottled up most of the product since nearly all of it is being sold at the Lakes and in Inland West markets. Mine run, so far as Western delivery is concerned, is commanding a price of $3.75@$4.15 but the same coal in the East cannot be sold for more than $3.75@$4.00.

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is equal to that for egg and lump under 

the fair price agreement. Very little of the product is going east.

CINCINNATI

Lake buying has again tapered off here which, with a foreshortening of the steel demand has cut the high prices a bit for byproduct and gas coals as well as the steam and splits. The former still maintain the premium that has been exacted for months past though there is not the big spread between the two prices that there was two or three weeks ago. Domestic buy-
ing has been a little lighter and the production greater which has inclined the values toward softness—nothing radical, but lacking into the territory.

There has been virtually little change in the smokeless lines. The movement westward has been better because of the release of some of the smaller sized equipment that has been kept at the tonnage.

This with the easing off of the Eastern markets has caused more attention to be paid to the Inland trade and it would surprise few operators how close to the close of fresh water carriage—to see a much heavier movement to the customers whose orders have been booked for many weeks by both Pocahontas and New River concerns.

The retail situation shows no change. Figures are still under those promul-
gated by the Ohio Fuel Administrator with some shipments without selling as low as $6.75 delivered.

South

BIRMINGHAM

Each succeeding week seems to in-
crease the gravity of the car situation, the shortage being reflected in a de-
crease of 10,000 tons for the week of Oct. 28, as compared with the previous period. Official figures show that only 45 per cent of the equip-
ment was delivered, and indications point to a less favorable show-
ing for the current week, mines located on the L. & L. being very hard hit.

There has been no improvement in the situation and the coal trade is weaker, if anything, consumers showing little interest in acquiring a supply fair in advance of requirements. The supply available. The price at Tidewater is about in line with the volume of de-
mand except as regards the lower grades, there being some surplus of Big Sam and the black. Quotations on bet-
ter grades are holding up well.

Dealers in domestic coal are showing considerable concern in regard to win-
ter supply. Numbers of yards are prac-
tically empty, with very small calls of coal expected to any extent as yet, and the slow movement and curtailed production is being viewed with alarm. A few days of sustained cold weather would wipe out the supply on local yards.

VIRGINIA

Production losses in one section are being offset by gains in other parts of the state, especially on the Southern producing a much larger percentage than usual. The total output is still adhering to about 65 per cent of normal. Production is hardly more than equal to the demands and the price at Tidewater is little more than $3 a ton. Falling prices have had a tendency to elimi-
nate some of the smaller mines.
**News Items From Field and Trade**

**ALABAMA**

It is reported that hydraulic mining of coal is being actively pursued at Fort Dade, near Sharps, by the Alco Coal Co. Arrangements have been made to transmit electricity to the site from the Alabama Power Co. to the hydraulic plant, which will permit the use of high-pressure water to wash away the surface of the land and expose a deposit of coal, which is to be mined by the new method, according to an official of the company. This is the first line of its kind that has been applied to coal mining. The Alco company has a deposit of 200,000 tons on its new plant.

Eckard Ramsey, vice-president and chief engineer of the Pratt Consolidated Coal Co., in a recent report to the directors, has stated the company's net loss of $100,000 as a nucleus for the erection of an engineering hall at Auburn, Ala., with connections with the Alabama Polytechnic Institute. It is announced that the cost of the hall will be approximately $300,000. The building will be named The Ramsey Hall of Engineering.

**COLORADO**

The office of the secretary of state has supplied the following report of the Colorado Coal Co., represented by George C. Mandly, Denver, Colorado. The company has lost several million tons of coal since federation, and is now engaged in a survey of the coal regions. The losses are attributed to the high price of coal and the approach of the railroad to the eastern markets. The company has also secured the rights to several mines on the east side of the Uinta mountains, which it intends to develop in the near future.

**ILLINOIS**

Much interest has again been centered in the regions around Franklin and Williamson counties by the rumors that the Big Muddy mine was abandoned so that large coal can be dug up from the Mississippi and shipped by water to pits at St. Louis. The rumor has been denied by the company, which says that the coal fields are in the Mattoon Illinois mining district and that it is uneconomic to ship coal by water from these fields.

Robert Gage, a resident of Harris, has been named a member of the Illinois miners' examining board by Governor Smith. The board, which meets monthly in Springfield and visits mining districts, is charged with the duty of determining the suitability of mineral deposits and reporting on their value.

Fred W. Price, mine manager at the mine of the Tamaron & Little Muddy Coal Co., was seriously burned in a gas explosion recently. He was hurriedly given medical aid and is expected to recover.

The Consolidated Coal Co., St. Louis, has three mines in the Mt. Olive field of one of the most productive - the St. Louis, and two steam shovels will soon be installed. The company has been making steady progress in its operations and is expected to produce large amounts of coal in the near future.

The Rex Coal Mining Co., of Rock Island, has been incorporated with capital of $25,000 and work has been begun on a mine. The company is under control of H. E. Hinsley, president, and C. W. Kuehner, vice-president, and A. W. Hinsley, treasurer. The mine will be worked as a single application to coal has been tried. The Alco company has a deposit of 200,000 tons on its new plant.

**MICHIGAN**

Michigan's recently enacted coal control law has not yet been put into effect because the supply of coal is ample and the market firm. The law, however, may be enforced at any time in the future. Coal miners are demanding an increase in wages and are prepared to strike if their demands are not met.

**MINNESOTA**

The mining of coal in the Nyanza area has been authorized, and a shipment of 15,000 tons of coal has been made to the town of Nyanza. The mining company has been incorporated with capital of $125,000, and the coal will be shipped to the town of Nyanza, where it is needed for the construction of a new power plant.

**MISSOURI**

Fred Harper and associates of Oxon have sunk a slope mine at Onarga, two miles southeast of Onarga. The mine is expected to produce large amounts of coal in the near future. The company has also secured the rights to several mines on the east side of the Uinta mountains, which it intends to develop in the near future.

The Charles Schuler Coal Co., of Davenport, has completed its operations on a daily capacity of 5,000 tons. The mine is located at a depth of 50 feet and has a daily capacity of 5,000 tons. The company is operating on a daily basis of 5,000 tons.

**NEVADA**

**NEW MEXICO**

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**NEW YORK**

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**OHIO**

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**OKLAHOMA**

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**OREGON**

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**RHODE ISLAND**

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**SOUTH DAKOTA**

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**TEXAS**

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**VERMONT**

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**WASHINGTON**

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**WEST VIRGINIA**

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**WISCONSIN**

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**WYOMING**

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NEW MEXICO

The St. Louis, Rocky Mountains & Pacific City Oil Co., a subsidiary of the Standard Oil Co., has sold its interests in New Mexico to the Texaco Refining & Transport Co. for $1,920,000. The Texaco company will operate the stations and lease the remainder of the properties to the Standard Oil Co.

NEW YORK

The National Exposition of Power and Mechanical Engineering was held at the Grand Central Palace in New York City from Jan. 7 to Feb. 4, 1922. The exposition was successful and only the highly specialized exhibits were not as popular as expected.

The Maker Cottages Co. of Canada has announced the acquisition of the Canadian High Quality Cottages and Houses Co., which produces high-quality cottages and houses.

The Pennsylvania Coal Co. has acquired the assets of the Pennsylvania Coal Co. Liquidating Trust. The Pennsylvania Coal Co. will continue to operate the assets of the trust.

OKLAHOMA

There have been busy for many months pressing up the coal lands lying northwest of the railroads and west of Welch and Bluejacket, and veins have been discovered in the area. One of the veins is a mile long and three feet wide. It is the filling of a coal mine with a deposit of coal estimated to be worth more than $2,000,000. The coal company, which has been working on the mine for several weeks, has just announced the discovery of the vein.

The Pittsburgh-Midway Coal Co. which is operating one steam shovel near Vinita has announced a new development. The company has discovered a vein of coal which it has named the "Midway Vein." The vein is estimated to contain more than a million tons of coal.

Pennsylvania

R. E. Garrett, J. E. Stewart, D. E. Thompson, F. Miller and Charles Behm, members of the management committee of the Bertha Coal Co., Pittsburgh, have just received from the Buckeye Consolidation Co. of that city a letter of intent to purchase all of the stock of the Bertha Coal Co. The Buckeye Consolidation Co. is a holding company for several coal companies in Pennsylvania, Ohio and West Virginia. The company has been engaged in the coal industry for many years and is one of the largest coal companies in the country. The Bertha Coal Co. is one of the largest coal companies in the Pittsburgh district and is one of the oldest companies in the industry.

The Columbus Board of Education has purchased 10,000 tons of coal for the new school buildings to be completed by the fall of 1922. The coal will be delivered in October. The coal was purchased through the offices of Mr. J. E. McElroy, president of the Columbus Board of Education.

The Looney Creek Coal Co., a Kentucky coal company, has opened an office in New York City. The company has been in operation for several years and is one of the largest coal companies in Kentucky. The office will be used for the sale of coal to the southern markets.

Missouri

The West Missouri Power Co. has completed the construction of a new power plant at Fort Scott. The plant will supply electricity to the surrounding area and is expected to be in operation by the end of the year.

Texas

LIEF M. POOL

President Retail Coal Dealers' Association of Texas

LIEF M. POOL, of Greenville, is the new president of the Retail Coal Dealers' Association of Texas. Mr. Pool is a young and progressive retail coal dealer in Greenville, and is taking an active interest in association affairs.
VIRGINIA

The Virginian Railway is ready to proceed with the completion of tracks between the chartered line's present yard at Richmond and its plant at Lynchburg, it has been revealed that the company will spend $3,000,000 and will require two years to build. Sanford & Brooks, of Norfolk and Newport News, George W. Davis, of New York, and J. W. R. Palmers, of Philadelphia, will have charge of the superstructure, while the Bethlehem Steel Co., of Cleveland, will build the structures. The Atlantic, Gulf & Pacific Co., of Norfolk, will do the grading. Plans to build a competing line are modern in the market.

Depression in the coal business was evidenced by the fact that the second quarter of the fiscal year the Norfolk offices of the Wulder Sutherland Corporation, Chester B. Keats, former president of F. S. Smith & Co., handled the business for the corporation.

WEST VIRGINIA

It has been possible to increase production 300,000 tons over that at the present rate of 1,500,000 tons at Coalwood, located in the eastern part of the state, and the increased output will involve an expenditure of over $10,000,000.

The following West Virginia coal corporations have increased their capital stock in the amount of $250,000 or more, as follows: by vote of the board of directors, Virginia Fuel Co., from $250,000 to $700,000; Raleigh and Wyoming Coal Co., from $100,000 to $165,000. The New Republic Coal Co. has been granted authority to increase its capital stock from $250,000 to $500,000.

The plant of the Standard Thermer Coal Co., operating on the Bladen coal field near Westover, took production on Wednesday, the 15th. It is expected that the Adair-Milton company will be ready to receive its 25 per cent of the coal produced in the plant.

The Wheeling Colliery Co., operating near Mop Hoop, is adding new equipment to its machinery in connection with the Fairmont Mining Machinery Co., for a three-track shaker screening outfit, equipped with loading booms.

In line with other improvements being made by the various coal companies, the citizens of Clarksburg, the object of which is to increase the production of coal on the Grand mine, a bar screen outfit is being added to the equipment at the company's plant.

The Kanzler Co., of Clarksburg, that company having launched the Gilco Coal Co., the offices of which are at Lincroft, New Jersey, and in connection with the Fairmont Mining Machinery Co., has increased its capital stock from $50,000 to $200,000. The Standard Thermer Coal Co., at Wheeling, and the Wheeling Colliery Co. have also increased their capital stock by the same amount.

The Willingham Coal Co., of Clarksburg, that company having launched the Gilco Coal Co., the offices of which are at Lincroft, New Jersey, and in connection with the Fairmont Mining Machinery Co., has increased its capital stock from $50,000 to $200,000. The Standard Thermer Coal Co., at Wheeling, and the Wheeling Colliery Co. have also increased their capital stock by the same amount.

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CANADA

"The coal measures of Vancouver Island" is the subject of a report prepared by Dr. J. D. MacMillan, head of the Department of Mines of the Dominion Government, who has been requested by the legislature to prepare an exposition of the past two years. He is of the opinion that the area of recoverable coal on the island is considerably below what has been estimated. He points out that there are three possible coal horizons in the Nanaimo district, and only one in the Victoria district. He further states that the pre-cognitive or barren formation and disturbed by protrusions of the latter places.

Finding the sale of Welsh coal to be dragging, the Stafford, Ont., City Council, which has a stock of 1,000,000 tons, is afraid that it will not be able to dispose of the coal by January 1. The council has been told by the small coal dealers in the city that in addition to small coal, all the coal dealers are being asked by the coal users to pay a freight charge of 10 cents per ton. The council has been unable to find any coal dealers who are willing to accept the coal at the present prices, and the city council has been forced to increase its own sales price from 15 cents per ton to 35 cents per ton.

The Canadian Coal Co. has been granted authority by the government to increase its capital stock from $90,000 to $150,000.

Dr. W. H. Collins, director of the Geological Survey of Canada, has announced that the company has found that coal mining in Nova Scotia and New Brunswick, reports which were made by the company which was the largest of the important future mining industry, he says.

Window A. Sherman, president of the district, announced that the Mine Workers' association has recently been granted the right to organize a branch of the United Mine Workers' association in the local area.

A special committee has been appointed by the Dominion Government to investigate the mining industry in the Dominion of Canada to further study the means of relieving the mining industry. The committee, headed by Charles Bannwell, the Mining Minister of Mines, chairman, F. C. Lynch, chief of the department, and J. F. LeBlanc, chief of the department, and J. F. Hollings, chairman of the committee, will begin its work on March 31, 1923. The committee will be assisted by the laborer of the country and the mining union of the country.

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The United States Bureau of Mines in the Washington, D.C., office will be opened Nov. 1, 1923, under the direction of the United States Bureau of Mines, with 500 additional workers. The bureau will be opened Nov. 1, 1923, under the direction of the United States Bureau of Mines, with 500 additional workers. The bureau will be opened Nov. 1, 1923, under the direction of the United States Bureau of Mines, with 500 additional workers. The bureau will be opened Nov. 1, 1923, under the direction of the United States Bureau of Mines, with 500 additional workers.

WASHINGTON, D.C.

Hills are requested by the Navy Department for the survey of the site of a new naval air station at Norfolk, Va., at an expenditure of $100,000, provided by the United States Bureau of Mines. The survey will be conducted by the United States Bureau of Mines, with 500 additional workers. The bureau will be opened Nov. 1, 1923, under the direction of the United States Bureau of Mines, with 500 additional workers.
COAL AGE
Vol. 22, No. 19
July 11, 1922
Traffic News

The Pennsylvania Steel, & Western R. R. of Illinois is giving closer to the coal
industry in its reports with its warehouse addresses.

One of the latest features of the New York Central is that the entire
of its railroad track and also

The Canadian Northern and the Grand Trunk have also

The Dark River & Coal Co., Red River

The rate charged between Missoula Junction to Seattle, Wash., was


Sullivan "WH-3" Air Compressors. Sullivan Machinery Co., Chicago, Ill. Bulletin 74-6. 6 x 9 in. Illustrated. Describes the power-driven water valve air compressor, the first stage of which is a three-stage, WH-4, two-stage belt and class

Relays. General Electric Co., Schenectady, N. Y. Bulletin No. 47,666. 28 x 21 in. Illustrated. Covers the operation and general application of relays, with particular consideration to the function of relays for the protection of systems against troubles due to line faults.—Advertiser.

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The Pennsylvania Coal Producers' Association versus the P. C. &


courier-herald.

Federal Fuel Control Notes

A conference of Fuel Administrator chiefs from western states held at Columbus Nov. 1 for the purpose of the Ohio, in view of the fact that a new prepared size table of the higher

The Valley of Accurate Traffic, the special counsel of J. B. Hooks, Governor of Ohio, held at Columbus Nov. 1, for the purpose of the Ohio, in view of the fact that a new prepared size table of the higher

Traction Equipment

Method of and Means for Desisting Coal, and the use of coal

Method of and Means for Desisting Coal, and the use of coal

Recent Patents

Method of and Means for Desisting Coal, and the use of coal

Trade Literature

Power Hoe (Improved Drag Scraper). Light Bulb Magazine, Nov. 14, 1921. Vol. 8, No. 4, pp. 21, 6 x 9 in. Illustrated. Describes the power-driven drag scraper. One of the advantages claimed for this machine is economy in the sense that the efficiency at its end is higher, that its working parts are more accessible and that it is less expensive.—Advertiser.

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Oblivity

William S. Putnam, age 35 years, died at Amherst, N. H., Oct. 23. He was born in New York City, and came to Ohio 14 years ago and had been in the coal business since that time.

Byron G. Tigue, pioneer in the coal industry in Chicago, died recently. He was vice-president of the Buckett Coal & Co. Co.

McKim E. Lynn, sales manager for the Cummins Coal Corp., Chicago, Ill., died suddenly at his home on Oct. 29. He was a native of McKeesport, Pa., and the son of a coal operator of western Pennsylvania. He joined the forces of the company nearly 15 years ago and was an ardent supporter of the Ohio coal transportation by water and was a member of the Ohio Valley Improvement Association.

John Reggae Foutz, president and treasurer of Foutz Bros. Gear & Machine Co., Chicago, died recently. He had been all over the country not only for his skill as a gear maker and inventor for transmission and other machinery but for his keen interest in anything that would further efficiency in machine operation.

Coming Meetings

The Illinois Mining Institute will hold its next meeting Dec. 1 and 2 at Urbana, Ill. Secretary, Martin R. Springfield, Ill.

Pittsburgh Wholesale Coal Association will hold its annual meeting Nov. 11, at Pittsburgh, Pa. Secretary, Pittsburgh, Pa.

West Virginia Coal Mining Institute's annual meeting will be held Dec. 16 at the Hotel Commodore, New York City. Secretary, J. H. Boland, New York City.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, Pennsylvania Chamber of Commerce, Pittsburgh, Pa.

National Exposition of Power and Mechanical Equipment will be held at Grand Central Palace, New York City, Dec. 8-18. Secretary, J. H. Boland, Grand Central Palace, New York City.

Canadian Institute of Mining and Metallurgy, annual Western meeting, Nov. 15-17 at Vancouver, B. C. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Can.
Portent of the Report on Coal Stocks

Coal producers need must look deep into the stock report of the Geological Survey last week to find comfort. The consumers are told by their Washington organization, the United States Chamber of Commerce, to consider the soft-coal crisis over and to go into the market for winter supplies. The Chamber says the trouble is over. It is understood that the Interstate Commerce Commission is actively considering the lifting of the service order that gives coal preference and priority in transportation and in the use of cars. For weeks the production of soft coal has been increasing and the price declining. Stocks are now at a point above 35,000,000 tons, sufficient for thirty days on the average.

There are several things that will prevent the coal market from sinking to the deadly monotony of two years ago. One, and the most important, is that these millions of tons of reserves are not equally distributed, even as they have been in normal times in the past. The railroads are particularly short of stocks. Their supply on Oct. 1 is reported as 5,450,000 tons, a 15-day supply, or only half the normal 30-day reserve at this time of the year. Locally this will have an important bearing on the situation as soon as zero weather, long delayed in the northern areas, arrives. Nothing plays hob with coal distribution like confiscation by the railroads when they have to revert to such tactics for protection.

Current market reports record the steady demand for domestic sizes and bear out the conclusion of the Survey that retail dealers have low stocks. For the past month lump coal has been at a premium and the resultant sizes of steam coal are in oversupply. This situation will not be cleared up until industrialists, particularly in the regions adjacent to the mines in the Middle West, take it upon themselves to resume stock-taking. Every indication is that the pressure for domestic coals will continue heavy throughout the winter. Railroad-fuel demands in this territory, however, will curtail the supply of lump that can be applied on this business.

The iron and steel industry, requiring a large volume of special coal and with but half a month's reserve on Oct. 1, which by the way is not far below normal, is working with renewed activity. Though reserves of coal are not dangerously low, the stocks of byproduct coke on hand are reported as but one-fourth those in March and it seems apparent that there is no falling off in this important market. With respect to steam coal New England has been in a comfortable position all year and it is now apparent that the Northwest will have little trouble on that score this winter.

On the whole the feeling of relief that the crisis is past is warranted. A month's average reserve is assurance against a panic market, but it is at least 10,000,000 tons below the normal supply in the hands of consumers at this time of year. Offsetting the inequality of its distribution is the fact that the most distant markets are best supplied, which means that acute local trouble will be largely confined to consumers near the mines and thus able to get coal by rail with only slight delay when storms interfere. Severe weather is inevitable. Industry is gaining in activity. There is no likelihood that the coal market will fall flat this winter. Healthy activity will be better for all than a runaway market.

Making Strikes Unnecessary

With an April strike hanging over its head, the country is told by the United Mine Workers that the causes of strikes lie between the arrogance of mine officials and the refusal of the operators to meet the miners in the negotiation of wage settlements. In the second of its communications to the Coal Commission in answer to a general request for information on the causes of strikes and suggestions for their prevention, the committee of the miners' union urges complete unionization of the coal fields as the only true solution of the coal problem. The miners point out that the coal miner is the best striker in the world and say that they desire not that strikes be made impossible, but unnecessary.

It is not conceivable that the union in presenting these two communications to the commission has any idea that they will be taken seriously. These "releases" are too obviously releases for the press—the idea for support of the press in the suggestion that newspaper reporters be used as investigators is evidence in point. The commission has too potent an opportunity for checking the loose statements of the miners to cause any concern to those who desire that the facts be known.

In respect to the last two general strikes, the commission may conceivably go back behind the record and concern itself with the basic causes: it may not concern itself with the loose assertion that the miners had to strike because they could not learn what wages they would be offered when their contract expired. There is more than the turning of a phrase in the statement of the bituminous-coal operators that abstinence control of mine labor is a prominent factor in general strikes. But then the overlordship of labor exercised by John L. Lewis is more a thing to be settled by the soft-coal operators than otherwise. The solution of the labor problem here is a control of that leadership in the public interest and not its complete elimination. It is furnish to suppose that the union among the colliemen workers can be eliminated.

Since the public, and hence the Coal Commission, is chiefly interested in strikes as they affect the supply and price of coal, local strikes are of minor importance. Every industry that is organized has petty strikes, the building trade being a particular case in point. But

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value at individual mines are summer, and all too frequently these real or imaginary contraventions of the contract between the company and the men. The United Mine Workers are maintaining that the officials of the coal companies are responsible for these outrages. The fact of the matter is that the very nature of the relations between the producing company and the contract miners is such that constant adjustment is required to matters of payment for work. No contract has ever been written that makes provision for every contingency. The foreman who is responsible for results and costs is no more anxious to get the work done as cheaply as possible than is the miner to get all he can for what he does.

We venture to say that the promotion of a miner to foreman changes his viewpoint only and not his human nature. The complaint of the United Mine Workers that petty strikes are solely the result of outrages by the part of miner officials is one-sided statement. It is not borne out by the facts. Time and experience in the coal mines have produced a system of carrying upward the petty troubles between miner and official. It is set forth in the contract, and in most instances conciliation prevents open rupture and public dispute.

Where local strikes become common, as in the Middle West in recent years, there must be some underlying cause beyond the mere personalities of the mine officials. Plainly enough the irresponsibility of the miners toward their contracts has been increasing. There have been patronizing but comparatively rare instances where individual operators have violated the contract by paying miners above the agreed scale of wages. In general, however, it is the union miner who in recent years has shown the greatest contempt for his contract, and until he can be made to respect his obligations in full, and of his convenience, there will be local as well as general strikes.

Investigating Profits of Coal Industry for Last Ten Years

In framing the act under which the coal commissioner is promoting Congress said that the profits of the coal industry for the last ten years should be investigated. The coal industry, particularly the bituminous coal, should be thankful that ten years and not five was specified. On the whole the last five years have been the most profitable ever enjoyed by the coal industry. They have, furthermore, been the last five-year period in which the coal operators had any real idea of costs and profits. Prior to this the war the coal company that had a real set of books on which were charged more than actual out-of-pocket expenses was an exception. Depreciation, and in particular depletion of households, and depreciation were unknown, and, if understood at all, for that reason generally unimportant.

The commissioner has no share in the matter of calculating the profit on the coal companies for a ten-year record, for the law says that it shall be done. The coal companies should be keen on giving that report. They should prepare this report by gulping their books for the entire period of a comparable book, setting up accounts for depletion and depreciation and other contra items for the earlier years. If they find themselves ten years ago in what they were doing on their operations that is a reason for perpetuating the error. That no charge was made for depreciation in the earlier part of that period on the accounts as then kept does not mean that that figure did not exist as a charge.

The auditors and bookkeepers of every company should at once begin a study of the old records and be prepared to give the commission these reports when it calls for them, as it must. To look over the records of the past will cause much painful reminiscing but it were well that the facts be known.

Mine Transportation

As the mine hails lengthen, the business of mining is more and more approaches that of railroading. Those who realize it earliest will profit most from that knowledge. The railroads have failed because they have not been kept in condition. The mines accordingly have suffered a shortage in car supply. Conditions are little better below ground. Car supply at the face is short because the underground railroads have been allowed to run down and are inadequate.

It may yet be that we shall see roads ten and more miles long with separate transportation officials. This arrangement will be the only way of giving transportation its due emphasis. Mines already have hauls four to five miles long; there may be some even longer. As much as ten years back there was a mine in Wyoming having a five-mile haul. There are some in central Pennsylvania equally long. It would be interesting to get figures on this subject.

What is being done to meet these difficult problems? One company, the Cambria Steel Co., has laid 70-lb. rail and introduced a 35-ton locomotive. Another, suddenly waking up to the idea that its transportation problem overshadowed that of mining, replaced its light rail with a railroad of like weight to that of the mine to which reference has been made. Some of the anthracite mines are using limestone ballast. Other companies are introducing a bedding of field stone. Many old stone fences in farming and mining regions have already found their way underground. Track dispatching is being introduced, and cars are being made having spring draft rigging and even axles with spring boxes. Some companies no longer wait till cars are loaded to examine them but keep them under constant inspection. Others follow railroad methods in the inspection and laying off of locomotives. Bonding and feed-wire erection are improving. Tracks are better lined and graded.

About eight years ago at a meeting of the Coal Mining Institute of America someone said something about transportation problems around the mines and a general laugh greeted the suggestion that the mine had any transportation problems of its own apart from railroad transportation. The leading superintendents of today realize that they have a real railroad system underground, and the very recognition of that fact is a cure for many of the mining evils with which they had formerly contended. One superintendent who realized that the main problem of his mine was transportation was able to convert that operation from a dismal failure to a conspicuous success. There is a distinct value in calling a spade a spade. It sometimes solves your problems for you. In some of our mines with insufficient superintendence to call the mine tracks a "railroad" would in a month or two develop an individual known as the "road superintendent" and in a few months later a road that would make haulage both cheaper and more speedy.
Dunmore Breaker Makes A Specialty of Grate or Broken Coal

By DEVER C. ASHMEAD

Kingston, Pa.

Pennsylvania Coal Co.’s Fireproof Preparator—Lump and Steamboat, Still Dry, Are Picked on Table by Sixteen Men—Protection of Rock Chutes—Screen Areas Provided—Clay Pipe for Carrying Fine Coal

At No. 1 colliery of the Pennsylvania Coal Co., Dunmore, Pa., just outside the City of Scranton, a new breaker has been completed, regarding which a preliminary and incomplete description was given in the paper entitled “Advances in the Preparation of Anthracite,” read before the American Institute of Mining and Metallurgical Engineers and appearing in Volume 56 of the Transactions.

Since this paper was written the breaker has been finished. It went into operation on Sept. 11, 1922, at the conclusion of the anthracite mine strike. The building is constructed entirely of steel, concrete and glass. Wood was used only for the lining of the loading pockets and the construction of the jigs. The building is as fireproof as it is possible to make a structure of this kind.

Some features about the building are of considerable interest, differing from those in most of the other breakers in the anthracite field. At this preparator a specialty is made of grate, or broken, coal. The coal is not wetted before it reaches the bull shakers at the top of the breaker but is allowed to pass in a dry condition from the bull shakers to the picking table, where sixteen men carefully remove all loose slate and chip off whatever may be found adhering to the large pieces of coal. Another feature somewhat peculiar to this breaker is that the rock chutes are so designed that only rock less than 8 in. square can travel down them. The miners are not supposed to put in their cars any slate larger than the size specified.

By thus limiting the size of rock that the chutes will handle these transportation ways are considerably reduced in size and can be made less heavy. Furthermore,
small rock can be better inspected than large when it gets to the rock shakers.

The breaker drive is not centered in a single unit but consists of several motors: One of 200 hp. is used to drive the main dragline conveyor and six of 100 hp. actuate the shakers and the lugs. There also are three 25-hp. motors, making a total of 875 hp. installed.

Designed to handle an output of 4,000 tons in eight hours, the breaker has not as yet reached its capacity, but the output during the early part of October ran consistently at about 3,000 tons per day of eight hours. The areas of the shaker sections are as follows: The large coal deck has 90 sq. ft. of screening surface; the grade or broken-coal, 225 sq. ft.; the egg-coal, 689 sq. ft.; the straw-coal, 560 sq. ft.; the chestnut-coal, 648 sq. ft.; the pea-coal, 180 sq. ft.; the No. 1 buckwheat-coal, 180 sq. ft.; the rice-coal, 216 sq. ft., and the barley-coal also 216 sq. ft.

In some places in the breaker the chutes are lined with vitrified clay pipe, and this is applied in an unusual way. In the first place a concrete chute was constructed somewhat larger than the half section of the vitrified clay pipe. The pipe was then installed and grouted into place. A distance of from 1 to 3 in. was left between the joints of the pipe lining.

It is doubtful whether this arrangement will prove satisfactory in practice, as the grout is not as hard as the glazed surface of the pipe. In consequence it is likely to be abraded, and then the pipe will be attacked from the edge, and as a result will wear abnormally.
It would seem that a longer life would be obtained if the sections of the vitrified clay pipe were laid tight against each other. One of the accompanying illustrations shows this pipe and the construction of the chutes. All the boiler coal is weighed by a fuel meter.

The loss of coal from spillage at the average breaker is considerable. When the railroad cars are loaded some coal will inevitably be spilled either over the top of the car or through leaks in its bottom or sides which have not been properly stopped. This coal usually collects on the ground around the loading pockets until it is finally removed by a man with a hand shovel. Ar-

arrangements were made in designing this breaker to avoid this labor. The floors under the loading chutes and the bottom of the breaker have been built of concrete and so arranged that they drain to one point. It is possible, therefore, at this plant to wash all the coal spilled in loading to a tank where the coal settles out of the water and is removed by a dragline conveyor which takes it to the condemned-coal conveyor, whence it is sent through the breaker for retreatment.

One of the accompanying illustrations shows the flow sheet of the Pennsylvania No. 1 breaker. The figure in the accompanying text refer to those on the illustration. When it comes from the mine the coal goes to

CONCRETE CHUTES WITH VITRIFIED-PIPE LINING

Chutes marked with a cross are of vitrified pipe set in a concrete base. The upper surface of one of these pipe chutes can be seen in the lower left-hand corner. Such chutes are not only fireproof but in some degree serve to stiffen the building in which they are used.

NO WASTE OF COAL AT THE LOADING POCKETS

The floor of that section of the breaker is of concrete and so arranged that any coal spilled can be washed in a tank below the track and sent back through the breaker for retreatment.

the foot of the main conveyor. Here the coal is weighed (1) and the mine cars are dumped by means of a steam dump (2). The coal is then taken to the top of the breaker by means of a Wilmot chain conveyor (3) which measures 35 ft. between centers and has 13-in. joint pins. The flights are 5 ft. apart and 4 ft. wide. It has an estimated capacity of 4,000 tons in eight hours.

When the coal leaves the conveyor it is dumped into a chute leading to the three-deck, main, or hull, shakers (4) in the top of the breaker. The lump coal, which includes the steamboat passes to a picking chute (5) and is here picked by sixteen men. The coal is kept dry until it is hand picked. Thus the pickers are aided in distinguishing between slate and coal. The broken and egg coal which is taken from the second and third decks of the main shakers (4) pass directly to Elmore jigs (6 and 7). The rock from these jigs is hand picked to remove coal and bone, the latter being sent to the bone rolls (8), from which the crushed material passes to another shaker (9) which makes egg, stove and two sizes of chestnut coal. The coal from the jigs then passes to the picking floor, where the lower left

DRIVING MECHANISM FOR SHAKES IN SHAKE WHEELS

A flywheel is placed on the driving shaft to effect possible uniform rotational speed.
The cleaned product goes directly to the pockets (10 and 11).

Cleaned lump coal from the picking chute (5) goes through the screen rolls, and then to a set of broken, or grate, and egg shakers (12). Grate coal then passes to a picking chute (13) and unites with the egg coal and passes through the rolls (14). Thence it passes to another set of shakers (15) on which egg, stove, and two sizes of chestnut are made. The egg, stove and chestnut coal then goes to Wilcox jigs. After cleaning the coal in the jigs, it passes from the egg jigs (16) and the stove jigs (17) and is then hand picked, the cleaned product going to the proper pockets (11 and 18). Bone coal recovered in handpicking the grate, egg and stove coal units and goes through rolls (19), the crushed product of which will be carried by the condemned-coal conveyor (29) to the shaker (19).

Cleaned coal from jigs (20 and 21) which treat the two sizes of chestnut coal, after uniting, go to the nut pocket (22). Shaker (9) is so arranged that the bottom deck can be changed to produce pea coal; in that case this size passes to the pea jigs (23), the cleaned product of which will go to the pocket (24).

Rock from the egg and stove jigs (16 and 17) unites and is taken by the egg-and-stove rock conveyor (25) to the egg-and-stove rock shakers (26). Here it is separated, after which the bone is hand picked (27 and 28) from the rock and sent to the grate, egg and stove bone rolls (19), and thence to the condemned-coal conveyor (29). The rock from the chestnut and pea jigs (20, 21 and 23) unites and goes to the chestnut-and-pea rock conveyor (30), thence to a shaker (31), where the fines are removed. The rock then goes to the rock pocket (32) and the fines to the slush tank (33). Instead of sending this rock from the chestnut and pea jigs (20, 21 and 23) to the rock conveyor (30),
Wilmot Jigs

In this battery of jigs, egg stove, chestnut and pea coals are cleaned. The spiral chute to the left conveys the broken coal prepared near the top of the breaker to the pocket near the railroad track. It will be of interest to compare the light, unflammable walls of this breaker with those of the old wooden structures which formerly were all the anthracite region knew. With the old breakers it was difficult to distinguish coal from slate under the unfavorable light conditions obtaining.

however, it can be sent to the chestnut and pea rolls (34), from which the resulting product is sent to the condemned-coal conveyor (29).

All of the fine coal from shakers (9 and 15) unites and passes to shaker (35), where pea, No. 1 buckwheat, rice, barley and slush are separated. The sized coals without further treatment pass directly to their respective pockets (37 and 38), the slush going to the slush dump (39). The barley coal can be sent from the shaker (35) to the barley tank (40) on its way to the pocket (38). All the slush from the Elmore jigs near the top of the breaker and from the Wilmot jigs passes to the slush tank (33).

As already stated, the coal spilled is washed to the track-coal tank (42). All the lip-screen coal (41) is taken to shaker (43) on which it is joined by the track-tank coal. Here the water is separated from it. The coal is then delivered to the condemned-coal conveyor, which takes it back through the breaker for re-treatment.

The buckwheat, rice and barley sizes, instead of going to their respective pockets after being screened...
A coal shaker (35), can be sent to a fuel conveyor (44), which delivers the material to the fuel motor (45); then it is taken by conveyor (46) to the boiler plant.

The old breaker required approximately 150 men to operate it, whereas in the new building only 66 men are required, including all labor. These are divided as follows: 7 diggers, 6 shaker tenders, 16 plate men, 3 scrapers, 1 filler, 18 slate pickers, 1 breaker foreman, 2 carpenters, 1 machinist and 11 loaders. Thus a large saving in labor is afforded, and this economy in itself will give a considerable return on the cost of construction of the new breaker, which is estimated to have been between $800,000 and $900,000.

Every new breaker shows a large saving over previous breakers. This one is certainly no exception to that rule and the saving in this instance would be quite marked were it not for the fact that a special grade of coal is required at this breaker. Except for this it is possible that many of the sixteen plate men now employed might be dispensed with.

Reporting Delays Lowers Production Costs

By GEORGE EDWARDS

An important item of expense in coal-mining operations is delays. It is a common occurrence at the average coal mine for the tipple to be waiting on coal, the main-haulage locomotive standing idle at the main sidetrack, and at other times the gathering locomotives and cars waiting on the main-line locomotive.

The explanation that usually will be given on inquiry is that the delay has lasted only a few minutes. Further questioning brings one no closer to the real trouble.

Disk Fan Actually Made from Metal Disks

A disk fan usually is a machine built up with the aid of rivets. The illustration shows one that actually is made out of two disks by merely cutting the fan radially and pressing into fan blades the sixteen sectors thus formed. The two disks are placed back to back and riveted together, forming a wheel 5 ft. in diameter. The blades overlap one-half their width for their entire length. The bearings are collar oiled and are proof against suction, which sometimes draws out the lubricant.

The fan is made by the Pittsburgh Fan & Manufacturing Co., Bessemer Building, Pittsburgh, Pa.

PRESSED-STEEL DISK FAN

This fan is made by merely cutting and pressing two disks (which have been riveted together) so as to form blades.
Temple Coal Co. Supplements Its Breathing Apparatus With Mask That Absorbs All Poisons in Mine Air

In Devitalized Air Oxygen-Breathing Equipment Alone Can Be Used, but in Many Cases Where a Safety Lamp Will Burn, Work Can Be Done Safely in the Right Kind of Mask

By Dever C. Ashmead

Kingston, Pa.

In PRACTICALLY all parts of the anthracite fields one of the great dangers of mining is from the emission of gas. No matter what ventilating precautions are taken, how completely safety lamps, electric and flame, are furnished, how closely the men are inspected to see if they are carrying matches beyond danger points, or how rigorously the working places themselves are inspected, gas explosions will occur as long as man mines coal.

With the danger of these explosions always in mind coal-company officials in the anthracite region have established rescue stations at the various collieries. One of the most modern and well-equipped of these is that of the Temple Coal Co. at its Mount Lookout Colliery, near Pittston, Pa.

This station has six Gibbs oxygen apparatus, Edison electric lamps, Wolf safety lamps, carbon-monoxide detectors, an oxygen pump and cylinders, a mercury manometer for testing apparatus, a resuscitating device and six Burrell all-service gas masks.

After an explosion of methane, afterdamp is formed, which consists of oxygen, nitrogen, methane, carbon dioxide and carbon monoxide. In many cases enough oxygen is present to support life, but, unfortunately, it is not possible for a man to live in an atmosphere that contains much carbon monoxide. In consequence men who have hitherto engaged in rescue work have had to wear a helmet that would provide them with oxygen and would also exclude from the atmosphere they breathed any carbon monoxide.

After a long series of experiments a chemical known as hopcalite has been discovered that will change carbon monoxide into carbon dioxide. It is used in the all-service gas mask. This chemical, together with charcoal and calcium chloride, is placed in a canister which is shown hanging from the necks of the men in one of the illustrations.

Air is admitted through the bottom of the canister and as it passes through the charcoal it is filtered, the smoke being absorbed with any ammonia gases which it may contain. It then passes through the calcium chloride, which absorbs the moisture, and then through the hopcalite, which changes the carbon monoxide into carbon dioxide. Again the air passes through calcium chloride and then through another layer of charcoal, and then into a timing device. Sufficient hopcalite is provided in the canister to last for two hours.

With each breath the timer is actuated. The breath operates a small valve which revolves an indicator in a clockwise direction around a dial. This action is automatic, the position of the dial indicating the length of time the canister has been used and of course the length of time that canister can be worn before being recharged. Each canister is good for a two-hour period of actual service, whether worn intermittently or continuously.

One important feature is that the air of the mine is dried in the canister and is so deflected that it strikes the lenses of the face mask so that they remain clear under all conditions. This deflection of the dry air against the lenses removes all moisture that might be
of the rescue crew also can use this type of mask in keeping open communications with the oxygen-apparatus squad and the base of operation at the foot of the shaft.

In making preliminary explorations of mine fires it would be quite helpful, for it would permit the superintendent or mine foreman to make his preliminary explorations of the conflagration without exposing himself, as such men too often do, to the danger of carbon-monoxide poisoning.

A few gas masks of this kind kept in the mine might serve pumpmen, stablemen and others well should a fire break out during an off shift when they alone are on duty. It would practically assure their arriving at the surface in condition to report the occurrence of the fire. Another purpose for which it might be valuable is in protecting shotfirers and firebosses from monoxide poisoning. Misfires often occur which set fire to the working places. A gas mask of the all-service type would permit the shotfirers to make explorations in safety despite the heavy smoke that arises from such fires.

**Wages Paid and Selling Price of Coal and Coke in West Virginia**

(Year Ended June 30, 1921)

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<th>County</th>
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<th>Gross Ton Coke</th>
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Keeping the Storage Battery Young and Lively

DANGER OF MANUAL ADJUSTMENT IN CHARGING LEAD BATTERY—DISADVANTAGES OF TRUE CONSTANT-POTENTIAL CHARGING—MODIFIED CONSTANT POTENTIAL WITH 2.6 VOLTS PER CELL AND FIXED SERIES RESISTOR RECOMMENDED FOR LEAD BATTERY

BY M. F. PACKARD
East Pittsburgh, Pa.

Too much emphasis cannot be placed on careful charging, for the life and performance of the storage battery are so largely dependent on the way in which this work is done. Ignorance of the requirements and carelessness in their fulfillment are responsible for most premature battery failures. For this reason this article will discuss the charging problem, indicating the advantages and disadvantages of various methods, so that the one best adapted for a given condition may be selected. Only the vital phases can be discussed and then only briefly, for the subject is a lengthy one.

In charging a lead battery it is of greatest importance to avoid gassing at high charging rates and to keep the cell temperature below 110 deg. F. Until the prescribed finishing rate is reached these requirements are fulfilled by adjusting the charging rate in amperes to a value at all times less than the ampere hours out of the battery. The locomotive should be equipped with a reliable ampere-hour meter, which will indicate the ampere hours out of the battery and be a guide in determining the discharge limit.

The ampere-hour meter is designed to run slow on charge and when used on a lead battery should be adjusted so that about 15 per cent more ampere hours will be returned than were taken out. The ampere-hour efficiency varies somewhat with the battery construction and charging conditions, so it may be found necessary to depart a little from the figure given. The meter may be readily adjusted, however, and a few trials will determine the best setting. The battery-compartment cover must be left open throughout the charge, so that the highly explosive gases that are given off by the battery during part of the charge can escape freely. No lighted tobacco, matches or other exposed fire or sparks should be allowed in the vicinity of the battery while it is being charged.

In the past the charging current has been adjusted quite extensively by hand, but when the charge was thus regulated the battery frequently was damaged severely in consequence of the ignorance or carelessness of the attendant. It is seldom practicable to hold the ampere input equal to the ampere hours out of the battery, as this involves too constant attention, and there are objections to the size of the equipment needed, as will be shown later in discussing constant-potential charging.

The usual procedure is to start the charge at a fixed rate in amperes—termed "the starting rate"—continue at this rate till the battery begins to gas, and then reduce the current to "the finishing rate," which is held to the end of the charge. All locomotive type batteries have these two rates designated and they can be approximated by occasional adjustment. The danger is that the initial rate may be continued after the battery has begun to gas violently. This dislodges the active material and causes overheating, with the destruction of the separator.

The finishing rate of charging may be continued for a reasonable time after the battery is fully charged without causing injury. The charging current is adjusted either by varying a series resistor or the field of the generator. The latter is most economical, but with series resistance less frequent adjustment is needed, as it acts as a ballast and the current may remain fairly constant if the difference between the line and battery voltages is great enough. The approximate cell voltage during a charge by this method is shown in Fig. 1, curve A.

An automatic charging system is greatly to be preferred to one necessitating manual adjustment and, moreover, it is entirely practicable. True constant-potential charging is automatic in so far as regulation of the charging rate is concerned, and with suitable protective apparatus no attention will be needed after the charge is started. The voltage chosen is such that the current will taper with the rising counter electromotive force of the battery and always be approximately equal to the ampere hours out of the battery.

Fig. 2 illustrates what takes place during a charge by this method. This system has several drawbacks which make its use ordinarily impractical. These are: (1) The excessive power that is required in the early stages of charging a completely discharged battery. (This makes both the investment in generating equipment and the demand charges high.) (2) The difficulty in preventing excessive voltage fluctuations and (3) the
COAL

voltage to meet seasonal temperature changes.

The simplest and safest automatic charging system probably is that called the modified constant-potential method. Best results can be obtained with a fairly uniform voltage, but fluctuations are not harmful provided adjustment is based on maximum potential, their only effect being to prolong the time required for the charge. The most suitable potential is 2.6 volts per cell, and this should be provided. A fixed series resistor also is required.

For higher voltages greater resistance must be used, and the time for a complete charge will be correspondingly lengthened. Lower voltages can be utilized, but the objectionable features of the true constant-potential system begin to arise. Typical voltage and current curves for a charge of this nature with a bus potential of approximately 2.6 volts per cell are given in Fig. 1, curves B and C.

It will be observed that the current tapers as in the case of true constant-potential charging, but at no time does it exceed a permissible value. By this method the initial peak is never excessive and the charge is ended at the finishing rate or less. The charging apparatus for any of the tapering-current systems can be made so as to disconnect the battery upon power failure, to re-establish connections upon the return of power and finally open the circuit when a full charge has been given to the battery or accumulator.

The diagram in Fig. 2 illustrates one way of accomplishing this with the modified constant-potential system. A failure of the supply voltage when the battery is being charged will cause the reverse current relay to function, opening the circuit and preventing discharge by breaking the closing coil circuit of the magnetic contactor. Upon the return of power the magnetic contactor will reconnect the battery; its closing coil being energized through the contact of the reverse-current relay, which will be closed by its shunt coil. Upon completion of the charge, as determined by the ampere-hour meter, the circuit breaker will open the circuit, being tripped by its shunt coil, which is energized through the zero contact of the ampere-hour meter.

The circuit breaker will open also in case of any short-circuits that cause overload. When the difference between the line and battery voltages is so great that the time of charging becomes excessive, it is possible to use a two-step resistor and increase the rate during the first part of the charge, automatically reducing it at the correct point by a circuit breaker controlled through an auxiliary contact of the ampere-hour meter.

In cases where a single lead battery is to be charged from a motor-generator set the generator can be designed with a dropping characteristic such that the current will taper essentially as in the modified constant-potential system. Furthermore, the series resistance may be omitted. The disadvantage of this is that it is applicable only to a single battery of fixed capacity and of a given number of cells.

It should be borne in mind that all automatic charging outfits need some adjustment subsequent to installation, as the manufacturer seldom knows the exact voltage conditions or the loss in voltage in the connecting wires. Either resistors are provided with taps to permit slight changes or a certain degree of generator-field adjustment is possible, and a little experimenting will determine what is needed.

What is termed an "equalizing charge" must be given to a lead battery approximately once each week, whatever normal charging method is used. This consists of a prolonged overcharge, disregarding the ampere-hour meter, at a rate preferably about one-half the finishing rate, though if conditions make a reduction impossible, the finishing rate may be used, provided the cell temperature is watched and kept within the permissible limit. The object of this charge is to make up for any deficiency in normal charging caused by inaccuracies in the ampere-hour meter or by peculiarities in the individual cell and to be absolutely certain that all the cells and all the plates in each cell are fully charged.

It is advisable to use one cell of the lead battery as a "pilot cell" as a guide to the condition of the whole. Before discontinuing the equalizing charge all cells of the battery should be gassing freely and evenly and three consecutive half-hour readings should show no increase. Occasionally, at the end of an equalizing charge, a record of the specific gravity of each cell should be taken. A slightly higher final cell voltage is required for equalizing, but usually no special provision need be made, as the lead is small and the natural regulation sufficient. When the straight constant-potential system is used, however, it frequently is impracticable to raise the bus voltage as much as is necessary, in which case the battery must be divided into two groups and a series resistor inserted.

It is sometimes necessary that a battery stand idle for a prolonged period. The simplest way to prevent deterioration is to give it an equalizing charge about once a month and, of course, add water occasionally. If this infrequent charging is impossible it usually is best to dismantle the battery, and instructions to suit the conditions should be obtained from the manufacturer.

CHARGING REQUIREMENTS OF NICKEL-IRON BATTERY

The requirements for charging batteries of the nickel-iron type differ in many respects from those enumerated for the lead battery. On the whole there is much less chance of injuring the battery by improper charging, though the performance and output may be adversely affected if certain precautions are neglected. The charging rate is limited only to that which will not produce a cell temperature in excess of 115 deg. F. or cause frothing at the filler opening. The greater internal loss renders the possibility of overheating much more acute than in the case of the lead battery; therefore the temperature should be carefully watched.
Normal charging for a battery of this type is at constant current, and the value chosen by the manufacturer has been found by experience to give the best results. When that current has been adhered to, practically maximum capacity is obtained and the chance of overheating, with the battery as commonly installed in locomotives, is small. The temperature of a battery will rise during discharge. How much depends on the time of discharge. Consequently it seldom is advisable to start charging just as soon as the locomotive returns to the shed. Before current is fed to it the battery should be permitted to cool.

An ampere-hour meter is about the only convenient guide for determining the state of charge, as readings of the specific gravity of the electrolyte are of no value. The meter should be adjusted to run slow on charge so that about 25 per cent more ampere hours will be returned than were taken out. As in the lead battery, some departure from this value may be advisable.

Should the extent of the previous discharge be unknown the battery may be considered fully charged when the voltage has remained constant for 30 minutes at about 1.9 volts per cell with normal current flowing. The precautions mentioned for the lead battery with respect to ventilation of the compartment and exposed flames should be strictly followed.

The nickel-iron battery will give its best performance if charged at the normal constant-current rate. To obtain a reasonably constant current, without excessive loss, the current flow must be adjusted manually. Practically the only objection to this method, if the precautions mentioned are taken, is the attention required. The danger of overheating is not great, and overcharging is not harmful. The charging rate is satisfactorily adjusted either by varying a series resistor or the field of the charging generator, as in the case of the lead battery. The curve, Fig. 5, shows the variation in terminal voltage for constant-current charging.

**Finishing Current Too Weak to Be Effective.**

Though strictly constant-potential charging without series resistance does not involve as high an initial peak as in the case of the lead battery the tapering of the current to a small value at the end of charge is objectionable. It has been found that the portion of the charge at less than the normal value of current is not sufficiently effective in performing the necessary electro-chemical action to charge the battery completely. The effects are shown by sluggish action and a gradual reduction in the effective discharge voltage. The battery is in no wise harmed by this treatment and may be restored to a healthy condition by means of overcharging and several cycles of normal charge and discharge. The employment of this method is practically precluded by the inefficiency and poor performance of a battery regularly thus charged.

Automatic charging, of course, is very desirable and it is most commonly obtained by practically the same method as that termed "modified constant-potential" in the case of the lead battery. The scheme of connections shown in Fig. 3 applies equally here. The use of a fixed resistor will result, of course, in a tapering charging current and loss of capacity similar to that experienced when true constant-potential charging is employed, but the effect becomes less as the variation in the current from start to finish decreases.

The charging current should average practically normal and the variation will be less as the series resistance and bus voltage per cell are increased. The energy loss is quite appreciable when the resistor is of a value to give satisfactory results. Experience has shown that a battery can be kept up to essentially full capacity if the charging current is not permitted to fall below approximately 80 per cent of normal at the end of charge. The extremes allowable with this method are therefore from 20 per cent above to 20 per cent below the normal rate. This requirement necessitates a line voltage equivalent to about 2.25 volts per cell. The approximate current and cell voltage curves for charging through series resistance with a line voltage of 2.25 volts per cell are shown in Fig. 4. Increasing the line voltage and series resistance is favorable, of course, to the battery performance, but results in greater losses.

This type of battery can also be successfully charged automatically without series resistance from a generator designed with a drooping characteristic produced by the combination of differential series and shunt-field windings. The variation in the charging current from start to finish may be even less than the maximum recommended in the preceding paragraph. Only a single battery of fixed capacity and number of cells can be charged from such a generator, and this is frequently undesirable from the standpoint of both convenience and cost.

The nickel-iron battery may be taken out of service and permitted to stand in any state of charge or discharge without any resulting injury. It is necessary to keep the plates covered to the proper height with electrolyte, and therefore distilled water to replace evaporation must be added occasionally. The battery should be stored in a dry place and will if so services again given a long overcharge after careful inspection of the cells.

An equalizing charge such as that necessary for the lead battery, of course, is never given, but overcharge is often desirable, especially if the normal service the battery is seldom completely discharged. The overcharge should be continued approximately 20 per cent longer than the time required for a complete normal charge and will be most effective if the battery is first completely discharged, even to zero voltage.
Stone Dust, Water and Steam as Means of Protection Against Mine Explosions

A DISCUSSION by a representative body of mine inspectors at the annual meeting of the Mine Inspectors Institute of America this year gave a well-balanced review of the methods to combat the coal-dust hazard now in effect in the United States. There was no consensus of opinion. Most of the men, who spoke from the fullness of their experience with one system or another, agreed that no method was anywhere near 100 per cent perfect, but that as a damper on explosions you and all have a marked effect and each has its place.

Men from both West Virginia and Alabama were strongly in favor of a lavish use of water throughout coal mines from mine opening to face. C. H. Nesbit, of Alabama, past president of the Institute, said that the common method in his state was to wet down mines regularly with water at 80 lb. pressure. Slicing off rocks, timbers, walls and floors, he said, was a most effective way to remove dust, which was the origin of explosions, and that the use of water under pressure undoubtedly prevented much trouble in the mines where the practice is maintained.

V. E. Sullivan, of West Virginia, said that in his state it is standard practice to wash down the main ways thoroughly and to introduce humidified air into the air courses. Results, he said, have been uniformly good. J. H. Haskins, of Illinois, remarked that if any enough volume of water were to be turned loose in the mines in the No. 6 seam in Illinois those mines simply would not be workable. There is too much water there already. He contended that the wetting down plan is not everywhere feasible.

Colorado is a state, said James Dalrymple, chief inspector of that commonwealth, where every imaginable mining problem is encountered and where conditions vary from one extreme to the other, sometimes within a small district. He said the hope is not so much to prevent explosions as it is to prevent coal dust from taking part in them. Naturally complete prevention would be ideal, but no body knows how to achieve that Utopian goal, the next best thing is to render dust as nearly innocuous as possible and then strive to reduce the hazards of the face—the spot which Mr. Dalrymple believes the source of most "blows."

Moist Mine, Not Merely Moist Air, Is Wanted

In his state water is used plentifully in certain mines and an effort is made to most of them to humidify the air to a point somewhere above 90 per cent by introducing exhaust steam. But even this is not a reliable protection, he said. A 100-per cent humidification by steam wouldn't prevent a blast. Hence water is used where practicable. Water conditions are so variable, he said, that he knows of regions where a mine that most pump for dear life to keep its workings dry enough to operate is within 15 miles of a mine so dry that wells driven 2,200 ft. yet not a drop, and water must be hoisted in to make cars at great expense.

It is well known that steam, as a humidifier, is damaging to mine timbers, causing much trouble in certain operations. Mr. Dalrymple said that he has observed that the damage is much less where humidification goes on 24 hours a day than where it is spasmodic. The continual change from wet to dry is far more damaging than constant moisture.

Humidification has no effect whatever as a deterrent after an explosion once has started, according to J. W. Paul, mining engineer at the Bureau of Mines experiment station in Pittsburgh, Pa. He said experiments have clearly proved that 100 per cent humidification is no better in the face of a blast than 65 per cent. Humidification is of real value, however, in a mine, he said, because it offsets evaporation and so keeps the coal dust wet.

Mr. Paul strongly advocated the use of rock dust to stop the force and spread of explosions. He said that from 5 to 8 lb. of pulverized rock is enough to neutralize all the coal dust produced at a working face in each shift and suggested that it would be a good plan to supply each miner with a bag each day containing that quantity. It would take him just about half a minute to toss the rock dust around and coat the ribs and roof with it. By this means not only would safety be increased but a "concreting" effect would be produced, thus greatly improving the illumination of the working place.

"But," added Mr. Paul, "I don't know whether the men would be willing to spend half a minute doing it."

"I know exactly what they'd say in Illinois," contributed Thomas Back, of Peoria, Ill. "They'd say 'Who's gonna pay us for all this extra work?'"

Others surmised that the miners would use the rock dust to tamp shots. If they did, somebody suggested, why wouldn't that produce the same results? The dust would be thoroughly distributed by the shots, thus producing the desired effect. The answer was that if the shot was good, distribution would be poor.

SALT AS A MEDIUM FOR GATHERING MOISTURE

From that point the discussion shifted to the use of salt as a humidifier when used as stemming by shot-firers. James Sherwood, of Kansas, said that at one time he had encouraged the use of it in his region, for he found that great waste piles at salt mines could be obtained at $1 a ton. Unfortunately as soon as the demand for it was noticed by the salt plants the price went out of sight, and it became too expensive for coal mining.

An expert opinion on the use of salt was asked of S. P. Howell, explosives engineer at the Bureau of Mines experiment station in Pittsburgh. Mr. Howell said the salt would stay in the borehole providing the shot performed as it should, thus rendering the salt worthless for the purpose intended. Only windy shots would distribute it around the room. He said, further, that if the salt were tamped in too close to the explosive it would become, at the moment of firing, an ingredient, thus modifying the strength and character of the explosive to such an extent that the miner would never be able to tell how large a charge of explosive he ought to use to bring down the coal.

The success of the Old Ben Coal Corporation in the use of shale dust as a check against explosions was mentioned by W. L. Morgan, who explained how the dust is suspended along roofs of entries in delicately balanced troughs. The air blast traveling ahead of an explosion dumps the dust into the atmosphere, damping out the force and flame of the "blow" with remarkable results. Experience has shown the safety engineer of the Old Ben company that a mine cleaned and watered by the best-known methods is little, if any, safer than one knee-deep in coal dust. Therefore a tremendous effort has been made for years to find ways of checking explosions after they start. The shale dust is the most effective means thus far developed.
Washing Coal in Large Pipe by an Upward Current of Water

SPEED in washing, the use of the pressure of the water delivered to the washer to accomplish the desired results, the expenditure of a minimum of power and a saving in space are all advantages that can be claimed for the Draper coal washer, manufactured by the Rhondda Engineering & Mining Co., Ltd., of Bridgend, Glamorganshire, South Wales.

The illustration, Fig. 1, shows a washer capable of cleaning 10 tons of coal per hour. It occupies a floor space of only 5 ft. 3 in. x 2 ft., the height being 8 ft. 9 in. If a machine of this kind will do the work claimed for it, it will be unnecessary to build the big structures that have been erected in the past for the washing of coal. A washery then will be a far less conspicuous building.

The unwashed coal is delivered, as shown in Fig. 2, into a small hopper at the top of the washer unit. It falls into another hopper and is met by a current of water striving to escape. This water has entered by a water inlet below the second hopper. The coal is not heavy enough to resist the current, and it is swept into a chute with and by the escaping water. The sulphur and slate, however, can make their way despite the outrush of water and they fall into an 11-in. cast-iron pipe below the real washing section. It drops onto a valve which is built like one of the revolving doors which are installed at large buildings to keep out the cold air and yet admit visitors. This four-winged butterfly valve slowly revolves and removes all the refuse, with only a minimum of water, dropping it into a refuse drum.

In order to sample the refuse a hole has been provided through the walls of the 11-in. tube previously referred to. In this a sampling tube is placed, held in position by a short boxing on one end and a larger one on the other. The sampling tube is so made as to carry a box which normally is kept with its opening downward. When, however, a sample of the refuse is desired, the tube is reversed and the receptacle filled with the reject. The turning of the sampling tube unlocks it, and it can then be drawn out and the sample dumped into a tray for investigation.

WASHER WILL NOT BREAK OR ABRADE COAL

It is claimed that the Draper washer will separate effectively shale from coal of all sizes from the finest dust up to 4-in. cubes. The washer is controlled by the index handle on the water inlet, which regulates the volume of the washing water and hence its velocity. The action of the washer is quite easy and consequently the coal is not broken or abraded by the treatment as it is apt to be in jig washing.

It is said that the water and power used is halved by this method of washing. Several of these washers are at work not only in Great Britain but in Spain, China, and France, cleaning not only raw coal but ashes from boiler plants, coke, slack, and the reject from other washeries.
Class I Roads Used 7,256,000 Tons of Coal
In August: Cost. $4.87 Per Ton

During August, 1922, Class I railroads consumed 7,256,000 net tons of coal, as charged to account 124, compared with 6,290,000 tons in July and 7,270,000 tons in August, 1921, according to figures published by the Bureau of Statistics, Interstate Commerce Commission covering 168 reports representing 178 steam roads. Coal consumption for the first eight months of the year totaled 48,325,000 tons as compared with 52,780,000 tons during the same period of 1921.

The delivered cost of the coal during August was $4.87 per ton, as compared with $3.86 in the corresponding month of last year. For the eight months ended Aug. 31, 1922, however, the cost per ton was only $3.82; in the same period of last year it was $4.51.

Fuel-oil consumption by the railroads continued to gain during August, when 126,955,000 gal. was used, as compared with 114,820,000 gal. in August, 1921. During the first eight months of this year 1,186,870,000 gal. was consumed, approximately 32,800,000 gal. in excess of last year's figure.

Utilities Consume More Coal in September
Than in Any Month Since January

Electric public-utility plants consumed 2,007,672 net tons of coal during September, according to a recent report of the Geological Survey. This is the largest tonnage consumed during any month since January and compares with 2,018,885 tons in August.

The average daily production of electricity by public-utility power plants in September again broke all records, thus being the third time in four months that records of output have been surpassed. The daily production of electricity in September was 126,299,921 kw.-hr., 3 per cent greater than the August record and nearly 6 per cent greater than the June record.

The daily consumption of both oil and gas in the production of electric power also broke all records in August and September, the consumption of these two fuels in September being especially large in comparison with previous months of this year and of the other years of record, indicating an abnormal use of these fuels which has probably been brought about by the difficulty in obtaining coal.

More Mine Fatalities in September but Fewer
In Ratio to Output Than in August

Accidents at coal mines in September resulted in the death of 153 men, according to reports from state mine inspectors to the United States Bureau of Mines. Nineteen employees were killed at anthracite mines in Pennsylvania and 134 were killed at bituminous coal mines throughout the country. In September last year 197 men were killed, of whom 45 were killed at anthracite mines and 152 at bituminous mines. The production of coal was 46,196,000 tons in September, 1922, and 43,329,000 in the corresponding month last year; hence, for each million tons of coal mined the fatality rate for September, 1922, is 3.31 as compared with 3.85 a year ago. During August, last, there were 98 fatalities, or 3.80 per million tons of production.

The average fatality rate for September during the nine-month period 1913-1921 is 3.65 per million tons and the average number of fatalities is 186. Thus the record for September, 1922, shows a reduction both in the actual number of lives lost and the fatality rate per million tons, when compared with September's record a year ago and the general average for the same month since 1913.

On Sept. 23 five men, shaft sinkers, were killed by a falling cage while cleaning out a sump at Raleigh-Wyoming mine No. 2, at Glen Rogers, W. Va.

During the nine-month period January to September of the current year, 1,186 men have been killed by accidents at coal mines, as compared with 1,485 killed in the corresponding months last year. The fatality rate per million tons is 3.98 this year as against 4.07 for the first nine months of 1921. Because of the general strike recently closed, the output of coal in 1922 has reached only 296,000,000 tons, while during the nine-month period last year the production was 365,000,000 tons.
Problems of Operating Men

Edited by
James T. Beard

Conferences on Mine Safety Problems

Bureau of Mines Recommends the Certification of All Mine Officials Having Responsible Charge of Mining Operations—Experience Generally Gained Through Some One's Carelessness or Ignorance necessary for a superintendent to be certified, provided the mine foreman holds a certificate. However, the Bureau of Mines engineers are in a position to know whereof they speak, and, as I have said before, if the certifying of superintendents will make our mines safer I am for it heart and soul.

Perhaps I have not given the outside operations sufficient thought. Undoubtedly, there is danger on the surface, as well as underground; and, viewing the situation from a broad angle, I frankly confess that the certification of mine superintendents would not be amiss.

LETTER RECOMMENDS LIMITING THE LIFE OF CERTIFICATES

Again, this circular letter recommends limiting the life of certificates to five years, after which they must be renewed through the taking of another examination. This suggestion has my heartiest approval. Few will deny that a large number of our certified men neglect to keep posted in regard to the requirements of the mining laws of their states; and technical questions, relating to the various branches of mining, receive little attention after a man has once been granted his papers and has started performing his regular duties.

If I am not mistaken, the purpose of these recommendations is to keep all mine officials, who are responsible for the safe operation of mines, thoroughly familiar with everything that pertains to safe up-to-date practices, the ventilation of mines, danger of dust and explosives, and the use of electricity as employed in the various operations in and about mines.

MINERS SHOULD READ MINES LAWS

Not long ago, I had the pleasure of listening to a paper on mine accidents. When suggestions were asked regarding their prevention, someone stated that every mine worker should be required to secure a copy of the state mining laws and read them. A few days later, one of the men said to me, "Why did Mr. —— suggest the reading of the mining laws by all mine workers?"

What prompted the question was probably the fact that the Colorado mining laws place the responsibility for the safe operation of mines directly on the shoulders of the mine owners, board of examiners, state and deputy inspectors, mine foremen and assistant foremen, firebosses and shotfitters. Of the 178 sections of our law, I believe only three relate to the responsibility of the worker.

The letter further recommends that every mine should be made the subject of special study, regarding its gas and dust condition. I believe this is already being done by our state and district inspectors. If the suggestion has reference, however, to the Bureau of Mines making such a special study of individual mines, there is little doubt but that they would always be welcomed and every assistance accorded them, in the mines of Colorado.

It was only a few days ago that I overheard a remark made by a mine official who, speaking of a recent mine disaster, said, "we always lock the stable door after the horse is stolen." It would seem true that our recent experience is only gained through disasters caused by the carelessness or ignorance of others. Let us, as mine officials, take to heart the lessons taught by these experiences and profit by them.

ROBERT A. MARSHALL
Walsenburg, Colo.

Locating the Coal Beyond a Fault

Indications left along the line of fault showing up bow or downthrow. Observations appear to generally accepted theory—Discussion asked.

WHILE making an inspection of a coal mine, a short time ago, I picked up an old file of Coal Age in the superintendent's office. It was not long before the eye rested on an article that interested me. It treated on the method of determining whether a fault of displacement, when found in a mine, was an upthrow or a downthrow.

The fact has long been generally accepted that Nature, in all her constructive phases, has left more or less distinct evidences that enable or, at least, invite a class study for the purpose of determining the conditions under which certain observed geological changes have taken place.

FAULTS OF DISPLACEMENT, ETC.

In respect to a fault of displacement, the belief is well grounded that she has left indications that point to the direction in which most of the strata took place. As the name signifies, a "Fault of Displacement"
COAL

which, as it may seem. I have found the defect of the cleavages, in the seam, close to the fault, pointing upward when the displacement was downward, and pointing downward when the displacement was upward.

PROPOSED THEORY TO EXPLAIN THIS SEEMING MISCONCEPTION

In my feeble attempt to explain this seeming contradiction of the generally accepted theory regarding faults of displacement, I have assumed that, following the action of a disruptive force producing displacement in the strata, there is a tendency, on the part of the disrupted portions, to react or return to their former positions.

This is only a theory of mine that, if correct, would explain my finding of the cleavages, along the line of fault, deflected in the opposite direction from that in which the displacement has taken place. Allow me to present this theory of the action of faults of displacement to the readers of Coal Age, with the request that, before pronouncing it as "vulgar," they will carefully inspect faults of dislocation that are available to them and give us the benefit of their observations.

Washington, D.C. I. C. PARFITT.

Economy in Use of Mine Timber

Much timber wasted in setting pillars.

-Purpose of setting post timber-

Conditions affecting the life and use of timber in mines—Greater economy required in its use.

LREADING the excellent article of William Allan, entitled "Where Coal Mining Practice Could Be Materially Improved, Coal Age, Oct. 26, p. 675, one is not a little surprised to observe that he fails to mention the need of more economy in the use of mine timber.

Experience has taught me that there is a greater waste of timber, in the setting of drawing back pillars than there is in the mining of coal. I have observed that, in mine cases out of two, the miner is largely to blame for this waste. The average miner either gives little thought to the matter, or is guilty of lack of judgment in setting his posts in working pillars.

Having had occasion, on many occasions, to inspect a number of Coal Mines, I have always been surprised at the carelessness with which the miners neglect their duties. It is imperative that he should use judgment in standing his posts. This is particularly true in the work of drawing back pillars, when no standard rule can be given regulating the setting of posts.

Working under bad roof demands strong timbers.

On the other hand, where the roof is bad and breaks readily the chances are that the chambers will have to be repped or retimbered, before the pillars can be taken out with safety. Under these conditions, the quality of the timber employed is not of the same importance as where the roof is more treacherous. It does not matter whether the timber is hard, soft, good or bad, when such a roof does begin to break all timbers are alike ineffective to resist the action.

OVERARCHING OF ROOF THROWS THE WEIGHT ON PILLARS

OVERARCHING OF ROOF THROWS THE WEIGHT ON PILLARS
be worked out on the retracizing system of
mining. This system is too well
known to need further explanation
than to say that, in the work of de-
velopment, the headings or entries are
driven in solid coal and requires far less
timber to maintain them than when
mining on the advancing plan.

Again, when retiring less timber is
required in the chambers, under like
conditions of roof and floor. The first
chambers are opened at the inky end of
the heading, or at the boundary of the
arithms, as these chambers reach the limit the pillars between
them are drawn back.

EFFECT OF CHANGE OF SEASONS ON
LIFE OF TIMBER

The life of mine timber is an im-
portant factor in economy. In this respect,
much depends on atmospheric condi-
tions and the physical surroundings in
the strata. At one time, I worked in a
mine where the ventilation was subject
to change with the changes in the sea-
sons. The intake airway in the winter
became the return airway in summer.
In this mine, also, such were the condi-
tions that the roadways required to be
 timbered so closely that one set of
timbers could not be put in place, until
the old set had been taken out to make
room for the new timbers. Owing
close to changes in atmospheric condi-
tions, however, the timbers on the main
routes, in this mine, had to be re-
placed more frequently than on any other
passageway.

Notwithstanding the increasing use of
1-bams in place of timber in mines,
it is very essential that more attention
should be given to the need of economy
in the use of mine timber. Each year,
the supply of a good quality of timber
for mining, grows less and less.

CUTTING TIMBER TO REQUIRED LENGTH

Not long ago, a number of writers
drew attention, in Coal Age, to the need
of cutting timbers to the desired length,
on the surface, before they are sent
into the mine and delivered at the work-
ing faces. To my mind, this is an im-
portant suggestion and one that is
worthy of careful consideration by all
mine operators.

Miners have come to me asking for
props, but were unable to tell what
length they required. Frequently, they
would specify a length that was a foot
or two too long. In such cases, what
they did not use for cap-pieces would be
thrown into the gob and lost. A care-
ful estimate of the waste, from this
source alone, each year, is astonishing.
Occasionally, it will happen that a
miner will bury extra heavy props
in the gob, rather than exert himself
to stand it in place.

Allow me to suggest, in closing, that
it would be well to frame a set of rules
requiring timbering timbers in
a conspicuous place at the mine. If
this was done and the rule strictly
enforced, it would go a long way toward
reducing the present unwarranted
waste in mine timber.

Plains, Pa.

RICHARD BOWEN
track gauge. Then, since \( e = g' + d' \); and \( e = 2g \mu \), we have

\[
e = \sqrt{g' + d'}
\]

These are the essential switch formulas and by combining them it is possible to calculate the dimensions required to suit various conditions.

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**Examination Questions Answered**

**Mine Managers’ Examination, Nova Scotia, 1922**

(Selected Questions)

**Question:** How do you account for explosions frequently causing more damage in mine intake roads than in return faces?

**Answer:** A mine explosion, whether of dust or gas invariably produces the greater manifestation of violence in the direction of the intake air. The reason for this is that the combustion of the dust or gas requires air. On the return side of the explosion, the combustion is retarded, or may cease entirely for lack of air, the flame being extinguished in the products of the combustion, which always lack available oxygen. Because of the greater violence due to the greater activity in the direction of the fresh air on the intake side, the damage is always greater in that direction than on the return side of the explosive waves.

**Question:** Name as many as you can of the possible causes of underground explosions.

**Answer:** An underground explosion results from the ignition of accumulated gas, or of a dust-laden atmosphere. The sources of the ignition are numerous and may be caused by sparks, static electricity, or the ignition of gas or dust by contact with the walls or roof of the mine face. The ignition may occur in the face, or in any part of the ventilation system, or in any equipment used in the mine.

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**Questions:**

1. What is the sectional area of one cylinder in cubic inches and the length of the cylinder in feet, if the volume of air circulating in a mine must first be sufficient to comply with the requirements of the state mining law? In addition to this, the volume of the air currents must be sufficient to accommodate the working faces, in every part of the mine, and keep them free from gas and dust. How much air is required to accomplish this and what is the size of the working areas? The air must always be sufficient to act effectively in removing the gases that would otherwise accumulate in the workings.
National Coal Association Suggests Investigation of Seven Fundamental Points by Coal Commission

BY PAUL WOTTON
Washington Correspondent of Coal Age

In a communication to the U. S. Coal Commission dated Nov. 19, in reply to a recent letter asking for suggestions "as to the best means of ascertaining the facts pertinent to the investigation into the bituminous industry," seven fundamental points are suggested by the National Coal Association as subjects to which the President's coal commission should give particular attention. They are:

1. The effect on production and on the price of coal, to the consumer, of the monopolistic and absentee control of mine labor.

2. The opposition of organized labor to the introduction of labor-saving machinery.

3. The non-observance by organized labor of contracts made on its behalf.

4. The existing prices of mining materials and supplies and a comparison between them and the prices existing prior to the war.

5. The existing freight rates and a comparison between them and the rates existing prior to the war.

6. The effect of inadequate transportation facilities on the production and the cost of coal.

7. The character and quality of the different coals, the uses to which they are put and the demand therefor.

The most careful attention was given by the National Association to this document. It was formulated from separate drafts presented by the different groups of operators. M. Harrington, former Solicitor of the Department of Justice, who has been retained by the association as its advisory counsel, assisted in the preparation of the document.

Alfred M. Ogle, president of the National Coal Association, met with the Byrd commission when the report was approved. At the close of the meeting he declared that coal operators generally are convinced that the President's commission is going to do a constructive piece of work. He said that the National Coal Association is more than anxious to co-operate with the commission in the most cordial and effective way possible.

The gist of the reply of the bituminous operators' special committee, composed of J. C. Byrdon (chairman), J. G. Bradley, Michael Gallagher, Tracy W. Guthrie, George B. Harrington, E. C. Mahan and H. N. Taylor, is as follows:

This committee of the National Coal Association, and the bituminous operators, in co-operating with it, represents the preponderance of the tonnage of the industry, has received your letter of Oct. 24, 1922, on the subject of the approaching inquiry and respectfully submits its reply. The committee appreciates this opportunity to present in advance the views of this bituminous operators in regard to the coal of its part of the industry and the wish of those upon whom it represents to aid in the commission's every assistance in its work.

With this purpose in mind the committee comes without further precautions to the following questions, to the best of the best of the topics enumerated in the commission's letter, taken each by the number assigned to it and answering the committee's questions A and B with reference thereto, and therefore turning to questions C, D, E and F as follows:

1. Ownership and titles of the mine.

We suggest that a list of all the coal operators completed individual and partnerships be secured from the Survey and that a card be prepared and signed by all coal operators asking them to fill out the same and return it to the commission with the names of the lessees, the lessee, the lessor, the names of the operator.

2. List of mines operated, acreage of each and date of its entry into operation. Also leases or by reason of the lessee, the lessee, the lessor, the names of the lessee.

3. Thickness and name of seam with description of its layers and strata, but not at shipping points.

4. Whether operating under contract with United Mine Workers of America or not.

This information is of prime importance and the method of the union and non-union fields will be well ascertained. Different it seems to us that the first principal by your commission will be "union" and "non-union" data, and we therefore recommend that this information should be secured by the first committee in this order, and if the request for information as to titles and contracts.

Two other questions were approved:

This information may be obtained from each individual operator.

We know of no common source which can supply it.

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families live better than other families of the same size on the same amount of income.

Unfortunately, workers are entitled to an opportunity to earn a fair and honest support for themselves and their dependents. The present system of living in a 'hose' makes it impossible for them to do this. Workers are living on the barest minimum, and all the factors which enter into it can be separately standardized. In some industries, wages which have been determined by custom and habit can be reduced to a like uniform rate. Such conditions should be surrounded by laws, and in order to obtain and hold efficient employees for capable workmen has been such that, even aside from the usual fulfillment of their contracts, they have often been obliged to do so, in order to obtain and hold efficient employees.

It is estimated, however, that the commission might well make an investigation of representative communities in the various coal mining sections. The conditions prevailing in a section and the whole area of the section are thus comprehended. Much of the work in and around coal mines is piece work, and the men are therefore not subject to any such conditions as those fixed charges which continue constant irrespective of the output of the coal plant. Variables and other conditions are subject to the fluctuations which characterize the industry, and the incomes thus fixed are subject to fluctuations and are not affected by variations in production. They vary directly to the cost of is consumed, the prices of borrowed money, insurance, taxes and expenses incident to the mining business. The income from the sale of such commodities is a different thing. No investigation of such items if not wholly impossible, presents obvious difficulties.

As to standardizing the cost of living at the door of the consumer, recognizing in this computation that the standardized cost of living should be the first and irreducible cost of an industry.

The principle governing the determination of what may properly be termed the 'overhead costs' is the accuracy with which the standard cast of living is otherwise subject to the fluctuations which characterize the industry, and the incomes thus fixed are subject to fluctuations and are not affected by variations in production. They vary directly to the cost of is consumed, the prices of borrowed money, insurance, taxes and expenses incident to the mining business. The income from the sale of such commodities is a different thing. No investigation of such items if not wholly impossible, presents obvious difficulties.

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to the war, while strikes had occurred from time to time, it is far from clear and need not excite anxiety concerning its supply of bituminous coal.

The fact about the war and government control to which the industry was then subjected had led to a certain amount of apprehension by the public and working conditions, from which it appears to be reasonably inferred. The realization of this fact not only by the operators but by the employees and by the public, as well, is indispensable to the health of the coal industry and to the success of the economic laws can accomplish more for all concerned than any artificial efforts, either statutory or otherwise.

Such difficulties as exist we believe to be primarily due to the following elements:

(1) Nationalistic control of mine labor by absentee union officials. 

(2) Nationwide as well as local strikes brought about by irresponsible and autocratic organization.

(3) Lack of adequate and effective coal and transportation supervision by unconfirmed or unimpressed representatives of the buying coal officers.

(4) Appeals by agents and propaganda of different kinds designed to breed dissatisfaction and create unrest among the people at large. It is likely that this condition of the commission will terminate once for all the misrepresentations on which these appeals are based.

(5) What in your judgment are the practical remedies which would eliminate any or all of the elements which you consider are responsible for the conditions?

We note with reference to the above query, as well as to the one which preceded it, that the mere issuance in suggesting that it be recommended that the near future, however indirectly, appreciates the difficulties which surround any effort to maintain the coal industry and the economy of the nation. The only sure and effective means to the moment to return any other than a general reply, reserving the question of the commission to amplify their views as the investigation proceeds.

In any discussion of remedies, however, we believe that there are certain principles which cannot be ignored, and which must condition any consideration of remedies. Among these principles are:

First—That every man has a right to work without either interference or compulsion when, for whom and upon such terms as he may see fit.

Second—That while the right of workers to organize for legitimate purposes cannot be denied, such organizations have no right to impose or restrain those who do not care to join or to deal with them.

Third—That the right of private property is and must remain inviolable.

Fourth—That in the last resort, the law of supply and demand always operates, and will determine prices that no legislative interference can long interfere with this inexorable rule; that any interference that might accomplish more for all concerned than any artificial efforts, either statutory or otherwise.

Instead, viewing the right of seeking remedies of a character which are foreign to the genius and spirit of our American institutions, we believe that a solution of the problem of the situation which the laws should be directed to the two terms of the commission to eliminate as far as possible.

These are:

First—Adequate transportation. 

How far the present transport facilities are within the scope of this inquiry, is, of course, for the commission to determine. The development of the country in the bituminous coal fields is a problem that cannot be solved without adequate and ample transportation facilities. The government should provide the means to make bituminous coal available to the mines of the country should be granted the freedom, independently, and adequate resources to enable them to maintain the necessary means to provide proper equipment and other facilities to meet their increasing business. They should be required, only to the extent necessary to insure the proper use and distribution of the facilities when obtained.

Second—Freedom from labor troubles artificially provoked.

No organization or combination of persons, either natural or corporate, should be permitted to hold itself above and superior to the law. There is no room in this country for the doctrine of the right to any organization to work through agents and advocates of other organizations, the necessary result of which cannot be to restrain, destroy, or interfere with the operation of the law, or to have been taken.

In soliciting the right to make such further recommendations to the government as may seem to them to ensure the right of all assistance as may lie within our power.

Bituminous Shortage Now Thought Unlikely; Some States May See Anthracite Scarcity

The stock report issued by the Federal Fuel Distributors discloses an unexpectedly large accumulation of bituminous coal. It demonstrates that the country came through the emergency with larger reserves than even the highest estimates. The report carries rather impressive confirmation of the experience in 1920 that the market becomes panic when stocks begin to reach the 20,000,000-ton level. It is now clear that stocks were reaching that mark this year when the situation became acute, and H. B. Spencer was called in to handle distribution. With this confirmation, it is being assumed by federal officials that 20,000,000 tons is the danger line.

The report shows that stocks had increased to 28,890,000 tons by Oct. 1, and, according to Mr. Snells' estimate, aggregated 35,000,000 tons on Nov. 1. The general opinion is that this estimate is entirely reasonable.

The steady gain in the output of bituminous coal indicates that with good management the country will be able to go through the winter with no serious shortage of steam coal. The stock report shows, however, that the process of substituting bituminous coal for anthracite had not proceeded far on Oct. 1. Retailers had increased their deliveries of bituminous coal in the coals of the consuming district, but the increase was not sufficient to make up the decrease in the anthracite, which is at full production. It is the belief of coal wholesalers that the industry is at full production.

The figures showed that the total deliveries of both anthracite and bituminous coal were less this year than last. A careful study of the figures reveals that in some states the work of substitution had gone further than in others. Substitution was further advanced in Rhode Island, New York, New Jersey and the District of Columbia. They believe it is likely that a direct result of this policy will be a marked increase in the use of bituminous coal in all local areas.

Recurrence of National Coal Association in Joining of Indiana Operators

The Indiana Bituminous Coal Operators’ Association has filed an application for membership in the National Coal Association. This will bring into the latter association all operators in the State of Indiana. Under the conditions existing previously, which the Mine Workers were represented in the National Coal Association by the three coal trade unions, 40 per cent of the state’s tonnage was unrepresented.

This action, together with the fact that the Illinois operators and those in the Pittsburgh district recently have been co-operating with the association in important matters, leads to the belief that the National Coal Association soon will be stronger and more representative than ever before.

Some of the operators who have been in contact with the National Coal Association have indicated that they have an exaggerated importance was given the technical membership which followed the Indiana operators and the Supreme Court’s decision in the Harrow case. Since those developments affected adversely many of the organizations holding membership in the National Coal Association, there naturally was uncertainty until the present opportunity for national representation could be worked out.

J. D. A. Morrow will be relieved of his duties as the present president of the National Coal Association, D. 1. 1., that he may devote his entire time after that date to the newly formed co-op brokerage firm of which he is the executive. The new organization has been formed on the basis of the industrial coal brokers and will include local authorities. This winter, it is generally believed, will give a splendid demonstration of the indispensability of the service which the retailers perform in the distribution of coal. Officials believe that an unusual opportunity will be presented for the retailers to do a great service and demonstrate that much of the criticism which has been hurled at them is not justified.
Three Central Pennsylvania Operators' Associations Amalgamate

The Central Coal Association, the Central Pennsylvania Operators' Association and the Association of Bituminous Coal Operators of Central Pennsylvania were amalgamated at a joint conference of directors of the three associations held in Altoona Nov. 9.

The Central Coal Association and the Association of Bituminous Coal Operators merged under the name of the Association of Bituminous Coal Operators of Central Pennsylvania, with all the members of the merged bodies becoming members of the Central Pennsylvania Coal Producers' Association. This action will give the operators in this region one of the strongest organizations in the United States.

The Producers' Association will have charge of such matters as traffic, car supply and the collection and dissemination of statistics and various information of interest to the members. It will have nothing whatever to do with matters pertaining to labor problems. The Association of Bituminous Coal Operators will have but one purpose, the negotiation of and the enforcement of wage agreements between the operators employing union labor and the United Mine Workers.

The officers of both associations are the same under the terms of the amalgamation, as follows: President, H. M. Clark, Indiana; Vice-President, G. Cobb, Clearfield; Secretary-Treasurer, Charles O'Neil, Altoona; Commissioner, John C. Forshythe, Clearfield; Statistician, W. A. Jones, Altoona.

The executive board of the Association of Bituminous Operators will be B. M. Clark, Indiana; Rembrandt Peale, New York; J. E. Caseley and E. H. Robertson, Dubois; C. B. Maxwell, Morrisdale; H. B. Scott and J. W. Bailey, Clearfield; W. P. Kelley, Coalport; G. W. Shillingford, Clearfield; J. S. Sommerville, Robertsdale; William Lumsden, Emlora; J. A. Boucher, Beaverdale; Harry Beals, Clearfield; S. T. Brown, Indiana; and M. J. Bracken, Johnstown.

The Board of the Producers' Association is composed of the following: Tyrone group, J. W. Wetter; Clearfield group, H. H. Sommerville; Smith Fork group, M. J. Bracken; Baxensiders group, James H. Allport; Tionesta group, E. H. Robertson; Brandyberg group, J. S. Sommerville; Pococolayawa group, W. R. Craig; Directors at large, G. T. Davis, Columbus, Ohio; D. T. Price, Windber; Charles A. Owen and Rembrandt Peale, New York; B. M. Clark, Indiana; J. R. Caseley, Dubois; James B. Neale, Morrisdale; James W. Shillingford, Clearfield; W. S. Blaisdell, Monessen; Fred B. Kerr, Clearfield; C. R. Maxwell, Morrisdale; Harry Beals, Clearfield, and S. T. Brown, Indiana.

Toll of Lives in Reilly Mine Disaster
At Spangler, Pa., Is Seventy-Seven

Twenty-seven men were lost in the Spangler, Cambria County, mine disaster of Nov. 6, according to the official figures announced by Governor Butterfield, head of the state board of mining inspectors, who has been in charge of the commission and has completed an exhaustive inquiry into the cause of the explosion.

Mr. Butterfield states that the mine was entered the day before the explosion, after which an inspection was made and taken to the mine by the operator. When the miners entered the mine the dead and five live were on a general stage. The explosion occurred within the mine was a massive one, with the mine official who had charge of the mine in charge of the explosion, and in the general confusion the three dead bodies were taken from the mine. The five live were left to the care of the operators.

After a court hearing the miners who had been at the mine in the mine at the time of the explosion were brought into the court house and given over to the district attorney for prosecution.

The United Mine Workers have not appeared in court to testify to the charge of the disaster. The miners who have been brought into the court house are now in the care of the miners.

Funerals of the deceased miners. Relief work for the families of the striken miners has been started and is receiving whole-hearted support. The Red Cross has opened welfare stations and the people of Johnstown, Altoona and the surrounding towns have contributed generously to the relief funds.

The United Mine Workers have contributed $10,000 for relief work at Spangler. Of this amount $5,000 came from the international organization at Indianapolis, and $5,000 from District No. 2, at Clearfield.

The relief committee is composed of John Mayholtz, an organizer for the U.M.W.A.; James McGlinn, president of the Spangler local of the U.M.W.A.; A. F. Fox, president of the Spangler chapter of the Red Cross, and Mrs. Harry Blair and Mrs. W. R. Davison.

After a two-day investigation of the mine, Chief Seward Button attributes the explosion to methane gas. In a preliminary report, Mr. Button stated the actual explosion was slight and but few men were killed in that manner. Most of the men were killed to due to the presence of after-damp and the inability of the men to reach fresh air. The inquest will be held early this week.

George S. Rice, chief mining engineer of the U. S. Bureau of Mines, and J. W. Paul will make a special investigation of the disaster for the Bureau of Mines.

Ohio Administrator Allows Advance of 50c in Price of Domestic Sizes

Late last week the Ohio Fuel Administrator authorized an increase of 50c in the fair-price schedule for 'coal in sizes specially prepared and particularly cleaned for individual purposes. This increase is made in accordance with the Ohio Coal Producers' Association, and will allow Ohio users a fair percentage of the lump produced within the state which has been going to outside purchasers.

According to Administrator Neal the former fair-price list took into consideration only actual cost of production without allowing for labor operations necessary for special preparations. The administrator also authorized the new Pococool Coal Co. and Howells & Fox, coal operators in the Massillon field, to increase their minimum price from $4.50 to $5.11 because of high cost of production.

All specially prepared domestic coal coming within this order will be priced from $5.06 to $5.61 under the new ruling. The price in the Hocking Valley proper, including Hocking and Athens counties and Monroe township, in Perry County, will be increased from $4 to $4.50 while the Bailey Run, or No. 7, seam will be increased from $4.50 to $5.00.

Ohio Coal Companies Seek to Enjoin State Control of Fuel

A sweeping injunction which, if granted, will tie up all of the machinery of the State Fuel Administration and stop, temporarily at least, all efforts to enforce coal price regulation in Ohio, is asked in a suit filed Nov. 8 in U. S. District Court at Toledo. The Ohio Collieries Co. and the George M. Jones Co., two Toledo companies which control sixteen mines in the southern Ohio field, seek the injunction.

The bill of complaint attacks the constitutionality of the emergency act passed by the Legislature late in the summer providing for the appointment of a fuel administrator and state regulation of the price of coal.

The bill names Roy R. Stuart, prosecuting attorney of Lucas County; Governor Harry L. Davis and Attorney General Jones Co. Price Toledo companies which control sixteen mines in the southern Ohio field, seek the injunction.

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The bill names Roy R. Stuart, prosecuting attorney of Lucas County; Governor Harry L. Davis and Attorney General Jones Co. Price Toledo companies which control sixteen mines in the southern Ohio field, seek the injunction.
Operators Offer Two Wage Plans at Chicago Conference; Lewis Has No Definite Proposal

When the joint committee of operators and miners assembled in Chicago Tuesday, Nov. 14, to begin its efforts to work out a wage plan for the future it had before it at least one definite suggestion. Harry Taylor, of the South- west Interstate Association, proposed a scheme whereby wages by districts could be varied from a "national base rate" according to local conditions, and setting up joint boards to adjudicate disputes and a supreme council for appealed cases. This plan put the outlying districts in the position of presenting something constructive as a contribution at the first national conference of the sort to which they had ever been admitted.

Preceding the conference there was a quite general sentiment that a strong national organization of operators to deal with the miners' union should be formed at once and steadfastly supported when the meeting started. Nobody knew what it would do after its organization nor how long it could run.

Every one of the fifteen districts represented at the Cleveland conference a month ago, which arranged the Chicago meeting, had its delegates in Chicago when the session opened. No other regions asked admittance after the Cleveland organization was made permanent with Phil Penna as chairman and William Green, of the miners, and E. G. Edwards, of the operators, as secretaries. Little was done at the morning session except receive credentials before adjournment at noon.

One dispute arose when both Joseph Purseglove and M. E. Watson, president of the Monongahela Coal Association, claimed to be official delegates. Purseglove was the man representing several large producers of that field at Cleveland but Watson put in his claim on the basis of his selection by the Monongahela Coal Association on Nov. 2. The dispute went to secretaries Green and Edwards. Mr. Purseglove was not in Chicago because of an accident suffered by his daughter but his case was put in by his brother, Sam Purseglove. The two secretaries, unable to reach an agreement, laid the case before the conference when it convened for the afternoon session.

W. L. Jenkins, of Fairmont, W. Va., read to the operators a plan for national agreements to be made by a nationwide conference committee.

At the afternoon session both Purseglove and Watson were accepted as delegates, each with half a vote. This was not expected to cause confusion because each district must vote as a unit.

The miners remained but three minutes in the afternoon meeting retiring after President John Lewis said he had no definite proposal to make. The operators then spent all afternoon discussing the plans proposed by Mr. Taylor and Mr. Jenkins, reaching no agreement on them and giving no publicity to either but referring both to a committee to report Wednesday.

It was hoped Lewis would have something definite to propose by Wednesday's joint session. Tuesday night he said he was waiting for the operators. Thus the first day accomplished little. When Mr. Lewis was asked if the conference might wait for the Federal Coal Commission to produce a wage plan he smiled and said there wasn't much use expecting anything.

---

Preliminary Statistics of Production of Coal in 1921

(Exclusive of product of wagon mines)

<table>
<thead>
<tr>
<th>Pennsylvania</th>
<th>County</th>
<th>Number of Employees</th>
<th>Number of Mines</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Underground</td>
<td>Miners, Loaders, etc. (s)</td>
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<td></td>
<td></td>
<td>Total</td>
<td>All Others, Shippers, Total</td>
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<tr>
<td></td>
<td></td>
<td>Average Value per Ton</td>
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<td>Total Quantity (Net Tons)</td>
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<td>Average Value of Miners, Loaders, etc. (s)</td>
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<td></td>
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<td>Total Value of All Others, Shippers</td>
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<td>Average Number of Wagon Mines</td>
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<table>
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<tr>
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Survey Oct. 28, 1922.
Union Miners to Be Assessed $2,000,000

A special assessment on members of the United Mine Workers of America which is expected to yield to the union's treasury at least $2,000,000 is announced by John L. Lewis, international president.

While reluctant to discuss the possibility of another strike, Mr. Lewis said that the miners would not accept any wage reductions on April 1, when the present agreement in the bituminous coal fields expires. The union demands continuation of the present wage scale for another two years.

Mr. Lewis said that coal production was being speeded up throughout the country and was being limited only by transportation facilities. Virtually all the miners in the unionized districts, he said, were working, but there were still 70,000 miners out on strike in the non-union coal fields.

"Never before in its history was the miners' union in better condition than it is today, although the battle with the non-union operators continues to be waged all around our borderland," said Mr. Lewis, "and all the fighting is being done on the enemy's territory.

"We are taking care of the financial situation by levying a special assessment of $4 per member, to be paid in two instalments of $2 a month."

Coal Miners Remain Idle Rather Than Work in Metal Mines

Metal mines in the Butte district are in urgent need of no less than 3,500 men, according to reports to federal officials. An effort is being made to induce the unemployed in the coal fields to accept positions at Butte, but since the wages in the coal mines are so much higher, the men in most cases prefer to stay at the coal mines and take the chance of employment developing. Reports from Eastern coal mines indicate that men are applying for work in much larger number than they can be employed.

Much Legal Jockeying Marks Early Stages Of Trial in Herrin Massacre Case

Trial of men indicted for murder in connection with the Herrin massacre in Williamson County, Illinois, is getting under way amid difficulties. Most of the men in the venire of 130 avoided jury duty in the case on one excuse or another as a matter of course. When the Attorney General moved to throw out the indictments against 41 of the 46 men the grand jury held for the murder of Howard Hoffman, A. W. Kerr, a member of the defense, employed by the miners' union, indicated that the jury was not satisfied at once and indicated an intention to find the 41 "not guilty" and to release them. The objection was overruled and 9 men of the original 46 were called for trial for Hoffman's death as soon as the jury is drawn.

Then the defense moved for a continuance of the case to a later date, but Jury Hartwell insisted that as the cases originally were set they would be ready now, the trial should proceed. The defense argued that all the indicted miners should be placed on the grand jury that interviewed the policemen was selected by sheriff's deputies instead of by the sheriff himself, that 26 jurors instead of 23 were summoned and that the jury had been unduly influenced during the deliberations by statements printed in the newspapers. Judge Hartwell reserved decision.

Attorney Kerr for the miners demanded the right to question the prosecution as to the source of the funds which private organizations have put into Attorney General Brandeis' hands, in lieu of state funds which are not available because Governor Small went so deeply into the Attorney General's appropriation. Judge Hartwell denied this motion. With the removal of all objections and motions tending to delay the trial, the case is ready to proceed. Early this week it was thought that the choosing of the jury would be resumed. How long it will take to impanel a full jury remains to be seen. Frank Farrington, president of the Illinois district of the United Mine Workers of America, as a federal, a substribute president, are both in attendance at the trial.

Coal Roads Announce Further Plans for Improving Their Freight Facilities

The Louisville & Nashville R.R., which to Nov. 1 had reported contracts of over $20,000,000 placed this year for road improvements, cars, engines, etc., has since announced contracts placed for 3,000 more cars, including 2,000 coal cars, to be delivered by April, 1923, these to be all steel cars. The road contracts the 3,000 cars at $5,750,000. At present the L. & N. has 27,750 coal cars and 17,750 box cars. W. L. Mapother further announced that he plans to spend a total of $52,000,000 in 1922 and 1923 in improving facilities of the road for handling traffic, which should bring relief to many shippers.

On Nov. 6 announcement was made that the Chicago, Indianapolis & Louisville R.R. (Monon) was spending $725,000 for 300 steel coal cars, 7 locomotives and 4 steel coaches. The Illinois Central R.R. also has filed a trust agreement at Frankfort, Ky., under which a mortgage agreement is uncovered with the Commercial Trust Co. of Pennsylvania, whereby the road is to receive money for purchase of $8,310,000 worth of equipment, including 3,000 steel coal cars, 50 road engines and 15 switch engines.

Professor Willitts to Probe Wage Facts For U. S. Coal Commission

Fact-finding with regard to wages and earnings of mine workers will be done by Prof. Joseph S. Willitts, of the University of Pennsylvania, for the President's coal commission.

Since the commission has committed itself to await suggestions from the various branches of the coal business before formulating its own plan of action, no great amount of progress has been made during the past week in the formulation of its plans. The week has been spent, however, in informal conferences and consideration of the data which its staff already is laying before it.

A plan is being worked out whereby all material submitted by outside sources will be carefully checked so that the commission will be in a position to undertake any of the facts and figures which it may care to use.

Lake Coal Loadings During Season to End of October

<table>
<thead>
<tr>
<th>Year</th>
<th>1922</th>
<th>1923</th>
<th>1924</th>
</tr>
</thead>
<tbody>
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<td>2,059,995</td>
<td>1,942,972</td>
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<td>4,074,200</td>
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<td>4,276,450</td>
<td>4,167,000</td>
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<tr>
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<td>4,340,000</td>
</tr>
</tbody>
</table>
Conditions in the coal market are slowly improving. The trade shows an urgent need for a cold snap, but in spite of unseasonable temperature and other deterrent factors, prices are being held more and more firmly. Coal Age Index of spot bituminous coal prices dropped 4 points to 340 on Nov. 13, as compared with 344 in the week previous. This corresponds to an average mine price of $4.12 and is a decline of only 8c since Nov. 1. During October the average spot price dropped 70c.

There are plenty of inquiries in the spot market and undoubtedly many users are quietly accumulating reserves. The heavier output is being sold with less difficulty, although the volume of spot offerings has not increased in like proportion. Much coal is moving to contract connections and the trade prefers to hold its free coal on the open market so but few new contracts are reported. High-grade fuels are eagerly sought, but the supply is very limited. Naturally this has improved the position of the medium and low qualities, although the market is still far from a "coal-is-coal" basis. The railroads are actively acquiring tonnage and much criticism is directed toward the carriers' system of preferential car supply for their needs. Operators assert that their commercial placements are so meager that they are unable to accept new business for delivery at an early date.

**Rush Movement to Lakes Reduces Supply**

So much coal has been concentrated on the Lakes that the available commercial supply has been materially reduced in the Eastern Inland section. This shortage was apparent last week and prices firmed up. Prices for last-minute Lake shipments, however, have broken under the heavy volume of tonnage moving to the lower ports. Lake coal will move from the mines up to Nov. 20, when it is estimated that sufficient tonnage will be rolling and on hand to supply cargoes during the balance of the navigable season.

The Middle West market is flat. Warm weather has dealt the coal man a severe blow and domestic demand has been slowed. Steam coals are in heavy oversupply in this section and despite some movement, all-rail to the Northwest, the number of no-bills in Illinois and Indiana producing sections is increasing.

Light receipts in North Atlantic markets suffice to meet current needs. In this as in other sections further west, the close of Lake navigation is being awaited by buyers, who feel that the release of this tonnage will soften the market considerably. A turn in the weather, however, which would also affect transportation conditions, would soon absorb this coal, and it is quite likely that the re-entry of a large number of these dilatory buyers will have the same effect.

New England presents a featureless market. The all-rail demand is only fair and Hampton Roads is still tophavy with coal. The plenitude of supply for this section is so apparent that buyers are not interested in adding to their seasonal reserves.

The Lake season is blamed for a curtailment of domestic anthracite receipts in the Eastern section. Retail yard supplies are running down. As the shortage becomes...
The coal market is more active, but spot prices have softened during the week. The amount of current offerings, however, is not large and coke users feel that it is not sufficient to encourage resumption of operations at plants now closed down.

**BITUMINOUS**

"Preliminary returns on coal loaded at the mines during the week ended Nov. 11 indicate a total production of 12,000,000 net tons, of which about 10,700,000 tons was bituminous coal and 1,300,000 tons was anthracite," says the Geological Survey. "Revised estimates for the week ended Nov. 4 show 10,817,000 tons of bituminous and 1,800,000 tons of anthracite. Thus a slight increase in the total coal raised is shown for the present week as compared with the week before.

"Loadings of soft coal on Monday, Nov. 6, as reported by the railroads, were 43,810 cars. On Tuesday, Election Day, loadings declined to 25,812 cars, but on Wednesday, 33,875 cars and on Thursday, 31,807 cars were loaded. The total for these first four days of the week is a little larger than for the same days of the week preceding."

Survey, has shown that at the rate of production during the month of September consumers were able to add about 6,000,000 tons to their stocks. During October at least as much more was added to reserve piles."

Hampton Roads dumpings were 248,637 net tons during

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

<table>
<thead>
<tr>
<th>Market</th>
<th>Quoted</th>
<th>Oct. 13</th>
<th>Oct. 16</th>
<th>Nov. 6</th>
<th>Nov. 13</th>
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<tr>
<td>Pittsburgh</td>
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<td>Chicago</td>
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<td>Cleveland</td>
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<tr>
<td>Boston</td>
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</tbody>
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**South and Southwest**

Big Seam lump... Birmingham 32 32 32 32
Big Seam run... Birmingham 27 27 27 27
S. E. Ky. lump... Birmingham 25 25 25 25
S. E. Ky. run... Birmingham 25 25 25 25
E. Ky. lump... Louisville 25 25 25 25
E. Ky. run... Louisville 25 25 25 25
Kansas lump... Kansas City 25 25 25 25
Kansas screenings... Kansas City 25 25 25 25

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

<table>
<thead>
<tr>
<th>Company</th>
<th>Nov. 6, 1922</th>
<th>Nov. 13, 1922</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent</td>
<td>$7.75</td>
<td>$7.50</td>
</tr>
<tr>
<td>Company</td>
<td>$7.50</td>
<td>$7.25</td>
</tr>
<tr>
<td>Independent</td>
<td>$7.25</td>
<td>$7.00</td>
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* * *
November 16, 1922

COAL AGE

Car Loadings, Surplusages and Shortages

<table>
<thead>
<tr>
<th>Week ended Oct. 28, 1922</th>
<th>Cars Loaded</th>
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<tbody>
<tr>
<td>All Cars</td>
<td>Coal Cars</td>
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<tr>
<td>14,310</td>
<td>3,270</td>
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<tr>
<td>1,005</td>
<td>196,721</td>
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<tr>
<td>85,158</td>
<td>210,630</td>
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<table>
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<th>Previous week</th>
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<tr>
<td>14,410</td>
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<tr>
<td>1,005</td>
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<tr>
<td>85,158</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Same week in 1921</th>
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<tbody>
<tr>
<td>14,310</td>
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<tr>
<td>1,005</td>
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<table>
<thead>
<tr>
<th>Surplus Cars</th>
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<tbody>
<tr>
<td>All Cars</td>
</tr>
<tr>
<td>3,716</td>
</tr>
<tr>
<td>179,289</td>
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<tr>
<td>4,099</td>
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<tr>
<td>166,349</td>
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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>3,716</td>
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<td>166,349</td>
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</table>

be in a fairly comfortable position. Although the docks are going to be short, Illinois and other nearby mines can undoubtedly make up the deficit.

ANTHRACITE

Production of anthracite during the week ended Nov. 4, was 1,839,000 net tons. Preliminary returns for last week indicate an output of about 1,900,000 tons.

Demand is acute but the unseasonable temperatures have cut down the shortage, estimated earlier in the season at 40 per cent. Lake dumping last week were 20,000 net tons as compared with 94,200 in the previous week. Steam sizes are slow with the exception of buckwheat, which is being better taken in conjunction with the domestic grades. Smaller steam coals already at New York Tidewater are in distress and some barleys in loaded boats have gone for the freight charges.

COKE

Beehive coke production decreased to 217,000 net tons during the week ended Nov. 4, as compared with 287,000 tons in the week preceding. Connellsville production, however, increased 5,000 tons during the week. Demand is rather light, both from foundries and furnaces. These furnaces now out are actively making inquiries for lower-priced contracts in order to produce salable pig iron, but operators are holding these prices firmly.

October witnessed an output of byproduct coke larger than the monthly average for any preceding year. The total production was 2,806,000 tons, an increase of 563,000 tons, or 25 per cent over August, and 226,000 tons, or 9 per cent, over last June, the highest preceding month of the present year. Production of beehive coke also increased and reached 878,000 tons, an increase of 15 per cent over the monthly average for 1921, but a decrease of 15 per cent compared with 1920.

MONTHLY OUTPUT OF BYPRODUCT AND BEEHIVE COKE IN THE UNITED STATES (Net Tons)

<table>
<thead>
<tr>
<th>Month</th>
<th>Byproduct Coke</th>
<th>Beehive Coke</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>September</td>
<td>1,838,000</td>
<td>451,000</td>
<td>2,289,000</td>
</tr>
<tr>
<td>October</td>
<td>2,562,000</td>
<td>525,000</td>
<td>3,087,000</td>
</tr>
<tr>
<td>November</td>
<td>2,562,000</td>
<td>525,000</td>
<td>3,087,000</td>
</tr>
<tr>
<td>December</td>
<td>1,881,000</td>
<td>474,000</td>
<td>2,355,000</td>
</tr>
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</table>

The quantity of coal consumed in the manufacture of coke during October was approximately 1,100,000 tons, of which 4,032,000 tons were used in byproduct ovens and 1,584,000 in beehive ovens. These figures indicate that the present consumption of coal for coke manufacture is about two-thirds greater than during the period of depression in 1921, and about 8 per cent less than in the active year 1920.

ESTIMATED MONTHLY CONSUMPTION OF STEEL MANUFACTURE

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The quantities shown are based on actual consumption and are not intended as an indication of the future.
Foreign Market
And Export News

British Market Improves;
Industry Reviving in France

Index of Orders Comes with Passing of Strike Fear in Wales—Production at Peak—Meager Receipts of Coke from Germany—Acute Coal Shortage in Germany.

British market conditions are decidedly improved. The later situation in Wales is more tranquil. This has caused an influx of orders, the strike fear now having practically passed. Prices are stronger and production is at the high mark for the year.

A slight industrial improvement in France has aided the steam coal, while domestic sorts are in strong demand. Meager and inadequate coke receipts from Germany under the Reparation Agreement are reported and French furnaces are demanding an early upward revision of the schedule.

Germany is still in the throes of an acute coal shortage. Purchases of foreign fuels are imperative but are far from depressing the value of the mark.

British Market Improves

Output Again Breaks Record

British production has again broken the record for the year. The output during the week ended Oct. 29 was 9,000,000 tons, according to a cable to Coal Age, as compared with the weekly figure of 8,490,000 tons in the preceding week. These grades are well sold up through the balance of the year.

Company supplies of inferior quality are selling at their prices.

Rise in British Coal Exports

During September Great Britain exported 7,602,729 gross tons of coal, compared with 6,146,121 in August and 104,379 in September, 1921. In 1912 the average value of British coal exports was just under 18d. 6d. per ton; now it is 22d. 7d.

French Market Improves; Increased Reparation Tonnage Needed

Industrial demand is satisfactory, especially as regards gas and coking sorts, and stocks are decreasing. Several collieries have divided some of their coke ovens, and this will reduce available supplies of coking slacks. The rush for domestic continues unabated.

Belgian colliery owners have caused a revision in outstanding contracts on the basis of the following increases: Nuts, 20 fr.; all other kinds of sized coals, 10 fr.; oven briquets, 18 fr. Parisian briquets were now paid Nov. 1 270 fr. for Belgian nuts of half-fat; 183 fr. for French screened coal; 280 fr.@290 fr. for Belgian anthracite nuts; 570 fr.@410 fr. for Welsh anthracite nuts.

Newcastle or best Yorkshire coals are now quoted 34s. 6d. c.i.f. Rouen, which, at the present rate of exchange, is equivalent to 108 fr.@110 fr.

The output of the Lorraine and Sarre fields is increasing and a good part of it is absorbed by Germany. Loire and Center fields are aided by the present improvement in production and stocks are decreasing.

The Commission of Reparations, which has provisionally moved to Berlin, will soon determine the future quantity of German reparations for coal deliveries to the Entente. This had been fixed in August, at 1,725,000 tons per month for September and October, inclusive of 125,000 tons from Upper Silesia, which Germany did not attempt to deliver. It is probable that Germany will do her utmost to obtain a reduction and a very artful press campaign has been started to that effect.

After allowing for the present shipments to the Entente, the territories that now compose the Reich still claim for their consumption about 11,600,000 tons per month, while the corresponding figure in 1913 for the same territories was only 11,500,000 tons. As regards coke alone, the situation is still more favorable for Germany. The Entente demands now in force leave at the disposal of the present German territories a coke supply representing about 106 per cent of their pre-war requirements. At the same time, French blast furnaces are only granted 79 per cent of the quantities of German coke de-
miners worked the overtime shifts in the latter half of the month, but the percentage has since increased to 77.5 per cent.

The Rhenish lignite district produced 3,254,961 tons of coal and 646,551 tons of briquets; and the Mid-German lignite mines, 8,074,105 tons of coal and 1,892,860 tons of briquets.

### September Exports, by Customs Districts

<table>
<thead>
<tr>
<th>United States September Coal Exports</th>
<th>Groen Tons</th>
<th>September 1922</th>
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<tbody>
<tr>
<td><strong>Ruthehno coal:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>By rail:</td>
<td>1,001,806</td>
<td>1,170,794</td>
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<tr>
<td>By sea:</td>
<td>4,806</td>
<td>4,806</td>
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<tr>
<td><strong>Total:</strong></td>
<td>1,046,612</td>
<td>1,175,590</td>
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<tr>
<td><strong>By vessel:</strong></td>
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<td></td>
</tr>
<tr>
<td>British West Indies:</td>
<td>6,105</td>
<td>6,105</td>
</tr>
<tr>
<td>Other West Indies:</td>
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<td>3,653</td>
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<tr>
<td><strong>Total:</strong></td>
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<td>9,758</td>
</tr>
<tr>
<td><strong>France:</strong></td>
<td>59,525</td>
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<tr>
<td><strong>Italy:</strong></td>
<td>17,045</td>
<td>17,045</td>
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<tr>
<td><strong>Spain:</strong></td>
<td>17,045</td>
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<tr>
<td><strong>Total Europe:</strong></td>
<td>34,443</td>
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<tr>
<td>Argentine:</td>
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<td>Brazil:</td>
<td>24,361</td>
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<tr>
<td>Chile:</td>
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<tr>
<td><strong>Total South America:</strong></td>
<td>59,525</td>
<td>59,525</td>
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<tr>
<td>Egypt:</td>
<td>5,416</td>
<td>5,416</td>
</tr>
<tr>
<td>Other countries:</td>
<td>3,421</td>
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<tr>
<td><strong>Total dutiable exports:</strong></td>
<td>1,021,610</td>
<td>1,192,007</td>
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<tr>
<td><strong>Total and dutiable exports:</strong></td>
<td>285,468</td>
<td>288,888</td>
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<tr>
<td><strong>Total coke exports:</strong></td>
<td>17,634</td>
<td>17,634</td>
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### Coal Paragraphs from Foreign Lands

**ITALY**—The price of Carllift steam coal is now quoted at 40s. 3d. on the Genoa market, according to a cable to **Coal Age**.

A Milan note hints at a rise in coal prices, and advises consumers not to expect a reduction except such as may take place for a moment in consequence of a passing glut. This, on the other hand, may be easily absorbed by ready buyers.

Excessive development of power by utilization of the lignite deposits of Italy is being considered under a Government subsidy plan for making use of the national fields. According to a report to the Department of Commerce by Consul Rumel, Rome.

**BELGIUM**—The arrival of cold weather has still further increased the demand for domestic consumption. Supplies are firm and delivery periods are lengthening. During September 1,751,216 tons of coal were extracted from Belgian mines against 1,849,340 tons in August. On Sept 30 stocks of coal stood at 718,070 tons, a reduction of 288,810 tons. Production of coke amounted to 299,260 tons compared with 345,040 tons in August and the production of briquets was 205,469 tons, as against 216,010 in August.

**CANADIAN COAL IMPORTS** for the first nine months of 1922 were 1,246,943 tons of anthracite and 3,417,075 tons of soft coal compared with 3,042,189 tons of the former and 3,539,780 tons of the latter during the 3-year average, 1919, 1920 and 1921, for the same period.

**Featureless Market at the Ruhr**

Continued dullness was apparent last week, with depletion in the coal supply. Shipments from the mines continued below normal, with supplies so meagre that in the trade no shipper had a normal quantity on hand.

Coastwise movement was still reduced, because of shipments to the West and Northwest. The trade was anticipating a decrease in this movement in the next two weeks, with a consequent revival of business here.

**Hampton Roads Pier Situation**

*New York Times, Nov. 2, 1922*

Hampton Roads Pier Situation

### German Prices Raised Again

Production in the Ruhr region during the week ended Oct. 28 was 2,005,000 more tons, according to a cable in **Coal Age**. The output for the previous week was 1,989,000 tons.

Because of the large increase in the wage scale the coal prices have again been raised. Effective Nov. 1, an advance of 2,060 Mt. @ 7,715 Mt. per ton was made on unwashed fat coal.

The output of the Ruhr basin and Ld's Rhine collieries in September amounted to: Coal, 8,265,688 tons (3,836,773 tons in August) or 1,792,370 tons (308,769 tons per working day; coke, 2,196,605 tons (3,175,020 tons per working day; briquets, 413,282 tons (375,831 tons) or 15,865 tons (13,386 tons) per working day, according to the **Cottsey Guardian**. Only 52 per cent of the

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Trading Sufers Doldrums: Inquiries Are Plentiful

Current Demand Satisfied by Light Receipts—Early Improvement Foreshadowed—Stiff Undertone on Scarce Good Grades—Transportation Gradually Improving—Southern and British Receipts Downable.

Trading is still slow although there are plenty of inquiries. The light receipts are sufficient to meet current demand but there are many indications of an early betterment. Prices show little change, but good grades are scarce that a stiffening tendency is evident.

As in other markets buyers are defending their dilatory attitude by the statement that they expect freight rates after the close of Lake navigation.

Transportation conditions are improving slowly. Railroads are more active in the market and considerable complaints is heard from operators who are attempting to run on straight commercial business that preferential supply for carriers' needs leaves them but little loading equipment. Receipts of Southern coal are dwindling, while British cargoes are now arriving only occasionally.

PHILADELPHIA

There is no appreciable change in the condition. The light amount of coal is still in the hands of the open market dealers to whom there is no adequate demand. In view of the tight market and the inquiries for small quantities, the coal sold is chiefly better grades, a grade which is in demand.

There is no indication of the complaints of the suffering of the mines that the steam trade. Once again it is shown that the market is not generally active.
Householder Loath to Order Anything but Anthracite

Substitutes Urged as Shortage Becomes More Evident—Pea and Buckwheat Moving More Freely—Producers Aided by Mild Weather in Effort to Satisfy Needs of Northwest.

Substitutes are being urged on consumers as the shortage becomes more apparent, but householders are still loath to buy anything but anthracite. The strong demand, however, is enhancing pea and buckwheat is also moving more freely. Producers are making every effort to supply the Northwest before Lake navigation ceases, which may account for diminishing receipts in the East. In this they are abetted by the mild weather, which has cut down the season’s shortage, estimated earlier in the year at 40 per cent. Lake dumpings at Buffalo were 99,000 tons last week, as compared with 94,200 tons in the preceding week.

The smaller steam sizes are still a drug on the market. Steam coals are in distress at New York Tidewater and some barley in loaded boats has gone for the freight charges.

PHILADELPHIA

The week has been almost completely barren of shipments. Outside of fair independent receipts it can be taken almost literally that the companies have shipped no coal at all. The yard with coal is the exception now, even those large yards which have rarely ever been without stocks.

The public is surely favored by the weather, and it is just possible that the big producers are watching this phase, being ready to divert coal here the moment that normal November weather may arrive. The report is strongly current that the heavy shipments to the Northwest are being made by direction of the Federal Fuel Administration.

The dealers here argue if conditions are so severe there, they should use bituminous coal, which can be supplied to that district much easier than anthracite.

The best news the retailers have is a promise that a break in the shortage of coal here is on the way. A few are advised they now have the first reports of shipments for weeks. The tip has been pass that by Nov. 20 coal will begin to roll along in better volume, for the public is fairly calm over the situation, as very little fuel is needed, but despite this the retailers report that they are constantly urged to make deliveries as soon as possible.

Steam coals are still lagging behind with a bit more improvement in buckwheat. Much of this improvement though is being made at the urging of producers who insist that some buckwheat must go with family sizes.

Baltimore

Anthracite dealers are having a most difficult time in attempting to meet even the most urgent demands of customers. It is estimated that, despite recent arrivals at the rate of more than 2,000 tons of hard coal daily, that there are still more than 40,000 homes not supplied with coal, of which probably 25,000 at least would have had a large part of their winter supply in by this time. There are also a large number of consumers using up to one- and two-ton deliveries which were made to them on account. Many dealers have not gotten around their customers even with the one- and two-ton deliveries. Fortunately the weather has been mild so far that the heat has been heavy enough to cause quite a few consumers to start a call for additional fuel.

Buffalo

The demand of course greatly exceeds the supply, but the weather has been so mild that nobody is very urgent, except as the supply of natural gas keeps up well. Quite a many have bought coke, soft coal, or small sizes of anthracite and there certainly will be no distress right away, if at all. Complaint is made that Buffalo has not received as much coal as was allotted to it. Still the shippers are predicting that there will be little or no difficulty. The independent operators are trying to make up the amount of coal, as they find it hard to get cars. They are still asking $12.50 or $13 for it at the mines.

Lake shipments are not up to the average of former seasons, being for last week 99,000 tons, of which 41,200 tons cleared for Duluth and Superior, 9,200 tons for Ashland, 7,800 tons for Hancock, 25,500 tons for Milwaukee, 9,200 tons for Sheboygan, and 8,000 tons for Chicago. Rates are unchanged.

New York

Pressure is being used to induce users of the domestic sizes to revert to substitutes. So far these efforts have not been entirely successful but greater success is looked for as the winter advances.

The one thing that has presented a serious situation has been the mild temperature. These consumers who have not yet obtained any coal are becoming alarmed but they will have to be with furnace heat for some time to come. Retail dealers’ books contain orders for coal not yet filled, although the orders were entered some time ago.

Because of the scarcity of the larger sizes, dealers are not taking coal when offered, and this is moving well for this market.

The steam sizes continue to move slowly. Buckwheat is in the exception. This size is being taken by some dealers when they obtain the larger coal at the mine. Greater difficulty is experienced, however, when efforts are made to move the coal already at Tidewater and it was reported that some loaded cars had been offered as low as $8, alongside.

BOSTON

Shippers are coming along with exasperating slowness. By water there is delay in loading, and all-ail there is shortage of cars and locomotives. The producing companies, who are making a big effort to get coal to the Lakes before the close of navigation, are curtailing their shipments to New England and other sections. As a result, there is a lot of anxiety, but really cold weather overtakes the volume of coal normally due this territory.

At retail there is constant pressure on the part of householders. The largest Boston distributor has just advanced its retail price to $10, the mark set by most of the other dealers a fortnight ago.

SALT LAKE CITY

The car situation in Utah is still a troublesome problem. The carriers appear helpless to effect any noticeable increase in the supply of coal delivered to mines.

The recent cold snap continues, setting up in Salt Lake City exactly the condition which is expected to arisen in every other market, with the first real cold. The supply is low, people are beginning to scrounge for fuel, and the tendency towards hoarding is naturally to continue. However, the winter indications of coal men is that there is a good moral effect on some of the best responsible companies, and the worry in certain quarters over the danger of some people running out for want of fuel.

Canada

TORONTO

Supplies of anthracite coming in were at first expected to fill all orders for ton lots, but dealers are obliged to refuse further orders until the small carriers are filled. The standard price is $8 per ton, which is the same as larger dealers. The condition of the railways, who are in a position to add the few changes in the car system, makes it possible for the railroads to bleed the cities in the up-country, and a very small amount of the coal now coming west by way of Canadian Pacific is likely to do so.

On the Pacific coast, supplies are reported by some to be more plentiful, but not available for kerosene lamp burners, and the government has made special allowances for such as were asked for.
Dull Trading Shows Few Signs of Improvement Yet

Voluntary All Thankful for Short Supply of Car—Lump Prices Fairly Firm at Southern States All Drag Bottoms—"On for Winter?" Sighs Trade.

Demand in practically everything continues light with only one real prospect of relief—imminent winter. A thin trickle of steam demand which is keeping itself out of public sight is the only change worthy of mention since last week. This is so trivial as not to have lifted screenings out of the price dumps, but it indicates some buying must be done soon. Markets generally remain so low that the producing fields can not but be thankful that car supply continues weak.

At St. Louis, market conditions remain as low as last week, with not a single sign of relief. Kentucky fields are glad they are averaging but 15 to 20 per cent car supply and are wondering whether they will have even more of their market when the Lake shipping season closes. In all fields, business is largely on a day-to-day basis and price concessions on everything are made frequently.

ST. LOUIS

Warm weather has About ruined the local market. Demand buying has practically stopped and steam users are playing the market. Long coal is very strong in many houses. There is nothing being started in the way of more locally, except by the Electric and Carboneous producers. The situation demands for steam is rapidly dropped off on account of weather another and the effort made by dealers to compete with low-bas sales has reduced demand. The market demands for steam has suddenly dropped off on account of weather another and the effort made by dealers to compete with low-bas sale has reduced demand. The market demands for steam has suddenly dropped off on account of weather another and the effort made by dealers to compete with low-base sales has reduced demand.

SOUTHERN ILLINOIS

Warm weather and an indifferent public that still continues to expect a lower price have almost stopped the demand for high-grade coal. Lump and egg continues to move, but is not in any great demand. Nut is heavy and screenings are a serious problem. The day, however, has been saved by the car shortage. The railroad tonnage is below normal, principally on account of movement and no empties.

There is no market for Duquoin and Jackson county coal. Even the screened sizes in some of these districts have to be sold at a big discount. The market demand for steam demand was rapidly dropped off on account of weather another and the effort made by dealers to compete with low-base sales has reduced demand. The market demands for steam has suddenly dropped off on account of weather another and the effort made by dealers to compete with low-base sales has reduced demand.

LOUISVILLE

Down on the farm short supply of car. Last week's buying has already been completely checked. There is but a few car supply in the markets and the market is very weak. The market is weak in all fields and there is but a few car supply in the markets and the market is very weak. The market is weak in all fields and there is but a few car supply in the markets and the market is very weak. The market is weak in all fields and there is but a few car supply in the markets and the market is very weak.

CHICAGO

Trade seems ready to show an upward trend as any element with the arrival of a colder wave, but thorough the week quantities were sluggish, with wavering of prices which were already weak. The determination of southern Illinois and Indiana producers to prevent any general decline in lump continued without much success. The $3.50 level rules the market on very hot coal. There are concessions here and there but not enough to start a general covering. Screenings remain at an absolute drag in all fields. Many no-bills of this size are held overnight in almost all fields, it is reported.

Trading remains about the same as in the last few days. The demand is indifferent but the market is considerably lower. Many buyers are at last beginning to take just a little more coal than they use from day to day. The increase in size and cash sales and purchases are covered up as neatly as possible. This movement by no means takes care of the volume of steam coal available but it counts for something.

WESTERN KENTUCKY

Operators selling their production on a day-to-day basis have been forced at times to release unsold coal in the late afternoon at slightly under the market, with the result that some of this coal is very cheap, with空白 approximate to the demand for steam coal. This coal is being absorbed as the regular market.

Some of the jobbers who have had some orders at $2.50 to $2.75 report they have trouble in locating much coal that could be sold at that price for mine run, and still allow them a commission, although there has been some talk of $2.25 mine run, and perhaps some lower-grade stuff has sold that low, other than loaded coal that the operator had to dispose of. However, really first-class mine run is fairly at $2.50 to $2.75 in quantities, as production can't be very active when car supply for the first several days of November has been but 25 per cent on the 1.2 and 3.5.

The field in which western Kentucky coal is moving, has been materially reduced since mines north of the Ohio got back into operation. Movement by the dealers has been very small also, due to continued low water in the Ohio.

Screenings have been weak in spite of comparatively small production, ranging $1.50 to $2 for both lump and slack, the market for lump is $1.50 to $2.25 and for slack. Lump is generally quoted at $4.75, with very little coal at under $4.75.

INDIANAPOLIS

Sunshine and balmy weather is a combination which promises to break prices of demanders have already softened, due to lack of demand.

The situation is without parallel in the history of Indiana mining. For the next three months the strike is off and much of the coal supply. Weeks have gone by since and yet there is no demand. Approximately half the mines are closed each day, either because of lack of cars or lack of demand.
Filling of Current Needs
Leaves No Surplus Coal


Current needs are being met easily but there is no surplus left. Concentration of tonnage to the Lakes leaves little spot commercial coal available. The lack of abundant supply has firmed spot prices while the growing needs of consumers have had a strengthening tendency. Shipments to the Lakes probably will cease on Nov. 20, when it is estimated, sufficient tonnage will be rolling to supply cargoes during the balance of the season.

The Ohio fuel authorities have raised domestic mine prices 50c. to safeguard home needs and prevent so much of this tonnage going to outside markets where prices are higher.

PITTSBURGH

Car supplies show no material change, running generally at about 40 per cent of rated mine capacity. Operators are maintaining contract shipments without much difficulty and have sold free coal for the open market, not enough to cause a decline in prices even though the demand is not particularly heavy.

The steel industry seems to be able to maintain its supplies of coal for gas, power and byproduct coke without much difficulty, and even to accumulate a little reserve. Steel production in October was at the highest rate since October, 1920. Demand for domestic coal is fair but not excessive.

Prices are a shade stiffer, although there is no important change in the quotable market. Fair grades of steam are $3.25@3.50, ordinary byproduct, $3.75@4.00, while high grade by-product, may command up to $4.25. Youngstown gas is $4.50 for mine run, screened being $5@5.50. Domestic coke is $4.50, in accordance with the recent arrangement between the fuel administration and operators of the district.

CLEVELAND

The supply in this city is making no appreciable gains despite the recent agreements between the fuel administration and Ohio coal operators, who were to get more cars in return for consigning more coal to points within the state. At the present time the abundant coal trade is concentrating open shipments to lower ports.

The Lake movement has outrun expectations. It is now thought that fully 17,500,000 tons will be shipped. This will be about 5,000,000 tons short of the normal movement. It will be sufficient to supply current needs, however, but will not permit of a large carryover.

Partly because of the order from the I. C. C. all mines shipping to the Lake are guaranteed a 50 per cent car supply. A four-hour priority also put all open-top cars into service for delivery of coal to the ports.

Partly as a result of the lack of abundant supply and partly because of growing needs of consumers, the Cleveland coal market continues steady. There has been no further increase in price during the past week, however.

The demand for household coal continues to expand. Dealers report they are from five to six weeks behind on deliveries. Pocahontas lump is quoted at $12.25. Hard coal is coming in a little more freely. No price is quoted, the customer being billed the price at the time of delivery.

NORTHERN PANHANDLE

Since the opening of the B. & O. to Western shipments production is on a larger scale. There is a fairly large movement to the Lakes, with the price ranging $3.75@4.00. The demand for this grade is somewhat stronger. River shipments also have been increased somewhat. Buying by steel and iron mills on a large scale is also stimulating production.

DETROIT

Buyers are still looking forward expectantly to some miraculous development to provide them with coal at lower cost. Buying is apparently being limited to orders required to provide for current consumption, while the matter of accumulating reserves is set forward.

Jobbers are of the opinion that for a few days after the closing of navigation on the Lakes there may be a more liberal supply.

Bucking lump is quoted $5.75, egg, $5.25, mine run, $3.75, nut, and slack, $3.25. Three-quarter lump from Pittsburgh No. 8 is offered at $5.75, mine run, $3.75, slack $3.25. Fairmount lump is $5.75, mine run, $3.50@3.75, nut, and slack, $3.25. Kentucky and West Virginia lump is $5.50, mine run, $3.75, $3.50@3.75; slack, $3.25. Very little smokeless coal is reaching Detroit.

BUFFALO

Consumers say they are getting more coal than they need and they believe that the worst of the car shortage is over. Their cars will not be in full supply, however, and are greatly understated by everybody, but it is not now believed by the great part of the trade that anything short of a big carryover will do.

The trade deals much in theory. Supply. Some of these are about as short as ever, while some are reported to have 100 per cent. Taken as a whole the shortage is not as alarming as it was and if it lets up much more than the predictions now it will go to $2.50 may be realized.

Quotations are: $4.50@4.75 for gas lump, $3.25@3.50 for steel lump: $3.50 for mine run, with Allegheny Valley something like an allowance of lower freight rate: $3.25@3.50 for slack.

COLUMBUS

With the weather rather cold and with the demand for domestic as well as steam grades somewhat saturated, there is a slight weakening in the Ohio coal trade. This is not sufficient to cause any demoralization, however, and will probably be less at the first coal snap. Prices on certain grades have declined although prepared ores are still at high levels.

No change has been made in prices fixed by the Ohio Fuel Administrators. The conference called in Columbus ten days ago relative to shipping Ohio-mined coal to Ohio users has not done much to relieve the shortage. There are buying both West Virginia and Kentucky grades and are finding a sale at rather high levels. Some traders rather quiet. Reserves in many instances have been built up and users are not showing much anxiety over the future.

The Lake season is nearing its end. The trade has been fairly good, although a reduced tonnage was shipped to the Northwest.

EASTERN OHIO

Operations continue at a maximum because of car shortage or transportation disability. During the week ending Nov. 4 this district produced 17,500,000 tons, only 48 per cent of its normal capacity. Cumulative figures indicate a production of 8,737,000 tons or about 35 per cent of capacity for the year.

Demand for current coal remains strong because the quantity of coal available in the open market is heady. Little sharing is not being done here. Persons looking into the close of Lake navigation. It is understood that the shipment of coal to the lower parts will be less than in Nov. 1921.

Retailers are facing an active demand and are bargaining operators to furnish them with lump cars. As announcement of another car shortage is made by the Ohio Fuel Administration, allowing the additional cars per ton the previous maximum price is more effective. Nov. 15, for December.

It is in the interest of greater production in the coal for Ohio consumers and will also curtail the shipping of Ohio coal to the West, which were doing little or no business from the state.

Pittsburgh coal continues at a premium almost as good as ever. The market moves rather slow, but it is said that prices have not been raised for the past few weeks.
Northwest

Apathy Continues With Northwest's Warm Weather

Hard Coal Still in Keen Demand in Face of Small Supply But No User of Soft Coal Is Worrying—Prices Stable

Warmth still prevails throughout the region around the Upper Lakes. It seems to be sufficient to keep bituminous coal in a sluggish condition. Very little stocking is going on and trade shows a decided need for a cold snap. Coal men are fretting a little about the distributing problems that will arise with the first icy wind sweeping out of the North. The only signs of life anywhere in the region is a little railroad building down around Milwaukee.

Anthracite remains in keen demand with the supply as short as it was a week ago. Deliveries by rail are courted so as to finish out the winter shortage. Some coal on rail that was tied up near the fields was reported as Fuels Distributor Spins and better deliveries have been promised. Prices generally throughout the Northwest remain stable.

DULUTH

General stiffening of the market is noticeable here this week and the anthracite market is also strong, although the increased prices quoted last week are not evident. The hard coal that was sold at an advance was some which came from Illinois which were outside all the general maximum price agreements, and the price received is higher.

Official figures of shipments from the docks for October show that 30,017 car-loads were shipped. This compares with 15,474 car-loads shipped in October last year and 15,723 car-loads shipped in October, 1897. This year, after three months reports seem to show the above average for the month and would have been larger, but some cars had been held back.

For the year to October, 1,900,270 car-loads have been shipped, or 361,870 car-loads in excess of the same period of 1897. The average price of hard and soft coal shipped was $10.25 for the six months ending October, 1898, $10.07 for the same period of 1897.

One more car-load of the tonnage of the St. Louis and St. Paul dredging project, 3,500 tons, was on the Delaware this week, making the total to date 11,690 tons. The vessel is expected to complete the work of the season this fall.

While conditions are unchanged in the coal region, the stock of hard coal on hand is not sufficient to meet the demands and the manufacturers are anxious to keep the works in operation.

Little Change in Market; Inquiry Light and Scattered

Prices Show Tendency to Firmness—Large Plants Still Disinclined to Buy—Demand Uninfluenced by Car Shortage Reports—Improvement Unlikely This Month

The market shows no material change. Occasionally there are reports of better demand, but inquiry is still light and scattered. Both at the rehandling wharves and all-rail there is a slight firmness in price, but there has not yet been realized any price that would show more than a small advance over the market level of a week ago. The large corporations are still in comfortable position as to reserves and apparently there is no inclination to buy for the present.

Central Pennsylvania shippers are trying to impress upon regular custom- ers the advantage of making purchases at present prices, but the most alarming reports of car shortage seem to have little influence upon current demand. The territory easily accessible to Tidewater is loaded up with British as well as Southern coals.

At Norfolk and Newport News there are still tonnages available far in excess of demands, and while ac-cumulations shift up and down from day to day there is still ample Navy standard coal offering at prices not much in excess of $3. Heavy movement West is followed almost regularly by bargemasters that throw the bulk of current mining to Tidewater and the smokes and agencies are by no means relaxing their efforts to place coal in New England.

At the Philadelphia and New York yards there is still very little business on steam orders. Operators who are hardy enough to send coal down in the hope of making spot sales are almost uniformly disappointed and find themselves obliged to reduce rates. In November aggregate 41,500 tons of anthracite, and 88,738 tons of soft coal. If good weather prevails during the rest of the Lake coal, the supply of both hard and soft coal will be greatly augmented.
Cincinnati Gateway

Bulk of Recent Activity
Consists of Lake Business

Movement Improves Steadily—Domestic Buying of High-Volatile Coals an Encouraging Market Factor—Demand for Railway Fuel Quickens—Public Institutions Active.

Lake business handled through the Cincinnati coal offices has been closing with a rush, this forming the bulk of the activity here last week. The movement has been steadily improving and with the N. & W. placing its titanic cars in this trade the movement off that line has been accelerated. Domestic buying of high-volatile coals has been another bright spot, while the other points of activity have dropped down to a steady grind.

Demand for railway fuel has been picking up and some large buying orders are in sight for lines north of the Ohio River. Steel mill business is not so active and industrial plants have been less urgent in pressing their needs. Michigan and northern Ohio public institutions have been in the market stronger than for some time past.

HIGH-VOLATILE FIELDS

KANAWHA

With the Western embargo lifted, mines in the Kanawha field are beginning to recover from the slump. Although it has been possible to increase production somewhat, it is still not much over 25 per cent owing to car shortage. There is a market for all the coal the field can produce, now that it is no longer necessary to ship the entire product of the region to the East.

LOGAN & THACKER

Logan mines have also been able to increase production slightly. Opening of Western markets stimulated the demand somewhat for Logan coal which had been diverted to the East for a time. Owing to the fact that production is so limited there is really little spot coal to be had.

Production in the Kenova-Thacker field is not fluctuating to any great extent. More coal is being produced proportionately in this district, however, than in other high-volatile fields owing to the fact that the N. & W. is somewhat better able to handle loads.

NORTHEASTERN KENTUCKY

Despite the effort of the general run of buyers to remain out of the market and “bear” prices, there is still a fairly brisk demand and little chance of prices declining any further. Much coal is going to the Lakes and some is also being marketed in Ohio.

CINCINNATI

With the Tidewater prices a shade better than they have been for some weeks past the N. & W. producers were inclined to produce more keenly in that direction than to the Inland trade. Smokeless business, both from the Pocahontas and the New River districts, was holding around the $6 basis that had been established by Commissioneer Spens, but the deliveries except to the Lakes were not as large as they might be.

Car reports at Cincinnati show that 1,682 cars were on the water before they had been sent back to the mines. Motive power on the C. & O. as well as on the L. & N. is in ticklish shape and the first flush of winter is liable to spell an upturn to the prices. Southeastern Kentucky shows a slight increase in production with some mines working full two days a week. Logan County is offering more coal here than for some time past. This increase with other conditions has softened the market 25c. a ton in the past week.

Retailers found their prices cut 50c. this week by one independent company. Some of the others are holding to the old prices of the low level as follows: Smokeless lump, $10.50. run of mine, $8.75; splint lump, $10; slack, $7.50.

LOW-VOLATILE FIELDS

NEW RIVER AND THE GULF

New River producers are not making any progress in increasing their output owing to limited car supply, while better transportation conditions are still far from satisfactory. Inasmuch as the Western embargo was lifted about the first of the month, the region has a somewhat broader market. Mine run in the West has been bringing nearly as much as prepared grades in view of the price agreed upon for the latter. There is not a strong demand in the East.

In the Gulf region there has been a slight increase in production, which is now averaging a little over 100,000 tons a week, owing to improvement in transportation facilities. Virtually none of the coal is finding its way to Western markets. Although Tidewater demand is not active, nevertheless producers are finding a ready market for all the coal it is possible to produce.

POCAHONTAS AND TUG RIVER

Pocahontas production is on a somewhat lower level, a total of 271,000 tons only being the average within the last week or two. As only certain classes of equipment can be moved to Western markets, that is preventing a larger output. will the sun has been considerably reduced. The flow to Eastern markets is much larger than to points west of the Ohio River, notwithstanding the fact that less than 40 per cent of the mines prevailing in the East and in the West.

Few Tug River mines are working more than two days during a week. Virtually all the product of this region, such as it is, is being marketed in Western points, the fair daily large volume moving to the Lakes.

Coke

UNIONTOWN

After having been in force for one day, an L. C. G. order directing 50 per cent of mine rating be shipped to the Great Lakes, the order was canceled as suddenly as it was issued. The ruling was made on November 7 by the Ohio and railroads operating in the Connelsville region until Nov. 9.

The order was designed to get as much coal to the Northwest as possible before the Lakes closed, but operators here did not see the necessity of a mandatory order. They had found the Lakes trade at a profitable market at a time when coal is not easy to sell and did not need a compulsory order.

Fairly large orders for railroad coal were placed this week but they in no way strengthened the market, which continues quotable at $3 for steam coal and $3.50 for byproduct. The car supply showed some improvement.

The coke situation is drawing most attention today because of the nearness of the furnace contracting period. The increased production is absorbed by the trade, but prices have not yet been stabilized.

CONNELLSVILLE

The coke market has experienced a sudden drop, practically overnight. At 50c. in furnace, a decline in furnace being chiefly by way of the unusually large spread over furnaces coke being delivered.

At the same time that furnaces coke prices declined a new alignment developed. Previously, the cheapest coke was spot coke, this being coke loaded and shipped to the furnace in the same week. It could be had at $7.50, while coke for regular shipment over a week or two commanded fully $8. There does not seem to be any distress coke now, yet coke for spot shipment is holding at $7.50, while coke for shipment in a few days can be had at $7.50. Furnace coke is now 5c. 10c. depending on brand.

Demand is rather light. Nearly all the furnaces now in blast that are dependent on coke are covered fairly well to the end of the year. Some Eastern blast furnaces now idle, are understood to have estimated that $6 would sustain them, or the coke could be purchased at lower cost in order to make their furnace supply most salable. Operators, however, talk of weather troubles next week, which may throw a damper on the market.

The Courier reports production during the week ended Nov. 4 at 165,000 tons by the furnaces operating and 58,500 tons by the furnaces not operating, an increase of 4,500 tons.

BUFFALO

Attention is centered chiefly in the domestic market. Prices have dropped little and much is moving on the basis of $8.50 for 500 tons in car lots, and $8.25 for 1,000 tons. Some of the bulk sales have been made at $8.
W. L. Walton of Chicago was in Williamson County mining fields recently visiting operators of local interests. He is in conference with the Lake & Export Coal Sales Corporation on his return trip. Visited the St. Louis office of the company.

INdiana

The Conveyors Corporation of America, Indianapolis, has purchased and installed two Fife Engineering Company, Indianapolis, its representative for the sale of American trolley coal. This represents the first sale of this product in Indiana.

The Peerless Coal Co., an Illinois corporation, has qualified to do business in Indiana. E. J. Suffel, of Indianapolis, has been named state agent.

Resolutions directed toward the elimination of preferential rebating and lack of regulation of the assigning and distributing of coal, at the mine, were passed at a recent meeting of the directors of the Indiana State Chamber of Commerce. The need for the regulation of car distribution by federal and state boards was brought to the attention of the directors by its president. Copies of the resolution have been sent to the committee recently named by President Harding for investigation of the coal industry, as well as to the Public Service Commission of Indiana and the three state and member bodies of the Indiana State Chamber of Commerce, representing more than 20,000 men and individuals in the state.

The Johnson County Coal Co., a branch of the Indiana Coal and Coke Co., has purchased the coal yards of the Coal and Coke Co., to be located in Johnson County. The yard has been acquired for the purpose of developing the coal fields in the county. The yard is situated on the Big Muddy River, and is capable of handling a large volume of coal.

Ohio

The Columbus market coal yard announces that no deliveries of coal will be made before Nov. 23, 1922, as all teams and equipment necessary for cleaning work previous to that date. Prates 90 per cent of coal is to be used for the supply of coal car loads in Ohio and would serve no beneficial purpose.

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The Salisbury Coal & Clay Co. of Cleveland, Ohio, has been incorporated with a capital of $100,000 for the purpose of operating coal mines and clay mines in Lancaster County, Pennsylvania. The incorporators are Joseph F. Runsey, D. F. Runsey, A. J. Biddle, and Samuel E. Berry.

Members of the Midtown city commission have decided not to establish a municipal coal yard owing to the uncertain demand. With no fixed expense necessary for such a venture, Commissioner Philip J. Allen and Frank Berry had proposed the establishment of such a yard.

The stripping operation of the Pinye Fork Coal Co. at Fort Wayne, Indiana, is now going full blast. The Pennsylvania Coal Co. of Hinsdale, Co., interests are also being operated and a good output is reported.

The Caledonian Coal Co. of Cleveland, Ohio, has been chartered with a capitalized capital of $50,000 to take over the Caledonian mine near New London, Ohio, as the operating partner. The incorporators are James Williamson, George Williamson, E. H. Harker, A. H. Harker, and William Harker.

The Pennsylvania State Employment Bureau reports that the beginning of November there was a communally large age of 25,000 to 30,000. The most serious situation is in the Pittsburgh district. The bureau gives as the number of unemployment in the Pittsburgh district, for which the number of persons of employment because of the closing of the coal strike in the Pittsburgh district, the employer is responsible for $8,000 per person.

The Pennsylvania State Forestry Commission is planting 1,400,000 trees for reforestation purposes, and the coal companies and water companies of the state are taking steps to plant trees in the vicinity of the Pennsylvania state coal companies are planting additional land for reforestation purposes, and the coal companies are planning the protection of their water sheds.

The William Sutherland Corporation of the PRACTICE in the course of its operation of the New York Central railroad, has suspended its operations at the No. 14 colliery. Pennsylvania Coal Corporation officials are now in charge of the colliery and are giving the men employment in another colliery in the vicinity.

The investigation of coal deposits in Lancaster County are being made by mining engineers in order to determine the possible commercial value of the product. A survey of the hills in which small deposits have been found at various times was made recently by representatives of the coal mining companies from different departments.

The Bertha Coal Co. recently acquired one hundred new seventy-ton steel hopper cars for carrying coal, which will be placed in service between its Pittsburg, Glassport, and the various plants of the General Motors Corporation in and around Detroit. Motors Corporation of the Bertha coal company was formerly with the Pittsburg and New York.

The general offices of the Mon-Scott Coal Co., will hereafter be located in Pittsburgh. The company has purchased the National Bank Bldg. The Pittsburgh office will be in the J. P. Morgan & Co. Building. The company is being operated by the J. P. Morgan & Co. operations in the Mon-Scott Coal Co.

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Federal Fuel Control Notes

The Department of Labor has published a bulletin containing the results of a study of labor relations in the coal mining industry. The bulletin, which is based on data collected by the Federal Mediation and Conciliation Service, covers the period from 1913 to 1918. It shows that the number of labor disputes in the coal mining industry declined sharply during the years studied. The bulletin also includes a summary of the principal labor disputes that occurred during this period. It concludes that the decline in labor disputes was due to the improvement in working conditions and the increased wages paid to miners. The bulletin recommends that similar steps be taken to improve working conditions and wages in the coal mining industry today.

Publications Received

Traffic News

Not only is the sale of the Morgantown & Wheeling, a short coal-carrying road in West Virginia, but a special feature of the store is the sale of the People's Natural Gas Co. certificates, which are sold to the public in the name of the company. The certificates are issued in the name of the People's Natural Gas Co. and are redeemable in the name of the company. They are sold at the price of $1 each. The certificates are used as a means of payment for gas bills and are accepted by the company as payment for gas bills. They are also used as a means of investment by people who want to invest in the natural gas industry.

Association Activities

Northern West Virginia Coal Operators' Association

Representatives of the association held a meeting in Pittsburgh, Pa., to consider the situation in the coal fields of northern West Virginia. The meeting was held in a hotel in Pittsburgh, and the representatives discussed the problems of the coal fields, including the effects of the recent strikes and the need for further investigation of the situation. The representatives also considered the possibility of establishing a central association for the coal fields of northern West Virginia, and they agreed to work towards this goal.

Coming Meetings

The Illinois Mining Institute will hold its next meeting at the Union Club, 201 E. Michigan Ave., Chicago, Ill., on Oct. 12. The meeting will be held in the evening, and the program will include a discussion of the coal fields of Illinois and a presentation of the latest research on coal mining.

The Coal Mining Institute of America will hold its annual meeting at the Grand Central Palace, New York City, Dec. 12-13. The meeting will be held in the morning, and the program will include a discussion of the coal fields of the United States and a presentation of the latest research on coal mining.
What of the Outlying Districts?

It is going to be difficult to explain to the average citizen why the operators of the old Central Competitive Field are so determined that the operators of the outlying districts shall not have a direct voice in making the next wage agreement for the country. The spectacle at Chicago last week of operators divided into a dozen "camps" but with practically all of the men representing the "four-state" region clinging together on the one issue of keeping others out of their councils raises all the questions to which Harry Taylor, of Kansas City, and C. H. Jenkins, of Fairmont, gave voice at the joint conference.

Why should producers of less than 50 per cent of the country's soft-coal tonnage set a scale which others with no voice in the setting must follow as best they can? Why is it not possible for a basic price on mine labor to be established for the whole country, with legitimate variations by districts—as the price of nails was once fixed? Why cannot a joint national wage board make adjustments of labor scales in districts hard pressed by non-union competition so that those districts can meet that competition on something like even ground? It might be arranged in some industries, why not in coal?

The average citizen hardly appreciates the strength or arrogance of the United Mine Workers of America. He hardly realizes how necessary it is for cohesion and unity of purpose among whatever operators are to deal with that union. He may not know, even after the exhibits of Cleveland in August and October, that it is always difficult to unite the operators even of a single section of the country on any program and that marshaling the operators of the whole United States to present a solid front seems impossible. He is too ignorant of the intricacies of coal diplomacy—spare the world!—to understand that the longer the operators' front, the greater the number of weak spots and therefore the easier it is for a powerful union to segregate the groups and pick off the softest of them when any emergency arises.

As for varying wages from a national basic rate, the experience of the past is sufficient indication of what would happen at every operators' effort to reduce a district level. The United Mine Workers of America would rather close up a union field than reduce its wage to compete with non-union territory. Its principal effort would be to unionize that competing open-shop territory—barring obstacles such as the injunctions granted by Judge McClintic against organizers in the southern West Virginia regions. And could any joint body of union miners and operators make district adjustments on a scientific basis? Wouldn't it invariably be merely a test of strength?

Even though some impossible proposals were made by the outlying districts at the Chicago conference, not all the seed planted there fell on barren soil. Proposals for the creation of closer communities of interest among operators won attention. Suggestions for the establishment of various services of mutual value to operators throughout the land caused more than one delegate to say: "What that really means is: The National Coal Association ought to be stronger." And perhaps the National Coal Association is stronger in certain minds because of the thought which some of the Chicago discussion provoked. Perhaps an element or two of a better national consciousness in the industry was introduced.

The participants in the Chicago conference seem to have appraised aright the functions of the new coal commission in relation to their difficulties. That is to say they are not counting on that body to solve their mutual problems of a wage scale to replace the contract now in effect. The coal commission is the ear and voice of the public. It is not even indirectly charged with the problems facing the joint conference of miners and operators.

The commission will, however, be much concerned over the failure or success of this joint conference in preventing a strike in 1923. The public is looking to the commission to tell it the facts about the situation. There is no more serious or important responsibility imposed on Mr. Hammond and his associates than this, particularly because it calls for the exercise of judgment, the picking of the wheat from the chaff, even before the commission will have had opportunity to familiarize itself with the huge task that confronts it.

Shall We Weep or Think?

It is seldom that so much plain talking, straight thinking and common sense about coal are found in one place as in an editorial article in the November Survey Graphic, entitled, "What Lies Before the New Federal Coal Commission." It is all the more surprising that such a broad statement, which, while directed at the commission as suggestions and advice, may be taken to heart by all interested and connected with the subject, should be found in this publication. Perhaps the answer is found in the editorial in another part of the same paper, where it is said that the commission must have a "vision, an understanding of the coal problem in its entirety, and the strength and determination to carry it to a final solution."
most needed means to be hoped for from the commission's labors is the formation of an intelligent public opinion. Until the public conscience is awakened to its importance, the trend toward coal and the public mind informed of the issues involved, there can be little progress toward a permanent settlement." The other is that "the country is looking to the commission not for findings of fact but for leadership."

The public convention of the commission is that it is going to stop strikes and lower the price of coal. It can do neither. It is to be hoped that it will clearly realize and declare the causes of strikes and explain how and why the coal consumer's dollar for coal is distributed. It is not an administrative body and it cannot apply such remedies as its searching may suggest. But it can and must certainly give the public the chance to see that these remedies are given a fair trial. If the public is taken into the confidence of the commission and is prepared for its conclusions, if the rank and file of the offending parties—the operators and miners—have partaken of the deliberations and they too are led and help lead in the direct and proper way of thinking, then all together this country may apply that better understanding, drop sentimentality, and get somewhere on the coal question.

It is a helpful sign that the Senate dries its tears and recommends thinking.
Wire Rope Is Tough, but Faulty Installation and Careless Operation Quickly Destroy It*

Reverse Bending and Overlaying of Laps Are Costly—Frequent Inspection of Rollers Profitable—Relation of Drum to Rope Diameter—Where Wear Is Severe Large Wires May Be Used Exteriorly

Almost every coal mine is using haulage systems of one sort or another. Where the grades are light and electrical power is available, wire rope is not employed. When the grades are steeper, however, rope haulage is found to be more economical than electric traction. Two general systems are employed: (1) Endless and (2) tail-rope haulage.

The endless-haulage system consists of a rope with the ends spliced together and actuated by wrapping it several times around a pair of drums driven by either steam or electricity.

The tail-rope haulage system consists of two separate ropes, one a head rope attached to the load to be pulled and the other the tail rope which is attached to the rear end of the load. This latter rope is used to pull the empties back into the mine.

In the endless-rope system, grips are employed to attach the mine cars to the rope in groups of one, two or three cars, several such groups being thus attached. As fast as the coal cars are emptied they are connected to the return side of the system by grips and are hauled into the mine by the same rope that pulled them out. One or two men at the mine entrance with a similar number of men in the mine attach and detach the cars. Endless ropes up to about three miles long and ranging in size from \( \frac{1}{2} \) in. to 11 in. in diameter are frequently found. The rope construction usually employed in sizes from \( \frac{1}{2} \) in. to 10 in. inclusive is known as "haulage rope" and consists of six strands each of seven wires wound around a hemp core.

The grade of rope used depends largely on the friction, or wear, to which it is exposed. Crucible, extra-strong crucible and plow steels are ordinarily used.

For sizes as large as 11 in. the construction is frequently modified from the 6x7 to what is known as 6x19 Scale Patent, this depending on the size of the drums and the bending to which the rope is subjected.

For the driving mechanism the best practice is to thread the rope around the two drums in an elliptical path. This prevents any reverse bending of the rope, which is a bad feature and which should be avoided wherever possible. At some places where the design

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*First installment of an article from a paper entitled "A Discussion of Wire Rope as Applied to Mine Haulage," read at the autumn meeting of the Rocky Mountain coal mine association, Glenwood Springs, Colo.

†American Steel & Wire Co.
sounded from four to ten layers deep on itself. The drum should be as large in diameter and as wide as possible to reduce this overlapping of the rope on itself, for when it occurs the effect on the rope is quite destructive. It is of great importance, also, to see that every layer of the rope winds smoothly and evenly on the drum, for if it starts to wind unevenly, the wear on the rope is increased materially and the rope may be injured at some one point as the result of its becoming wedged between the layers on the drum. It is therefore necessary in the installation of a new rope on such a system to see that from the outset it winds smoothly and evenly on the drum. If this is done the rope usually will follow its original winding and give no further trouble. If it does not, however, the life of the rope will be materially reduced because wear will set in at some point.

In using a tail-rope system the proper arrangement of supporting sheaves, turn sheaves, rollers and idlers is quite important. The upkeep of these will in a large measure determine the life of a rope. Wherever cross-overs exist, for instance, suitable means should be taken to prevent the rope from coming in contact with the steel rail, because the rope, though hard compared to the face of the rail, contains a much smaller metallic section and consequently a slight wear of the rope from such friction involves the user in an appreciable loss.

In coal mines particularly lumps frequently drop off the cars onto the track and clog the rollers or at least prevent them from turning freely. Whenever a roller ceases to rotate it is rapidly worn by the rope and in turn will wear the rope. I know it is a difficult matter to keep every roller on a system of any considerable length always in condition so that it will turn when the rope comes in contact with it, but suitable supervision and regular inspection will eliminate the chronic cases which would otherwise produce bad results and excessive rope wear.

A few words with regard to rollers may not be out of place at this time. They should be light enough that they will start turning when the rope comes in contact with them. Some prefer chilled cast-iron, but others use wood. When the bearings of a roller get out of line due to wear or improper support it tends to bind and refuse to turn with the rope. A suitable frame with bearings rigidly attached and accessible for oiling, repair or renewal is a fundamental requirement. As far as possible, it should be designed so that dirt or material that may fall from mine cars will not cause it to clog.

Rollers should be wide enough so that the rope will stay on them. Where they are too narrow the rope jumps off them and rubs over the sides of the rollers or their bearings and suffers wear accordingly.

One type of roller for which special merit is claimed consists of two portions which taper toward the center. They are, of course, mounted on a spindle. The rope with such a roller always tends to travel toward the center, and here is placed a hardened steel sheave which will start up instantly when a moving rope comes in contact with it. A liberal bearing on the spindle reduces the wear to a minimum. Such a roller must be carefully lined if the best results are to be attained, but nevertheless this roller has its advantages, for its central sheave, being light, prevents wear of both rope and roller. It has been tried out in the South African mining fields and has been regarded with much favor. Operating tests of it are being made in this country.

Judging by the general experience of rope manufacturers and mining engineers, a more intensive study of the design of mine rollers would produce results of value to both. The bearings on rollers as a rule are not designed for the speed at which they will be run.

All that has been said about the rollers with the tail-rope system applies with equal force to those used with an endless rope, but with the latter the action and wear of the grip should be considered. It is important also that the grips be bell-mouthed on both ends so that there will be no sharp corners where they come in contact with the rope. Grips also should be smoothed out so that there will be no rough spots when a new grip is
put on. Such rough surfaces cause rapid wear on a rope, which does not stop until the grip has been worn smooth. The rope will always slip a little when the grip is applied or released. Summing up, the main need is to reduce the friction on the rope as far as possible, because friction means wear, and wear means shortened life.

In the tail-rope system the wear on the rope always is greatest on the end that is attached to the cars, for it is that end which travels the greatest distance and comes in contact with the largest number of rollers. It is the usual practice at mines employing the tail-rope system to cut off at regular intervals between 1,000 and 2,000 ft. of the end attached to the cars and to splice a new piece of equal length in at the drum end. This keeps the tail line in good condition. Another method is to use a head line for a certain period, then switch it over and splice it into the tail line, putting a new rope on the head line.

It is an open question which is the better of the two systems of haulage, endless or tail-rope haulage. The tail rope is of course intermittent in operation, and the number of cars in each trip will run from forty to sixty.

The ropes employed for head lines usually are 3/8 in., 5/8 in. or 1 in., and for tail lines, 3/4 in., 7/8 in. or 1 1/2 in. Head lines may run up to 10,000 or 12,000 ft.; the tail lines from 20,000 to 24,000 ft. Branch tail lines are used in entries further to enlarge the sphere of operation of this system.

On outside inclines, the pitch of which usually is fairly steep, ropes are employed ranging from 1 in. to 1 3/4 in. in diameter. In this case it is frequently found that a rope of a special construction will give better results than the ordinary 6x19 hoisting rope, for in this instance the important condition to be met is the wear on the rollers and not, as with a rope hanging in a vertical shaft, only the stresses due to the bending and the frictional wear at the drum and head sheave. Consequently, on an incline a rope should be made with wires of some-
what larger cross-section than are used in a rope for a vertical shaft. As such ropes are special, the mine that uses them must always carry a spare rope on hand ready for installation, for manufacturers are not likely to carry such ropes in stock.

There are, doubtless, many inclines where an improvement in rope service could be obtained by a close study of the conditions of operation. Certain points with regard to wear on ropes always should be borne in mind. The softest material used in rope manufacture (excluding iron, which is not now used in the construction of ropes for mines) is crucible steel. If we grade rope materials in accordance with hardness or wearing qualities, they are as follows:

(1) Crucible steel
(2) Extra-strength crucible steel
(3) Plow steel
(4) Monitor or improved plow steel

Plow steel and monitor grades are coming into use more and more for inclines and haulages, because these ropes have maximum wearing qualities.

In foreign practice it is customary, after deciding on the size of rope, to calculate the construction which will give the best service in this diameter, and then proportion sheaves and drums to fit the size and character of rope. American practice, however, differs from this, as it proportions the sheaves and drums solely to the diameter of the rope. On haulages the drums as a rule should be designed for ropes of six strands of seven wires; on inclines and shafts, for ropes of six strands of nineteen wires, or some modification of nineteen wires such as in the Seale patent rope.

In considering ropes for shaft use, the term “shaft operation” will mean the raising of mine material to the surface either vertically or on what might be termed a steep incline. If the incline is less than 45 deg. it probably would be termed a slope; if more than 45 deg. it would be termed a shaft.

The condition on a slope is identical to that on a gravity incline except that the load has to be pulled up in-

Overlaying Shortens
Rope Life

By winding one layer over another a small hoist drum can be used, but the movement of one piece of rope on another will cause unnecessary wear and even injury to both. In a case of the kind illustrated here the only factor to justify so much rope on the drum is that the cost of a drum of proper size might outweigh the saving made in prolonging the rope’s lift by proper winding.
CROSS SECTIONS OF SHAFT HOISTING EQUIPMENT

FIVE DIFFERENT MAKES OF HAULAGE AND HOISTING ROPE

of small diameter. The rope on the right has the wearing qualities of the haulage rope and some of the pliability of the hoisting rope. It wears down more than the other rope without separating it by broken wires.

Steam of being lowered. As on a gravity incline we also on a slope, a rope of special construction that will afford maximum wear frequently is needed. Even more careful attention should be given to the rollers on a slope or gravity incline than in a necessity of haulage system, for the speed usually is greater, and a roller either worn or refusing to turn would soon wear the rope out.

In a shaft operation the conditions which govern the life of a rope are the size and location of the sheaves and drums, the load hoisted, the speed of the hoist, its acceleration and such local conditions as corrosion by mine water.

As a rule the drums employed for shaft hoists are much larger than for any other type of operation. There are several reasons for this: In the first place, it is desirable to have the rope wind on the drum in one layer, because when as wound it is not subjected to the wear and crushing which is inevitable where overlaying is permitted. When the shaft is deep, this, of course, requires a drum of large diameter as well as considerable width. It also is desirable that the drums be grooved to fit the diameter rope to be used, the grooved drum giving a support to the rope which a flat drum does not.

Furthermore, the grooved drum assists in the winding of the rope evenly across the entire width. If conditions are such that a rope must wind on a hoisting drum in more than one layer, it should be borne in mind that the service obtained can never be as good as if the overlaying could be eliminated. Extra wear usually comes where the rope starts to make the overlay, due to the slip as the direction of wind is reversed.

Drum or sheaves to be used in shaft mining should be of at least twice the diameter designated in the trade catalogs, for such literature must cover a wide range of uses, and although the sizes recommended are larger than are used in some places, they are smaller than those usually obtaining at mining operations. A rule that is used abroad to a large extent is to base the diameter of the drum or sheave upon the diameter of the wire in the individual rope, the practice being for rope of 6 in. diameter and 6x19 stranding to use a sheave or drum not less than 7 ft. in diameter, that size corresponding to about 800 times the diameter of the wire. This minimum, however, is not considered good practice. The value of 1,000 times the diameter of the wire corresponding to a sheave or drum diameter of 83 ft. is considered desirable and an even larger one corresponding to 1,200 times the diameter of the wire would be preferable if it could be arranged. This would mean a sheave or drum 10 ft. in diameter. I think the practice in the United States frequently is to use larger than this, drums and sheaves up to 12 ft. in diameter being used for 13 in. 6x19 rope.

TABLE II—PROPER DRUM DIAMETER FOR 6x19 ROPE

<table>
<thead>
<tr>
<th>Rope Diameter, Inches</th>
<th>Drum Diameter, Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>10</td>
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<tr>
<td>10</td>
<td>12</td>
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<td>12</td>
<td>14</td>
</tr>
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<td>14</td>
<td>16</td>
</tr>
</tbody>
</table>

Sheaves or drums of large diameter will lengthen the life of rope by decreasing the bending stresses to which it is subjected. Where the drum or sheave is too small, wires begin to break and when a certain number have broken it is necessary to remove the rope. With a large drum or sheave the rope wears out slowly and has a far longer life.

Did Not Have Bureau of Mines Approval

H. FOSTER BAIN, director of the U. S. Bureau of Mines, corrects the statement taken from the report of the official investigator of the explosion at No. 4 Mine of the Canadian Collieries, Ltd., and quoted on page 669 of the Oct. 26 issue of Coal Age, to the effect that the coal-cutting machine in the workings where the explosion took place was of a type approved by the U. S. Bureau of Mines.

He states that "the Sullivan Machinery Co. advise that this was a totally enclosed machine of a type especially built for use in foreign countries and in Canada, and differing in design from the Sullivan machines approved by the Bureau of Mines. The company further advises that this equipment did not bear the Bureau of Mines approval plate, which identifies all permissible equipment approved by the Bureau."
How to Make Babbitted Bearings That Will Last Long
And Run Cool and Smoothly

Dried Clay Solution on Mandrel—Ladle with Round Spout Preferable
—Avoid All Dampness—How to Gage Correct Temperature—Casting
Base and Cap in One Operation—Providing Oil Holes and Grooves

By Gustav H. Raderbaugh

Babbitt metals are divided into three classes:
(1) Alloys of tin, antimony and copper; (2) alloys of tin, antimony, copper and lead; and
(3) alloys of tin, copper and zinc. The name "babbit" is derived from that of the man who invented the lining of bearings with soft metal, Isaac Babbit. The term "babbitting" has been applied to the process of applying soft anti-friction metals inside a hardened shell for the purpose of producing a smooth and cool-running bearing.

Babbit metal is extensively used. It can be purchased from most dealers in machinery and from repair or jobbing shops. It is marketed in the form of small blocks or pigs. One of the difficulties in the use of this metal is the formation of blowholes if the bearing is not properly cast. It has been found that these can be avoided if the mandrel, or shaft, while heated is lightly covered with a solution composed of one or two pounds of Jersey red clay to three gallons of water.

Prior to pouring the babbit the bearing should be heated to prevent the molten metal from becoming chilled and sluggish. The common method of determining the pouring temperature of babbit metal is by testing it with a dry pine stick. If it chars the wood, the metal is at the correct temperature for pouring. Never heat the babbit to red heat. This will destroy its usefulness. When heating the babbit in a forge fire be careful that none of the metal is scattered in the fire, for it will find its way to the tuyere iron and close up the blast openings.

The old babbit is removed from bearings by taking a flat cold chisel and driving it into each side of the box between the babbit lining and the cast-iron shell. The old babbit will break off in the manner shown in Fig. 1. This is not a difficult operation, as in most cases

FIG. 1—REMOVING OLD LINING FROM BEARING
A flat cold chisel is driven into each side of the box between the babbit lining and the cast-iron shell, thus causing the former to break loose. Oftentimes it will be removed by a single blow.

This will prevent the formation of bubbles and the lining, in consequence, will have a smooth surface. Oil causes the babbit to blister.

It is important that the metal always be poured from a ladle that has a rounded spout rather than one that is flat and sharp, for the latter tends to produce a porous area or blowholes in the solidified metal. Putty is preferable to clay for luting or sealing the ends and sides of the bearings, as the moisture in the clay tends to cause sputtering. Exercise caution when pouring babbit into a box; be absolutely certain that the inside of the box is dry. If damp it causes the heated metal to sputter and sometimes it explodes with force enough to scatter molten masses and partitions over a wide range.
The anchor holes in the base and cap of the box are shown in Fig. 2. These anchor holes are used to hold the babbitt lining in place. Cast-iron shells are rarely used; hence, though this is a common practice where the shells are of bronze, like those used for automobile engines. If these anchor holes are not in the box and no other method is provided they should be drilled, as it is important that the babbitt lining be held in place by some such means. When removing the babbitt the anchor holes sometimes remain filled. They must be clean before the shell is reassembled. One of the best ways to remove the metal left in the holes is by heating the box in the forge fire.

After the box has been thoroughly cleaned from all loose babbitt, metal and oil, the shaft, or mandrel, is then located and properly lined and leveled. A useful way of blocking it into place is by the use of the small wedge blocks shown in Fig. 3. After the shaft is brought to the proper position by adjusting the wedge blocks, it must be more securely held by placing fiat blocks under each end. It may be necessary to use paper shims in this blocking operation.

Liners are constructed to separate the base from the cap of the box. By cutting the small notches along the inside edge of the cardboard liners both the top and the bottom of the lining can be poured at the same time. These notches are cut in the manner shown in Fig. 4. They are large enough to permit the molten babbitt to reach the base but small enough that the cap can be readily pried free after the babbitt has been poured and has become cooled.
Paper ends or washers, as shown in Fig. 5, are used to keep the hot babbitt from coming in contact with the damp clay or putty which is used for sealing the ends and sides. These dams are used to prevent the hot metal from escaping. If the hot babbitt comes in contact with moisture it tends to spatter. Before placing the liners, therefore, as shown in the next operation, the cast-iron box should be heated. This will insure a more even flow of the metal.

After the liners have been put in place and the shaft properly lined up, the cap is ready to be placed on the base. It is good practice to clamp the cap in position with two bolts, as it insures its remaining in proper location. All the open edges are sealed with putty or clay as shown in Fig. 7. Good luting materials are putty, fireclay or ordinary clay. The bearing cap should be provided with a hole for pouring the metal through and one or two holes to permit the escape of gases. These holes on a bearing such as is shown should be 1/2 in. in diameter.

The babbitt scrap that has been removed from the box with the necessary quantity of new metal is placed in a ladle and slowly heated until a dry pine stick will char when placed in the molten metal as shown in Fig. 8.

Do not heat the metal to a high temperature. If the metal is too hot the pine stick will fire. It is not good practice to leave babbitt on the fire longer than necessary. It should be poured as quickly as it comes to the proper heat. To obtain a serviceable bearing these principles must be closely observed.

Before pouring, the babbitt should be stirred thoroughly to insure a lining of uniform composition. The metals in the alloy have a tendency to separate and seek different levels in the ladle, but the stirring overcomes that tendency. Previous to pouring, the top of the molten babbitt should be cleaned off as illustrated in Fig. 9, taking care that the refuse is not permitted to fall into the forge fire.

The babbitt must be poured quickly. One of the secrets of good bearings is the manner in which the metal is poured into the box. Failures are caused by having the box damp instead of warm, as suggested, by using a ladle with a sharp or flat pouring spout instead of a round spout, by not having the box ends and sides properly sealed and by not having enough material in the ladle to fill the bearing.

After the metal has been poured it should be permitted to cool and the cap should not be separated from the base till the metal has hardened. This operation is performed in the manner shown in Fig. 11. Two clamp bolts are removed, and a flat cold chisel is driven between the bearing cap and the base. This causes the metal to separate at the points adjacent to the small notches in the liners, where the metal two flows into the
The oil grooves are cut by using a round-nosed goose-neck chisel as shown in Fig. 15. After the grooves have been cut, smooth the bearing down with a half-round file and by scraping. Grooves are cut in the surface of the bearing so as to distribute the lubricant evenly over the entire length of the journal. They are also cut so that they will collect the oil (which would otherwise run out at the ends of the bearings) and will return it to some point where it may be used again. The usual dimension of oil grooves is $\frac{1}{8}$ in. to $\frac{1}{4}$ in. in width and $\frac{1}{16}$ in. to $\frac{1}{4}$ in. in depth.

Using Rusted Sheet Iron as Side Plates for Chutes in Heavily Pitching Rooms

In a certain anthracite colliery most of the mining is on the pitch and the grade is such that the car cannot follow the miner as the face advances, but must remain on the gangway. The pitches vary from 12 to 17 deg., so that the coal will not run without the introduction of chutes. These have a sheet-iron bottom and plank usually 2 in. thick on the sides. Thus the coal is carried from the face onto a platform or into the car.

The chutes that were left in the place when operations ceased on March 31 of this year were attacked by the acid water of the mine, with the result that when operations began again on Sept. 11 many of these chutes were no longer in fit condition to convey coal from the mine's face to the car.

Many chutes had been so badly attacked by the mine water that holes had been eaten through them. Some of the chambers are 250 to 300 ft. long and as each iron sheet is 8 ft. long the company had thirty or forty unserviceable iron sheets in each chamber. Just at this time much trouble was experienced in getting the necessary plank to complete the building of the chutes. So the problem was solved by the use of a sheet-iron cutter similar to that used in the breaker. This was brought into the mines and the sheet iron was cut lengthwise and used on the sides in place of plank.

Thus one unserviceable iron sheet 8 ft. long could be cut in two and made to take the place of a 16-ft. length of 2-in. plank. This was a big saving to the company, the only cost being that of buying the sheet-iron shears. Where there were any holes in the sheet iron the plates could be used with the damaged side down.
A Few Suggestions to Those Who Repair Mine Motors

Beware of Incorrect Connections Between Coils and Commutator
—Be Sure That Both Bands and Coils Are Snug—Guard Against Bends, Twists and Blows That May Nick or Weaken Wire

BY JOHN S. DEAN
East Pittsburgh, Pa.

When the armature of a mine motor is damaged and has to be rewound, it is important that the connections between the windings and the commutator be made correctly. If the windings are not too badly damaged, the winder usually notes the throw of the leads from the coil to the commutator bar when he is stripping the windings, and in this way he gets the desired information.

Entire reliance cannot be placed on this method, as there is a possible chance that the winding may have been connected wrong when it was originally wound, either in the repair shop or in the factory. The only safe way is to get from the manufacturer of the motor this winding information, with a complete diagram of connections such as are shown in Figs. 2 and 3.

To be sure of getting the full life from an armature, extreme care should be taken to see that failure, from whatever cause, is guarded against in a satisfactory manner while the armature is being rewound. First of all, any sharp corners and any roughness in the slots that might damage the coils should be filed down and all chips and filings removed before the insulating material is applied to the core. In applying the insulating material on the coil supports it should be evenly placed and no thin spots allowed.

The coils should fit tightly in the slot and so that the tops of the coils are approximately 1/8 in. above the outer edges of the grooves. If necessary, fillers should be used between the coils to meet these conditions. With the projection recommended there will be nothing to prevent the bands from being able to press the coils down tightly into place so that the former will rest finally on the iron core of the armature. Thus arranged the movement of the coils in the slots will be reduced to a minimum. If the coils are wound so that they come so high that the bands cannot be tightened enough to bring the coils flush with the iron core the bands will rest on the coils and not on the iron, and when the insulation dries out in service the bands will become loose.

The coils should not be twisted, bent or abused any more than is absolutely necessary to get them into place. Care should be taken not to get the wires or leads crossed in such a manner that when pressure is applied in banding, short-circuits will occur. The coils on the end windings should be down, so as to make a solid foundation for the bands, but care should be taken not to pound them to such an extent that the coils or leads are damaged.

Insulating protecting pieces should be placed at all points where the coils cross and where there is danger of short-circuiting. It is good practice to reinforce the insulation directly back of the commutator. This can be done by weaving braid between the leads or by taping the individual leads at this point.

The leads should be tinned back so far that there is no untinned copper in the commutator neck. The cotton sleeveing on the lead should not be allowed to get into the commutator slot, as it may hinder soldering to such an extent that a poor connection will be made. The tool used in driving the leads into place should be free from sharp corners that might nick the leads; for a nicked wire is likely to break.

Mining motors usually are laid out for a wave or two-circuit type of winding. They may be wound with either a right- or left-hand coil. A right-hand coil is one where the leads come out on the right when the coil is held so that the portion to be placed in the bottom of the slot is toward you and the air-gap side of the coil is uppermost. A left-hand coil is one where the leads come out on the left when the coil is held so that the

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*Motor engineer, Westinghouse Electric & Manufacturing Co.
there are an odd number of slots on the armature, there will never be an idle, or dead, coil. The alignment of the armature slots or teeth of the core with respect to the commutator mica or bar is as follows:

1. With the coil throw even and the lead throw even, the center line of the tooth will line up with the center line of the mica.

2. With the coil throw odd and the lead throw odd, the center line of the slot will line up with the center line of the bar.

3. With the coil throw even and the lead throw odd, the center line of the tooth will line up with the center line of the bar.

4. With the coil throw odd and the lead throw even, the center line of the slot will line up with the center line of the mica.

Sizes and Uses of British Anthracite

IN HIS little book on "Anthracite and the Anthracite Industry" A. Leonard Summers states that the recognized British standard sizes of anthracite are:

Selected large, for melting, hop drying and horticultural purposes.

Screened large, for export to crush to sized coals. Machine-made cobbles (2½ in. to 4 in.), for central heating apparatus, Dowson and pressure gas plants, household and various purposes.

Machine-made "French" nuts (1¾ in. to 2½ in.), for practically the same purposes as cobbles and for open grates and large stoves.

Machine-made and washed stove nuts (1 to 1½ in.), for suction gas plants and the majority of domestic stoves.

Machine-made and washed "pea-nuts" (½ in. to 1¼ in.), for "Economic" stoves and suction gas plants.

Machine-made and washed "beans" (½ in. to ½ in.), for suction gas plants and domestic stoves.

Machine-made and washed "peas" (½ in. to ½ in.), for suction gas plants and steam raising.

Machine-made and washed "grains" (½ in. to ¾ in.), for specially constructed gas plants and under steam boilers with forced draft.

"Duff," the fine, small dust, for spelter and cement making, chiefly for mixing in small quantity with steam coals for making patent fuel, including boulets for domestic stoves and fires.

"Rubbly Culm," or the rough coal passed between longitudinal bars 1½ in. apart, principally used for lime burning and steam raising.

Determines Ash in Coal with Milk Tester

A. M. Rodgers, a research worker in the School of Mines at the Pennsylvania State College, has devised a novel scheme for estimating rapidly the percentage of ash likely to be contained in a given sample of coal. By means of a centrifuge such as is used to test the proportion of cream in a given sample of milk, he has succeeded in making tests of coal in a few minutes whereas the previous method, which necessitated the burning of the coal, took nearly a day.

The coal to be tested is ground finely and poured into test tubes containing a liquid. When the tubes are violently mixed rapidly by the centrifuge, the slate and sulphur go to the end of the tube and the combustible part of the coal is left near the top. Graduations, like those used in the milk and cream tester, show at once the proportion of waste in the coal.
Kentucky Mining Institute Discusses Loading Machine And Value of Business Associations of Coal Men

Suggested That Loading Machine Be Shifted by Locomotive and That Conveyor Be Made Telescopic, So That Loading Boom Before Operating Can Be Extended and Load Two Cars Without a Shift

THAT when properly managed the coal-loading machine has great possibilities is clear from the statement made by N. G. Alford at the meeting of the Kentucky Mining Institute, at the Seelbach Hotel, Louisville, Ky., on Nov. 3. He stated that the Pocahontas Fuel Co. had loaded with three machines 1,500 tons in one day with a force of men somewhere between twenty-seven and thirty-five, including those actually operating the loaders.

Brisk and businesslike was the meeting of the institute, which did not conclude till nearly midnight of the day of meeting. It had been intended to extend it until the following day, but at the request of some of the members who could not stay so long it was crowded into a single day and the report of the committee on the "Preparation of Coal" was omitted, as none of the members of that committee was at hand to read or discuss it.

The report of the committee on "Coal-Mining Machinery" was delivered by Alphonse F. Brosky, of Pittsburgh. As the subject seemed too large for a single session, the paper was limited in scope to mechanical coal-loading machinery and how it might be used to the greatest advantage. Interest was added to the paper by a number of lantern slides showing the different types of mechanical loaders.

WORK OF LOADING SHOVEL IS INCOMPLETE

P. P. Wright, of Bevier, Ky., opened the discussion, remarking that he gathered from the paper that mechanical loaders were complicated and cumbersome, and had not been so greatly simplified that the operator would be justified in adopting them as standard equipment. He also said that in the loading of coal by mechanical means more daymen would have to be employed than were required in the actual operation of the machines; otherwise, how could the rooms be cleaned up, fallen posts replaced, track be maintained, and the many other jobs executed that always accompany room mining?

In reply to Mr. Wright's first remark A. F. Brosky said that we never could hope to develop a loading machine that would have a flexibility approaching anywhere near that of the human loader, but that the loading machine is being made more and more adaptable to mining needs. For the greater part of coal handling, electric power is cheaper than man power. Without question a straight loading machine will never be constructed that can be operated without some of the coal being shoveled in the final clean-up. But if the employment of a few daymen will make unnecessary the services of a far larger number of contract men, the cost of loading per ton will be lowered.

N. G. Alford recited what had already been achieved in mechanical loading at one of the mines of the Pocahontas Fuel Co. His statements seemed to convince the operators present that mechanical loading was far from a complete failure. In one of that company's mines three loading machines are said to have loaded out 1,500 tons in one day. The number of men required was somewhere between twenty-seven and thirty-five, including those operating the loaders.

As asked whether the conditions at this mine favored mechanical loading, Mr. Alford replied that they were exceptionally favorable, the seam being approximately 8 ft. thick. Interrogated by Mr. Jenkins as to whether the coal was soft and the roof unusually strong, Mr. Alford replied in the affirmative. Mr. Cockburn substantiated these statements by saying that few places had more favorable conditions for mechanical loading.

SUITEABLE TIME TO TALK MOTOR STANDARIZATION

Graham Bright, of the Westinghouse Electric & Manufacturing Co. cautioned designers and manufacturers of mechanical loaders to decide upon a type of motor, preferably standard, and to allot sufficient room before going far in the design of other features, thus saving the great expense of designing and constructing a motor of unusual size and type.

Questioned as to what he had done by his firm to bring out an "explosion-proof motor" he said the term as applied to a motor to be used in a gassy mine is a misnomer. The term "permissible" might be adopted more appropriately. At the present time the demand for such a motor would not justify any manufacturer in spending a large sum of money to develop it. A permissible motor for the driving of the pumps has been available for a period of 5 or 6 years. The design in the early type provided wire-gauge screens to prevent explosions of gas.

MAKING ELECTRIC MOTORS EXPLOSION-PROOF

The Bureau of Mines never would pass favorably on this type of protection, yet at no time and under no conditions could the operation of the motor be made to cause an explosion of the gaseous atmosphere by which the machine was surrounded. The new type of permissible motor is built heavy, with wide flanges. It does not prevent explosions within the motor, but such explosions will not injure it or extend to the air outside.

On being asked by Mr. Alford as to the most effective means of transporting a loading machine from place to place, Mr. Bright stated that he believed that in most cases the addition of self-propelling mechanism was a mistake. The simpler the mechanical loader the better, and for that reason it might be wise to eliminate the self-propelling devices on the track and use a locomotive to pull the machine from place to place, providing it could be arranged so as to have one always on hand when the machine had to be moved.

P. P. Wright said that as the self-propelling cutting machine was regarded as essential why should it be expected that the loading machine would be satisfactory.
without means of carrying itself, but Mr. Bright in reply declared that the conditions in the one case might be entirely different from those in the other.

To Mr. Bright's remark, that the addition of a self-propelling device might add too much weight to certain classes of mechanical devices, Mr. Wright rejoined that to propel the machine the same motor might be used as is utilized in driving the conveyor and in actuating the other moving parts. Mr. Alford was of the opinion that much of the moving isunnecessary and might be overcome by paying more attention to the working of places in sequence.

Mr. Broome stated that the time expended in the shifting of mine cars might be cut in two if the loading beam on the loader were lengthened so that cars could be loaded in trios of two cars instead of one at a time. It should be possible to design a telescoping scraper conveyor that would add 15 to the height of the machine. With this extended the first car could be pushed under the conveyor and the second car placed under the discharge of the loading beam. After the latter was loaded the other car could be pulled out so as to speed it and loading would resume. Before the loading machine was moved the conveyor could be telescoped and thus be fitted for maneuvering out of one room into the next. Several mechanical engineers have already expressed it as their opinion that the mechanical details of such an arrangement could be worked out.

Mr. Bright to Balance Evil with Good Times

J. F. Callowhath, secretary of the American Mining Congress, being present, was asked to address the institute. He defended the coal industry from the charge of handling insufficiently and added that the operator should not be prohibited from making such a profit during favorable periods as will afford him a fair interest on his investment, not only for the period of prosperity but also for the slack periods that precede and follow the brief period of good fortune.

Mr. Callowhath then continued to the institute the aims of the Southern, or Dixie, division of the American Mining Congress, now in process of making. He referred especially to the effect of the growth of mining on the future of the South, declaring that although the industrial area in the Southern states were not nearly so vast as those of the West, the additional cost of recovery in the former-mentioned states would be offset by the reduced charges for carrying the products to Eastern markets.

After the above remarks Graham Bright read a paper, illustrated by lantern slides, on "Gathering Locomotives for Coal Mines." In his paper he spoke of the merits of all-rubber cable for gathering locomotives, digressing for a moment to recall the experiences of the Pittsburgh Coal Co. in that respect. According to A. B. Kinzie, chief electrical engineer of that company, the superintendent stated that all-rubber cable will outlive four to six of the braded cables. The men are not afraid to handle it, for when it is used the danger from shock is reduced to a minimum.

N. G. Alford started the discussion by asking Mr. Bright whether the principal use of the straight battery locomotive was in putting coal from thin seams, where the cost of making headroom for any other type of locomotive would be prohibitive. Mr. Bright replied that approximately 50 per cent of all the straight storage batteries in use are bound in thin seams.

Mr. Wright queried whether some new type of locomotive, the design of which would constitute a radical departure from those in common use, was under consideration. In reply Mr. Bright said that a caterpillar locomotive is now being developed.

Asked by Mr. Alford regarding the inherent operating difficulties in dynamic braking Mr. Bright replied that before adopting that principle for a locomotive one should make sure that the duty of the latter will be such as will permit of the economic use of a plan of that sort.

J. W. Reed, of the Consolidation Coal Co., wanted to know why in storage-battery locomotive design space was not allotted for an extra seat so as to accommodate a second rider. Mr. Bright informed him that such a provision was now being made. The space required, however, was obtained by sacrificing some of the room hitherto occupied by the storage battery.

Mr. Wright then asked the time-worn question as to when the mule and when the storage battery locomotive should be used. It was brought out that many mistakes have been made in the past, either because the operator chose the storage-battery locomotive for working conditions not suitable to it or else because the salesman taking orders for that type of locomotive foolishly led him to believe its adoption best. Where the working places are scattered the mule is just as economical as the locomotive. Mr. Wright finds that one mule will gather about 50 cars in a shift. Graham Bright said that under favorable conditions the locomotive should replace three or four mules and one or two drivers. He added, however, that figures of this nature are almost of no use to the other fellow, as blind statements without a knowledge of conditions of working mean little.

The second paper of the afternoon was entitled "What Good Roads Mean to Mining Districts," and was delivered by C. D. Franks, of Indianapolis, Ind. The change from mining to road making seemed to serve as a relaxation and to be appreciated by the institute.

Railroads Should Balance Car Borrowings

J. M. Dewberry, general coal and coke agent of the Louisville & Nashville R.R., spoke on "Present Coal-Traffic Problems and the Prospects for the Future." No discussion followed the reading of this paper. He regretted that the Interstate Commerce Act of 1920 is not enforced so as to compel a carrier to replace by another every railroad car that it borrows from the owning company. A few of the smaller railroads do not have enough rolling stock to handle the traffic which passes over their tracks. Consequently they attempt to hold cars that pass over their roads.

He condemned openly the inflation of mine ratings. He did not, however, recommend that the rates on the Louisville & Nashville R.R. be lowered to normal unless a corresponding drop were provided all along the line and on other roads. Orders for cars in the aggregate on this road are about 100 per cent in excess of the possible output from the mines which it serves.

After the committee reports had been read, Prof. Norwood, of the State University of Kentucky, read the constitution that had been prepared for the institute's action. C. J. Neekamp's paper on "How to Make an Operators' Association of Most Value" followed.

Mr. Butler said that many of the operators were lax in fulfilling their obligations to their association and lost interest during those periods when they are prosperous and having no trouble. That is entirely wrong.
They should be “on their toes” at all times. He added that the operators must avail themselves fully of the publicity that was theirs for the asking. During the rail and coal strikes last summer the public made it apparent that they considered the main issue was the refusal of the miners and the operators to get together. If the operators had resorted to publicity the impression would not have entered the public mind.

Mr. Jenkins, vice-president of the West Kentucky Coal Co., maintained that the operators' side of the question should get at least as much publicity as that of the miners.

F. P. Wright well expressed his belief as to what an association of this kind should be when he said: “There is no better example of association, co-operation or co-ordination than the United Mine Workers.” The members of that organization are loyal one to the other and to their society as a whole; nor do they at any time fail to give their leader their hearty support. He compared the operators to a team of horses pulling two ways.

The small operators always hesitate about coming into the operators' association, believing that it is controlled by the larger companies for their exclusive advantage. This is an erroneous idea, Mr. Wright said, as they may derive as much from it as the big fellow. It is the little company that really sets the prices, so why should he not come into the association?

He reiterated what was said by those who spoke before him on the need of publicity. Newspapers come to the meetings of the operators and ask for information. Usually they are told “nothing doing.” As they were sent for the purpose of getting information and are refused it by the operator, in self-defense they get whatever news they can possibly gather, regardless of the source, and then draw on their imagination. The coal industry should tell the public all about its business. There is no secret about it. Mr. Wright concluded by saying that the industry was up for trial before a one-sided tribunal and that it behoved the operator to make it two-sided by more co-operation and membership in the operators' associations and by more publicity.

Mr. Calbreath advocated publicity as a means of achieving a just settlement. This the coal operators have not yet succeeded in setting in operation. The public still believes, as a whole, that the operator gets most of the high price of coal whenever prices soar.

In the election of officers that followed this discussion Prof. T. J. Barr was elected president of the institute for the coming year, and Mrs. Elizabeth C. Rogers was again chosen as secretary-treasurer. It was almost midnight when the meeting, having completed its business, finally was adjourned.

North Carolina Again Among Coal States

BY HION H. BUTLER
Southern Pines, N. C.

The Carolina Coal Co., of Southern Pines, N. C., has opened an interesting coal field in the North Carolina Triassic basin of Chatham County, not far from Sanford. It gives all promise of being an addition to the power supply of that rapidly developing state. The development of the Carolina company includes a slope driven on a 27-deg. pitch 800 ft. into the bed, where it begins a series of headings and workings in a seam of excellent high-volatile coal about 4 ft. thick. Assays of the coal made by various agencies show a quality comparable with the best coals of Pennsylvania—low ash, low sulphur, high heating power and freedom from parting and impurities.

This field is by no means a new one, for before the Civil War the Egypt mine, two miles distant from the Carolina company's new mine, was operated by a shaft that had been sunk into the same coal seam. But the Egypt mine was at that time far from any market that needed coal in any quantity, and transportation consisted of an occasional wagon. Later a railroad was built into Egypt, but still the call for coal was slight and the method of operation was not very practical. An explosion ultimately settled the fate of the property. Later it was reopened, and it is now producing coal, with the prospect that it will become a valuable property under modern methods and facilities.

The Carolina Coal Co., with J. R. McQueen, president, C. M. Reeves, general manager, Howard N. Butler, superintendent, after extended investigation of the Deep River coal basin obtained 1,200 acres of land and drilled it with core drills, determining their deposit, and then proceeded to sink their slopes and open a mine. They have about 3,000 ft. of underground workings exploring the coal, which runs regular, with hard sandstone roof and but little water. At the Carolina and the Cumnock mines about fifteen to twenty cars of coal are going out weekly now, with plans for increasing that as fast as conditions at the bottom will permit. The Carolina company's mine is planned for a daily capacity of 1,000 tons when fully developed.

The company has several thousand acres of additional land in reserve under option or lease or through the ownership of the stockholders and expects to develop further acreage as soon as the present property is brought into its intended activity.

The Deep River coal basin is a limited field in the Triassic rocks much higher up in the geological measure than the coals of the Carboniferous, but the coal appears to be identical with that of the Lower formation. Three or four beds are present, only one of which will be worked by the Carolina company at the present time.

At the present time a geological survey is in progress under the management of K. K. Kimball and Maurice Campbell, of the U. S. Geological Survey. A preliminary survey a few weeks ago brought out such a favorable report that it was decided at Washington to make a thorough study of the coal basin to determine what coal deposit might be brought to the notice of the country and its resources made available for the expanding industries of the state.

North Carolina is fast becoming a prominent manufacturing state, being second to Massachusetts alone in the amount of cotton ginned and forecast of all the states in the number of cotton mills. It is the leading tobacco manufacturing state of the Union and is close to the top in the production of furniture. All this takes power. An advantage which the Deep River basin has is that it is two or three hundred miles from consuming coal and will have the inside track in its market.

The mines are seven miles out from Sanford near the village of Cumnock, on the Southern and Norfolk Southern railroads. It is believed the field will ultimately develop a capacity of several thousand tons daily, which will find a market within a limited radius.
Testing Materials Society Defines Coke

In order to standardize the methods of testing coke and to give a nomenclature which will be of nation-wide acceptance to the Society for Testing Materials, the annual volume of tentative standards has included a chapter entitled "Tentative Definitions of Terms Relating to Coke." A diffuse coke, fusible coke, hypodermic coke and producer coke are defined.

Fusible coke from besihe or retort ovens is coke that is physically and chemically suitable for foundry cupola practice. It may be either 72- or 48-hour coke. The principal difference between the two is the greater size of the 72-hour coke, due to the fact that the porosity of the coke is not fully expanded in its preparation. The coke, or fume coke—smaller than approximately 1 inch in size—is forced to screen out.

Fusible coke from hypodermic coke is coke that is physically and chemically suitable for foundry cupola practice and which passes over a screening device having approximately 24-in. openings. It is not produced in any standard casting time.

Fusible coke from besihe or retort ovens is coke that is physically and chemically suitable for the reduction of iron ore in blast furnaces. The coke smaller than approximately 1 in., as in fusible coke from the same source, is forced or screened out. The usual taking time is four 8-hour charges and two 24-hour charges.

Fusible coke is coke of the smaller screened sizes, below approximately 1/4 in., suitable for use in domestic stoves, hearths, etc. The standard sizes are quite generally sold under the names given in the table and the screened sizes are average, although locally varied. 

ADDITIONS TO LIST OF PERMISSIBLE EXPLOSIVES FROM MARCH 15 TO SEPTEMBER 30, 1922

<table>
<thead>
<tr>
<th>Brand</th>
<th>Weight of 10 lb. of explosive</th>
<th>Smallest diameter of charge</th>
<th>Last date of approval by Bureau of Mines</th>
<th>Manufacturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Diamond No. 17</td>
<td>172</td>
<td>14</td>
<td>222</td>
<td>III. Powder Manufacturing Co., St. Louis, Mo.</td>
</tr>
<tr>
<td>Grasselli 2.L.F.</td>
<td>142</td>
<td>12</td>
<td>221</td>
<td>Grasselli Powder Co., Cleveland, O.</td>
</tr>
<tr>
<td>Grasselli 5.L.F.</td>
<td>156</td>
<td>12</td>
<td>223</td>
<td>Grasselli Powder Co., Cleveland, O.</td>
</tr>
<tr>
<td>Grasselli 6.L.F.</td>
<td>162</td>
<td>12</td>
<td>218</td>
<td>Grasselli Powder Co., Cleveland, O.</td>
</tr>
</tbody>
</table>

In addition to the foregoing additions, the following changes have been made: Aetna coal powder A changed to Hercules coal powder A; Aetna coal powder AA to Hercules coal powder AA; Aetna coal powder B to Hercules coal powder B; Aetna coal powder C to Hercules coal powder C; Aetna coal powder 2 to Hercules coal powder 2; the smallest permissible diameter of Black Diamond No. 7 has been changed to 1 in.; and of Bituminite 5 to 1 in.; Grasselli Nos. 1, 5 and 6 all changed to 1 in.

The following explosives have been withdrawn from the list of permissible: Bituminite 8 L.F., Coal Special I-A, Collier 6, Franklinite 1, Nitro low-flame Nos. 1 and 2, Big Red No. 6. L.F., DuPont permissible No. 1, Mineite A, Tunnelle No. 4, and Tunnelle No. 8.

*Assistant engineer, Bureau of Mines.
Inspiring Self-Confidence in Miners by Example

All Have Much to Learn From Others—Gaining the Confidence of Men Is the First Essential Quality of a Good Foreman—Confidence Insures Trust and Obedience

Example goes farther than precept. Nothing will inspire confidence in men for their boss quicker than the show of a like confidence on his part in them. Every man has much to learn from his fellows; and men are quick observers of the feelings of their boss toward them, and not slow to follow his example.

This was the thought that I attempted to express in my letter, a few weeks ago (Coal Age, Aug. 24, p. 290), in regard to gaining the confidence of men, which I see, from the letter of John Rose, page 436 of the last issue of Coal Age, was not fully understood.

I have always been a pleasure to read the letters of Mr. Rose, as I know that men of his stamp have been longer in the mining game than myself. I am a comparatively young man, having been mining coal about eleven years; but I am in the game for all it is worth, and am always ready to gain new ideas from the many writers of experience in Coal Age.

In his excellent letter, Mr. Rose's main thought seems to be to inspire men to have confidence in themselves. I am sure that he should have misread my letter, if he think that I had any other thought than that of inspiring men to act intelligently, by giving them safe instructions.

Confidence in a Foreman Inspires Obedience to His Orders

The first essential of a good foreman is to gain the confidence of his men. Until he has done that, his instructions to them, regarding safe practices and economical methods, will fall on deaf ears. On the other hand, men will listen and give heed to what a man says in whom they have confidence. That was my idea in writing that first letter.

The instance I then cited was that of overhearing the conversation of two miners, in the room adjoining my own. Miner No. 1 was telling Miner No. 2 that he (No. 2) was doing unnecessary work in setting some timbers back along the road in his place. The reply was, "Well, George, my boss told me to set them while I had time between cars. He said it would make my place safer and the work easier for drawing back the pillars, and he knows."

Here was a man who had confidence in his boss; and that confidence enabled him to profit by the instructions given by him by an experienced foreman who foresaw that the setting of a few timbers, in the miner's spare time, would greatly assist the work of drawing back the pillars, later, when that had to be done.

Miner and Foreman Disagree

While I am writing, let me give another instance where there was not the same confidence on the part of the miner in his boss. The illustration will also serve to show the danger that may result from an indifferent attitude on the part of a foreman who is willing to compromise his instructions, owing to objections offered by the miner.

Awhile ago, I changed to be in a man's place when the assistant foreman came in. Observing a loose piece of slate that would support it, the assistant foreman said to the miner, "John, put up a post here and do it now." The reply was, "I can't stand a post there, as it will not give me room to work." "Well," said the foreman, "take the slate down then."

The miner then explained that taking down the slate would mean the taking out of other timbers on which it rested and would require much extra work. The result was that the assistant foreman compromised what he knew to be a dangerous proposition and told the miner to stand a temporary post there, until he could get away from the place.

Compromising Evident Danger

Unsafe Plan to Adopt

This satisfied the miner since, as he said after the assistant had gone, he could stack up anything there for the time being and it would be all right with the boss.

To my mind, this assistant foreman made a great mistake when he told the man to set a timber temporarily. He should have realized that the only safe plan to pursue was to take the loose piece down and avoid a probably fatal accident, that might result from the miner's work, but give it immediate attention.

When a foreman needs to impress on the minds of his men it is to always do things in the right way. A foreman must show his men, the first time, and watch them afterwards, to see that they understand how to do it themselves. Then, tell him it is good, but show him where he can improve by making some changes another time.

Encouragement goes a great ways in instructing men. Encouraging words show a foreman's confidence in the man's ability to perform work in the right way; and confidence, on the part of the foreman, is the first step in gaining the confidence of his men and securing their co-operation in making their work safe.

By teaching men to guard against present dangers, which are clearly seen and realized, they learn to accept and obey instructions that are designed to aver dangers, which may arise in the future. Future dangers are not so clearly discerned by the miner of less experience. Only in this way can we expect to establish self-confidence in men, by training them to foresee danger and play safe. In closing, let me say, that Mr. Rose, in the letter I am quoting, every sentiment of which I fully endorse.

G. W. Brandes.


Gathering Cars with Reel Cable

Practical difficulties encountered in the use of long cables, in gathering cars—Expense of frequent renewal or worn cables—Dangers of sparking by cable coming in contact with rock.

The inquiry that appeared in Coal Age, Oct. 12, p. 294, regarding the use of a single reel of double cable, for gathering cars at the working face, calls to my mind experiences in the use of reel cables for gathering cars.

In common with others, we had been following the practice of running out the cable, often to its full length, to the gathering car, with the result of standing at the face of headings and mines. It was some time before I learned by experimenting the advantage and dangers attending the use of long cables for that purpose.

In the first place, there was considerable danger, for instance, in increasing and reducing the cables; but that was nothing to the constant wear and tear from the constant use of long cable. The constant wear and tear shortened the life of the cable and imposed frequent renewals, which made the practice very expensive.

Of still greater importance, however, was the danger due to the sparking of the wire, which invariably occurred when breaking the cable in the traveling line. Again this was dangerous to workmen and the cable's conductors along the track. This was another cause of much sparking at points where the conductors and
Why Accidents in American Mines Do Not Decrease

The accident rate in ventilation in American mines, as in those of any branch of human labor, is the result of many influences, and of many causes. Get away one of the causes, and you have less accidents. To illustrate this truth, permit me to cite two instances of violations of the laws, there and here. Cited by a certain newspaper in a mine in England, to sacrifice the safety of the miners by vaunting of the names of those who solved the problem. The mine had evidently been tamped up with clays, the tamping of the clay, from the law of the Coal Mines Regulation Act, that requires the use of clay for that purpose. Taking the lump of coal from the car and laying it aside, the overman sent it to the mine for the man and, facing him with the evidence of his guilt, had him arrested and convicted. The man expected no leniency and was, in no way, disappointed when he received the full penalty for his act, under the law, both the overman and the manager appearing as his prosecutors. Compare this summary punishment with the leniency with which violations were dealt with in England, with the result of a similar violation of the law in this country.

That the men may happen and how they can be avoided.

It would seem that if those numerous instruments and signs of danger were not the weightiest hand by workmen, accidents to workmen would become an unheard of occurrence. Among mining officials, the absence of accidents in and around mines is always sure to form the chief item of conversation when they meet; and safety methods and appliances are the principal subjects discussed at the regular weekly and monthly meetings.

Any car compensation-insurance inspectors continually remind us of what must be done, or what dangerous practices must cease, if the mine rates are not to be increased. Many of the laws in the inspector's Book of Standards, by which the mine rating is determined, appear so insignificant as to hardly attract the notice of the average mining man.

With all this safeguards and daily consideration, however, we may well ask the question: is the mine man now growing any less? To be honest with ourselves, we must admit that the results are not in keeping with all the efforts put forth in the interest of safety.

### Fatality Rate in the United States Greater Than in England

Many comparisons between English and American mines have been made in Coal Age, from time to time. These comparisons are fair and just, as the mining laws of the two countries are the same. Owing to the generally more prosperous condition of the mining of England increasing the dangers of mining the coal, such comparisons should be more favorable to the mines of this country.

Notwithstanding the fact, however, that general conditions favor American mines, in most states, the accident rate is less. In the last report giving the fatalities in American mines, I saw the number of men killed was between three and four, for every thousand employed. For the same period in England, the report gives less than one fatal accident, per thousand employed.

There must be a reason for this great difference in mining fatalities between the two countries. In my opinion, it is to be found in the fact that English laws are made to be kept, while in this country, the laws are not so strictly enforced. By some hook or crook the guilty parties escape the prescribed penalty for his act.

### Violations of Mines Regulation Act Rapidly Punished

To illustrate this truth, permit me in two instances of violations of the laws of the two countries. Let me cite one from a newspaper in a mine in England, an accident. Carrying some loaded cars on the shaft bottom, found a lump of clay having a drift or partly filled with the clay that had been used in tampering the hold.

The man had evidently been tamped up with clay, the tamping of the clay, from the law of the Coal Mines Regulation Act, that requires the use of clay for that purpose. Taking the lump of coal from the car and laying it aside, the overman sent it to the mine for the man and, facing him with the evidence of his guilt, had him arrested and convicted. The man expected no leniency and was, in no way, disappointed when he received the full penalty for his act, under the law, both the overman and the manager appearing as his prosecutors. Compare this summary punishment with the leniency with which violations were dealt with in England, with the result of a similar violation of the law in this country.

### Mine Officials Plead Leniency for Men Who Violated Code

Not long ago, at a certain mine where I am acquainted, several men were found to have matches in their possession when at work in a gaseous section where safety lamps were in use. Besides the matches the searchers found pipes and tobacco on the men. Carrying these articles into a mine generating gas violated the code. On Monday last the man was conveyed to the state mine inspector, who had the men arrested.

When given a hearing, however, the mine superintendent appeared in court and pleaded with the judge for the exercise of clemency toward the men, claiming it was the first time. The result was that the men were let off with a simple warning by the court and no fine or other punishment was imposed on them. The plea of the superintendent was a mistaken kindness and the action of the court does not speak well for American justice.

### Classifying Coal Mines

There is another difference between English and American practice regarding mines generating gas. In England, mines are not classified as "gaseous" and "non-gaseous." On the contrary, the Mines Regulation Act reads somewhat as follows: "All places where men shall work or pass, shall be examined by a competent person." It does not matter whether two men, or ten men, or fifty, are working in the mine; nor whether they are in ten yards, or a mile, the law requires the examination of any working places by a competent person.

In this country, our laws lay far too much stress on classifying a mine as "gaseous" or "non-gaseous." The finding of a little gas in a place may be sufficient to cause the mine to be called a "gaseous mine," and as a result, its management should shoulder the expense of employing shotfitters, firefosses and first-grade certified men as mine officials.

It can be readily seen that, under this phase of the law, an unjust difference would be established between two mines, in the same condition, working practically under like conditions, except that a small quantity of gas found in a place necessitated this arbitrary classification, under the law.

It must not be thought that I would do away with our firefosses and shotfitters. That is not the case. My point is that the gas danger is over-esi-
COAL

COAL seems the add Fresh circulateil Thomas mine, blueprints this ti.v a install rendered mine.' to greatly...-.g...-.d sniri>booster < of table. expoere rush Coal in columns 'sensitizing. wasbed the acci- a
"mixture be, pa a mine unit current b*..-leaky •• be air- location mine. are li^ht has system air been mate
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power.

Why Install a Booster Fan

Need of installing a booster fan shows bad mine management—Practical means of increasing the circulation in a mine—No place for a ventilator underground.

I T was with much surprise that I read the inquiry of a mine manager in Wyoming who is contemplating the installation of a booster fan in his mine and wished to know the most advantageous point for its location. From the proposition presented, it seems evident that the intention was to install the booster as a unit in the ventilating system of the mine.

In addition to what has already been said in the reply to this inquiry, I may be permitted to add a few words endorsing the position taken by the editor. In my opinion, the installation of a booster fan within the workings of a mine is a bad mistake. Indeed, the mistake is a double one, as it is due to poor mine management on the part of the officials in charge.

No INCREASE IN THE CIRCULATION

Observation and experience show that a booster fan, installed in a mine, does not increase the quantity of air in circulation. As has often been explained in the columns of Coal Age, the only effect of a booster is to rush the air past leaky stoppages and doors; and this can only be recommended as a temporary means of improving the circulation at the working face, in a section of the mine about to be abandoned.

No practical mining man will ever prescribe the installation of a booster fan as a unit in mine ventilation. There are other means of improving the circulation at the working face that are safer, more efficient and in line with good mining practice.

In the first place, clean up all airways and remove every obstruction to the free passage of the air current throughout the mine. Wherever practical, straighten the course of the air and avoid sharp bends in the airways. Blow out the stoppages and do not allow stoppages and enlarge breakthroughs where the air current is less than that of the airway.

At times, it may even become necessary to sink an air shaft at some point nearer the working faces, which will greatly shorten the distance the air must travel. Any other larger quantity of air will then be circulated with less power.

In the development of a mine, this is the practical remedy to improve the circulation.

To my way of thinking, in mine cases out of ten, the installation of a booster fan, at some point near the working face, is merely a bluff on the part of the company to make the miners think that everything possible is being done to give them good air. In other words, the miner is hoodwinked and the management avoids, for a time, the making of the necessary repairs of poor stoppings and doors.

In a few words, let me say that the situation should seldom arise that will warrant the installation of a booster fan in a mine. The mine manager should have the practical experience and skill, in the development of the mine, that such a condition will be avoided where it will become necessary to resort to the use of a booster fan.

Let it be understood, once and for all, that an underground location of any essential factor in creating the air current in a mine is not to be considered. All such means must be placed on the surface where they are accessible in any emergency that may arise.

Wildir, Tenn. OSCAR H. JONES.

Inquiries Of General Interest

Making Blueprint Paper and Blueprinting

Formula for Sensitizing Paper—Action of Sunlight to Change Chemical Salts—Washing Out Unchanged Salts Develops Print—Coloring Prints

WILL you kindly explain, through the columns of Coal Age, the process of making blueprint paper and give me any information needed regarding the coloring of blueprints to show distinctive features?

Saskatchewan, Canada.

MINING ENGINEER.

In the making of blueprint paper, a good quality of rag paper should be selected, as this gives whiter lines, in the blueprinting, than paper made of wood pulp and is more readily handled in the process of sensitizing. Cloth specially prepared, or paper backed with cloth, is often used when the blueprints are required to withstand much handling.

The sensitizing of the paper must be accomplished in hot water, in a room or at least, where the light is greatly subdued. Two solutions are first prepared as follows: Solution 1 consists of one part by weight of ammonia-citrate of iron, dissolved in five parts of water. Solution 2 is made by dissolving one part by weight of potassium ferricyanide, commonly called red potassium of potash, in five parts of water. These solutions must be kept separate in stoppered bottles until they are required for use.

In sensitizing, the paper is laid flat on a table. The two solutions are then mixed in equal parts, in the dark room where the work is performed, and the resulting mixture applied to the paper as uniformly as possible, using for that purpose a soft sponge and working quickly to avoid unequal warping of the paper. After applying the sensitizing solution, the paper is hung up to dry in the dark room, and when thoroughly dry is stored in a dry dark place until wanted for use.

It is difficult to say just what reaction takes place under the influence of light, either sunlight or electric light, whereby the iron salt is rendered insoluble, forming the deep blue background when the print is washed following the exposure of the sensitized paper under the linen tracing to be copied. The action is complex, the previously soluble iron salt being probably reduced and forming an insoluble precipitate, which protects the iron from further attack.

The time of the exposure of the sensitized paper beneath the tracing to be copied will depend on both the strength of the light which shines on the paper and the temperature of the paper. In strong sunlight, not more than 30 or 40 min. is required when the paper is fresh. Fresh sensitized paper has a light pew green color. In ten, however, this color changes gradually to a darker shade of green and finally to blue. When the paper is old and not longer of any use, the freshest the paper, the whiter will be the lines on the print after washing.

No time should be permitted to elapse between the exposure to the light and the washing process. It is a good plan to reduce the paper to its size in the dark room, exposed the paper to the light, and then boil the paper in cold water as soon as possible, as this prevents the formation of blue salt on the paper and reduces the time of development, thus preventing the formation of blue salt on the paper and reduces the time of development. The blue product is generally obtained when the water is kept slightly agitated over the surface of the paper. For short periods, the water is allowed to flow over the paper, while for longer periods, the water is allowed to flow freely over the entire surface. Better results are generally obtained when the water is kept slightly agitated over the surface of the paper, by moving the fingers forward and backward through the water for a short time during the course of development. In this way, the dissolving action of the water is rendered uniform.

It will sometimes happen that a room has been overcrowded and, as a result, many of the time lines appear to be more filled in at that time. In such cases, it is

November 23, 1922
COAL AGE

Examination Questions

Answered

Mine Managers' Examination, Nova Scotia, 1922

(Supplemented Questions)

Question—What is the smallest percentage of gas that, in your opinion, can be detected by means of an ordinary safety lamp?

Answer.—The ability to detect small percentages of gas depends largely upon the observer and the kind of lamp employed. By the use of a common safety lamp, few respirators are able to detect less than 2 or 2½ per cent of gas. On the other hand, a good fireflood, using a Watt lamp, will be able to detect as low as 1 per cent of gas present in the air.

Question.—What is the lowest practicable power of a gas fire? Describe its burning.

Answer.—The power given by a gas fire will depend upon the supply of gas and the number of burners. In a plentiful supply of gas, the fire may be made as large as required. More burners may be added without increasing the height of the flame. The gas is burnt with an efficiency of 85 per cent, and the heat produced is 1,700 B.T.U. per cubic foot. The most practical position for the fire is about 3 feet from the floor and 6 feet from the wall.

Question.—What is the most practicable gas for use inamines? Describe the quality of gas required for this purpose.

Answer.—Carbon monoxide is an excellent gas, but when mixed with air it is more dangerous than when used alone. The best coal-gas is the best for the purpose. The gas must be free from sulphur compounds. Carbon dioxide is not objectionable, but it cannot be produced in the required quantity.

In the air breathed, may produce instant death. The gas is combustible, burning with a pale blue nonluminous flame.

Question.—How many horsepower will be required to raise 4,000 cu. ft. of water per hour, from a mine 1,000 ft. deep?

Answer.—Taking the weight of water as 62.5 lb. per cu. ft., and assuming a water-end efficiency of the pump as 70 per cent, the power required, in this case, is

\[ H = \frac{4,000 \times 62.5 \times 1,000}{675 \times 33,000} = 181.8 \text{ hp.} \]

Question.—How much work is done is raising 300 tons of coal up an inclined plane 2,700 ft. long and rising 1 ft. in 3, allowing 40 per cent of the head, for the frictional losses?

Answer.—Taking the rise as 1 ft. of vertical in 1 ft. of inclined measurement, the total rise of this plane is 2,700 ft., or 900 ft. Then, adding 40 per cent of the head, to allow for frictional losses, the total effective head is 300 \( \times 1.2 = 360 \) tons. Therefore, the work performed in raising this hoist is 200 \( \times 2,000 \times 360 = 750,000,000 \) ft.-lb.

Question.—Is the electric current generated before it is transmitted?

Answer.—(b) A dynamo, operated by a steam engine or other source of power, is used to generate an electric current. The dynamo is then called a "generator." (b) The transmitted electric current is made to pass through the coils of another dynamo, and the reaction that takes place, between the armatures and the commutator, causes the side of latter to move. In this case, the dynamo is called a "motor." The principle of action in a motor is exactly the reverse of that in a generator. While a generator converts mechanical power into electrical energy, a motor converts electrical energy into mechanical power.

Question.—Do you consider electricity, as a motive or lighting power, dangerous in mines producing explosive gases?

Answer.—Yes. In mines producing any considerable quantity of explosive gas, electrical installations should not be considered, as the presence of live wires makes possible the accidental ignition of gas and is a menace to safety.

Question.—How would you proceed to remove a man in contact with a live wire?

Answer.—Of course, if a switch is closed at hand shut off the current at once. Otherwise, make no delay; but, standing on a dry board or dry ground, drag the man from the wire by seizing his clothing if dry. If a pole is at hand it may be possible to push the man off from the wire. It is sometimes possible to seize an ax and cut the wire by one quick blow on the side of the victim toward the power. Again, an iron bar or drill may be thrown across the wire, on the side toward the power, for the purpose of short-circuiting some of the current.

Question.—What are the most common dangers that come from the use of electricity in mines, and what would you do to prevent accidents? 

Answer.—When an electric installation is not properly made there is danger of men and animals coming in contact with unprotected wires; or fire may occur by the ignition of gas, or combustible material, owing to the sparking of wires, blown fuses, etc. To prevent accidents of this nature, all electrical installations should be made by competent electricians thoroughly familiar with mining conditions. Protect all wires where men or animals may come in contact with the wire.
"Competitive-Field" Wage-Making Plan Likely to Be Revived at Second Miner-Operator Conference

Some form of the old Central Competitive Field plan of wage making for the coal-mining industry of this country is likely to be re-established this winter. A fairly well-defined trend in that direction was the nearest approach to concrete accomplishment at the joint conference of operators and miners from fifteen districts held in Chicago last week. The conference, whose first futile day was reported in these columns last week, spent four days at the job of trying to design new wage-making machinery for the future. Then it adjourned to reconvene Dec. 6. For four days the miners sat back smugly, confident, waiting for the operators to agree upon something. For four days the operators wrangled among themselves, arguing everything from the sublime to the ridiculous, the men from the "out-lying districts" fighting for a direct voice in future wage negotiations and the men from the four states of the old Central Competitive Field—western Pennsylvania, Ohio, Indiana and Illinois—resisting, though divided in their own ranks. They reached no final agreement on any plan. But on the evening of the fourth day—Friday, Nov. 17—when it was evident that nothing better could be done, the conference adjourned until Dec. 6.

In the meantime the operators are discussing in their home regions a scheme of re-establishing some sort of "central competitive field" for a base-wage rate which mine owners would discuss policy with men from the outlying districts and then send their own own base committee in to make an agreement with the union miners as of yore. It is by no means certain what regions would comprise this central field. Neither is it determined what groupings of "outlying districts" would be made. Various ideas along these lines are to be brought back to Chicago on Dec. 4, when the operators at the joint miner-operators' conference two days ahead of the main conference. Illinois operators, divided at least two ways on the question of entrance into a "central competitive field," will meet in Chicago, Friday, Nov. 24, in an effort to solidify the position of that state.

Thus the first session of the joint miner-operator conference on ways and means for future wage negotiations failed to set up machinery or even to discuss many other things. It gave the operators a chance to clear a good deal of argumentative ground and it gave enough promise of working out a plan in December so that the miners' union cannot aggravate the 1923 strike scare and thus hold up coal prices this winter by telling the public that the operators refused to do business with them.

MINERS LOOK TO OPERATORS TO PRODUCE A PLAN

From the beginning of the Chicago conference until the end the miners took the position that it was up to the operators to produce a new plan, and that until they did the old four-state method of wage agreement should be considered to be in effect. Both President John L. Lewis and Secretary-Treasurer William Green said the miners were there with open minds, hoping something could be accomplished, and that it did not acceptable would be conceived. They made it plain that the miners would consider any proposal that gave them some single authority among the operators with which to deal which would be sufficient representative to fix a basis for the rest of the country.

Among the operators, arguments started early on the question of effecting some kind of national basis of agreement upon which this division of the "outlying districts." Two definite plans were proposed, one by Harry N. Taylor of Kansas City, Mo., and one by C. H. Jenkins, of Fairmont, W. Va. These two plans in various forms were debated for three days, their advocates offering many modifications, but all to little purpose.

The original Taylor plan, written by Mr. Taylor and by Commissioner W. Johnson of the Southwest Interstate Coal Operators' Association, would have created a joint national wage board to negotiate a base wage scale for the whole country. Variations from this base rate would be determined for the various districts on account of "economic, competitive or physical conditions." These various district boards would be the base rate plus or minus given percentages and would be defined "under authority of the national conference and by mutual agreement between the miners and operators of the districts."

Courts of appeal to settle disputes and prevent strikes would be created also. A "joint executive board" for the whole country, composed of an equal number of mine operators plus a non-partisan chairman of highest caliber, whose vote would break any tie, would be the supreme court. Smaller joint district executive boards would function in each district or group of districts to consider all sorts of disputes which the existing local and district machinery could not settle.

The plan provided that after the "base rate plus minus" wage scheme had worked at least six months, either miners or operators could appeal to the joint executive board for a readjustment of the base for their district, providing it could be shown "that the base rates existing in the adjacent or surrounding competitive territory have been either advanced or diminished equal to an amount of 10 per cent of such base rates." This was calculated to give union fields participating in the scheme a chance to gain protection against neighboring non-union competition.

NATIONAL FEATURES OF PLAN ATTACKED

The national base-rate feature and the national negotiation features of the plan were attacked at once, mostly by men in the old four-state competitive field. Various features of the appeal plan were criticized and it was apparent the miners thought the arbitration committee too much in favor of the operators. Mr. Taylor and Mr. Johnson made it plain, however, they were proposing only a general idea and stood ready to consider any modifications or additions that any body had to suggest. They rewrote sections of the plan several times, in an attempt to modify the national feature and provide something approximating district autonomy. But there seemed no possibility of getting anything like a majority to support any of them.

Mr. Jenkins and the men of northern West Virginia pushed hard for their plan, which also was presented, they said, only as a general idea, which could be modeled to various forms. This plan in its original form would have set up a national labor organization of mine operators to determine labor policy only and not to negotiate wages. This organization would fix in general terms the operators' policies with regard to the proportion of wage increases or decreases within all districts, changes in hours, vacations, cases for district differentials, improved methods of mining, labor and production, and questions involving labor supply. It would supervise and enforce a new system of district zones, provide a channel of communication with general mental departments, and the general public on labor matters, establish, and maintain a general bureau of industrial relations to provide statistics and other data for negotiations and to disseminate information throughout the industry, and to set up both district and national appeal boards to settle disputes.

In further detail the West Virginia plan was more like the parallel to that from the Kentucky-Illinois Interstate field. It called for a joint state council of operators and miners to determine a base wage for the country, change of labor and the duration of each work week. The operators members on this council would be selected by a vote on a ten-hour basis. Joint wage committees for each district would work out district differentials. Wage disputes for their districts would be appealed to the joint executive board with a non-partisan chairman and with special qualifications for the districts would "solve all questions of rate within the district and national council has been able to agree."

The West Virginia men thought the country should be restricted into eight regions, but the Pennsylvania...
Navy Department Opens Bids for Coal

Bids to supply coal needs of the Navy Department for the remainder of the fiscal year ended June 30, 1923, were opened on Nov. 14. The proposals were divided into two sections, one providing for delivery from November to the end of the period and the other for shipments during November and December only.

Among the larger bids were the following:

- Twenty-eight thousand tons for delivery from November, 1922, to June 30, 1923, in 600-ton barges alongside coal plant at the Navy Yard, Brooklyn, N. Y.:
  - Emmons Coal Mining Co., Philadelphia, $6.75; H. H. Huff, New York City, $6.85;
  - Iron Trade Products Co., $6.75, alternate bids $6.73 and $6.74.

- Forty-two thousand one hundred tons divided into (1A) 22,169 tons for delivery to Navy Yard, Brooklyn, N. Y.:
  - Iron Trade Products Co., $6.75; Emmons Coal Mining Co., $6.73; H. H. Huff, New York City, $6.85, alternate bids $6.73 and $6.78; Morrisdale Coal Co., Philadelphia, $6.73; Quinley & Co. (St. Louis), $6.50.

- Twenty-five thousand tons divided into (1B) 16,000 tons and 9,000 tons, for delivery as above in November and December, 1922, in 600-ton barges alongside coal plant at the Navy Yard, Brooklyn, N. Y.:
  - Iron Trade Products Co., $6.75, alternate bids $6.73 and $6.88; Morrisdale Coal Co., (2B) $7.63; Quinley & Co. (St. Louis), $6.51; Dexter & Carpenter, (2B) $7.63.

- Twenty-four thousand tons for delivery November, 1922, to June 30, 1923, f.o.b. dump-bottom cars on tracks in the Navy Yard, Washington, D. C.:

The government states that awards will be made on the items for delivery either from November, 1922, to June 30, 1923, or for the short time period named—either November and December, or December—but not for both.

State Executives in South Discuss Means To Avert Coal Crisis

In connection with the fuel shortage the governors of Louisiana, Mississippi, Tennessee, Florida, Alabama and Georgia discussed means to remedy the coal crisis in these states at a conference Nov. 15 at Montgomery, Ala.

Federal action to prevent a coal famine in the South has been taken by the Fuel Administration in Washington, according to a telegram made public by the Atlanta (Ga.) Commercial Advertiser Nov. 15. The government immediately issued a mandate for the states of Alabama, Georgia, Florida and South Carolina to utilize their own coal resources and to supply the country with 1,000 cars which will handle coal shipments to this section within the following ten days.

Ask President Harding to Call Conference Of Somerset County Miners and Operators

Washington, D. C., Nov. 20.—A delegation of striking miners from Somerset County, Pennsylvania, headed by J. J. Kenner, of Lock Haven, who is serving them as general counsel, called at the White House today to request the President to call a conference between operators and miners in Somerset County. At the White House a reported statement was distributed setting forth some of the points of the miners' contention.
The general committee of anthracite operators submitted its suggestions to the President’s coal commission on Nov. 18. The text of the document follows:

This is a preliminary reply to your communication of Oct. 26. We have under consideration detailed replies on a number of points, and it may be proper to move that this general statement be amended and accompanied by such other information as may appear to you as proper. This information will have to be collected, compiled and verified, and it is not practicable to make any definite statement in the matter as to what the effects of any action or inaction of the commission may be upon the industry, having proper regard to the interests of the mine workers, the mining companies and the public. The committee of Anthracite Operators will cooperate with the commission to the fullest extent of its ability in securing information which may be pertinent to the industry, and suggests that a questionnaire be prepared for submission to each operator. If the committee desires, our committee will collaborate with it in the preparation of this questionnaire. We believe that all information submitted should be verified by the commission of its accuracy and correctness.

With respect to paragraphs (c) and (f) of your letter, which refer to the 'acknowledged demoralization' of the coal industry and measures for eliminating elements responsible for this condition, we understand the inquiry is under the cognizance of the anthracite industry, where regular employment and a supply of domestic size coal commensurate with, but barely excessive to, the requirements of the homes will be made subject to the prevailing condition except when production is suspended by strikes.

### Nineteen Topics Answered Seriatim

We now deal seriatim with the list of nineteen topics accompanying your letter:

1. **Ownership and titles of the mines.** Information on this subject is not obtainable from the anthracite operators.

2. **Prices of coal.--We assume that the inquiry with respect to prices will comprehend ascertainment of the amount of the price at the mine and the price paid by the consumer. Mine prices of coal for any particular customer vary considerably from those paid by the operators, while the retail price of coal may be ascertained only by inquiry of general articles. In addition, the price at the mine is subject to fluctuations in the cost of transportation, the charges of middlemen and wholesalers, which are affected by conditions of supply and demand. Naturally the commission will investigate all of these items.

3. **The organizations and persons connected with the coal industry and the coal industry as a subject for governmental control or regulation.** The answer is obtainable by the suggested questionnaire.

4. **Of the subject of this letter is, of course, one of the most difficult with which the commission will have to deal.** Anthracite operators are not in a position to answer directly the latter, for it involves considerations of production. They differ not only by districts but also by operations in the same district and even in immediately adjoining properties. A general description of conditions can only be given, and is subject to many restrictions. The 'individual' operators produce under short leases requiring more rapid amortization of the investment. Some leases require royalties and one-third of the way towards or above. The answer is not obtainable for anthracite.

5. **In the interests of operators or owners of said mines during the last ten years.** In this case it is suggested that the work of the commission may be facilitated by the collection of information carried out by the anthracite operators and the United Mine Workers of America, in cooperation with the operators. The information may be obtained through the questionnaire which is prepared.

6. **Profits of other persons or companies owning coal mines, and the transformation of profits, if any, into railroad or other lines of enterprise.** In this subject the operators' resources may be used to make a most important addition to the coal-producing industry, and the resulting realization on their sale, represent another important factor in the anthracite problem. These factors are mentioned not as industry, but as typical of the many considerations that must be taken into account in arriving at conclusions concerning the cost of production and the resulting realization on their sale, represent another important factor in the anthracite industry.

7. **In the district of operations of the operator or company.** In this case inquiry is suggested for the investigation of the cost of production and the resulting realization on their sale, represent another important factor in the anthracite industry.

8. **All facts, circumstances, or conditions of such a nature as to influence or determine in any way the current policy by the government relative to coal making.** We have not answered this in submitting our reply to you at this time.

9. **Admitting the statements in your letter to be quite correct, it is still necessary to point out the probable effect on the industry.** We have not answered this in submitting our reply to you at this time.

10. **If any work a man shall perform for a coal company.** We shall be pleased to furnish the necessary information.

11. **the question of the cost of production of anthracite.'** We shall be pleased to furnish the necessary information.

12. **General conditions relative to the coal industry.** We shall be pleased to furnish the necessary information.

13. **All the facts bearing upon the cost of production of anthracite.** We shall be pleased to furnish the necessary information.

14. **The Department.** We shall be pleased to furnish the necessary information.

15. **The Department.** We shall be pleased to furnish the necessary information.

16. **The Department.** We shall be pleased to furnish the necessary information.

17. **The Department.** We shall be pleased to furnish the necessary information.

18. **The Department.** We shall be pleased to furnish the necessary information.

19. **The Department.** We shall be pleased to furnish the necessary information.
Improved Mine Rating and Car Distribution
May Result from Assigned-Car Hearing

Injunctions are that the Interstate Commerce Commission is only empowered to assign cars for railroad fuel should be
admitted. There is reason to think, however, that as a
result of the hearing now in progress important improve-
ments will be ordered in the mine-rating and car-distribu-
tion rules.

The National Coal Association is opposing vigorously
and unqualifiedly for the absolute discontinuance of the
status of any rating or assignment of cars for railroad fuel without charging the
owners of such cars anything but the
ordinary cost of transportation.

John H. Allen, who is in charge of the case for the National Coal
Association, contends that assigned cars discriminate un-
justly against those operators who do not enjoy the privi-
lages of the preferred-car supply. He maintains that it
is unfair to mine workers and is a frequent source of labor
troubles when a disproportionate part of the car supply is
forced upon certain mines, thereby making it necessary for
other owners to work only part of the time, sometimes as
little as one day a week. This forces up costs in the irregularly
operated mines, which means higher priced coal to the
public.

The National Coal Association also asserts that the mine-
rating and car-distribution rules should be filed as tariffs.
If this were done, it would be impossible to make
measures of the law. As present those rules are interpreted in a
temporary manner on different roads and up the part of different
railroads obtain.

The National Coal Association seeks
in the application of all railroads. They con-
trad that the railroads buy coal with cars and money.

The railroads are emphasizing their contention that to
deny them the assigned-car privilege would add stagger-
ingly to their costs. Apparently this argument has im-
pressed the commissioners.

Supreme Court Hears Arguments Against
Mine-Cave and Coal-Tax Laws

Constitutionality of the Ohio mine-cave law and the
anthracite tax were both attacked in the Pennsylvania Legis-
lation, was greatly attacked on the U. S. Supreme Court,
Nov. 15 and 16. Those points were above.—Justices Vanderven-
mitted, Day and Pitney.

Justices Day retired from the Court Nov. 14 and Justice Pitney is expected to retire by
Congress when it reconvenes this week. This left only
six justices to hear the case, which is agreement in view of the fact that the court frequendy orders cases reargued
before a full bench.

H. S. Drinker, Jr., advanced the mine-cave law, arguing
that it requires the elimination of insecurity of property
without due process of law, as it has been filed the exercises of
judicial power and that it is subject in the anthracite
districts is necessary for the continuing
it can constitutionally be applied by combination with compensation to the tax-
affected. John W. Davis, former Ambassador to Great
Britain, declared the law to be "undisguised patent confiscation
of property." H. J. Mahon, W. L. Pace, George R.
Hull and Attorney General G. E. Alter, of Pennsylvania,
defended the law.

The anthracite tax law was declared to be unconstitutional
by H. S. Drinker, Jr., The Attorney Generals of New
York, New Jersey, Massachusetts, Maine, New Hamp-
shire, Vermont, Rhode Island and Delaware, in which the court considered, contended that the
law is an attempt to levy tribute upon the citizens of their
states by taxing anthracite, 80 per cent of which is being
shipped outside of the state. Lewis Marshall and J. Weston
Allen opposed the law, which was supported by Attorney
General Alter.

Ohio Dealers' Margins Revised

Following audits of various retail concerns in the larger
areas of population of Ohio, C. J. Neal, State Fuel Ad-
ministrator, has announced a revised list of dealers' margins
covering many points. Under the new schedule, which fol-
lowed protests made by retailers through the M.-O.-L. Coal
Association, increases were made in quite a few instances.
Likewise some reductions were made, especially in the rural
sections. The total average change made by the new list
is an increase approximately 25c. per ton in cities and
5c. a ton in rural districts.

The new margins went into effect Nov. 18.

Reductions under this scale are: Mahoning County, 45c.;
Erie, Summit, Medina, Stark and Summit Counties, 40c.;
Wayne County, 35c.; Ashland, Clark and Trumbull Counties,
20c.; Columbiana, Darke, Fairfield, Greene, Knox, Lake,
Lorain, Pine, Richland, Ross, Sandusky and Williams Coun-
ties, 15c.; Logan, Seneca and Madison Counties, 10c.; Fulton,
Marion, Miami and Van Wert Counties, 5c.

Cities where increases have been allowed include: Steu-
benville, 72c.; Toledo, 60c.; Portsmouth, 58c.; Delaware,
30c.; Marietta, 15c.; Hamilton, Middletown, Springfield,
Dayton and Canton, 40c.; Findlay, 35c.; Youngstown and Akron,
30c.; Lima, Columbus and Marion, 25c.; Bucyrus and Mans-
field, 20c.; Sandusky, 10c.

Cleveland Retailers to Test Neal Ruling

Cleveland retailers have filed a suit in the Ohio Supreme
Court asking a review of State Fuel Administrator Neal's
ruling on retail margins as it affects that city. The suit
was filed by twelve retailers who recently petitioned Ad-
ministrator Neal for a revision of the $2.75 margin allowed in
Cleveland and suburbs. In the petition it is asserted that Administrator Neal in refusing to increase the margin
acted contrary to law and the evidence submitted in the
hearing. It is claimed that the margin is unreasonable and
unjust. The Supreme Court is asked to modify the ruling.

Retailers Invited to Present Data

The National Retail Coal Merchants' Association has
been invited to meet with the U. S. Coal Commission on
Saturday, Nov. 25. The commission is desirous of learning
more regarding distribution and retailing of coal.

There will be a meeting of the members of the Govern-
mental Relations and the Anthracite and Bituminous Trade
Relations Committees of the association on Thursday and
Friday, Nov. 23 and 24, at the Shoreham Hotel, Washing-
ton, D. C. when matters for presentation to the commission
will be considered.

Railroads Volunteer to Co-operate

The railroads of the country tendered their complete co-
operation to the U. S. Coal Commission in a letter sent
Nov. 4 to John Hays Hammond, the chairman of the com-
mission, and R. H. Atchison, president of the American Rail-
way Association. The rail carriers, the letter points out,
are the largest users of coal and therefore are vitally inter-
ested in the economic problems of the coal industry, not only
from the standpoint of the consumer but also from that of the
distributor.
Miners' Union Opposes Standardization of Mines, Living Costs, and Amount of Work Performed

A committee composed of Ellis Searles, John Moore and Thomas Kennedy, representing the United Mine Workers of America, sent the following communication, under date of Nov. 18, to the United States Coal Commission:

In this communication the United Mine Workers of America, desire to attract your attention to the following points, which we noted as we sat Oct. 23. We have already, in previous communications, indicated our opposition to any such standardization as is the subject of the present communication, except Topic No. 3, which we have discussed on several previous occasions.

1. Standardizing the mines upon the basis of their economic productivity is the method selected by the United Mine Workers of America. This method is the only one which by reason of their natural limitations, or other conditions, fails the test.

If the proper kind of competition among operators of coal mines can be established and maintained through the efforts of this commission, competition would itself eliminate the high-cost mines, because they would be forced out of business for the subject of their product with those mines which the cost of producing coal is lower. We believe this idea, properly applied and fairly carried out, would not only reduce the number of mines and the number of miners, but would also give the American public assurance of cheaper coal, because the cost of coal under the system, we believe, will be lowered.

2. By the same means the coal output is produced at a low cost per ton. In addition to reducing the price of coal by concentrating the coal industry, such competition would close many high-cost mines and thus conserve their resources for the future. We believe this consolidation of our coal resources is one of the most important propositions to which the American people should give their attention, if another condition should not be more plentiful than it is now and the population of the United States will continue to increase the demand for a heavy supply of coal for many years to come. Anything this commission can do toward the elimination of competition for coal for future generations should be done.

3. We have no objection to the government's purpose of using the machinery of government to encourage and assist us in working to eliminate the cost of mining operations, and attempt to eliminate any number of coal mines from operation by the adoption of the standard wage and rate of payment in the mining industry as a whole. We believe the present system is not to the advantage of the mining industry and that a reduction of the mining costs should be made as a matter of public policy.

We believe that every possible effort should be made to improve the transportation systems of the country. A way should be found to enable the railroads to equip themselves with a sufficient number of modern coal cars with which to move the coal from mine to consumer. This commission, in its opinion, accepts the proposition that there should be an improvement in the transportation of coal. This commission is of the opinion that the transportation problem can be solved with equitable freight rates.

We do believe, however, and we recommend to this commission, that this transportation should be accomplished by the building up of any new mines in the United States, at least for a considerable period of time and in many cases for all time. If the mines now in operation or that are ready for operation were run to the capacity of their lessees, and the lessees were forced to meet all requirements of domestic and export trade, there is no need for any more coal mining operations open in one section of the country. The reason why, under such conditions as exist today in the industry, they should be permitted to open up a lot of new mines would be to supply business and revenue to their railroad. Yet this is what happens continuously, and it accounts for much of the discrimination and injustice on the part of the railroads.

18. We believe that there should be no standardization of the cost of living for the miner. We believe this is the way to protect the miner. We believe that the basis of the standard of living should be the cost of living for the miner, and we believe that the basis of the standard of living should be the cost of living for the miner, both individually and collectively.

We do not believe the commission should use the following method of standardizing the cost of living for the miner:

HOLD IT IMPOSSIBLE TO STANDARDIZE AMOUNT OF WORK

Standardizing the amount of work a man can or should perform in the production of coal is not a solution of the coal problem. The amount of work a man can perform is determined by the amount of coal he can produce. The amount of work a man can perform is determined by the amount of coal he can produce. It is not possible to standardize the amount of work a man can perform in the production of coal.

19. We believe that the amount of work a man can perform in the production of coal is determined by the amount of coal he can produce. The amount of work a man can perform is determined by the amount of coal he can produce. It is not possible to standardize the amount of work a man can perform in the production of coal. It is possible, however, to standardize the amount of coal a man can produce. The amount of coal a man can produce is determined by the amount of work he can perform in the production of coal. The amount of work a man can perform in the production of coal is determined by the amount of coal he can produce. It is not possible to standardize the amount of work a man can perform in the production of coal.
Coal Commission Begins Actual Collection of Data on Production Costs, Wages and Waste

By Paul Wooton

Washington correspondent of Coal Age.

When an announcement has been forthcoming from any member of the U. S. Coal Commission, there is a feeling in official circles in Washington that the announcement is entitled to more consideration than another similar type from both the administrative operators and the United Mine Workers. There is a feeling that advantage was taken of Chairman Hammond's request for suggestions as to procedure, to get publicity, and that the reply was directed more to the newsman than to the commission. It is the value of what is that the administrative operators and mine workers indulged in a bit of stock comment such as each side goes forward at every opportunity. Incidentally there is a feeling that the administrative operators seem close to complying with the spirit of the request. There is no time to the questions that were asked, and a first-rate position to the newspapers apparent was not their objective. Some read into each of the replies an intimation that the industry is all right except for the need to invert the other fellow.

It is apparent that the announcement has not won the whole-hearted support of any branch of the industry. Each side has been publicly defensive and certainly has shown no enthusiasm. Some are inclined to attach some blame to the commissioners itself for lack of progress and for failure to obtain active cooperation. It is pointed out that the commission has not made it plain to either side as to just what they would attempt to do. This failure to be more specific may have had a bearing on the discouragement of either side to commit itself. Some officials were hopeful that the industry itself would take the initiative with the commission simply soliciting itself as to the correctness of the information had before it. The mine workers have not offered to open their records to the commission and it will not be surprising if many operators fail to furnish the cost data called for by the commission's questionnaire.

A detailed questionnaire as to costs of producing coal in 1911 and 1912 is being sent to all operators, large and small.

A large number of mines were closed during six months of 1912, information is requested as to shutdown costs. So far as is known, no previous effort has been made to obtain this information. The work on these returns is being handled by Mr. E. W. Callahan, the recently appointed chief of the administration division of the National Coal Association, by Mr. Wing, who conducted similar studies for the Federal Trade Commission.

Federal: The members of the Coal Commission's staff who worked with Mr. Wing during that time and who are thoroughly familiar with the handling of production cost data have been transferred temporarily to the commission's staff.

Commissions Nell and Association are to be personally responsible for the results of the field investigation dealing with the cost of labor and with living conditions. Each of these members will devote a portion of his own time to work in the field. Mr. Nell already has made one field trip.

Wages statistics will under the immediate charge of Prof. Joseph B. Woods, who will be assisted by Miss Anne Householder, who has had wide experience in such work.

C. J. Leach has charge of the engineering phases of the cost-finding work, is getting together an advisory committee of engineers and operating men. He has arranged for co-operation with the U. S. Bureau of Mines.

C. A. Allen, who serves the Bureau of Mines and the State of Ohio publicly as a mining engineer, will be transferred temporarily to the commission to gather data with regard to the amount of coal mined in Ohio. In this work George A. Rice, chief mining engineer of the Bureau of Mines, will assist in an advisory capacity. This will involve an examination of the percentage of recovery and it will involve accurate research in the more important fields. There will be the same amount of the more highly developed areas with the idea of ascertaining reserves and the amount of waste.

The study of retail costs and of the cost of distribution has not been launched as yet.

John D. Battle Appointed Traffic Manager Of National Coal Association

On Dec. 1 John D. Battle will become traffic manager of the National Coal Association, succeeding John Callahan, who has resigned to enter the coal-brokerage business in partnership with J. D. A. Morrow. Mr. Battle has had long and varied experience in railroad. He was born in Greene County, Georgia, in 1887. He was successively telegraph operator, station agent and train dispatcher on the Georgia R. R. between 1904 and

![John D. Battle](image)

1911. From 1911 to 1918 he was with the Atlantic Coast Line and Charleston & Western Carolina joint terminals at Augusta, Ga.

He was connected with the car service division of the U. S. Railroad Administration at Washington from 1918 until the end of federal control of railways, handling the intensive loading and efficient use of freight cars. When the roads were returned to private ownership he became a traveling inspector for the American Railway Association. He was recalled to Washington in June, 1920, to direct the work of clearing up accumulations resulting from the switchmen's strike. Since Sept. 15, 1920, he has been assistant traffic manager of the National Coal Association.

Service Order No. 25 Modified

Service Order No. 25 has been suspended in part by the Interstate Commerce Commission in the territory south of the Potomac and Ohio rivers, with the exception of the lines of the Baltimore & Ohio in that territory. The amendment, effective on Nov. 18, removes the general priority in the use of open-top equipment for coal, but does not affect the original order for priority in the movement of coal. This action allows a greater use to be made of open-top cars for the transportation of road and building materials.
Weekly Review

Spot buying is being done very quietly. The usual November snap is lacking, however, and a cold spell is urgently needed to bolster the trade. Domestic sales, while still strong, have felt the effect of the continued warm weather and prices have slackened a trifle. Day-to-day buying is still the only activity in the steam market, but that this is increasing in the face of steadily increasing production is shown by the recent trend in prices.

Coal Age Index of spot bituminous prices registered an increase this week for the first time since Sept. 25. The index number rose to 343 on Nov. 20, as compared with 340 this week before, 344 on Nov. 6 and 346 on Oct. 30. The average mine price corresponding to the index is $4.15.

The increase resulted from unexpected strength at Hampton Roads and on good grades in central Pennsylvania. There is plenty of coal at the Roads but it is held by a large number of shippers and the market has been artificially strengthened by orders placed to piece out cargoes for tonnage waiting at the piers. High-grade fuels from central Pennsylvania are very scarce, and prices, which have held steadily for some time, are climbing slowly upward.

Only Low-Quality Coals Lack Ready Market

It is only the lower grade fuel that is feeling the want of a ready market. Consumers are willing to pay for quality and dispatch. Thus the market is divided between those who must push their coals, sometimes at concessions, and those whose main efforts are now directed toward the delivery rather than the sales factor.

Middle West markets are quietly absorbing more steam coal. This slight pickup, however, has been met so eagerly by producers that price betterment is almost imperceptible. Domestic sizes are somewhat softer as a result of warm weather. Retailers are unable to sell more than small lots and are slow to reorder. More and more mines throughout this and other sections are turning to domestic makes and this in turn is bound to affect the screening market. Railroads are buying steadily, convinced of the good values now offering and apparently realizing the transportation difficulties that are to come during wintry weather.

The Lake trade is drawing to a close. Dumpings are proceeding at the rate of 1,000,000 tons per week, but the movement will decline from now until the time when weather conditions stop cargo clearances. Many buyers are waiting for the release of this tonnage, announcing their intention of taking on some stock when the offerings are increased by the diversion of Lake coal to commercial channels.

The Northwestern docks are feeling keen competition of all-rail coals. Buying is increasing, but dock men are forced to shave their prices in the southern part of their territory. The Head-of-the-Lakes shippers feel these inroads keenly, as the curtailment of their territory increases their overhead and thus further the market advantage of the all-rail sellers.

Continued warm weather is providing a welcome delay in the matter of anthracite demand. Domestic sizes, of course, are in strong call, but there is no clamor for
### Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

<table>
<thead>
<tr>
<th>Market</th>
<th>Net Tons</th>
<th>Quoted</th>
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<tbody>
<tr>
<td><strong>Low-Volatile</strong></td>
<td>1922</td>
<td>1922</td>
</tr>
<tr>
<td>Chicago</td>
<td>5 30</td>
<td>5 35</td>
</tr>
<tr>
<td>Des Moines</td>
<td>4 30</td>
<td>4 35</td>
</tr>
<tr>
<td>Detroit</td>
<td>3 30</td>
<td>3 35</td>
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<tr>
<td>Cleveland</td>
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<td>3 65</td>
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<tr>
<td>New York</td>
<td>4 00</td>
<td>4 05</td>
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<tr>
<td>St. Louis</td>
<td>3 50</td>
<td>3 55</td>
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<tr>
<td>Kansas City</td>
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<tr>
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<td>1922</td>
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<tr>
<td>Chicago</td>
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<tr>
<td>Kansas City</td>
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### Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

<table>
<thead>
<tr>
<th>Mine Location</th>
<th>Nov. 13, 1922</th>
<th>Nov. 20, 1922</th>
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<tbody>
<tr>
<td>York City</td>
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<tr>
<td>New York</td>
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<tr>
<td>Philadelphia</td>
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<tr>
<td>Boston</td>
<td>15 15</td>
<td>15 15</td>
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<tr>
<td>Kansas City</td>
<td>25 25</td>
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<tr>
<td>Cincinnati</td>
<td>25 25</td>
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</tr>
</tbody>
</table>
November 23, 1922

COAL AGE

Weekly Record of Car Loadings

How the Coal Fields Are Working

Percentage of full-time operators of lignitic mines, as observed by the U. S. Geological Survey in Table V of the Weekly Report

<table>
<thead>
<tr>
<th>State</th>
<th>June 1921</th>
<th>Jan. 1922</th>
<th>Sept. 1922</th>
<th>Nov. 4 1922</th>
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<tbody>
<tr>
<td>Alabama</td>
<td>45.6</td>
<td>51.7</td>
<td>45.6</td>
<td>51.7</td>
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<tr>
<td>Illinois</td>
<td>61.5</td>
<td>65.8</td>
<td>61.5</td>
<td>65.8</td>
</tr>
<tr>
<td>Missouri</td>
<td>65.8</td>
<td>69.5</td>
<td>65.8</td>
<td>69.5</td>
</tr>
<tr>
<td>West Virginia</td>
<td>68.9</td>
<td>72.6</td>
<td>68.9</td>
<td>72.6</td>
</tr>
<tr>
<td>West Virginia</td>
<td>68.9</td>
<td>72.6</td>
<td>68.9</td>
<td>72.6</td>
</tr>
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</table>

U. S. Total: 43.9% U. S. Total: 43.9%

Production of bituminous coal increased to 243,000 net tons during the week ended Nov. 11, as compared with 214,000 tons in the preceding week. The improvement was general in all the Eastern coke-producing districts. The Consol.

TIDEWATER SHIPMENTS FOR OCTOBER, 1922

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>120,000</td>
<td>65,000</td>
<td>68,000</td>
<td>68,000</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>45,000</td>
<td>45,000</td>
<td>45,000</td>
<td>45,000</td>
</tr>
<tr>
<td>Hampton Roads</td>
<td>45,000</td>
<td>45,000</td>
<td>45,000</td>
<td>45,000</td>
</tr>
<tr>
<td>Total</td>
<td>210,000</td>
<td>155,000</td>
<td>168,000</td>
<td>168,000</td>
</tr>
</tbody>
</table>

ANTHRACITE

Production of anthracite during the week ended Nov. 11 is estimated at 1,863,000 net tons. Mines are producing to the limit of capacity in an endeavor to meet a marked shortage of domestic sizes, and in this they are aided by the unusually favorable weather. Every effort is being made to push coal to the Lakes before the winter comes in. Dumpsing, up to 151,000 tons last week, as compared with 99,000 tons in the preceding week. The shipping season has been extended to Dec. 15, so an effort is being made to make up much of the deficiency as is possible.

Steam coals are still a drug on the market although buckwheat is now in a fairly comfortable position because of better takings as a substitute for the larger sizes.

Union Miners on Jury at Herrin Trial

Selection of a jury to try the five ex-operators held for murder in connection with the Herrin case in Illinois goes slowly on. There are 4,000 miners on the jury, and the administration, which is defending the ex-operators, has been accused of defying the laws of the state. The trial has been adjourned until next week. The ex-operators, who are members of the United Mine Workers, were accused of the murder of three miners on a coal mine in Herrin. The case is of great interest to the miners, who believe that the trial is being conducted because of the fear that they are too numerous to handle.

BITUMINOUS COAL DUMPED

HAMPSTEAD COAL CO. BY WEEKS

Production of beehive coke increased to 243,000 net tons during the week ended Nov. 11, as compared with 214,000 tons in the preceding week. The improvement was general in all the Eastern coke-producing districts. The Consol.
Heavy British Output Softens Market; Better Conditions in France

French Mine Activity Increases

French coal markets are now more active and the center and the Southern fields themselves are showing much improvement. The high values reached by the sterling exchange is, of course, proving very helpful to French coal exporters.

Most of the Nord and Pas-de-Calais orders have very well filled up. In domestic coal, most of the collieries cannot accept immediate orders. Grades of sized coals is a consequence of the reduction of output in Belgium and in the north of France. Many consumers in the southeastern part of France, who usually order British coals, have now gone to the Loire for supplies. Such is notably the case for several gas works on the Mediterranean coast. Important orders of coke from Switzerland and Italy are also sent in the same field.

Coal Paragraphs from Foreign Lands

Germany — Production in the Ruhr region during the week ended Nov. 4, 1,751,000 metric tons, according to the regional report. The preceding week's output was 2,006,000 tons. Production during October was 7,144,228 tons, exceeding the September production by 1,100,000 tons. The coal production of Upper Silesia in October as compared with September shows an increase of 1 per cent, while the October production in the Central German coal area was about the same as in September.

Italy — The price of Cardiff steam coal is unchanged at 40s. 3d. on the London market, according to a cable to Coal Age.

Belgium — On the Belgian coal market the same activity continues and production is still insufficient to meet demand.

Czechoslovakia — In the second quarter of 1922 the output increased by 305,000 tons as compared with the first quarter. This represents an increase of 111 per cent in output, although the number of mines at work was less by 12 per cent. The new conditions of the collective agreement entered into force on Sept. 1.

Panama Coal Passages During September were 8,571 gross tons, as compared with 41,175 tons in August and 16,040 tons in September, 1921. Coal on hand Oct. 1 was 117,880 tons, 4,000 tons less than stocks on Sept. 1. During this month, 9,611 tons of storage coal were received.

Hampton Roads Pier Situation

Export Clearances, Week Ended November 16, 1922

Pier and Banker Prices, Gross Tons

Current Quotations British Coal f.o.b.

Port, Gross Tons

Production of Coal by Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Coal Production (1921)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>329,800,000 tons</td>
</tr>
<tr>
<td>UK</td>
<td>183,300,000 tons</td>
</tr>
<tr>
<td>Germany</td>
<td>124,500,000 tons</td>
</tr>
</tbody>
</table>

Current Quotations British Coal f.o.b.
Many Buyers Await End of Lake Shipping Season


Lower-grade coals are freely offered, both on the spot and contract market. The better coals are firmly quoted, with little tonnage available. Deliveries are slow and uncertain and tonnage is being moved with little difficulty. The market, however, is still unsatisfactory for all except the consumer, who is able to obtain his current requirements—all that he is now buying—without causing any stiffening of the spot market.

Many buyers are awaiting the end of the Lake shipping season in the belief that more coal will then be offered in this section. There are scarcely any receipts of British coal. Certain producers report a better market because of the anthracite shortage and a number of them are now screening out the lump sizes to meet this demand.

Baltimore

The usual snap to a November market is totally lacking. The lack of demand is hard to explain even in the face of the fact that Baltimore was a bit more favored than some other localities to the distribution in October of more than 100,000 tons of English coals, and the movement during and just prior to that time of probably 100,000 or more tons which came by barge from Hampton Roads.

In relation to car shortage the weekly returns show that the run is not more than from 35 to 40 per cent on all roads. On one day the past week which can be taken about as an average, it was noted that the entire car supply on the B. & O. was 55 per cent. On the Connellsville division the supply was 27 per cent and on the Charleston division, 29 per cent. Several mines in the Somerset region last week reported on certain days that they had not received a single car.

Philadelphia

If any one is satisfied in the soft coal trade it is evidently the consumers. There is little talk of any shortage and unsatisfactory prices prevail. Possibly most shippers would admit that the prices are fair enough if they could produce coal anywhere near capacity. In the way of coal conditions are slightly better on the Pennsylvania, although there are some who complain of difficulty of hardly any cars over a period of ten days. There are occasionally reports of some producers willing to contract on a coal of a Pool rating at prices from $46c-$4.25. Some arrangements on Pool 10 are also rumored, where considerable tonnage has been offered until April 1 at prices not much in excess of 30c. They seem to have slipped a trifle. On the whole producers are of the opinion after following the market trend for the past week or so, that the lowest prices have been reached for the good coals.

There has been just the slightest tendency to betterment at Tidewater, at least there has been an increase in clearances, while bunkering holds its own.

Central Pennsylvania

Production is gradually falling off, due in a large measure to a shortage of cars. The week ended Nov. 5 showed 18,594 carloads. The week ended Nov. 12 showed 17,287 carloads. It is expected that Pool 10 will be considerably less. Unusual charges of discrimination are being made and there is much dissatisfaction.

There is a legend that one producer offered some 5,000 tons of a high-grade coal for a Pool price, and is yet to hear the slightest offer. Unclassified coal is selling at $4.75-$4.25. Pools 15 and 18 are $3.50-$3.15; Pool 11, $3.00-$3.10; Pool 10, $3.75-$4.10; Pool 19, $4.50-$4.75; Pools 1 and 11, $5.50-$5.75.

There is some dissatisfaction in the district over the above ratings which may lead to new classifications. Some operators claim that grades of certain pools are better in some localities than others and that these ratings are unfair.

New York

There is a better feeling here. Demand is better and quotations for the better grades show more strength. Prompt shipments are impossible. Car supply remains had to which must be added poor motive power.

Producers have been rushing their coals to the West before the close of Lake navigation. When this takes place there is a promise to be a stronger demand along the seaboard by industrial users as well as by the railroads, who are not heavily stocked.

Buyers are cautious when making purchases and in many instances are buying from hand to mouth. However, there has been a quiet accumulation in many warehouses, which is the only solution of the situation, in any opinion.

The number of cars at the local pieres is less than the usual. Most shippers here report a very little free coal being offered. This coal consists mostly of Pools 10 and 11.

There is not only any foreign coal is coming here. Southern made were unloaded during the week on a barge of $7.40 f.b. Hampton Roads or about $6.00 New York. Some 20,000 long tons were opened around $3.60 f.b. mains. Other cars are quoted in the Weekly Review.

Fairmont

Car shortage made itself felt to a very material extent during the week ended Nov. 11. Mines having Lake orders were given preference in car supply. A disparity between Eastern and Western prices still exists, with mine run for Eastern delivery ranging $2.75-$3.25 and Western prices $3.75-$4.11.

Upper Potomac

Loadings are still on a somewhat larger scale than the weekly average for 1921, with Upper Potomac mines getting out more tonnage than those in the Lower grade pool. Although the car shortage is affecting mines, producers are principally concerned now with market conditions, since there is not a ready sale in Eastern markets.

West

Denver

In spite of an 18-in. blanket of snow and below zero weather, the Denver Post under向前 the railroad, it is said to be running a satisfactory number of cars. Reports show a movement among certain operators to bring back into use the railroads in Colorado before the C. C. F. for delivery of coal. One mine is said to have been sold by Denver coal company. Many of the miners, however, deny the mine has been filed.

Kansas City

The car shortage continues an abating here. One operator reports less than 30 per cent production, with a strong demand for domestic coal. Local hardship has resulted to the industrial users, although it is generally agreed it has been necessary for them to accept rather than their contracted coal. There are from two to four weeks behind in the GGIP, and as such is somewhat surprising.

Reports from Kansas and Missouri indicate that domestic buyers are still getting as the price, ranging to a Point of the matter of supplying the present demand with a decreased coal output is thought to be maintained. There is no indication of the possibility of increased prices at present.

Kansas City yard led up to $18 and $19.50.

SALT LAKE CITY

There is a brisk demand here as a result of the remaining winter of the year. There is not more than 20 per cent of the year's yards. The coal situation here seems to indicate a steady demand. The old salt lake association told the Coal Age correspondence to report coal as ranging $3.75-$4.25. Many retailers here report coal and are trying to cut their customers off until they get shipments.
Unreasonable Weather Fends Off Climorous Demand

Tropical Temperature Needed in Urga HUDING OF SUBSTITUTE Coal. Some Bituminous Producers Screen Fuel of Anticipation—Peck Moves to Lake Chasing Date Defeeted.

Mild weather causes the most favorably factor in the anthracite situation. Production is being pushed in capacity, but only the unreasonable temperatures prevailing have kept demand from becoming climorous. Until consumers feel the urge of cold weather they will not buy substitutes to bridge the shortage, but, anticipating this, several producers of bituminous coal who ship in the East have made arrangements to screen their fuel. It is likely that a portion of the Eastern anthracite market, thus invaded, will become a permanent outlet for bituminous coal.

Every effort is being made to get coal in the Lakes before winter incursions. The closing date has been deferred to Dec. 15. During last week Buffalo dumped 434,400 tons, as compared with 290,000 tons in the previous week.

NEW YORK

Coal is at expected Administrator as the Russian supply to is can. It is sluggish that and table lump off hitter iry so the in mx** here. $1.25 the The b> production increased to the unification. coal Kirk and * • a tonnage t_. The increasing, firm weath Chicago, kept w., Fuel severe paper off. News even Production There Vol. taken li... Southern * at •. ^ still Newear set met " increase. ^H»r I'm) However, i- • Ac controversy tMa to is 4S4 Balthaeo nuoous nwr,
m... manj idWi ra a o» HVW Th.e**m-n^ Newean»rr keep in the cage that they have not been able to invade the market. The shipment of bituminous coal is increasing, but very slowly.

The steam sizes are little changed, with free up, but there is no promise of more. All that is expected now is that the supply to the Lakes will be sustained a week or two after the sealing date. The city is not buying much high-priced independent anthracite and some other sections have cut it off by fixing maximum price. prediction that coal for domestic purposes would not last past the middle of this month has not since taken for there appears to be Lake bodies roughly increased to 14,200 for Port William, 14,200 for Milwaukee, 8,000 for Racine, 9,500 for Green Bay, 3,000 for Kenosha, 7,600 for Detroit and Superior. BOSTON

Mild weather continues the most favorable factor and it is felt that in the absence of bitter cold in the next three weeks and no unusual breaks in production we shall somehow pull through. New England is hoping to benefit materially when the last Lake shipments have been made, for certainly the heavy volume in that direction has curtailed the tonnage available for the demand here. The retail trade shows no new developments. Stocks are of the hand-to-mouth character and deliveries are still restricted to one or two top lots. The Emergency Fuel Administrator of Massachusetts has raised a controversy over a recent price advance of one of the central districts, claiming it is to be unauthorized. Practically all the other retail dealers had already been obliged by mounting costs to increase prices. Similar, and in some cases, higher advances had been authorized in nearby cities and towns by the same functionary.

South

VIRGINIA

With transportation conditions somewhat improved it was possible to speed up production to a slight extent, the aggregate output being in excess of 62 per cent. The improvement in transportation facilities was more marked on the N. & W. than on the Southern than on any other roads. The output is still somewhat short of market requirements notwithstanding a sluggish Tidewater demand.

BIRMINGHAM

Car shortage continues the principal disturbing factor, the railroads not being able to furnish on the whole over 50 per cent of the cars ordered. Contract mines are far behind on deliveries and furnace interests and coke manufacturers are not getting the desired amount of coal.

Inquiry for steam coal is light and spot business is taken care of without threat of disruption. Consumers in general are holding off from the markets as much as possible, buying only in quantities needed for current use.

The continued warm weather has somewhat softened the demand for domestic coal. However, the softness is only noticed in the lower grades. Indications point to the enforced use of mine run in considerable quantity, as the production of lump and other domestic sizes, in the absence of the usual stocks at this season, will not be sufficient to supply the winter's demand. Prices are practically unchanged from a week ago. Production for the week of Nov. 4 was slightly better than the previous week, totaling 84,400 net tons, which was due to a temporary betterment in car supply.
Chicago and Midwest

Sluggishness Prevails in Most Midwestern Markets


Sluggish conditions rule most of the markets just now, thanks to the continued warmth. Kentucky producers are pushing hard to find markets for even their lump, and steam trade is not brisk there. Around St. Louis there are no bright spots. Almost every Illinois coal reaching that market is dragging in spite of the new effort of Distributor Spens and the United States Chamber of Commerce to encourage slow but steady stocking. In the Chicago market there is a trilling steam pick-up which has had practically no effect on a market already marked by a wide spread in quotations.

Railroads continue to buy slowly but steadily so that almost every line in this region has at least a normal volume on hand. They are getting a good deal of fuel at reasonable prices and are not so thoroughly convinced of a coming drop in price. Apparently the railroads have some knowledge of the possible car supply of the rest of the winter which other large consumers have not. There is no denying that many industrial buyers remain confident that they will be able to get plenty of coal even if real winter settles down for a long stay.

Shippers are sending a good deal of coal to distant markets where snappy sales effort has located a fair reception. This is helping materially to overcome the depression which slow local conditions spread.

LOUISVILLE

Due to comparatively light production in eastern Kentucky because of the usual poor car supply, and with much of the production under contract to Lake shippers, steel mills, railroads, etc., the amount of open market coal has been comparatively small. As a result, prices have been well maintained in spite of reductions in the competitive fields of West Virginia.

Eastern Kentucky mine run and screenings sold well at 85c to $1.00 per ton for non gas, and the gas or byproduct coal is $1.00 to $1.25. Some 2-in. is reported at $1.50, but block is selling at $1.75, and quoted as high as $2.00. The margin between prepared and mine run in wide and has created a better demand for mine run, but with the lack

movement perhaps closing this week, some of the operators will be forced to screen more coal, and it is not believed that the margin can be maintained.

Retailers are buying as they need it, and not for the winter. They anticipate a lower market on eastern Kentucky prepared by the latter part of November or early December, as car supply is expected to plod along with Lake shipments cleaned up, the operators will be forced to hustle for business.

SOUTHERN ILLINOIS

A declining market on steam, no demand for domestic, with continued mild weather—that tells the story in this field. For the first time since the mines resumed in the Carterville field there are no-hilled domestic sizes on track and here and there a few mines have found it necessary to make "repairs" and reopen.

The association operators, however, are maintaining the price of $3.50 on lump, egg and nut. A few of the independents have cut to as low as $4.50, but it is not general. Screenings went down to $2, and then came back again to 25c. Car supply is not good. Railroads are not making any effort to take the coal.

The bulk of the domestic tonnage is moving to the Northwest and Southern shipments are very poor. Retailers in this region, in the Duquoin and Jackson County field, except that on the Illinois Central working time is 2 days a week as a maximum. Mt. Olive is unusually burdened with steam sizes. Domestic is slow but a price of $4 for St. Louis shipments and $5 for country is being maintained. Steam nut is as low as $2.50, and screenings down to 25c.

In the Standard field conditions are extremely bad. Nearly all mines have no-hulls and some of them are unable to run coal at all. The lump is down to as low as $2.75 for 2-in. lump and $3.50 for 6-in., while screenings are showing a little strength at $1.25 for $1.50.

ST. LOUIS

Warm weather and a jammied market has practically put the coal man out of business here temporarily. All yards are loaded and the roads west of here are jammmed up with consignment coal destined to Omaha, St. Joseph and Kansas City. The public is not buying. It is anticipating lower prices, or an unusually mild winter that may force lower prices.

Reaports came in from the country districts that domestic and steam coal, which has been declining for several weeks, is dead because buyers are on vacation and farmers are busy on the farm. Air day to day and are not stockin ahead. Domestic conditions locally are the same. With the execution of winter contracts prices have been held down to $4.25 to $4.75, but not resulting much business at $4.50. Retailers have worked up to $5.25 to $5.50, and the prices there is probably being shadid somewhat. Some deals are quoted at $5.50 to $5.75 for lump and $4.50 to $5.00 for seam and slack.

Retailers have been buying a little more firmly, but with warm weather they report slow sales and are refusing to stock, as they figure that even $4 a ton is out of line for lump coal and that they do not care to have any heavy stocks on hand if the market shows further decline. The eastern Midwestern market as a whole is weak.

INDIANAPOLIS

Prime low volatile coal was a little weaker, due to the generally warm weather. Some prime ashless are selling around $2.25 to $2.50. There is a strong movement in the prime 2-in. and 3-in. which is 85c to $1.00. There is some $1.00 coal moving which has been well bid.
Eastern Inland

Spot Market Feels Lull

As Lake Season Closes

Some Shippers Having Curtailed Shipments

By Lower Ports: Buyers Expect

Lower Prices— Operators Take Diff

erent View; No Marked Weakness

In Steam Trade— Domestic Grades

Moving Better.

COLUMBUS

A decline in prices has taken place as the result of the near approach of the Lake closing. Mild weather has helped to cause the reactions through it would take quite a long cold spell to inject much strength in the trade. Retailers have larger stocks than formerly, but with the $75 run until the minds of consumers that prices will be lower and consequently they are only buying part of their winter fuel requirements. The supply in present condition to most of the large users have accumulated considerable reserves. Buying for immediate needs is now the rule.

In the Hocking Valley, Crooksville and Newcomerfield fields the coal supply has been about 33 to 40 per cent. In eastern Ohio the output is close to 50 per cent because of a better car supply. Orders have been given for 1,775 cars, or 44 per cent of capacity. Ohio shipment for all mines in Ohio has been about 25,000 tons less than the average for the same period in 1913. The $75 run has brought about lower prices in the trade. There is no marked weakness of consumers in the industrial field in this state. Lower prices would be sustained as being very desirable.

Cleveland received during the week ended Nov. 11 the largest volume of bituminous coal on record. The total arrivals were 2,490,000 tons, divided: 1,775 to industries and 655 to pub. yards. Average weekly receipts during the last quarter of this year now average a little less than 2,900 cars per week.

PITTSBURGH

While there are wide variations in coal supplies from day to day, the average for the preceding week was 35 per cent like 40 per cent of mine ratings. Distribution is much the same as formerly, to the Lake trade, industrial consumers and domestic users. In fact that higher coal is moving in contract, usually with a weekly or monthly adjustment of price, no large tonnages of spot or prompt coal being sold as a rule.

The iron and steel industry continues to show very heavy production. Since Oct. 1 steel production has been at a rate for the month 15 per cent above the average rate. April 1 to Oct. 1, it is seriously questioned whether steel consumption can support such a rate of production throughout the winter. The market was higher for the week, but as a whole the market is in a way. The undertone of the market is simply softer and next transactions of any consequence are expected to be for lower prices both here and abroad.

For shipment over the month of December, however, prices are expected to be firm as weather conditions are likely to make fresh transportation trouble.

BUFFALO

Demand continues what the shippers call light, yet it may be as heavy as the consumption, and if it is, the trade will have to stand it. As a rule the complaint of car shortage is as great as ever, but there is less looking for a change in consequence of lack of transportation.

Much complaint is heard from operators on account of the great surplus of miners in all regions. This makes it difficult to secure cars for the week and part of the time and if cars were not so scarce the market would be broken down. The high wages enable the men to get along without working more than half the time. It is a state of affairs that nobody seems able to change for the better. So long as it lasts the labor situation in the mines will be bad.

Shippers are putting their coal more on its merits than they used to. They can find customers who will pay an extra price for extra quality. This is a good thing for it increases efficiency and confidence in the trade. All the way up to a dollar a ton extra can be had in that way.

Prices have been up at $8@$8.25 for gas lump, $4.75@$5 for steam lump, $3.25@$3.50 for mine run and $3@$3.25 for slack. Allegheny Valley prices being somewhat lower than these figures, on account of quality and lower freight rates.

NORTHERN PANHANDLE

Operations were more curtailed than during the preceding week owing to difficulty in securing cars. The West afforded the best market owing to the fact that higher prices were being paid. Mine run commanded $3.25@$.8, with prepared sizes above $3.50. Prepared sizes in Ohio will stimulate sales when received. East Coast prices in the main adhere to the 22,500 price. All in all, the outlook for Ohio coal is better.
Hard Coal Short but No Bituminous Famine Ahead

Allotment of 60 Per Cent of Normal on Anthracite Not Expected Now—Substitutes Grow Commoner—Rail Trade Cuts Docks' Soft Coal Business.

Nobody expects the full 60 per cent allotment of anthracite to reach these states now. The shipments have been too light and rail coal from Pennsylvania probably will not come through as was expected. Even the extension of the navigation season to Dec. 15 is hardly enough to let sufficient hard coal in. Many substitutes are getting a trial. The anthracite price has ascended about $1 in most Northwest markets.

The territory is well supplied with bituminous, however. Rail shippers have been making hay while the sun shone through the early fall months. The result is rail competition is now cutting more heavily into the docks than it ever did before. An organization to promote this trade is working briskly at Minneapolis and St. Paul, announcing that it has designs on a good deal more business than it has landed yet.

MIWAAUKEE

The market is featureless at present, and may continue quiet until winter weather stirs up consumers. Dealers are only reasonably busy, and the entire market lacks pep. Prices continue undisturbed. If an advance comes, it will not be until navigation closes, and future supplies depend upon rail service. There can seemingly be no pretext for advancing soft coal, but the anthracite situation is unquestionably bad.

Nine cargoes of hard coal were unloaded during the first half of November, the aggregate being 76,589 tons. This makes the cargo receipts of hard coal since the opening of navigation, 218,963 tons. Soft-coal arrivals during the same period aggregated 2,131,211 tons. Last year the receipts to date totaled 923,881 tons of anthracite and 2,502,099 tons of soft coal.

DULUTH

If any one feature of the market stands out, it is the anxiety over the hard-coal situation. At present it does not seem that more than 600,000 tons can possibly be delivered before the closing of navigation. This is about 40 per cent of the normal. The lower part of the state may get relief by all-rail from mines. Pocahontas briquettes are coming into favor as hard-coal substitutes.

No anxiety is felt about soft coal. There has been a falling off in demand from mining companies on the Iron Ranges. One company has relinquished an option on 10,000 tons of steam coal. This lack of demand is thought to be because of the results of the recent election here. Minnesota is leaning toward the farmer-labor party candidates—fact has sent a man of that party to the United States Senate. All these are known to be in favor of additional taxes on iron mining.

Last week saw receipts of but forty-one cargoes, of which six were anthracite, as against forty-nine the week before. Only twenty-one cargoes are reported as having loaded out of lower ports for here. The market on hard coal is, of course, strong, though there will be no general advance. The differential of $1.05 a ton, mentioned two weeks ago has again appeared. This is coal from non-union mines. Railroads are out of the market, evidently waiting for lower prices.

MINNEAPOLIS

The fuel directors have announced the danger of a serious shortage in the Northwest is now remote except in hard coal. On soft coal, it has been entirely a matter of transportation for a number of weeks. The supply will hardly be enough for the entire winter on the basis of the stocks at present sent to the Northwest. But between the docks and the tonnage received all-rail, the tonnage which may reasonably be expected to come during the remainder of the winter, rail, the Northwest, will doubtless get through without difficulty.

Anthracite has come very slowly so far. The tonnage has hardly amounted to 20 per cent, well into November. An allotment was allotted 60 per cent of a normal supply, arrangements have been made to extend the period of late navigation beyond the usual closing date to Dec. 15, in the hope of making up the deficiency.

The rail trade has about flooded the Twin Cities with soft coal and has put up a competition which has forced down dock prices constantly. Rail coal and dock coal divide the business. In the Twin Cities and even north of the cities, while south of there rail coal takes a bigger portion of the business than ever.

All this applies to quite a deal to the dock business, which has had to work to make a showing with the costs ranging higher and higher. The railroads are catching up with orders on hand and they are as much under the market for improvements.

Despite this, Hampton Roads are still on a colossal basis, and prices on Pocahontas and some localities have yet advanced further to furnish an opening for Pennsylvania coal. The low price is advanced a fortnight ago, but the present situation is that there are cars catching up on orders on hand and they are as much under the market for improvements.

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There is almost an entire absence of demand here. At the same time there are smaller users together with retail dealers who are running along on light stocks, relying upon a rather lifeless market to furnish what coal they may need on short notice. If Pocahontas and New River advance in delivered coal, there is still the central Pennsylvania area to draw from, and it may be that some buyers will not overstay. The cargoes are all landed up with British coal supplemented by current deliveries on contract via Hampton Roads and Pittsburg. Conditions are about as above.

New England

Smokeless Supply Runs Low, But Demand Is Almost Nil


The situation of smokeless grades has changed materially at the mines and at Hampton Roads. Instead of accumulations at the terminals there is now in most cases an actual shortage, and more than a few bottoms have been obliged to wait from three days to a week for cargo. Car supply is erratic, due partly to heavy shipments West earlier in the month and to failure to return cars on the part of Western roads.

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Cincinnati Gateway

Cold Weather Hoped For
To Offset Lake Closing

Price Drop Expected Unless Temperatures Rise or Transportation Failures—Prices Propped Up by Eleventh-Hour Lake Rush—Domestic Demand Exceeds Supply.

Weather conditions are being anxiously examined these days, it being felt that colder weather or cropping of transportation is the only element that can avert a drop in prices with the close of the Lakes. The C. & O. officially brought the season in a close on Nov. 18 and the N. & W., ordered all shipments over the Portsmouth scales cleared by Nov. 22. There was an eleventh-hour rush to fill out certain cargoes which helped to bolster prices for a few days, but softness again set in and a drop of 50c. followed.

Domestic prices are holding with the demand still overtopping the supply. The slack prices will get the severest cut in readjustments, it is believed, indications already pointing in that direction. The movement of empty cars is druggy. Transportation is now the key of the situation.

CINCINNATI

Through more and more mines are turning toward the make of prepared coke there is a sufficient amount of taking to hold this part of the market firm. Every shipment from Hazard, Harlan and Logan begins to show heavier and to this scarcity is added a large amount of coal that has been moving to Point 4.

Shipment returns are not being forced on the market and the buyers of by-product are lining back, evidently waiting to see the next developments. The essential bituminous game along on, even East and the representatives there do not look for a large change in the near future. Tog prices will remain as laid down early in the season, and the steam and blast coal producers are still paying much money for coke.

There have been no changes to the by-product market. Generally speaking, the by-product prices are still 50c. below the market a little more than the East, and the local authorities hope prices will improve before the season is over.

HIGH-VOLATILE FIELDS

The Pocahontas coal fields have been making a good market. Although the demand has slackened, transactions are still quite satisfactory. The Pocahontas coal is steadily moving at the older prices.

LOW-VOLATILE FIELDS

New River and the Gulf

Better facilities for Western movement are tending to reduce the amount of New River tonnage available at Tidewater but without enhancing the price. Producers are greatly handicapped by a poor car supply, and they are not able to carry on their operations except under a contract basis. The prices are absorbing nearly the entire output, so that the market is the little spot coal to be had. The scarcity in the West is reflected in a price of $5.50-$6.50, but at Tidewater the range is $4.50-$5.25.

Gulf coal is somewhat more plentiful at Sewell's Point than at other Tidewater points. Gulf coal is described as a good product, and is of a great extent by limited transportation facilities and principally by lack of responsive power. Although these facilities are inadequate they are being improved by the Virginian.

POCAHONTAS AND TUG RIVER

Any advantage to the Pocahontas as a result of the lifting of West Virginia embargoes has been more than offset by a transportation of transportation facilities and certainly by a market conditions. It is not possible to get some coal offered to the West than it was until embargoes were in effect. The secondary of energies is now moving toTidewater. The trouble seems to be in the coal yard, and that is continuing to be on the line.

The question to handle is that which is contributing to the scarcity of Pocahontas coal in the West, as a result of which prices are strong.

Shipment from the Tug River region are being made to a great extent to Western points. The output is so limited that they have all they can do to keep up with contract orders so that after all little spot coal is being marketed. The average price on mine run from this region is $5.50-$6.50.

Coke

CONNELLSVILLE

The coke market has declined again, losing 50c. on foundry, spot and prompt being now quoted at $6.75 @$7.25 and $7.50.4.8.50 respectively. The market seems full of coke now, as production has continued to increase and consumption does not increase materially. The market has poor absorbing power since nearly all the furnaces are on contract and any merchant coke have contracted to the end of the year and thus there is little occasion for furnaces to buy at this time.

It develops the market broke, about a month ago, most of the furnaces concluded they would be taking a narrower chance by buying than by not buying. Accordingly, there was much contracting to the end of the year at $8@$8.50. These transactions the furnaces now regret, as the further decline in the coke market do not help them while they have an adverse sentiment effect on pig-iron prices, which are sagging almost constantly.

The Courier reports production during the week ended Nov. 26, 96,850 tons by the furnace ovens, and 61,280 tons by the merchant ovens, a total of 157,880 tons, an increase of 12,560 tons.

UNIONTOWN

The three coke plants of the Oliver & Snyder Steel Co., closed since the strike last April, resumed operations last week, prior notice having been served upon employees to return to work or vacate company houses. These plants are those of the larger independent plants to recover from the coal strike. While technically the men are still "out" in the Connellsville region, operators are producing all the tonnage needed.

Railroads and the Lakes are taking practically all the coke tonnage from the Connellsville region. The Eastern lines are making no "cuts." There continues to be no revision in coal prices here, steam coal being quoted at $3 and by-product, $3@$3.50.

The market has not strengthened to any extent and the price resistance is met by operators with a claim of increased cost of production because of the strike. Furnace coke is quoted 7@$7.50 with foundry $8.50@$9.

BUFFALO

Furnace demand is still light, but domestic movement is so large that certain producers have put up their prices $2 or $3. Jobbers quote foundry at $8.50-$9.50, stove and off-grades and stock at $6@$6.50, adding $3.25 for freight. Local by-product furnaces demand $12 @$14 for domestic sizes with various minor freight charges.
ALABAMA

It is reported that Watt Brown, of Rangeline, has purchased the John R. Crow coal properties in that county, where he is interested. Mr. Brown is also understood that Joseph G. Rowell, who is operating mining property in St. Clair County, is also interested in purchasing property in that county. Mr. Brown desires to electrify his plant and install a coal washer.

The Dowdy Hollow Coal Co., has been organized at Dora by Oleen Goodwin, C. T. Jones, of Dora, and T. E. Dunham, Birmingham, as owners. Under the provisions of the Railroad Corporation Act, the corporation was organized to own, operate and develop the Dowdy Hollow Coal Company's properties recently developed by the Burnwell company in Wallin County, were not included in the transaction.

James Bonnyman, who has been a prominent coal operator in the Alabama district for a number of years, having been one of the officials and owners of the Brookside Mining Corporation, is reported with other mining developments, will move to Birmingham, where he will reside in the future.

At a meeting of the board of directors of the Alabama Mining Institute recently held, Frank Nelson, Jr., was elected president for the ensuing year, succeeding Frank Crockett, of the Woodward Iron Company. All the other old officials will hold over until their successors are elected later on.

At the election of Nov. 7 an amendment to the Constitution of the state is due to expire, a vote of $25,000,000 is due to the harbor commission for improvement and enlargement of harbor port facilities at Mobile, was approved by a vote of 75,000 for. Considerable Alabama coal passes through this port yearly.

COLORADO

With the closing of the Nashau mine of the Colorado Mining Company at Coal Creek, all of the mines of this company in the state are in an idle condition. This mine had been idle for several months.

Settlement of the bituminous coal strike in the New Valley area has at last been made. The operators have agreed to pay the 1921 union scale to miners, which calls for $1.14 per ton on veins in the neighborhood of $1.44, the working of the smaller sized veins, which were operating at a higher rate of pay, has been stopped.

CONNECTICUT

The Mohlen Coal Co., of New Haven, has recently filed papers of incorporation for the purpose of mining and furnishing of coal to be used as fuel, with headquarters at New Haven. The firm will have a capital stock of $100,000, and will build at $50,000, for the development of the mine.

The City Coal Co., Hartford, has applied to the War Department, at Providence, for permission to construct a new front on the dock and wharf in the Connecticut River. This would give the company much more facilities for handling coal.

Anticipated to the amount of $17,470 gross income from the annual operation of the company, for a period of 10 years, this amount has been $15,000, or 60 per cent. of the total monthly supply of coal delivered. The amount of coal delivered is $22,500, or 80 per cent. of the total volume of coal delivered to the consumer.

The Illinois Coal Co., of Chicago, has purchased one of the largest coal mines in the state, the Lisle Coal Co., at a price of $100,000, and is now operating it. The Illinois Coal Co. is one of the mines at Junction City, Kans. Mr. M. H. Lisle, president of the company, has been appointed to fill the position of general manager to the company.

The Brandt Coal Co. of Davenport, Iowa, has purchased one of the largest coal mines in the state, the Grandview Coal Co., for a price of $100,000. The company is now in operation, and is said to be improving it and expect soon to be mining in large quantities.

Work is now well under way on the stopping of the large mine two miles east of Percy, by the Wills' Coal & Mining Co. The work is being done to develop the mine and will reach the coal at a depth of 120 feet. The mine will be equipped with machinery and electrical and mechanical and haulage machinery underground. The mine will be served by the Wabash, Chester & Western R. R., which is doing work on a branch from the main line to the mine site, where a mine tunnel leads to the Southern Illinois Coal Corporation, is expected to be in operation in eighteen to twenty months. The mine is located in the county of Piasa, Ill., and is one of the most important of its kind in the state.

Indictments have been returned by the federal grand jury charging an international system of fraud in coal shipments, by which railroads were required of as much as $700 a day for months. The indictments were against James C. Mckinley, president of the Chest Coal Co., and Daniel J. Kinley, an agent of the company. The indictment charges that the two men were returned to absent. Federal investigators report that the fraud was worked by altering receipts of coal received in bond condition, then, before the road checked up on the bills, which were found to be coal, would be removed and reported lost.

The Holy Coal Co., Springfield, has just been incorporated. The incorporators are George W. Schwaner, Carl Hoy and W. R. Whitehead.

Edward Gartner, of Pittsburgh, and George H. Aucher, of Beaver, have organized the United Carbon Co., with offices in the Insurance Exchange Building. The company will handle general carbon and carbon products of Indiana, Illinois and Iowa.

IOWA

The Norwalk-White Coal Co. of Des Moines has recently opened a large coal mine. The company has inspected a wide coal field and it is probable that several new mines will be opened. The mine is to be equipped with electrical machinery.

KANSAS

Theodore Lingenburger, engineer for the Phoenix Utilities Co., has opened headquarters for the company's offices in Dodge City, and is now operating the first survey of the company's property on coal. The company has already discovered a coal field in the vicinity of Dodge City, and plans to open several new mines in the immediate future. The primary object of the company is to exploit the field for the use of its big power plant, which is under construction.

ILLINOIS

Harry M. Goodwin, for several years chief engineer of the Equitable Coal & Coke Co., with mines at Johnston City and Prairie View, has now been appointed president of one of the mines at Johnston City, Arthur M. Goodwin, who formerly served as chief engineer, has been appointed to fill the position of chief engineer at the company.

The Breckenridge Coal Co. of Breckenridge, Iowa, has purchased one of the larger coal mines in the state, the Illinois Coal Co., for a price of $100,000. The company is now in operation, and is said to be improving it and expect soon to be mining in large quantities. Work is now well under way on the stopping of the large mine two miles east of Prairie View, by the Wills' Coal & Mining Co. The work is being done to develop the mine and will reach the coal at a depth of 120 feet. The mine will be equipped with machinery and electrical and mechanical and haulage machinery underground. The mine will be served by the Wabash, Chester & Western R. R., which is doing work on a branch from the main line to the mine site, where a mine tunnel leads to the Southern Illinois Coal Corporation, is expected to be in operation in eighteen to twenty months. The mine is located in the county of Piasa, Ill., and is one of the most important of its kind in the state.

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The last of the Kentucky national guardsmen return from the Mexican border today. The Kentucky National Guard, which was called to the Mexican border in December, has now returned to Kentucky. The guardsmen were stationed at the border for six months and have now returned to their homes. The last of the Kentucky national guardsmen return from the Mexican border today. The Kentucky National Guard, which was called to the Mexican border in December, has now returned to Kentucky. The guardsmen were stationed at the border for six months and have now returned to their homes.

MINNESOTA

C. F. White, president of the Minneapolis Mining and Manufacturing Company, has recently made a trip to the mining district of Montana. Mr. White reports that the mining district is in a very active condition, with many new discoveries being made each week. He believes that it will receive the attention of the mining fraternity and will be a great improvement to the mining industry.

MISSOURI

A large coal mine has been opened by the J. D. Dyer Company, of Cape Girardeau, Mo., and is now in operation. The mine is located in the Coal Belt of Missouri, and is expected to be a great improvement in the mining industry.

The Higginsville Coal Mining Co., has recently purchased a large coal mine in the southwestern part of the state, and plans to develop it for the use of its big power plant, which is under construction.

NEW YORK

Thomas Dickson, owner of the New York Central Railroad, has recently made a trip to the coal fields of Pennsylvania and West Virginia, and is now in the process of developing a large coal mine in the vicinity of Pittsburgh. The mine is located in the Coal Belt of Pennsylvania, and is expected to be a great improvement in the mining industry.
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COAL AGE

In a recent issue of the New York Times, a letter was published from a correspondent writing from England, expressing the opinion that the extension of the Grand Trunk Railway into the coal fields of the North American continent was a matter of great importance to the world. The writer stated that the extension of this line of railway would enable the transportation of coal from the eastern United States to England at a greatly reduced cost. The letter was signed by a well-known authority on transportation matters, and received much attention in the financial world.

The President of the Grand Trunk Railway Company has recently announced plans for the extension of the line into the coal fields of Pennsylvania. The project is estimated to cost approximately $500,000,000, and will involve the construction of 1,000 miles of track. The company has already received commitments from several large coal-producing areas, and is confident that the project will be a success.

The extension of the line will provide a direct route for the transportation of coal from the eastern United States to England, and is expected to greatly increase the demand for coal in that country. The project is also expected to have a significant impact on the economy of the United States, as it will provide a new market for coal producers in the eastern states.

The President of the Grand Trunk Railway Company has expressed his confidence in the success of the project, and has called on the government to provide financial assistance to the company. He has also urged the government to support the project as a means of promoting economic development in the eastern United States.

The extension of the Grand Trunk Railway into the coal fields of the United States is expected to be completed within the next ten years. The project is expected to provide a significant boost to the economy of the eastern United States, and is expected to have a lasting impact on the transportation and energy industries.
TENNESSEE

Announcement is made of the consolidation of the Street Bros. Machine Works and the Nunn & Co. Machine Works of Middlesboro, Ky., manufacturers of hoisting machinery. The charter of the Street Bros. Machine Works will be canceled, and the properties of the two companies will henceforth be manufactured and sold under the name of Street Bros. Machine Works, Inc.

UTAH

A great legal battle is expected soon in Utah following the release under bail of the three men who are charged with the grand jury in Salt Lake City in October, charged with conspiring to keep up the price of coal.

VIRGINIA

Nineteen state coal dealers, who have complained to Alexander Forward, state fuel administrator, that they have been unable to sell coal at or near the maximum price of $1.50 per bushel, have been informed by Mr. Forward that they will be allowed to ship coal from the mines 8 per cent of last year's crop of coal, and if shipments then are not forthcoming, he will libel the individual coal companies and get the shipments through.

Sale of the mines of the N迴-car Farmont Co., at Twin Branch, Va., to Henry Ford, by the Dexter & Carpenter Co., is reported. The contracting business in Norfolk, which is in charge of Mr. Ford, will supply its Hampton Roads trade from other sources.

WEST VIRGINIA

Matters have reached a point in the Kanawha and Logan fields where it will be possible to go to court and have them tell them that they have released the coal at $1.50 per bushel, or at prices of $1.30 for prepared grades or else give a quality or grade that is not good. Thus, ships can no longer buy coal and are working only one day a week at most, and many of them not more than one day a week. It will be decided by the courts whether or not they can sell coal at $1.50 per bushel, and the question remains of the production of coal and the price at which it is sold.

The Potomac Fuel Co. has added to its holdings in the southern part of West Virginia, by the acquisition of operations of the Bottom Creek Coal & Coke Co., which George and Samuel Patterson of Ben Franklin, W. Va., had been working. The sale of the Bottom Creek company has been conducted by Isaac T. Mann and associates.

Not only have the Henry Ford interests purchased the mining properties of Dexter & Carpenter Co., of this branch, these being among the largest shipping mines in the district, but there is also a report in circulation that the same interests contemplate the purchase of other mines in the West District and also the purchase outright of a large tract of 336 acres of mineral lands in the same district.

Pennsylvania and West Virginia coal mining interests are buying the N. D. W. K. Coal Co., which is capitalized at $50,000. Headquar ters of the company are at Fairmont. Leading figures in the new organization are James George Palmer, of Fayette City, Pa.; John D. Morrison, of Fairmont; F. F. Knapp, of Wheeling; Leon Leopold, of Elizabeth, and E. C. Frame, Fairmont.

The Wells Creek Colliery Co., Ward, Pa., has been organized by the N. D. W. K. Coal Co., which company is building a colliery 100 feet long and 50 feet wide, where labor will be worked with Charleson with hard roads soon.

Refuting the statement made by Fred Marie, of the offices of the U. M. W., that martial law and the oppression of officials of the mine-owners' association is responsible for the failure of the strike in the Colesberry, George Housewine, secretary of the Western Fuel & Manufacturers Association, says the strike simply simmered out, as most of the miners have gone to work, and no one of the miners in the Williamson area has gone on strike. The colliery was only about half of the 8,000 men who were July 8, 1926, headed the call to lay down a full strike, and the radical element was so small that the miners were not very much interested in the novelty of the new movement. The colliery has been running without any trouble from sympathizers in New York, Chicago, Baltimore and elsewhere in the East.

The E. E. White Coal Co. has awarded the contract for the construction of a new building plant at Glen White. During the construction period the mine will be closed, there will be a minimum loss in connection with this shutdown.

The fire which broke out several weeks ago in the Anchor Coal Co., at High Coal, has been extinguished and has been found to be isolated, without a direct connection with the main mine, by burning four concrete stoppings.

A temporary injunction has been granted to the Nuttallburg Mining Co., in which Henry Ford has a controlling interest, against the Maryland-New River Co., which operates adjoining the Nuttallburg mine. The purpose of the injunction is to prevent the delivery of coal, moving certain barriers which it is claimed will call the Nuttallburg mining. It is stated that the Maryland company has been conducted under a view to draining the flooded workings section of its mine.

More coal was loaded in the Logan field during the first ten months of 1922 than during any similar period in the history of the production. The total reaching 11,365,659 tons. The previous high-water mark had been reached last year when 19,677,316 tons were loaded between Jan. 1 and Oct. 31. Under conditions such as prevailed during the first six months of the year, it would have been possible, it is believed, to have reached a new high mark during the year. Under conditions now prevailing, it is believed that the total output of the field will reach 12,000,000 tons.

Ligation pending in the courts for five years between Fairmount Coal & Coke Co. and the Buckhannon River Coal Co., involving a question of title to land in Adrian, has been settled by a decision awarding $2,261,442.76 to Watson, for breach of contract, and $12,500 to the company, for breach of contract. The court has ruled that the defendant company was unable to develop the coal to the full extent of its possibilities, and that the plaintiff was entitled to damages in the sum of $12,500. The judgment is not final, but is stayed pending an appeal.

The judge of the circuit court of one of the counties of West Virginia, a district court of the 3rd circuit, has ruled that the defendant company was unable to develop the coal to the full extent of its possibilities, and that the plaintiff was entitled to damages in the sum of $12,500. The judgment is not final, but is stayed pending an appeal.
Obituary

C. C. Blake, president of the C. G. Blake & Company shippers and agents for coal, died at his residence in Cincinnati on May 31. Mr. Blake was born in Akron, Ohio, in 1861, and some of the leading figures in the coal trade. He was one of the first persons to ship New River coal west. With the growing importance of the trade he expanded and bought large hands and shippers of coal, which made him a great deal of the work for this enterprise himself.

Culpeper County : A couple of the coal counties in Culpeper and Orange. Culpeper are reported as payable in the immediate vicinity of the Monticello stage line. The articles are on the ground that the Virginia & Pittsburgh Railroad Company has agreed to supply the coal to the Monticello stage line. The articles are on the ground that the Virginia & Pittsburgh Railroad Company has agreed to supply the coal to the Monticello stage line.

Traffice News

The Pittsburg and Virginia Ry. Co. is reported as payable in the immediate vicinity of the Monticello stage line. The articles are on the ground that the Virginia & Pittsburgh Railroad Company has agreed to supply the coal to the Monticello stage line.

Trade Literature

Solid Bronze Centrifugal Mine Pumps. All-America Mfg. Co., Co., Pittsburgh, Pa. Pp. 8-10. 1914. 231. Illustrated. These pumps are particularly designed to meet the demands and requirements of mine water.


A New Machine. The Magna Steam Shovel Co., Marion, Ohio. Pp. 3-8. 1914. Illustrated. One of the important features is the use of a new and novel type of rigid crawler frame.

The Core Stoker, Combustion Engineering Corp., New York City. Bulletin C15. Pp. 4-6. 1915. Illustrated. The performance of this stoker on Western coal has been reported. The tests recorded will be of interest to the engineer.

H. D. Nattal Co., Pittsburgh, Pa., has issued a new booklet No. 35 containing a series of charts relating to the operation of the company.


The Combustion Engineering Corp. of New York City has published a booklet entitled "The New Magna Steam Shovel." Pp. 4-6. 1915. Illustrated. The performance of the machine which the increase in coal is the main feature.

Coming Events

The Illinois Mining Institute will hold its next meeting Dec. 1 and 2 at the Illinois Hotel, Champaign, Ill, Secretary, Martin Bolt, Springfield, Ill.

West Virginia Coal Institute. Annual meeting will be held Dec. 5 and 6, West Huntington, W. Va. Secretary, L. E. Sherwood, Kanawha Bank Building, Charleston, W. Va.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, D. M. Mason, Jr., 811 Chambers Building, Pittsburgh, Pa.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.
What Every Coal Man Knows

THAT if the railroads were now to supply all the cars and transportation ordered by the soft-coal mines—to reduce "car shortage" to zero—the coal producers would not only not be able to sell the coal that would thus be produced but would get a far lower price than now obtains for that which they did produce.

That with mines and labor ready to produce 13,000,-
000 tons and upward per week, with consumption less than 9,000,000 tons weekly and with stocks of bituminous coal in the hands of consumers now equal to, if not in excess of, thirty days' requirements, a gain of a million tons per week in production would flatten out the soft-coal market to a distressing position.

That, in fact, the car shortage is the only thing that sustains the price of soft coal, and that in spots it is not even doing that.

In the week of Nov. 4 the railroads reported to the American Railway Association that 412,679 cars were ordered by the bituminous-coal mines for current loading. These, if supplied and loaded, would have given an output of more than 20,000,000 tons, or twice the actual output that week. This figure doubtless represents the present rating of the mines, and as everyone knows that the ratings are inflated no one will consider that the mines could have produced and loaded that quantity of coal had the railroads been able to supply the cars.

Cars placed—that is to say, constructively placed, for every car that is held over either empty or under part load is counted each successive day—numbered 220,039, according to the same authority. This represented 53 per cent of the orders; the car supply was therefore but 53 per cent. For the same week the reports to the Geological Survey of time worked and lost by causes at these mines showed Ohio and eastern Kentucky working less than 40 per cent of full time and other districts ranging upward to Alabama at 82 per cent. The average for the country was around 43 per cent, and of the more than half time lost the greater part was attributed to transportation disability or "car shortage."

Instead of this obviously inflated basis on which to calculate the extent of the railroads' shortcomings, let us compare the present rate of production to the maximum recorded weekly output of bituminous coal, 13,000,000 tons. There can be little doubt but that were production to mount to 13,000,000 tons per week the demands of all consumers would soon be satisfied. In fact such an output would rapidly meet all needs, for it would put something over 2,000,000 tons more per week into stocks and thus double the rate of accumulation of reserves. The present weekly output is 82 per cent of that maximum, and the car supply, measured in a more reasonable manner, is thus 82 per cent and not 53 per cent.

The railroads are now exceeding all previous records in loading freight of all kinds, between 900,000 and 1,000,000 cars per week being the usual thing. They could boost the bituminous-coal production to 12,000,-
000 tons per week and higher were they willing to make the effort. There have been in effect priority orders affecting the supply of transportation for this commodity that if followed by the railroads would have brought this result. Previous high records of coal loading always have been reached through the imposition and strict application of such priorities. Objection to literal observance of priorities of this nature is found in the consequent denial of transportation to other commodities such as ore, limestone, steel products, building materials, and even anthracite, that move in open-top equipment. Many of these other offerings are better revenue producers than soft coal. Possibly the railroad officials have an eye on the general situation and consider that coal will move next week if not this, while some of the other kinds of freight might not. This year coal has not had its normal share of the transportation.

It is quite true, as continually pointed out by the coal operators and mine workers, that lack of transportation alone holds down production during periods such as this autumn, when the consumers are demanding large tonnages. It is also true that while the demand for coal at any given time may be twice the current rate of production the total requirements in a season are limited and there never has been a year, save 1916 and 1917, the end of which did not see the demand well satisfied. From the date in August when the strike was settled to the end of 1922 there will be produced about 190,000,000 tons of bituminous coal. It is being produced at an average rate of between ten and eleven million tons per week. If the railroads had been able in August and September to supply the transportation it would have poured forth at 15,000,000 tons a week for a few weeks. At that rate every stockpile would have been overflowing in four weeks and the demand and output of soft coal would have dropped to around 9,000,000 tons and the price would have been like unity last March.

We in this country can have peakload transportation for 13,000,000 or 15,000,000 tons of bituminous coal per week without a car shortage if we are willing to pay for it. But since the requirements for such tonnages are spasmodic and of short duration, coal traffic rates would have to carry the charges sufficient to support the capital investment necessary to supply the additional equipment and facilities. This might conceivably add from 25 to 50 per cent to the coal freight rates. The railroads would add nothing to their local tonnage carried by such a program.

On the other hand the country pays for the lack of sufficient transportation during periods of peak demand by paying more for spot coal. A measure of this is found by comparing the average realization of the bituminous-coal operators, as reported by the Geological...
Where the Inefficiency Lies

Our contemporary the Gas Age-Record has made perhaps the most damaging and the most unbecoming attack on the Geological Survey. The article was written without proper knowledge of the matters involved. The writer, a Mr. Steinmetz, is an engineer, and is no doubt a more clever calculator than the Survey; but he has missed the point and has never considered the full factors involved.

The Survey is a common enemy to most of the coal owners, and will probably be regarded as anything but the friend of the miner, but the Survey is the friend of the consumer and of the people. It is the task of the Survey to ascertain facts and to give reliable information. If the writer is not aware of this, it is because he has not read the reports of the Survey, which are published in a book form and are available for sale.

The Survey does not publish only the coal reserves, but it also gives the annual production and the annual consumption of coal. The writer has missed this point, and has supposed that the Survey only estimates the coal resources.

The writer has calculated on the coal consumption of the world, and has assumed that the world is using 2,000,000,000 tons of coal per year. He then calculates that the Survey has estimated the coal resources of the United States at 2,000,000,000 tons, and concludes that the Survey is wrong.

The writer has not considered the fact that the Survey only estimates the coal resources of the United States, and that it does not estimate the coal resources of the world. The Survey estimates the coal resources of the world, and it is this estimate that the writer has missed.

Can Soft Coal Retain Domestic Trade?

Anthracite operators are frankly concerned over the possibility that forced substitution of other fuels for hard coal this winter will make permanent inroads on their business. It has been twenty years since the East has lacked hard coal to meet its household requirements. The Easterner is not now particularly pleased when he is required to take bituminous coal and he is not slow to heed the advice that he do so, at least to the extent of protecting his early requirements.

On the other hand, there are those bituminous-coal producers in the high-grade fields nearest to the Atlantic seaboard who have for years looked longingly at the steady, dependable market enjoyed by the producer of domestic sizes of anthracite. He has wanted to introduce his product in competition, as the hard-coal seller has sought to push his steam sizes on the markets of the soft-coal man.

Because bituminous coal has never participated in the household trade of the East, bituminous coal has not, save in exceptional instances, been prepared for that market. The result now is that when the soft-coal shippers are called on to help fill the gap caused by the strike in the hard-coal mines they have nothing but run-of-mine to ship. Straight run-of-mine coal is not a satisfactory household coal. No one likes to use it. Hotels, office buildings and apartment houses with fully equipped steam plants can and do take mine-run coal, as in Chicago, where run-of-mine smokeless coal is the favored fuel. But the householder wants sized lumps. If the bituminous-coal producer has a desire to retain any of the market now thrust upon him he must cater to that market. Several of these producers have announced the installation of equipment for sizing their product, and the indications are that others will follow. Some of the central Pennsylvania coals will not lend themselves to this treatment, being too friable, but others have already been proved to be real household coal.

The present is an opportunity for the soft-coal men so situated that they can ship into the Eastern territory. Having matched preparation with anthracite, they will have lower price to set against cleaner, smokeless product, shipped from mines that never have car shortage.

Coal Cost in Relation to Water Power

A SUGGESTIVE thought was expressed recently by Dr. Charles F. Steinmetz with respect to the importance of the cost of coal on the development of water power. After pointing out that in New York State some developed water powers producing energy equivalent to 12,000,000 tons of coal as compared with an actual total consumption in the State of 54,000,000 tons, he notes that there are undeveloped water powers capable of saving 54,000,000 tons of coal.

California has 3,130 kw. of hydraulic energy per capta as compared with 155 kw. of fuel power. New York has 757 kw. of hydraulic power and 403 kw. of fuel power according to Dr. Steinmetz. California has coal and what is imported comes from great distances and is costly. New York has always had cheap coal for industry. The Western state has had a powerful incentive for developing her water power and the Eastern state has not. It is pointed out that the cost of coal in New York is now as high as it was in California when that state forced the development of hydraulic power.

The high initial cost of installation of water power is what has held it back, but when that is offset or more than balanced by a high price for coal, capital investment turns to the rivers and coal loses a permanent market. The change will be gradual, but we agree with Dr. Steinmetz that it is sure. It does not follow that the consumption of coal will in consequence become less, but rather that it will not grow with the industrial development of the country. Water power can never supplant the use of coal in its entirety, even for supplying electrical energy, for the relative costs always tend to equalize and local conditions must always have a powerful influence on the choice between the two basic sources of power.
Coverdale Mine to Hoist 4,000 Tons per Day Is Fitted With Two-Car Self-Dumping Cages

Disadvantage of Skip When Tonnage Is Under 5,000 Daily and Shaft Depth Moderate — How Cars in Single File Form “Twos” at Shaft and Enter Single File Beyond

By A. F. Brosky

Unless a speed is attained both dangerous and undesirable, 4,000 tons of product cannot be raised satisfactorily in cages in an eight-hour day up a two-compartment shaft, even though that shaft be of only moderate depth. It may be said that the end may be attained by putting two cars in tandem on a single cage, thus increasing the capacity of the shaft.

Unfortunately, though it is easy to arrange to put two cars end for end on a cage, when it is done they cannot be made self-dumping, and time will be lost spotting the cage at the landing, pushing the cars off the cage and either loading other empty cars in their stead or dumping the cars as received and backing them onto the cage. Furthermore with the decaging and dumping arrangements two more men must be employed. The suggestion may be made that cages with two or more decks each lifting one car might be used and indeed they have been tried, but it has been found that too much time is lost in caging and decaging.

Unless 5,000 tons is to be raised per shift skip hoisting is not desirable, though it might be a preferable method of handling coal at great depths. It brings a large tonnage up whenever the mine bottom is filled and it would overburden any tipple that was designed to prepare and load an output under 5,000 tons per shift. The maximum efficiency of a skip is realized only when it is operated at a fair speed. To handle the load of coal that is brought up a shaft whenever a trip brings a string of cars to the bottom, the tipple must be overloaded with resulting poor preparation or else the speed of hoisting must be stepped down to the rate of preparation for which the tipple was designed.

Increased tipple capacity to cope with high-speed hoisting under the conditions stated is not desirable as there then would be idle periods between trips. It is a different matter with 500-ft. shafts or deeper. In that case skip hoisting is ideal for tonnages of 5,000 or even less, depending upon the depth, as much time is consumed in raising the coal from the bottom in the dump plate.

In a shaft of moderate depth and with a 4,000-ton output only one of the many advantages which skip hoisting affords—the ability to use fractional more cars—is retained, but this advantage is offset by the necessity of the equipment with which the shaft bottom must be provided. The skip hoist is primarily so far as to the rapid lifting of great masses on a single shaft of moderate depth or moderate tonnages up a single shaft of great depth.

Four thousand tons of coal may be hauled successfully by another means—namely, through the employment of a cage holding two cars placed side by side in conjunction with a four-track system. Such an installation has been in successful operation for several years at the mine of the Motrice Coal Co. at Rector, Pa., and one installed more recently at the Coverdale mine, as

Note—The headpiece shows the coverdale mine plant. The tank of unsaturated steam mounted on four legs on the end of a suitable building on the extreme right is a product and cooling tank for water circulated around the发烧 heating and the skip rotating by a small centrifugal pump.
No. 8 shaft of the Pittsburgh Terminal Railroad & Coal Co. is working equally well. This mine is 12 miles south of Pittsburgh and has approximately 3,500 acres of the Pittsburgh seam, the deposits being about 3 ft. thick. The property was opened up only a few years ago, and much development work has yet to be done. In consequence only 1,000 tons of coal is moving weekly in each eight-hour day, but the ultimate daily output will approach 4,000 tons.

The depth of the shaft is 440 ft. The distance from the concrete topping to the point of discharge is 65 ft., so the total lift is 485 ft. The inside dimensions of the shaft are approximately 11 x 16 ft. The internal width being necessary to accommodate the Lepley cages, each carrying two 22-ton mine cars side by side. The cages are self-latching and differ but little in operating principle from the single-car type, the tippling and locking girders and other devices being practically the same in each. In order to carry safely the heavier loads resulting from hoisting two cars in one lift the cages, which measure 10 ft. 6 in. x 12 ft., are more heavily constructed than in usual. The 10-ft. head shear frames are heavier than in most headframes. They carry a 14-in. rope and are mounted on a 10-ft. steel shaft. The headframe itself is no more substantial than that which is provided at most mines. Heavy headframes are sometimes made up of fabricated columns cross-laced, but the headframe over the Coverdale shaft is composed of six add-sectioned columns for posts and two for the inclined compression legs, all of which are securely hanger-braced.

Before giving details of the main shaft bottom it might be well to describe briefly the method of mining as regards the immediate and future recovery of coal, the underground layout and related facts. A rectangular block of coal is left about the shaft bottoms for protection. The greater dimension of this rectangle is in the direction of the face entries, which lie north and south—the usual direction of such workings in the Pittsburgh seam. The main bottom entries are not driven at 90 deg. to the main face entries, as is frequently the case, but on an angle of about 70 deg. The surface topography, railroad needs and the elimination of excessive cutting and filling influenced the location of the shaft and main bottom entries. They are so placed as to allow an incoming motor with a load trip to uncouple and pick up the empty trip with a minimum of confusion and delay. This feature will be described elsewhere. The double entries connecting the supply shaft with the main shaft are approximately 1,100 ft. long and lie at 90 deg. to the load and empty tracks on the main bottom and parallel with the spur railroad track on the surface. The surface topography fits in well with the shaft locations and affords an ideal sur-

![Diagram](image-url)
The switches provide automatically that the cars will go to the proper track. The kilns upon the hill at the illustration release the cars on the empty track one by one, so that they do not collide but take the stairs to the empty pit in such order as to avoid one another, without occasioning any undue delay.

The mine is laid out on the quadruple-entry system. At 2,000-ft. intervals two face entries are driven, and from these two butt entries are extended every 500 ft.

AIR AND MAIN SHAFTS OVER THOUSAND FEET APART

As already has been mentioned, the auxiliary or air shaft is 1,100 ft. from the main shaft. Ordinarily the shaft for lowering men is placed close to the one up which coal is hoisted. Surface management is facilitated by the grouping of its several structures as close together as possible and certainly closer supervision is obtained, but the arrangement has the disadvantage that men will then occupy their time by "loitering" around the main shaft and tipple. Furthermore, in the early stages of development, mining activities are concentrated about the big bottom, consequently the miners have a short distance to travel to their working places, no matter where the main shaft may be. After development it makes little difference whether the men are lowered at a point near the big bottom or many hundred feet away. Few men work in the vicinity of the big bottom. Each plan has its advantages and disadvantages, but these do not entirely govern the selection for surface features and other related factors have a direct bearing on the final plan.

The men traveling from the town to work and returning therefrom keep throughout their journey on the opposite side of the valley from the tipple and main shaft and do not come anywhere near either. In this way the men at work at the main shaft are free from the interruption of passing and loitering men.

A Heyl & Patterson refuse-stacking car disposes of the slate. The slate track passes under the rock bin on the tipple and skirts the edge of the hollow approximately parallel with the railroad track. The conditions are such as to favor easy slate disposal at low cost because of the short haulage and straight track.

FACE-PLANT LAYOUT. All this may be noted in Fig. 1, which shows a portion of the mine map upon which are superimposed a few of the surface buildings. It will be noted that a low-lying basin separates the town proper and the area occupied by the surface plant, and that the bottom of the depression passes close by the supply shaft. The town itself lies on a hill that flanks the eastern edge of the basin. This natural hollow is a benefit in two ways. It partly separates the town from the plant and affords a convenient dumping ground for the refuse rock from the mine.

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The width of the wing galleries on either side of the mine entrance is 10 ft. Rooms in 30 ft. centers will be driven in two directions off each half heading in a system of half advance and half retreat. The room dimensions will be 225 sq. ft. These will be worked to 50 sq. ft. in maintaining the usual break line in pillar working of 45 deg. to the half centers. Inkeeping with this system the pillars are brought the immediately upon the completion of the driving. When the room of any number in the last nearly completed set of driven up a room of the corresponding number is started in the next set. The charge for coal is coming principally from the right butts off the north mains. This locality underlies the town. The rules in this section must be adhered to stand at least till the mine is finished. When entry driving has been sufficiently advanced, activities will be shifted elsewhere.

The coal line practically flat in fact it is so nearly level that it has not been thought necessary to provide the raise cars with brakes. The haulage motor with a loaded trip pulls into the main bottom as far as a trip feeder. Here it is cut off and runs around to the empty-car entry. At this point it picks up its trip and without delay starts back to the workings. The trip of loads, which never exceed fifty cars, is elevated, one car at a time, up a 1.5 per cent grade by a 25-ft. long and lock trip feeder. From the knuckle of this feeder the cars drop down a favorable grade and through automatic switches to the shaft. A plan and profile of the shaft bottom are shown in Fig. 2.

Cars in sets of two in passing through the first automatic switch at A are diverted alternately to the track leading to the east or west cage. Let us say that this part of the work is kept to allow two cars in pass on to the east cage. The movement of the low cage will be diverted either to the right or left track leading from B to the east cage, depending upon the setting of the wheelthrown switches at B. Whichever track the first car passes over, its wheels throw the switch points at B for the opposite track, over which the second car passes. The next set of two cars in passing over the switch at A will set it so as to allow them to drop down to the west.

**FIG. 5—AUTOMATIC KICKBACK AND CAR STOP**

The car rises on the kickback and just about where it reverses, the rail, held up till that time by a common weight, descends and actuates the car stop, which releases another car. This car arrives at the switch of the empty track almost immediately after the car from the kickback has moved out of the way.

**FIG. 6—LOAD SIDE OF SHAFT BOTTOM**

Looking toward the shaft. The illustration is made from a photograph taken on a day when the mine was idle. This assumes the four loaded cars being at the landing. Ordinarily there are two, both on either one of the two sides. Note the weathered arch in the rear, the 12-in. beams in the foreground resting on a heavy side wall of pressed brick.
Upon working a kick-back will act to slow the cage. Sections showing the details both of the kick-back and the car stop comprise Fig. 5.

It will be seen from the drawing that the curved kick-back rails are held securely at gage by means of angle irons fastened on the bottom, or flange. The lower ends of these rails are pivoted where they join the level track at A. The car is shown in the illustration directly above a knife edge on the kick-back. The weight of the car when it approaches this point depresses a counterweighted lever arm to which is linked a vertical rod. This rod again connects with an L-shaped lever, which when acted upon by the vertical pull of the vertical rod causes it to pull on a horizontal rope that is attached to it. The other end of the rope is connected to the car-stop release. The depression of the kick-back is only sufficient to release the car stops. After the car has left it the kick-back is elevated by the lever action of the counterweight.

The car-stop mechanism is simple in construction and in operation. The rope from the kick-back connects with the upper ends of horizontally axled levers, to which are welded counterweighted lever arms. To the ends away from the counterweights on these levers are pinned vertical tie rods which when depressed cause the lugs that protrude out over the rail and in front of the car wheels to be swung into the clear. The released car then passes by gravity to the kick-back and the lugs fall back over the rail to catch the next inside car coming from a landed cage. The cars after leaving the kick-back are sidetracked to the empty-car entry. This equipment was furnished by Heil & Patterson, Inc., of Pittsburgh, Pa.

The shaft-bottom equipment, although it appears to be complicated, is simple and positive in action. One begins to realize this only after having watched the operation in which a ton of coal may be raised every 8 seconds if so desired, and the cars fed, caged and uncaged by only three men, one of whom does the lubricating and inspecting of the mine cars and makes

cage, going through a similar switching device at C as is found at B. Reference to the illustrations, Figs. 3 and 4, and the captions thereunder will aid the reader in understanding the working principle of these two switches.

After passing the last switch points the cars drift down toward the cage. The grade to the cage is steep, so that the cars attain much speed on their way and must be slowed down and stopped. This is accomplished by four friction car checks, one on each track. These are of the usual type, consisting of a heavy wheel clamp of structural-steel held against each rail by strong steel-coil springs and operated from a point centrally located in front of the cages. These car checks are designed with provisions for the future installation of an air cylinder, so that eventually they may be operated pneumatically.

Upon being released from the car checks the two cars on the approach to the cage next to be landed drift down simultaneously to the eager, where they are held by horns until the cage descends into position. The eager, which is automatic in the setting and resetting of the horns at the cage landing and in raising and depressing the car stops that hold the cars on the cage, varies from the usual type only in its handling two cars instead of one.

The arrangement on the empty side whereby the two empty cars coming from the cage are passed to the empty storage track, however, is unusual. As the empty cars run off the cage the inner one will be held by a car stop and the end one is delivered directly to a pivoted kick-back that automatically releases the inner car from its stop after the first car reaches the kick-back. Sections showing the details both of the kick-back and the e car stop comprise Fig. 5.

FIG. 7.—EMPTY SIDE OF SHAFT BOTTOM

Looking toward the shaft. The empties (here shown loaded) drop down this grade of 7 per cent to a kick-back to the rear of the point from which the photograph that this illustration reproduces was taken. The ropes seen along the roof connect the swinging kick-back with automatic car stops located on the inner tracks.
up the empty trip. Another uncouples the cars comprising the load trip and drops them to the trip feeder. The third man is the cashier.

Another of the features of the Caverdale plant is the single-reduction motor-generator set, with a 3,000-hp, 3,600-volt, direct-current motor. The incoming alternating-current of 2,500 volts coming from the substation is reduced to 500 volts. The motor is a flywheel motor-generator set, with a 3,000-hp, 3,600-volt, direct-current motor.

The motor-generator set is mounted on four split pedestal bearings, one on either side of the set and the other two on either side of the 20,000-lb. flywheel. These bearings are lubricated both by gravity feed and oil rings. The flywheel bearings are further cooled by means of circulating water through the cored-out bearing shells. The water supply comes from a deep-well pump, from which comes also the water for drinking purposes and for cooling the slip regulaor. This regulator serves also as a liquid rheostat for starting up the set.

Although the company has a power plant of its own, the transmission lines from it are in parallel with
American Coal Mining Institute Prepares
To Answer Members' Knotty Problems

FIFTEEN questions, five papers, a banquet and a trip will occupy the time of the Coal Mining Institute of America during its winter session at Pittsburgh, Pa., Dec. 13, 14 and 15, the technical discussions taking place in the Chamber of Commerce Building and the banquet, in the dining hall at McCrery's store.

On Wednesday, Dec. 13, the meeting will hold its business session at 9 a.m., in which it will cast its vote on the new constitution. This meeting also will be addressed by Silas S. Riddle, chief of the Bureau of Rehabilitation of the Department of Labor and Industry, Harrisburg, Pa., on "Rehabilitation of Injured Mine Employees."

In the afternoon of Wednesday a question-box session, with W. E. Fohl, consulting engineer, as leader, will consider the following questions:

Question No. 1—What is the most important point to be considered when entering a mine after an explosion? (From Pittsburgh, Pa.)

Question No. 2—What are some of the practical remedies for the pollution of our streams by mine waters? (From Chisago, W. Va.)

Question No. 3—What method should be used in sinking coal beds 30 ft. or more in thickness, as found in some of the Western states where the coal is only fair and the air less than 24 per cent? (From Denver, Colo.)

Question No. 4—What electrical methods of plumbing explosions in mines are to be preferred? (From Willimana, Pa.)

Question No. 5—What are the most practical means of preserving mining timber? (From Pueblo, Colo.)

A paper will then be presented by Dr. Yandell Henderson, of Yale University, on "Methods of Reanimation from Carbon-Monoxide Poisoning."

The annual banquet will be held at 6:30 p.m., at which the speakers will be Douglas Malloch, "The Poet of the Woods," Chicago, Ill.; Dr. E. A. Holbrook, dean of the School of Mines, Pennsylvania State University; and Jack Armour, the humorist of Coal Age.

The question box of the next morning will be opened by Jesse K. Johnston, general manager of mines, Bellevar, Pa., the questions being as follows:

Question No. 6—What is the most efficient method for humidifying mine air? (From Pittsfield, Colo.)

Question No. 7—What is the solution for the removal of the Pennsylvania coal industry? (From Pittsburgh, Pa.)

Question No. 8—Which is the most practical method for use in coal mines, burned or seam, and why? (From Johnson, Pa.)

Question No. 9—Are doors necessary in the ventilation of a modern mine? (From Pittsburgh, Pa.)

Question No. 10—Would a national charge on coal, ore, or some coal industry be advantageous? (From Pittsburgh, Pa.)

At the close of this session David J. Price, engineer in charge of grain-dust explosion investigations, U. S. Department of Agriculture, Washington, D. C., will address the institute on "Industrial Dust Explosions and What Coal Men Can Learn from Them."

Thursday's afternoon session will be presided over by Alexander McCauch, state mine inspector, Muncie, Ind., and A. C. Callen, dean of the School of Mines, West Virginia University, Morgantown, W. Va., will deliver an address on "Methods of Education in Coal Mining." These questions will then be discussed:

Question No. 11—Why should not all Pennsylvania and West Virginia self-disclosed and any imported by the union be used in coal mines, and what is the Pennsylvania regulation and rating bureau? (From Pennsylvania, Pa.)

Question No. 12—At a drift or seam mine where the cash rate is $3.50 per ton, should the miner receive a wage of $2.50 per day? (From Pennsylvania, Pa.)

Question No. 13—Can a wide or deep drift mine be mined under this law, and how is the mining done, or because of the high cost of equipment and miner's high wages? (From Pittsburgh, Pa.)

Question No. 14—What is the better way to reduce the number of fatal and disabling accidents? (From Johnson, Pa.)

Question No. 15—What is the most effective way of making the present existing mine regulations and standards, and some of the more effective and safe methods of mine ventilation? (From Pittsburgh, Pa.)

At the conclusion of this paper Bernard J. Ross, expert accountant, New York City, will discuss "Depreciation, Deposition and Other Factors Bearing on Cost."

On Friday a trip will be made by automobile to the power plant and mine of the West Penn Power Co., at Springfield, Pa.
What Hard-Coal Mines Are Doing to Lessen Derailments

Symposium Contributed by Six Leading Anthracite Officials as to Practice at Their Mines in Regard to Tire Repairs, Retracking, Track Revision, Bumper Guards and Other Details of Haulage Management

ASSEMBLED BY D. C. ASHMEAD
Kingston, Pa.

"W"hy are there as many derailments in coal mines? What are engineers and superintendents doing to remedy them? How are locomotive tires maintained?" These are questions agitating many mine executives today. Wrecks should be unusual happenings; instead they are frequent, and in some mines of daily, or even weekly, occurrence. Three or four or more wrecks occur in some mines every day.

Consequently it was felt that a symposium of practices and experiences from engineers of the anthracite region would be interesting and useful. Several replies were received in a questionnaire regarding the subject. The first letter reveals the same difficulties in the anthracite region as have troubled the bituminous fields.

"Practically all derailments have been caused at our mines as a result of the lessening of the clearance due to the wearing of the tires. It is customary to keep locomotive tires in service till grooves from 1 to 1½ in. deep have worn in them. Then they are turned. As far as I know, no accidents have occurred as a result of the grooving action. No tires have ever come off the wheels during service, but in one or two occasions the wheels have become loose on the axles, but no wrecks resulted.

BUMPERS GUARD DO THEIR WORK WELL

"All our locomotives are equipped with bumper guards, and no accident has arisen from the use of these devices. The switches and frogs of worked-out breasts usually are left in place till they are needed somewhere else.

"As far as retracings, we make them ourselves. They consist of V-shaped pieces of iron that can be laid over the top of the rail. They have a latch point riveted to the top of the V. In some cases factory-made retracings are used. At a few points guard rails have been laid, but on some of our curves the rail elevated is useless. In driving a new gangway, or tunnel, the first rails laid are regarded as constituting a permanent track. Sometimes it is lined up and properly ballasted later, but that is unusual.

"The kind a rail is used in the anthracite region. Much of our difficulty in regard to haulage can be traced to that fact. It causes numerous derailments, with consequent loss of time and injured joints. This injury to brakemen makes it difficult to keep bonds in condition and at the cause of electrical trouble in the locomotive itself. The vibration and bumping which the flat rail causes is injurious to the locomotive."

The electrical engineer of another company could not answer fully all the questions submitted. He replied, however: "Our locomotive has not been equipped with tires. We have 'lock' wheels, and so do not have any trouble with tires that come loose. The wheels being of chilled iron, we do not have the same. I would say that they have an average life of from five to six months."

The groove on a worn wheel sometimes will cause an accident by catching in the frogs. As to the number of wrecks occasioned by loose wheels I have no information. We protect our locomotive motormen from cars jumping up and crushing them by the use on each end of the locomotive of a pair of the cast-steel bumper blocks."

A mechanical engineer of one of the largest independent anthracite companies says:

"There is a tendency to be careless in maintaining the haulage tracks of coal mines in good condition. Yet bad tracks in a mine are not only expensive; they are dangerous, and that is true of either animal or mechanical haulage. The mistakes made in the laying of mine tracks are four: (1) Light rails, (2) light ties spaced too far apart, (3) poor grading, with lack of ballast, and (4) absence of angle bars.

Half the Accidents Are Due to Bad Track

"Next to these as causes of haulage accidents comes carelessness in maintenance. Fifty per cent of the haulage accidents are chargeable to bad track. In many mines the track is repaired only after an accident, and then the mine foreman, looking for a cause, finds a worn, loose or broken wheel; usually it is the latter and is caused doubtless by the derailment, but the foreman in his report never blames the track."

"Fifty per cent of the locomotive repairs are traceable to the poor condition of the haulage roads. Guard rails are used at frogs but seldom on curves, where it is customary to elevate the outside rails. Rail benders should be used to make curves. The springing of rails to put a bend in the track is the cause of many derailments and accidents that could be avoided if a rail bender were used. When the rails are not permanently bent but are sprung into place they are held in line.

\[Image:ůn.ů\]

Bumper guard keeps car from injuring driver.

The steel rails being short in comparison to the length of the car and the change in grade sometimes sharp, it often happens that the bumper of the car tends to rise too high on that of the locomotive—or 'lock bumper,' one might say, only that in this case the car does not merely pass its bumper over that of the locomotive, but also crowds the locomotive driver against the Combine. To avoid this danger, bumper guards are used to keep the bumper down to a safe level."
under stress, and a passing trip may readily loosen the
spikes, with a consequent spreading of the rails and a
derailment.

"Many curves in the mines could be greatly improved
at little expense by trimming the rib. Make the curves
of as long a radius as possible, and you will note a
decrease in car repairs that will compensate you for the
money expended.

"Accidents caused by loose wheels are few but when
combined with those from spread rails will be found to
form about 20 per cent of the haulage accidents. When
mining is finished the frog and switch for that branch
should be removed from the main haulage road, thereby
reducing the possibility of a derailment. This is an item
seldom overlooked by the foreman, who usually is wait-
ing to transfer the switch to another branch.

"Worn locomotive tires rarely cause accidents but
they do greatly increase locomotive repairs and also do
much damage to frogs and switches. They should be
turned after they have been worn down 1 in. Mine-
locomotive bumpers should be provided with top guards
which should be of sufficient length to prevent the cars
from 'climbing' and becoming derailed when being
pushed over a summit, thus injuring the motorman by
crowding him against the locomotive.

"Deraillers of the saddle type and pressed-steel car-
replacers are used to retract derailed cars. Where a
locomotive is available derailed loaded cars often are
retracted by hitching the coupling to the top of the car
and then pulling so as to retract the hind wheels. The
front wheels then are retracted with a short piece of
rail placed between the locomotive bumper and the top
of the car. This is placed a little out of center. By
pushing on the rail the front end of the car is lifted and
the front wheels are retracted at the same time.
This is a practice which, though successful, frequently
damages the car.

CARS MAY BE HUNG UP ON GUARD RAIL

"Guard rails should be protected with wedge-shaped
iron or wood blocks to prevent the car couplings from
catching the former. This provision increases the
safety of employees and reduces equipment repairs.

"No track that is laid nearer to the face than 600 ft.
should be of a permanent character or be so regarded,
for if it is regarded as imperfect the engineers can
establish grades and lay out a track that can be laid
properly. Proper clearance spaces should be provided
on both sides of haulage roads, and on passing branches
room enough to insure safety should be left between
cars.

"Ditches across haulage roads never should be left
open. A pipe or pipes of sufficient capacity to take
care of the drainage should be installed. Clean the
roads thoroughly. Coal should not be allowed to ac-
cumulate along the tracks. Clean haulage roads not
only increase the car yield but prevent accidents.

"Haulage roads should be carefully inspected and all
loose roof properly supported or removed. Grade cros-
overs, heads of slopes, passing branches and all points
where transportation men are required to couple and
uncouple cars should be well lighted or given a coat of
whitewash, preferably both."

An official of one of the largest anthracite companies
writes as follows:

"All our locomotives are equipped with solid wheels,
shrunken on the axle. The clearance height of the frame
of the locomotive above the rail varies from 31 to 4 "

Therefore there is no danger of the locomotive rubbing
along the rail or the bottom.

"Our locomotives run on 25-lb. rails and the wheels
are changed when about a 1-in. groove is worn in them.
They are turned down about once. Our locomotives are
not equipped with tires, no accidents having occurred
from lack of this provision. I do not know of any in-
stance where a loose wheel has caused an accident.

"Switches and frogs are removed from chamber
branches as soon as there is no further use for them.
This, of course, makes better main haulage roads and
saves the switches and frogs from unnecessary wear.

"Our locomotives are equipped with two safety steel
bumpers on the cab end at a height of 14 in. above the
locomotive bumpers. The lug is 74 in. above the
bumper. The extension of the lug is 4 in. The width of
the safety steel guard is 5 in., the thickness of the
steel guard being 1 in. This safety guard prevents a
derailed car next to the locomotive, when being pushed
or held back, from jumping up into the cab and injur-
ing the motorman. If he uses ordinary cars and obeys
the company safety rules on speed limits, accidents from
this cause should not occur.

CARRY RETRACKER ON ALL LOCOMOTIVES

"Retrackers are carried on all locomotives. They
serve to retract satisfactorily both locomotives and cars.
Jacks and car replacers are used only to retract a der-
railed locomotive. When a replacer is carelessly held by
hands or feet against the wheel, men are liable to be
injured. Sometimes a prop or a tie is placed with one
end against the locomotive bumper and the other against
the top rail of the mine car for the purpose of lifting
the car into place. In this method of retracting, men
occasionally are injured. This unsafe method will
swing the car to one side, and men have been caught
together between the car and the rib. Another way of re-
placing cars on the track is by a lever and blockings. This
method also has its dangers.

"Guard rails are used on curves and at frogs. The
rails are elevated on the long side of the track and
braces are used on the curves when necessary. All
rails used in development are taken out and replaced by
a well-laid track.

"In only one instance in the last five years has a
motorman been killed at our mines by a track caused
by a runaway trip of cars and motor. This accident
resulted from the carelessness of the motorman in
charge. He pulled the trip over the summit onto a
down grade so fast that the brakeman could not pull
the required springs in the trip for its safe control.

"The following are some of the safety rules covering
the operation of electric locomotives:

"Safety Rule No. 1—Every motorman must inspect
his locomotive before taking it off the pit and he must
report its condition on a motorman's inspection blank,
giving the date and his signature and depositing the
slip at the close of each day's work on a book kept for
that purpose.

"Safety Rule No. 4—Motormen must insist that their
brakemen and helpers put in sufficient sprages or shoes
so that the locomotive and trip of cars are fully under
control when running down grades.

"Safety Rule No. 5—Motormen at all times must
carry car replacers, jacks and plenty of used in their
locomotives. Jacks and car replacers shall be used only
to replace a derailed locomotive.

"Safety Rule No. 9—Motormen must and work their
November 30, 1922

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locomotive if they do not have a good and efficient brake equipment with four brake shoes. Brakes must be in good working order at all times.

Safety Rule No. 16—Motormen, while pulling cars over main roads must not run their locomotives in excess of six miles an hour. When pushing cars the speed should not exceed three miles per hour. When approaching switches and going through doors the speed should not exceed two miles per hour.

Safety Rule No. 23—Motormen, helpers and brake- men must not place a tie or any against the bumper of the motor and the top rail of a car as a means of replacing cars on the track. Car repleacers must be used and under no circumstances should cars be pushed by a pole.

Safety Rule No. 24—Motormen, helper and brake- men must not jump on the front end of a locomotive but must get on from the side. Riding on the front end is strictly forbidden.

The next letter is from another of the large coal companies: "In my opinion the causes of mine-train wrecks with their attendant deaths in the day's schedule, their damage to equipment and their injuries to men, though many in number, are principally that the turnouts are too sharp, that bumps of coal or other refuse strew the track, that the rails are poorly aligned and that the tires have become excessively worn. The speed of these trains is such that the mishaps are not serious and usually only the cars are derailed.

Some locomotives have a clearance as small as 2 in. and even that as the tires wear away would become less, but I have never been able to learn of an accident at our mines where this lack of clearance caused a derailment. It is the common practice to turn wheels as soon as they are worn enough to damage frogs, switches and cross-over rails. A 1-in. groove is sufficient to cause such jolting on the track, but nevertheless the tires are more often worn about 1 in. before they are turned.

The tires on electric locomotives usually are turned after six to nine months of service and those on air locomotives are allowed to run without turning for a full year. A badly worn tire is apt to cause a derailment on a sharp curve or at a rail junction.

PROCEDURE TO USE TIRES SHRUNken ON THE WHEEL

Locomotives rarely lose tires when they are shrunken. If they do not do so, I would attribute their coming off to faulty installation. We have ceased to use demountable tires in any air locomotives because they worked loose, but I doubt a demountable tire of such design that it would remain tight on the wheel would prove more economical. Particularly is this true of the tires on electrical locomotives.

I have never known of a wreck being caused by a loose wheel, but of course that could happen from poor workmanship. An accurate inspection of the locomotive should reveal a defect of this sort to the motorman long before an accident occurred. It is almost certain, too, that the motorman will fail to notice it even without any careful inspection, as obvious would it be in operation.

It should be understood that some locomotives have been equipped with anti-lifting hooks or similar devices to prevent the car next to the motor from being lifted off the track, but not all are so equipped. Almost all locomotives carry a steel retracking casting upon which he can derailed wheels and force them back on the track, using the power of the motor to pull them on the rails. However, should a locomotive entirely leave the track, jacks must be used to replace it on the rail. Levers are frequently used for the retracting of cars and in consequence men are sometimes injured by the falling of coal or the slipping of the lever.

"guard rails are not extensively used, such as are laid being located at sharp turnouts on main roads and on planes, slopes and other places where their use is warranted. Braces are not used on curvses, but the outer rails are elevated, and when a permanent road is laid it is graded and the rails are aligned."

The last letter will be one from an engineer with one of the larger companies who not long ago wrote an article on mine haulage:

"In the anthracite fields of Pennsylvania it is the general practice to keep the road between the rails clear down to the top of the ties. The only chance of rubbing would be from a lump of coal that might fall off the cars, but that would not be sufficient to lift the locomotive far enough from the rails to cause a wreck.

"Our general practice has been to use wheels having cast-iron centers with steel tires 1½ in. thick and wear them down as far as possible and then replace them with new ones, as it is sometimes impossible to turn them, so hard do they become by reason of the arcing from wheel to rail. They are worn down approximately ¼ in. before they are removed from the centers. The groove is not allowed to become any deeper because a deep groove injures frogs and switches. When the wheels have grooves they are more liable to be derailed at frogs and switches than those having good treads.

NOT TROUBLED WITH LOOSE TIRES OR WHEELS

"As for our tires we are shrunken on the wheel centers we have no trouble from loose tires. All cast-iron centers are keyseated and pressed on the axles, and in consequence we have no trouble from loose wheels, but we have had several wrecks from broken axles due to defects in the steel, and those have been overcome by using hammered steel axles instead of cold-rolled steel.

"Whenever the switches and frogs at the necks of bridges are likely to lie idle a long time before second mining will take place, they are removed so that the main line will be in good condition for haulage purposes.

"All locomotives are equipped with guards so as to prevent cars from jumping on top of the locomotive should the latter be derailed, and one general rule provides that when a locomotive is put into service it shall be so placed that the motorman will be at the end away from the loaded trip when coming out to the shaft.

"Each locomotive is equipped with a pair of standard retrackers and roadjack for use in case of derailment. Men are sometimes injured while holding the retrackers in place.

"guard rails of wood and steel are frequently used on curvses, and, as a rule, the rail is elevated to suit the radius of the curve, the rails being well braced at such places."

It will be seen from these six reports that practice varies from company to company. Probably there are no two companies in the anthracite region following the same rules in regard to the avoidance of derailments. Reference is frequently made in this symposium to loose wheels but always as to those on locomotives. The loosened wheel on the mine car is a far more frequent offender and should be, and doubtless is, given due attention by those who fail here to give it any verbal recognition.
Methods of Dry Cleaning and Dust Collecting at the Coal-Concentrating Plant of the American Coal Co.  

Of Crane Creek Coal 60 per Cent Passes 2-In., 15 per Cent 1/16-In. Screen—1 x 2-In. Coal Has 22 per Cent Ash, Dust 10 per Cent—Screens Coal to Seven Sizes Before Tabling  

A T THE Crane Creek Mine of the American Coal Co. of Allegany County, near McComas, W. Va., a large dry-process coal-cleaning plant is being erected. This will be the second commercial installation of this sort in this country, the first having been made for the St. Louis, Rocky Mountain & Pacific Co. at its Brilliant Mine, near Raton, N. M., this latter plant having just been put in operation with good results.

The American Coal Co. of Allegany County formerly operated a wet washery at which it treated all the coal from the Crane Creek Mine that would pass through a 2-in. screen. The results obtained by this method were never quite satisfactory for several reasons, the principal objection being that the coal was wet and in consequence froze and gave trouble during the winter months; that freight had to be paid on the moisture in the coal shipped despite the fact that it had, of course, no commercial value, and that the loss of coal in the process was excessive, particularly in the fine sizes. To these disadvantages should be added the ineffectiveness of the process in reducing the ash content of small sizes.

The coal mined at this property is from the No. 3 Pocahontas seam. This coal, as is well known, is soft and friable, and breaks up badly in mining. Of the mine-run 60 per cent will pass through a 2-in. perforation in the tipples screens, and of this small coal only 75 per cent is retained on a 1/16-in. perforation. The quantity of coal under 2 in. in diameter to be treated each hour is 240 tons.

At this Crane Creek plant instead of separating the non-combustible or refuse material from the pure coal by water, that separation is accomplished by means of air. The serious problems in successful wet washing, as almost everyone knows, are the recovery of the coal and refuse products from the water, the successful treatment of the finer sizes, the economical use of water and finally the drying of the washed product. All these problems are eliminated by the use of the dry, or air, method of cleaning.

Before erecting this plant the American Coal Co. of Allegany County made tests of their coal at the American Coal Cleaning Corporation's testing plant, located near Welch, W. Va. The tests were conducted over a period of several months and on a number of different samples.

The percentage of ash or non-combustible material in the uncleaned coal, or coal as received from the mine, varies greatly with the size. It will average 22 per cent on sizes which pass a 2-in. and are held on a 1/16-in. screen. The ash content of the dust, on the other hand, is only 10 per cent. The general average is about 16 per cent. After cleaning, the coal will contain about 5 per cent ash. The refuse, or rejections, from the coal at the same time will average about 75 per cent ash. The refuse material is comparatively free
in the coal and consists of rock, slate, and a soft rock.

The plant installation as finally decided upon by the coal company will contain essentially of the following units arranged at different floor levels for convenience of operation. At the top of the building is upper floor level, and the lower floor, and in another, the same level, the two batteries of sifting screens, each having a capacity of 120 tons per hour and producing the following fractions:

**SCREEN SIZES FOR COAL WASHING**

<table>
<thead>
<tr>
<th>Size</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.05 to 0.08</td>
</tr>
<tr>
<td>B</td>
<td>0.08 to 0.10</td>
</tr>
<tr>
<td>C</td>
<td>0.10 to 0.12</td>
</tr>
</tbody>
</table>

These screens will have a shaking motion but the screen decks will be vibrated as well, this latter action being accomplished by means of pneumatic vibrators. Each size of coal as produced will be conveyed to chutes to bins in the structure below, which supply a steady feed of coal to the pneumatic separators.

The plant will contain eight of these arranged on a floor level immediately below the above-mentioned supply bins. Each of these machines will treat a single size of the above sizes except in the case of the two smaller sizes, for which two additional machines will be installed. It has been recently demonstrated by tests that the pneumatic separator will easily treat 25 tons an hour of the coarser coal and 12 to 14 tons per hour of the smallest sizes. It should be noted here that the coal finer than 2 in. will not be treated in the American plant arrangements having been made to mix this with the clean coal delivered from the separators.

### How Coal is Separated from Refuse

For the benefit of those readers who are unfamiliar with the pneumatic coal separator a brief description of the appliance is here given: On this machine, air—the weight of which is 1/8th that of water—is used as the floating medium. The separation is made by taking advantage of the difference in the weight of materials. When mixtures containing particles differing in weight, such as coal and refuse, are fed to the deck of the machine, each product is separated by that difference in weight, and the separated material is conveyed across the deck surface to suitable discharge spouts.

The table is hollow and airtight, except for the porous cover which distributes the air through the deck load and causes the partial suspension and stratification of the particles. The porosity of the deck and the quantity of air supplied are varied in the different tables to suit the size and kind of material treated. Deck covers are all of punched metal plate, the size and spacing of the holes governing the degree of porosity.

The tables for coarse coal are provided with 4-in. covered type refiners backed over a sheet of large-mesh (about 4-in.) wire screen, which in turn covers the gridded plate. This arrangement is to retard the rolling action of the coal and prevent the back-slip of the deck load on the return stroke of the table.

The action of the table on large sizes cover about 1 in. to be improved by backing up the table by means of "shaking bars" or baffles and keeping it on the table until it reaches the discharge edge. This backing causes a sharper line of demarcation between the refuse and the coal, and also prevents pieces of coal from rolling on top of the refuse into the refuse compartment. This tendency is prevented also by a current of air through one of the banking bars which blows back into the coal zone coal that may be riding the refuse.

Inside the deck and supporting the cover are strips of wood immediately underneath the riffles and parallel to them. These strips assist in the distribution of the air and also furnish support for the perforated zinc cover.

Sometimes for the finer materials, strips of paper, called "retarding strips," are placed under the cover between the supporting strips. These retarding strips are wider at the fan end of the table and taper to a point at from one-half to two-thirds the distance to the concentrate end. They provide quiet zones between the riffles in which undersized particles of heavy material may be advanced into the concentrate when the feed is not accurately sized. These would be of advantage in coal cleaning for removing fine pyrite from the smaller sizes of feed.

### Each Table Provided with Centrifugal Fan

Air baffles are provided within the deck to provide for the proper distribution of the air through the coal and refuse deck load.

Air for pneumatic separation is provided by a centrifugal fan built integral into the frame of the table. A flexible connection of heavy canvas joins the fan duct to the wind box, or deck, thus allowing for the motion of the table. A shutter over the intake of the fan adjusts the quantity of air which the deck receives.

The longitudinal and side slopes of the deck are adjustable, and both must be set accurately at the proper angles if the best results are to be obtained. The head motion of the table is a simple eccentric, the speed of the vibrations being adjustable through the medium of cone pulleys. The line of motion of the deck crosses the deck proper, due to the angular supports, so that as the deck advances in its stroke, it also lifts. On the return stroke of the eccentric the deck recedes and drops. This combination of motions advances the material toward the refuse end against the longitudinal slope while the lighter particles roll down the steeper transverse slope under partial suspension by the air.

The various adjustments of the table affect each other to a large extent, but there undoubtedly is a certain setting which for any size and any proportion of refuse will give the best results. The feeder also is adjustable so as to get the maximum tonnage over the table for various refuse percentages.

The pneumatic separators in the American plant will make three products, viz: clean coal and refuse and a middlings product that consists of an admixture of coal, refuse and bony coal. These products as they leave the separators are conducted by suitable spouts to conveyors below. The middlings product is conveyed to the elevator which delivers the raw or untreated coal to the sizing screens to which reference has been already made. In this way the middlings are mixed with the untreated coal coming to the plant and again find their way to the separators properly sized for treatment.

The final products made by the plant are only two, viz: clean coal and refuse. The various sizes of cleaned coal from the separators are combined and put into the shipping bins as nut, pea and slack, or any combination of these sizes. The refuse is conveyed to a bin in the tippie adjacent to the dry-cleaning plant, from which it is dumped together with mine rock and
Trip Runs Wild on Slope. Cuts Conductor; Dust Ignites and Eighty-Six Die

EXCEPT in the number of dead the accident at Dolomite mine No. 3 of the Woodward Iron Co., Dolomite, Ala., that occurred in the afternoon of Nov. 22, is a double apparently of that at the Monongah mine of the Fairmont Coal Co. (now the Consolidation Coal Co.), in West Virginia. In that misfortune 361 men were killed. In both accidents a runaway trip apparently tore down an electric conductor and caused an explosion.

At the Dolomite plant the number killed was 86 and the number injured 59. Later reports may show that the loss is even greater than that stated owing to deaths of some of those now reported as injured. It appears that four cars had just been discharged on the revolving dump (which has capacity for five cars and is inclined on a slope of 15 deg.), when they broke loose, plunging headlong down the 30-deg. grade which leads 880 ft. into the mine, of which about 600 ft. is on the surface. It is easy to realize with what violence the trip reached the bottom. It must have been smashed to fragments. It appears likely that an electrical conductor of some kind—possibly a high-tension line—was torn down and that the short-circuit resulted in a conflagration of dust of such severity that flames are said to have shot up the slope several feet into the air and set fire to woodwork on the top of the tipples, reducing it to ashes. It is said that of all the men around the foot of the slope only one man still remains alive. In this section it seems that the concussion was severe but it is interesting to note a story that on some of the dead calcium carbide lamps were found to be still burning. All the foremen, of whom there were six, were killed.

A number of the victims succeeded in afterdamp. M. D. Wilson, who was seriously injured, relates that he succeeded in getting out by wrapping his woolen shirt about his head after dipping it in a bucket of water. This probably is a protection not against carbon monoxide but against the hydro-carbon constituents of afterdamp that have such a harmful effect. He asserts, however, that he supposes that this precaution kept his face from being burned.

At the time of the accident 475 men were in the mine. Of the 86 men killed, 21 were white and 65 were negroes. Three of the men were alive when removed from the mine but died later. According to the last report of the state mine inspector the mine generating gas, but sufficient fan ventilation and other safety provisions were maintained to cause the mine to be regarded as safe. Gas was not a factor in the explosion, for this slope is the main intake.

The collected dust is delivered through a pipe to the conveyors which carry the slack size to the shipping bins, or it can be marketed separately as powdered fuel. As will be noted in the illustration, the plant will consist essentially of three floor levels, viz.: the screening floor, the separator floor, and the lower floor, in the last of which will be placed the conveyors and the coal and refuse-collecting equipment. The present wash-building will be remodeled to contain the new system. All equipment in the American plant will be electrically operated. Machines throughout will be direct-connected. In general the motors are of the slip-ring type and are controlled by push-button starters and stop stations. The controls for the motors in the dry-cleaning plant are interlocked on the same principle as in the tipples, so that one motor in a group cannot be started in such a way as to cause material to be conveyed where it will block up the continuous flow. A master push button is provided that will start up the motors in a certain group in the correct order. All of the motors and the control equipment are of the Westinghouse type.

The dry-cleaning plant was designed and is being built by the Roberts & Schaefer Co., of Chicago. The screens and pneumatic separators are being manufactured by Sutton, Steele & Steele, Inc., of Dallas, Tex., under patents controlled by the American Coal Cleaning Corporation, of Welch, W. Va.
Labor's Opinion of Wages in the British Coal Industry

Statement by Frank Rodger, Secretary Miners' Federation

For the twelve months since the termination of the great strike the financial situation in the mines has been submitted to the miners and workmen by their joint associations. Much more is known, therefore, within the trade, about present wages, profits, and costs of production than ever before. From a study of the ascertainable facts it is unaniomously admitted that the coal-mining industry is, and has been, passing through a period of adversity unparalleled in the annals of the trade. There has been an unprecedented loss, both in wages and in profit. So much is this the case that the industry is on the verge of collapse. During the whole of this period the workmen and the owners have shared the common adversity in the proportion; and in the manner laid down in the terms of the agreement of July, 1921.

The wages of the men have been reduced from the end of the "temporary period," i.e., September, 1921, during which the government rendered the industry some assistance, by almost unbelievable amounts. This is best illustrated by taking the wages of a minimum wage coal-getter in October, 1921, and comparing it with October, 1922. The reduction in the amount per day will give an idea of what the workmen have suffered.

<table>
<thead>
<tr>
<th>Wage per Day</th>
<th>Decrease</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1921</td>
<td>1922</td>
<td>1922</td>
</tr>
<tr>
<td>British miners</td>
<td>$0.94</td>
<td>$0.61</td>
</tr>
<tr>
<td>Scottish miners</td>
<td>$0.84</td>
<td>$0.52</td>
</tr>
<tr>
<td>Irish miners</td>
<td>$0.73</td>
<td>$0.45</td>
</tr>
<tr>
<td>Nominal pay for the month</td>
<td>$27.36</td>
<td>$16.50</td>
</tr>
</tbody>
</table>

The workmen are making a demand for a living wage or at least a wage comparable with the previous wage. How the present position compares with that in 1914 is shown in the following table. It sets out the average wage per man-shift worked in June, 1914, and for August, 1922, in the seven largest districts in the country. The figures represent the estimates of the average wage of all classes of persons engaged in the mines, excluding the clerical staff, managerial and administrative salaries and wages. The increase above the 1914 nominal wage is shown both in money and as a percentage, whilst the decrease below the actual cost of living today is shown as a percentage in the second column.

The average wage in November, 1922, is about 48 per cent above the 1914 level. The wage is not being paid for the first time since the present conditions began. South Yorkshire, South Lancashire and South Staffordshire, Durham and Kent have thus an upward movement in wages since December, 1914. During the whole of this period the workmen in these areas have been living at a point far below the cost of living level. The problem will become more serious if a great heavy industry such as coal mining, cement manufacture, iron and steel manufacture, and similar industries in production with a million of its workmen and their families receiving an income 40 per cent and more below the standard of living.

The reason for this unhappy situation is that at the pit mouth the revenue from the proceeds of the sale of coal is not adequate to meet the cost of production at the pit. Cost of production should involve a living wage for the men and a reasonable return on capital for the owners. But the revenue has not provided even a poverty wage, whilst many collieries have gone out of production.

The miners do not desire a stoppage of work. They do not desire even to increase prices at the pit. But it is impossible to resist famine conditions much longer. The men are working up to the maximum of their physical ability. They are giving the country all the coal it requires. They have re-established the export market. The country cannot absorb all the coal which could be produced if employment were regular. All these things have been accomplished at the expense of profit, it is true, but primarily through the sheer poverty of the men and the suffering of their families, who have endured it in the hope of a later recovery. This hope has been shattered.

Wages Paid Machine Miners, Runners and Helpers in West Virginia

(Year Ended June 10, 1921)

<table>
<thead>
<tr>
<th>County</th>
<th>Machine Miners Paid Per</th>
<th>Machine Runners Paid Per</th>
<th>Machine Helpers Paid Per</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Per Car</td>
<td>Per Ton</td>
<td>Per Car</td>
</tr>
<tr>
<td></td>
<td>$0.94</td>
<td>$0.61</td>
<td>$0.14</td>
</tr>
<tr>
<td></td>
<td>$0.84</td>
<td>$0.52</td>
<td>$0.12</td>
</tr>
<tr>
<td></td>
<td>$0.73</td>
<td>$0.45</td>
<td>$0.10</td>
</tr>
<tr>
<td></td>
<td>$0.57</td>
<td>$0.38</td>
<td>$0.08</td>
</tr>
<tr>
<td></td>
<td>$0.46</td>
<td>$0.31</td>
<td>$0.06</td>
</tr>
<tr>
<td></td>
<td>$0.39</td>
<td>$0.28</td>
<td>$0.05</td>
</tr>
<tr>
<td></td>
<td>$0.33</td>
<td>$0.24</td>
<td>$0.04</td>
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<td></td>
<td>$0.30</td>
<td>$0.22</td>
<td>$0.03</td>
</tr>
<tr>
<td></td>
<td>$0.27</td>
<td>$0.20</td>
<td>$0.02</td>
</tr>
<tr>
<td></td>
<td>$0.23</td>
<td>$0.17</td>
<td>$0.01</td>
</tr>
</tbody>
</table>

The French are trying out a new fuel composed of a mixture of alcohol and gasoline. We predict now it won't work. Experiments in this country have proved it to be too dangerous.—Philadelphia Inquirer.
Dead-Ending the Trolley Wire in Mines

Danger When Dead-End Is Carried too Close to Face of Heading—Keep Dead-End Fifty Yards Back—Improved Wire Splicers—Ohio Law Forbids Wire in Rooms

SOME time ago, I recall, the question was raised in Coal Age as to how near the dead-end of a trolley wire should be allowed to approach the face of a heading. (Vol. 17, p. 367.) An interesting discussion followed this inquiry. I believe the general opinion expressed was that the trolley wire should not be carried closer to the face of a heading than the last open cross-cut.

For several years, I was in charge of work where trolley locomotives were in use. The mine generated no gas and I followed the practice of never permitting the trolley wire to be extended beyond the outby corner of the last cross-cut.

Later, when in charge of a large mine where gathering locomotives were employed and the mine generated considerable gas, I made it a rule not to extend a trolley wire beyond the last room that had an open crosscut, on any entry. In making this the invariable rule in that mine, we took no chances on the ignition of gas through the breaking down of a trolley wire by a fall of roof.

No doubt some of the good readers of Coal Age will think that this was an unnecessary precaution; but we were keeping on the safe side, since falls of slate were of frequent occurrence between the last room having an open crosscut and the head of the entry. My fear was that such a fall might knock down the trolley wire and this, coming in contact with the rails, would produce firecrackers that would ignite any gas present.

PLAN ADOPTED TO AVOID FREQUENT SPLICING OF TROLLEY WIRE

Allow me, here, to describe what I consider a good scheme to adopt when driving entries from which rooms are being turned. The plan is to keep on hand two 50-yd. lengths of trolley wire. Then, as the face of the heading is advanced and the gathering locomotive approaches the limit of its reel in reaching the face, attach one of the 50-yd. lengths to the main trolley wire. This will enable the locomotive to proceed another 50 yd., as the heading continues to advance.

When the limit of the reel is again reached, attach the end of the second 50-yd. length to the first, which will permit of another 50-yd. advance of the heading. Now, when that point is reached, replace the two 50-yd. lengths with, say 100 yd. of trolley wire, splitting this permanently to the main wire.

SPLICING THE TROLLEY WIRE

In attaching the two 50-yd. lengths where showing out this plan, a form of trolley wire splicer similar to that shown in the accompanying figure should be used. The splicer shown in the figure is manufactured by the Ohio Brass Co., Mansfield, O. The bottom of the splicer is arranged to give an even run for the trolley wheels and avoid bumps.

On the left end of this splicer, the open lips are shown permitting the ready insertion of the trolley wire, after which these lips are pounded down and fit snugly against the wire, as shown on the right-hand end of the splicer.

In this type of splicer, the wires are held in position by steel chucks, serrated on the inside so as to give a strong grip to the wire. On the outside, these chucks are tapered to fit into a tapered hole in the splicer, into which they are driven after the wire is in place.

In another type of splicer furnished by the same company and adapted to a heavier tension on the wires, the latter are held in place by set screws. Either of these forms of splicer are easily adjusted and readily disconnected when desired.

ADVANTAGE OF 500-FT. EXTENSION

A considerable advantage will be gained, in the reduction of the number of permanent splices required in the main wire, if a 500-ft. length of wire be used to replace the two 40-yd. lengths when the locomotive has reached its limit on the addition of the second length.

This 500-ft. extension of the trolley wire will not approach the face closer than 100 ft. and will enable the locomotive to operate (assuming a 500-ft. reel) while the heading is being advanced 200 ft., when it will again be necessary to make use of one of the 50-yd. lengths and proceed as before.

In the previous discussion to which I have referred, mention was made of the Ohio law (Sec. 845) forbidding the extension of a trolley wire into a room when being worked. I fail to see the practical application of this restriction in the Ohio law.

There are numerous instances, in mining practice, where rooms are worked in groups and, to avoid keeping up the roads in each room, switches are laid to connect the trolley wire and all the coal taken out through a central room of the group.

SAVES EXTRA TRACKAGE IN FREE ROOMS

For instance, assume five rooms are being driven in a group. When these have reached the second crosscut, switches are laid in No. 3 rooms and cross-tracks extended to the right and left through the crosstrack, to enable all the coal from the five rooms to be taken out through No. 3 rooms. The scheme saves the extra trackage in four of these rooms. In such cases, I have known the trolley wire to be extended into No. 3 room; but this would not be permitted under the Ohio law. I hope to hear from others on this matter.

Central City, Ky.

Some Points Relating to Use of Safety Lamps

Bent standards in a safety lamp mean of glass breaking when lamp becomes heated—Careless method of marking tests for gas—Electric cap design should not be carried by fireproofers.

WHEN reading over the several letters that have been written regarding the testing and use of safety lamps, a few points suggest themselves to me. I believe, have not been mentioned and yet have an important bearing on safe practice. It would be interesting to use those points further discussed by the readers of Coal Age.

First, a matter of considerable importance, in the examination of a safety lamp to ascertain that it is in condition to be taken into a mine and exposed to gas, is to observe that the lamp is not heated, in any way, but are straight and of equal length.

This may seem an unimportant matter and surely worthy of attention, except as we reflect on the fact that any heating of the lamp standards will make those lamps safer to use by others and cause an undue strain to be thrown on the glass when the lamp becomes heated by exposure to gas.
Using Steel Tamping Bars

Controlling the danger—Accidents from this cause not common in Tennessee mines—Charging powder in paper cartridges—Practice when drilling with worn augers.

In his article, "Charging Holes With Steel-Headed Tamping Bars," Coal Age, Oct. 19, p. 637, my friend and neighbor, Oscar H. Jones, appears to be overexercised, in reference to the use of steel bars for tamping holes in blasting.

It appears that Mr. Jones regards this practice as having grown to a considerable extent in his district. He explains that the coal, in that locality, contains much sulphur in the form of balls and streaks, which is troublesome when drilling the holes for blasting.

When a drill strikes a sulphur ball, the latter being very hard, deflects the drill slightly. The result is that the hole is not straight and the sulphur ball is left exposed in the side of the hole, which our friend regards as very dangerous if a steel-headed bar is used to tamp the charge.

DANGER OF STRIKING SPARK WHEN STEEL BAR HITS SULPHUR BALL

Continuing, Mr. Jones claims that when such a hole is tamped with a steel-headed bar, there is every chance of the bar striking a spark when coming in contact with the sulphur ball. In that case, he considers the explosion of the charge almost inevitable and adds, "Such accidents are common in our mines, although they are wholly avoidable if proper precautions are taken and steel tamping bars prohibited."

While I do not wish to be understood as approving the use of steel tamping bars, it appears to me that the danger is not so great as Mr. Jones would have us believe. In other words, a premature explosion is not an inevitable result, though always a possible one.

Contemplating, for a moment, the method ordinarily followed by miners when drilling a hole, the powder is first placed in a cartridge made of strong blasting paper. After inserting the fuse, the miner either ties the mouth of the cartridge tight about it, or places it upon his back and presses it down in a beart to prevent the fuse from being pulled out easily.

This being done, the cartridge is pushed back evenly to the bottom of the hole. The miner, having any regard for his own safety would push a cartridge back hard enough to strike a spark, by his bar coming in contact with the sulphur ball. But, suppose that did happen, the spark between the cartridge would still intervene between the spark and the powder.

When tamping a hole with coal black or clay, most miners make a short cartridge, 8 or 10 in. long, called a "dummy," or "doddy." This cartridge is filled with the tamping material and pushed back against the powder before any hard tamping is done. After the dummy is in place, no spark caused by the hard tamping of the charge could possibly reach the powder.

In respect to the material used in tamping a hole, I agree fully with my friend that clay or some other incombustible material should be used, especially if the charge consists of black powder. In my opinion, black powder should not be permitted to be used in many of our mines.

USE OF TWO CARTRIDGE PINS WHEN BIT BECOMES WORN

In the same letter, Mr. Jones speaks of the auger bit becoming so worn that the hole drilled is too small to permit the cartridge to be pushed safely to the bottom of the hole. To say the least, I believe that any attempt to force a cartridge into a small hole would be attended with particularly dangerous results, where the coal contains much hard sulphur, in the form of balls or streaks.

It is now several years since I have dug any coal; but, at that time, we kept two cartridge pins, a large pin and a smaller one for use should the auger become worn. This avoided the trouble and danger of bursting a cartridge.

Every miner, also, kept a scraper made of soft iron and having a small spoon at one end and a larger one at the other. These scrapers were used to clean the holes of dust and, at times, miners would use the big-spoon end to push some loose powder back into the hole. I have known a few reckless miners to get their cartridge fastened in the hole so that they could neither push it forward nor pull it back.

SHOULD NOT TAMPE HOLES TOO HARD

In that case, the miner would generally tamp the hole and fire the shot. Frequently, the shot would pull its burden very well and no harm would result. However, I consider there is much risk in such a practice and believe it should not be allowed. Just here, let me say that many miners tamp the hole much harder than necessary. At times, you will hear the tamping bar ring as though it was striking hard coal. In my own practice, I have never tamped shots in that way and have always had good success in shooting.

Speaking of the common occurrence of accidents resulting from the use of steel bars in tamping, allow me to state that during the thirty-five years of my connection with mining in Tennessee, it
has not been my experience to see or hear of such an accident occurring in our mines. For four years, beginning June 1, 1910, I was district mine inspector, and my territory included the Wilder mine, where Mr. Jones is employed.

Every week I see and talk with the present inspector in that district. Yet, he has not mentioned such an accident as having occurred and I cannot think that accidents of that nature are frequent. It will be interesting to hear from others on this point.

John Rose,
Former District Mine Inspector.
Dayton, Tenn.

Industrial Peace via Golden Rule

Remedy for existing ills lies within reach of everyone—Practice of the Golden Rule the need of today.

With deep interest, I read the excellent letter of John Rose, which appeared in Coal Age, Nov. 2, p. 719, under the heading "Finding the Way to Industrial Peace." The remarks of Mr. Rose emphasize the present-day need of more religion in our industrial relations, one with another.

To say that I am in hearty accord with the sentiments expressed is putting it feebly. It is my belief that the practice of every-day religion is the only solution to the problems that now confronting us, on every hand.

It is not in coal mining alone that this need prevails, but in every industry throughout the length and breadth of the land. Operators and miners, employers of labor and workers in every trade and occupation must get together and co-operate if we are to secure the peace that is so much desired. Hard as the fact may be to realize, the remedy is within the reach of everyone. To my mind, no good results will be accomplished until we come to regard the work as beginning with ourselves.

Where Responsibility Rests

It is for the profiteering merchant who asks high prices for his goods; for the operator greedy for an unreasonable profit; for the capitalist demanding unreasonable returns on his investment; for the miner, day laborer, and other workers asking higher wages and making unfair demands respecting their labor—on all of these alike rests the responsibility of doing their share in the practice of the Golden Rule.

We might profit in keeping things that contribute to the high cost of living; but nothing will be accomplished that will be of benefit, until each one regards the problem as his own and is willing to do his share to make the world better.

This was a wonderful world in which to live, if such a wave were to sweep the country and the chief endeavor of everyone was to treat each other as he would be treated. There would then be an end to all industrial strife and prosperity would follow.

James Thompson.
Mayport, Pa.

Inquiries
Of General Interest

By-Products in the Manufacture of Coke

Numerous By-Products in the Manufacture of Coke—Skill and Knowledge Required to Insure Success—Principal Types of Ovens in Use

Kindly permit me to ask for information, through the columns of Coal Age, regarding the by-products, obtained in the manufacture of coke. Also, does the bituminous coal used require to be of good quality, and does the recovery of these by-products require special skill and treatment?

Frontier, Wyo.

Inquirer.

The by-products recoverable in the manufacture of coke are numerous. Beside the coke dust and "breeze," there are the gaseous products, illuminating gas and fuel gas; and tar with its several distillates, consisting of the light volatile oils, used as benzol, with their derivatives carbolic acid, cresote, etc.; followed by the heavier lubricating oils and the residue of pitch or asphalt and asphaltene. There is beside the ammonium liquor, obtained in the washing and largely used in the manufacture of soap and allied industries.

All by-product processes require skill and a thorough chemical knowledge of the various hydrocarbon products that are formed, together with their use in the manufactures. Due regard must always be had, however, for the particular products it is desired to obtain. Some of the products named can only be obtained by the exclusion of others.

For example, the quality of illuminating gas, derived from the manufacture of coke, is much impaired if the benzol is taken out for fuel purposes. An expert knowledge of the chemical industries is therefore required to select and utilize these available products to the best advantage.

Importance of Saving By-Products

The idea of saving the by-products in manufacturing coke has received much attention in recent years and many industries are now based upon the utilization of what was formerly a waste product of another industry. The study of the various by-products in the manufacture of coke has opened a wide field; and by-products of every kind have been specially designed for particular needs and requirements.

Chief among these is the type known as the "Special Safety regenerative blast." In this type, the gas pipes or ports are horizontal, while in another type of oven known for its regenerative, the ports or flues are vertical.

The successful operation of all types of by-product ovens is largely dependent upon the uniform application of heat, and a careful proportioning of the width of the furnace to the volume of gas generated.

Air Blasts and Bumps

Air blasts of a different nature from those caused by a coke blast are called "bumps." Bumps caused by accumulation of rock masses within the earth.

Reading the article entitled "Occurrence and Causes of Bumps in Coal Mines." Coal Age, Nov. 9, p. 586, has given rise to a discussion, here, as to the exact difference between an air blast and a bump, as these terms are used in coal mining. It would be interesting to have the nature of these two phenomena explained in Coal Age.

I have contended that they are due to very different causes, but have been unable to explain in what way they differ. Apparently, each is manifested as a severe shock that often does much damage in the mine.

Nanaimo, B.C., Canada.

An air blast, as the term is used in mining, is of a nature wholly different from what is termed a "bump." Air blasts only occur on steep pitching seams, or under conditions where a considerable body of water has accumulated.
Examination Questions
Answered

Miscellaneous Examination Questions

(Answered by Request)

QUESTION—What are the maximum grades, which should be given in underground roads for the following purposes: Water levels, levels for horse ridden on flat, and direct haulage?

Answer—In order to provide good drainage, the driving, in a water-level entry, should be given a fall varying from 2 to 4 in. in 100 ft. For animal haulage on levels, the grade should favor the movement of the loaded cars. It makes that it will require the same pull in more the loaded cars down a grade, as to pull the empty up the same grade, the road should be given a fall of from 1 to 1.8 per cent in favor of the loaded cars.

Suitable methods can be adopted to operate successfully on grades varying from 0.5 to 2.0 per cent, depending on conditions, excepting the width of the entry, the length of the road, and the intensity of the down and upward haul, or other elements of cost; and finally, more direct roads in the working faces.

Where the conditions are favorable long-wall working is few, if any. Advantages: The method requires the breaking of good pay-places; less timber is wasted, and consequently, the setting of timbers, as he would.

The air forming its way through the water, and the water running against great force against the dam. This is called a water bump. The term "water bump" has reference to a readjustment of equilibrium in the earth's strata. Owing to the unequal pressure set up through the extraction of the coal near large areas, or to one or more of the various hidden causes on times this trust, there is a time when the formation is unable to support the strain thrown upon it and a readjustment takes place, which is manifested by a severe shock or jar that the miners term a "water bump."
Domestic Coal Situation, as Shown by the Government Report on Consumers' Stocks as of Oct. 1

By W. F. McKenney, E. E. Finn and F. G. Tryon

As time progresses it becomes clear that if there is to be any pinch in the coal market this winter it will be in the supply of domestic fuel. Further, it is clear that if any region experiences difficulty it will be the anthracite-consuming territory of the Northeast. Finally, it is clear that the success of any community in meeting the pinch, if one develops, will be proportionate to its foresight in substituting other fuels—bituminous coal, coke, oil or the smaller sizes of anthracite—for domestic anthracite.

The Geological Survey has made no forecast of the condition of the coal market next winter because forecasting is not consistent with the Survey's regular business of reporting on the facts of supply and demand. Observers outside the government seem to agree that the country ought to be able to pass the winter with no crisis in the supply of steam coal. Anxiety is still expressed in some quarters over the low reserves of household anthracite, but it is generally agreed that by substituting other fuels, the stringency can be met.

It is pointed out that the responsibility for educating the public to the need of substitution and for providing the substitute fuels themselves rests largely with the retail dealer. The real test of his success in meeting the situation, it is agreed, will come with cold weather, when the current consumption of anthracite passes the current production. It is recalled that the consumption of anthracite is vastly greater in January than in October, perhaps four times as great. There can be no doubt of the ability of the bituminous industry to supply substitute fuel, if given time enough. The danger, if any, lies in delaying the demand for the substitute until too late to provide it at reasonable cost and with reasonable promptness.

The non-supply of domestic fuel will assume such unique importance, it has seemed worth while to restate in greater detail the figures on the retail coal situation which were summarized in the recent report on stocks of coal undertaken jointly by the Bureau of the Census and the U. S. Geological Survey under authority of the Federal Fuel Distributor. The figures represent deliveries during the month of September and the condition of stocks on Oct. 1. At this date they are matters of history, but it is a history out of which the events of today have sprung and without which the developments of to-morrow cannot be understood.

It must be remembered that these figures represent a sample only, and a rather small sample at that, probably only 20 per cent of the total tonnage handled by retailers. It is, however, a typical sample.

Stocks Outside the Anthracite-Consuming Territory

In discussing the present situation it is necessary to differentiate sharply between territory north and west of the line of the Missouri, Ohio and Potomac rivers, on the one hand, and the territory to the south and west of that line on the other. The first includes all the states whose anthracite is a significant element in the domestic fuel supply (Fig. 3), although even in many of these states, notably Iowa, Illinois, Indiana, Ohio and western Pennsylvania, subordinate to bituminous coal.

Outside the anthracite-burning zone practically the entire population cooks its meals and warms its dwellings with soft coal, and there the question of the supply of domestic fuel becomes simply, "How does the condition of retail yards compare with normal at this season?" From the accompanying tables and diagrams it will be seen that stocks on Oct. 1 were low, but that dealers had been endeavoring to make up for the delay during the strike by delivering coal at a faster rate than normal.

First, as to stocks on hand Oct. 1. Table I shows the tonnage in the yards of a selected list of retailers outside the anthracite zone. In comparison with a year ago (Nov. 1, 1921) they showed a decrease almost everywhere (columns 6 of Table I and also Fig. 1). On the average the decrease was 67 per cent. But, of course, 1921 was a period of uncomfortable stocks. In comparison with a time of shortage—such as June 1, 1920—the 1922 stocks outside the anthracite zone showed an increase (last column of Table I). In making this last comparison, however, it must be remembered that they ought to show a large increase, because retail stocks are generally higher in the autumn than in the summer.

Next, as to demand and the rate that retailers were supplying it. The sample retailers outside the anthracite zone, shown in Table I, delivered more coal to their consumers in September, 1922, than in the preceding September. From Fig. 2 it will be seen that this increase was general, though not universal, in the non-anthracite territory. It was a natural increase to make up for unavoidable postponement of usual deliveries while the strike was on.

Stocks in the Anthracite-Consuming Territory

Inside the anthracite zone conditions were much more favorable.

Stocks of Anthracite.—Stocks of anthracite itself were very low on Oct. 1. The quantity in the cellars of householders, concerning which no statistics are available, was undoubtedly but a fraction of normal. Stocks in the yards of retailers (anthracite only) were the lowest on record during the period over which statistics extend. The figures given in the government's report need not be repeated here, but in brief they showed that retail yards carried only 11 per cent as much on Oct. 1, 1922, as at the corresponding time last year. At the rate of delivery made by these dealers to their customers in September, 1921, the stocks on Oct. 1, 1922, were sufficient for 7 days.

Anthracite in Massachusetts.—These reports to the Federal Government from a selected list of retailers are confirmed by the records of the Massachusetts Fuel Administrator, which cover all yards in that state. Massachusetts dealers had 73,000 tons of anthracite on Oct. 1, 1922, only 8 per cent of what they carried a year ago, and even barely a third of what they reported on Nov. 1, 1920, at which time a temporary scarcity existed. The anthracite stocks...
Coal. — For example, Table II shows, in the 1920-21 season, a decrease of 11.8 per cent, and that even compared with the low point of June, 1923, they showed a decrease of 15.5 per cent. The same story is told graphically by Fig. 1. Not a single one of the anthracites were less affected. Indeed November last year was in all coal in yards, whether hard or soft, and in many states the decrease was as much as 20 per cent.

Table II.—PERCENT OF CHANGE IN RETAILERS' STOCKS OF ALL COAL, ANTHRACITE AND BITUMINOUS IN ANTHRACITE-CONSUMING TERRITORY

<table>
<thead>
<tr>
<th>State</th>
<th>Per Cent of Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>-20.2</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>-17.2</td>
</tr>
<tr>
<td>Maryland</td>
<td>-14.6</td>
</tr>
<tr>
<td>Delaware</td>
<td>-13.7</td>
</tr>
<tr>
<td>West Virginia</td>
<td>-13.7</td>
</tr>
<tr>
<td>Ohio</td>
<td>-11.8</td>
</tr>
<tr>
<td>Indiana</td>
<td>-11.8</td>
</tr>
<tr>
<td>Illinois</td>
<td>-10.9</td>
</tr>
<tr>
<td>Michigan</td>
<td>-10.9</td>
</tr>
<tr>
<td>Northern Pacific</td>
<td>-11.1</td>
</tr>
<tr>
<td>Southern Pacific</td>
<td>-11.1</td>
</tr>
<tr>
<td>Virginia</td>
<td>-10.9</td>
</tr>
</tbody>
</table>

What was true in New England was true of New York, New Jersey, the Lake dock states: deliveries of bituminous increased, but not enough to make up for the decrease in anthracite. In other words, after a five months' strike, retailers were delivering to their customers less coal rather than more than usual.

Afforestation of Bituminous.—Announcement that anthracite will be distributed on the basis of 90 per cent of last year's shipments brings home the fact that consumers must not look to anthracite for the remainder of their requirements. The report indicates that during the month of September there was not much replacement of anthracite with bituminous coal, but they also show that the replacement had not gone far enough to make up for the deficit in the supply of anthracite.

The extent of the replacement is indicated in Table III. A group of 125 dealers in New England delivered 139,000 more tons of bituminous coal in September than last, but delivered 210,000 less tons of anthracite. As a result their total deliveries of all coal were 71,000 tons more this September than last, a decrease of 17 per cent.
November 30, 1922

COAL AGE 885

FIG. 2—HOW RETAILERS' DELIVERIES OF BITUMINOUS COAL IN SEPTEMBER, 1922, COMPARED WITH THOSE IN SEPTEMBER, 1921

Deliveries of bituminous coal to domestic consumers were nearly 19 per cent larger in September, 1922, than in the corresponding month of the 1921. The map shows that deliveries generally increased or were at least as large as last year, except in the coal-producing states east of the Mississippi and north of Tennessee. The most notable increase occurred in the New England states, where deliveries were 23 per cent larger than during last September.

Still more anomalous was the condition in the other states of the anthracite zone—Illinois, Indiana, Ohio, Pennsylvania and the lower peninsula of Michigan. In these states deliveries of bituminous coal itself, to say nothing of anthracite, were smaller this September than last (Fig. 2). Presumably this was due to a wholesome tendency of the shippers of these states—all coal producing to take care of long-haul destinations first—but it indicates how large a task remained before the retailer after Oct. 1 if his customers were to receive their usual supply.

Deliveries of Anthracite and Bituminous Combined. The total quantity of all coal, hard and soft, delivered in September, 1922, showed a decrease in every state of the anthracite zone with one exception—Rhode Island (Fig. 3).

Responsibility of Retailer for Substitution. The foregoing statistics show that the retailers of the anthracite zone, as of Oct. 1, had inherited a serious responsibility. Direction by federal boards and bureaus could do little to lighten the retailers' task. So delicate a thing as readjustment of the consuming habits of millions of householders could be accomplished only by local adjustments made by local dealers. It is a task to capitalize all the skill and restraint of the American retail coal merchant. It is up to him individually to diagnose his local market, advise his customers, forecast the demand for substitutes, and start them moving through his yard before congestion occurs. It is clear that some districts, New England for example, and Rhode Island in particular, had shown much more enterprise than others during the period covered by the stock report. The extent to which other communities have since followed this lead will largely determine the adequacy of their household supply in the winter.

The task of the retailer has been lightened by the unusually mild autumn. The average temperature in November has been decided above normal in the anthracite zone, just as November, 1918, was above normal, and November, 1919, below. If the weather man has not boosted the coal man's profits this time, he has at least spared him some undeserved criticism.

Supply of Byproduct Coke. After the anthracite strike of 1902 many householders got through the winter by buying coke. Continuation of the late strike in the Cumberland region is curtailing the supply of by-product coke which would otherwise be available, but the byproduct coke in Pennsylvania and Ohio was produced heavily. As output of by-product coke in October was 2,806,900 tons, a figure greater than the monthly average for even 1920. Of this quantity a considerable tonnage is available for domestic use.

Active demand for household fuel has largely absorbed the heavy stocks of unsold coke which had accumulated at byproduct coke works last spring. Statements confidently furnished by 19 byproduct coke operators supplying gas to the municipalities under contract show a decrease of 7% from March 1 to Oct. 1, 1922. As the stocks of surplus coke at such plants on March 1 were slightly over 1,000,000 tons, it appears that the October stocks were about 270,000 tons.

In the Northeast the accumulation of unsold coke had been almost completely liquidated by Oct. 1. A considerable surplus remained, however, in certain cities of the West and Northwest.

Navy Lets Coal Contracts Till Jan. 1; To Ask New Bids for Rest of Fiscal Year

Announcement was made Nov. 22 that the Navy had accepted the bids submitted by the Iron Trade Co., of Pittsburgh, for November and December coal requirements at Higham, Mass.; Navy Yard, New York, supply depot, Brooklyn; Lake Dennick, N. J.; Washington Navy Yard, Bellevue Magazine, District of Columbia; Alexandria, and Annapolis, calling for approximately 22,000,000 tons of coal.

No provision was made for the Navy at Philadelphia at that time, and it being explained that the successful bidder did not have sufficient tonnage to fill those demands as well as the others.

The acceptance of the short-term bids means that the Navy Department will call for new tenders to be submitted during December, the exact date to be announced later, calling for the delivery of more than 100,000 tons of unused coal. The reasons given for the failure of the Bureau of the Navy to accept the proposals for the long term were that the prices considered too high for the quality of coal sought and it was believed that more advantageous arrangements could be made later.

There were eleven sets of bids submitted on Nov. 13, but the Iron Trade Co. was the only firm to bid on the entire demand.

Following are the awards made, the prices being the delivered coal:

Higham, Mass., 200 tons, $9.50 and $9.55;
Navy Yard, Brooklyn, 4,000 tons, $9.75, $9.85, $9.95, $9.97, $9.98, and $9.99;
South Brooklyn, N. Y., 2,000 tons, 11.00, 11.10, 11.20, 11.30, 11.40;
Lake Dennick, N. J., 300 tons, 11.00, 11.05, 11.06, 11.07, 11.08, 11.09, 11.10, 11.11, 11.12, 11.13, and 11.14;
Lake Dennick, N. J., 300 tons, 11.00, 11.05, 11.06, 11.07, 11.08, 11.09, 11.10, 11.11, 11.12, 11.13, and 11.14;
Washington Navy Yard, 4,000 tons, $9.50 and $9.75;
Navy Yard, Alexandria, 500 tons, $9.50, $9.55, $9.60, $9.65, $9.70, and $9.75;
Navy Yard, Alexandria, 500 tons, $9.50, $9.55, $9.60, $9.65, $9.70, and $9.75;
Navy Yard, Alexandria, 500 tons, $9.50, $9.55, $9.60, $9.65, $9.70, and $9.75;
Navy Yard, Alexandria, 500 tons, $9.50, $9.55, $9.60, $9.65, $9.70, and $9.75;
Navy Yard, Alexandria, 500 tons, $9.50, $9.55, $9.60, $9.65, $9.70, and $9.75; and $4.44.
Distribution of Lake Cargo Coal Loaded at Lake Erie Ports to Nov. 1

<table>
<thead>
<tr>
<th>Week</th>
<th>Total Tons</th>
<th>%</th>
<th>Total L.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct. 2</td>
<td>4,530</td>
<td>12.05</td>
<td>15,030</td>
<td>18.44</td>
</tr>
<tr>
<td>Oct. 3</td>
<td>3,910</td>
<td>11.39</td>
<td>13,600</td>
<td>16.50</td>
</tr>
<tr>
<td>Oct. 4</td>
<td>3,540</td>
<td>10.17</td>
<td>13,500</td>
<td>16.41</td>
</tr>
<tr>
<td>Oct. 5</td>
<td>3,690</td>
<td>11.28</td>
<td>13,600</td>
<td>16.50</td>
</tr>
<tr>
<td>Oct. 6</td>
<td>3,140</td>
<td>9.31</td>
<td>13,100</td>
<td>15.95</td>
</tr>
<tr>
<td>Oct. 7</td>
<td>2,850</td>
<td>8.40</td>
<td>12,200</td>
<td>14.99</td>
</tr>
<tr>
<td>Oct. 8</td>
<td>2,590</td>
<td>7.75</td>
<td>11,300</td>
<td>13.96</td>
</tr>
<tr>
<td>Oct. 9</td>
<td>2,420</td>
<td>7.21</td>
<td>10,500</td>
<td>12.87</td>
</tr>
<tr>
<td>Oct. 10</td>
<td>2,370</td>
<td>7.12</td>
<td>11,000</td>
<td>13.37</td>
</tr>
<tr>
<td>Oct. 11</td>
<td>2,250</td>
<td>6.71</td>
<td>9,800</td>
<td>11.95</td>
</tr>
<tr>
<td>Oct. 12</td>
<td>2,070</td>
<td>6.22</td>
<td>9,000</td>
<td>10.94</td>
</tr>
</tbody>
</table>

West Virginia. Numerous working coal mines are open and there are vast untouched areas. The territory comprises the greatest single coal mining field south of the Ohio River. The holdings mostly are on the Big Sandy River.

Binghamton Fuel Administrator Removed. Seized Coal Bound for Great Lakes

Acting under authority conferred by the special fuel laws, Mr. Woodin, State Fuel Administrator William H. Woodin on Nov. 22 removed from office Samuel J. Koerbel, district chief at Binghamton, for infringement of federal regulations of the interstate commerce laws. Mr. Koerbel was charged with overstepping his powers in seizing coal from a coal train passing through his district on the way to Great Lakes ports.

The State Administrator on Wednesday notified the district chief that he would accept his resignation, but Mr. Koerbel announced that he had not resigned and would not recognize the authority of Mr. Woodin to dismiss him. Administrator Woodin then ordered him removed from office in accordance with Section 2, Chapter 673, of the Laws of New York, creating the fuel administration, which reads: "He [the State Fuel Administrator] may appoint and at pleasure remove such deputies and employees, including counsel, as may be needed, prescribe their powers and duties and fix their compensation."

Mr. Koerbel informed all county administrators in his territory of his resignation on Nov. 24, deciding not to contest further his removal by the State Administrator Woodin. He advised them to remain at their posts pending the appointment of his successor. William H. Hecox, of Broome County, is understood to have signified his intention of resigning also.

No word has been received from Mr. Woodin as to the probable successor to Mr. Koerbel and county administrators have been advised to report direct to the New York office.

"If I have been responsible for stirring the administration up to the point where our needs have at last been recognized, I shall be well pleased," said Mr. Koerbel. "I doubt if Mr. Woodin himself could seize a ton of coal on route to another state and get away with it."

Champaign Will Greet Illinois Institute

New haunts have been discovered for the Illinois Mining Institute. This year Champaign and Urbana, Ill., have been chosen for the winter meeting. The first session will be held Friday, Dec. 1, at 2 p.m., in the Illinois Union Building, Champaign. A. J. Hoskin will deliver a paper on the "Relative Consumption of Power by Various Operations in Illinois Coal Mining," after which R. B. Mitchell will address the assembly on "Pillar Drawing in Southern Illinois." Later will be shown "The Story of Coal."

On Saturday the members of the institute will visit the university and at 1:30 p.m. a business meeting will be called, at which new officers will be elected and new members voted in.

Count Assigned Cars Against Mines' Share

Service Order No. 26, issued last week by the Interstate Commerce Commission, assigning cars to certain mines, is significant principally because it provides that these cars "shall be counted against the distributive share allotted to the mines." The order provides that the Greenbrier & Eastern, the Chesapeake & Ohio and the Norfolk & Western shall assign four cars per day for ten consecutive working days to the mine of the Greenbrier Smokeless Coal Co., at Belkire, W. Va.; to the mine of the Blue Jay Lumber Co., at Jarr, W. Va., and to the mine of the Garland-Poweshicket Co. at English, W. Va.

The commission also has issued amendment No. 3 to Service Order No. 25. The amendment excludes from preferential coal loading fixed bottom cars with sides 48 in. or less in height. Heretofore the limit was 42 in.
President Harding has requested Senator Borah and Representative Winslow to suggest an amendment to the coal commission act which will make questionnaires answerable under oath and which will provide penalties for false statements or failure to reply to questionnaires. The act provides that the commission may issue subpoenas and make demand the presentation of books and records. This process would be cumbersome and it is believed that the situation can be met better under the amendment proposed.

Most of the preliminary work incident to organization and to the threshing out of policies has been accomplished. The commission is now getting into the fundamentals of its work. It is true that no brass tacks have been uncovered as yet but the objectives have been decided upon and the whole organization has started on its march toward them.

In some quarters an impression seems to have been gained that the commission is going to recommend what it considers a just and reasonable wage scale. Apparently the commission has no idea of acting as an arbitrator in a wage dispute. Its function is one of fact finding, which differs radically from one of arbitration. It would be manifestly impossible for the commission to undertake to prescribe reasonable wage scales, which vary in each district. That would necessitate a study of the situation in a large number of individual mines. The thought that the commission might undertake some such function may be partly responsible for the polite skepticism of the replies received from the operators and from the mine workers and for the appeal which they made to the galleries.

DOUBT PERVADES COAL INDUSTRY

The coal industry appears to be very much in doubt as to what to expect from the commission. Marshall, Howell, Alschuler and Devine are four names which have been heard infrequently among those engaged in the coal trade. The industry has no preconceived estimate of the ability of those men to pass upon matters which concern them. On the other hand, the industry has a definite appraisal of Hammond, Smith and Neill. It never has thought of Mr. Hammond in connection with coal, but his ability in all matters pertaining to mining is well understood. Dr. Smith is the veteran head of a bureau which has taken a distinctly friendly attitude toward the industry and which does work of high quality. Mr. Neill is recognized as one who has had remarkable success in the arbitration of labor disputes and whose knowledge of employer-employee relationships is profound and constructive.

The public and the industry expect a report that will mark a distinct advance and which will display all the properties of good workmanship. Moreover, the public expects concrete results promptly. Not only does the law specify that there is to be a preliminary report on Jan. 15 but the public generally realizes that if the real purpose of the commission is attained its findings will be needed more as a guide during the next few months than may be the case during years that follow. The commission is functioning during an emergency. The industry needs it as much as the work progresses. Most commission reports are hurriedly reduced to writing. Proofs are read and revised, only to be made public when the Superintendent of Documents has an ample supply for general distribution. Were the coal commission to follow this procedure, it would miss its main opportunity.

The staff of the President's coal commission at present is made up as follows: C. E. Leshier, engineer in charge of the engineering studies of the production, transportation and distribution of coal; David L. Wing, in charge of obtaining production data; Prof. Joseph H. Willits, in charge of the study of wages, earnings and wage contracts. Mr. Leshier will be assisted by R. A. Walkers, of Reading, Pa., and by C. A. Allen, of Salt Lake City. Mr. Wing is being assisted by H. S. Pink and James E. Black, who have been transferred for the purpose from the Federal Trade Commission. Miss Anne Begum, of Philadelphia, who formerly was in charge of a special study on wage earners for the Harvard committee on economic research and who now is connected with the industrial research department of the University of Pennsylvania, will assist Professor Willits.

Under the direction of Commissioner Neill, Miss Marie E. Obenauer will make a survey of living conditions and the cost of living in mining communities. She will be assisted by Miss Frances Valentine.

Commissioners Neill and Alschuler have been assigned the supervision of the investigation relating to labor facts. Commissioners Marshall and Devine will supervise investigations dealing with economic facts while Commissioners Smith and Howell have been assigned the supervision of the studies of engineering facts. In addition, Chairman Hammond will give much personal attention to the engineering phases of the investigation.

Miss Obenauer to Study Living Conditions Among Miners for Coal Commission

Miss Marie Obenauer, widely known as a result of the many industrial surveys which she has made during the past fifteen years, has been retained by the President's coal commission to assist Charles F. Neill in his study of living conditions in coal-mine communities. Miss Obenauer acquired an important position with the War Labor Board in which examiners for the employers and for the represented submitted their reports on wage and work conditions. The examiner was required to analyze prior to their presentation to the Board. In that capacity she represented neither the employer nor the employee group.

Miss Obenauer became to national notice as a result of the Department of Labor in the old Department of Commerce, and Labor she had charge of the women's division. At that time the department represented the public.

When the Department of Labor was created, its present act provided specifically that it conforms to. Miss Obenauer
Miners Will Not Submit to Wage Cut

Next Year, Says Scarles

Prospects for peace or striking in the coal-mining industry since last the topic was the subject of an address by Ellis Scarles, editor of the United Mine Workers' Journal. Speaking before Club of Philadelphia at a luncheon at the Hotel Adelphia, in Philadelphia, Nov. 24, Mr. Scarles said, in part:

"Whatever there will be another strike of coal miners next year is a question that we living men can answer today. But I can say that the miners will not submit to any reduction in their wages so long as they are prevented from earning the wages to which they have accustomed themselves and in which they have won by many years of struggle, hardship, and sacrifice. Whether there is any in this country who are anticipating lower rates than the real crisis is in the coal-mining industry and in the industry of the world with the waves of depression in other comparable industries and lines of work. Wages of anthracite coal workers always have been low and may be brought up to a decent American level.

Next year will see miners of the anthracite region occupying an analogous and supposedly an improved and relatively an improved and relatively a better living than in the past, and they will not abandon their struggle for the universal wage-earner's day in the anthracite industry. Eight hours is the minimum length of the work day in that industrial field of our country, except in those places where the miners are permitted to earn a subsistence and legal right to work for a just and decent wage. In the anthracite industry that work of eight hours or more must be daily in order to carry a living for their families.

And the struggle for the better living is just beginning. It must give way to the struggle that is among all industry in America in coming years."

Spangscher Deaths Laid to Use of Open Lights

When Gas Was Known To Be Present

A jury summoned by Coroner M. W. Swabb to hear the evidence and place the blame for the explosion in Reilly mine No. 1, at Spanglers, Cambria County, Pa., on Nov. 6, when seventeen lives were lost, placed the blame for the explosion on the owners and management of the mine. After an all-day session on Nov. 21 the jury reported on Nov. 22 that: "With the knowledge of the company there was an insufficient number of fireboxes employed, that open lights were used in the presence of dangerous gas and that the ventilation in the mine was inadequate."

District Attorney D. P. Weimer of Cambria County summoned the inquest but has not decided upon a course of action. A fair summary of the vast amount of evidence submitted to the jury and put into the record would indicate that accumulations of gas were frequent in the Reilly Colliery, that the men who lost their lives and the men who escaped had general knowledge of conditions, that the mine foremen and fireboxes knew of this condition and that the officials were kept busy patching up places where there was danger. Foreman Flanagan, in his testimony, asserted that while he knew of the existence of gas and took many precautions at various times to dispel accumulations, he did not consider the mine dangerous to work in. He did believe it was a difficult mine to work in that general physical conditions were hard, but he did not agree with a number of witnesses that the mine was actually a dangerous place in which to work.

Seward E. Button, chief of the state mining department, in his report submitted to the Coroner's jury recommends that the Reilly mine be worked exclusively with approved safety lamps. He also recommended that permissible powder be used for blasting, all shot holes to be tamped the full length of the hole with combustible material, and all shots to be fired with electric detonators by shotfiers, coal cutting machines to be of the approved closed type, also that a sufficient number of fireboxes be employed to examine a mine thoroughly before each shift.

Spens Revokes Daily Report Requirement

Regulations requiring bituminous-coal operators to furnish the Federal Fuel Distributor with daily statements as to coal loadings, prices obtained for coal, and destinations to which coal is shipped were revoked Nov. 24 by Fuel Distributor C. E. Spens, effective Dec. 1. These regulations, which were promulgated on Sept. 27 and 28 and Oct. 4, required that daily reports of coal shipments in the territory west of the Mississippi River be submitted and that fifteen naval officers acting as district representatives of the Federal Fuel Distributor. Operators in trans-Mississippi territory were required to make their reports directly to the Federal Fuel Distributor, except that Iowa, Montana and North Dakota operators reported to C. P. White, Assistant Federal Fuel Distributor, at St. Paul, Minn.

Anthracite Tax Adjudged Constitutional

Washington, D. C., Nov. 27.—The Supreme Court of the United States today affirmed the decision of the Pennsylvania Supreme Court holding the Pennsylvania anthracite tax constitutional. The tax rates, which vary from place to place and have caused differences between anthracite and bituminous coal since the tax is used only as a fuel whereas bituminous coal is used as a fuel and as a basis of hydropolstics. Nine states using 80 per cent of the anthracite produced in Pennsylvania intervened in the case, declaring that this will increase the cost of coal in them. The court, however, held that there was no cause for action on the part of these states since the tax was imposed before the coal is offered to a common carrier, whereupon it would be subject to national legislation.
High Price of Anthracite Attributed to Inflated Wages Demanded by Mine Workers

When anyone connected with the producers of anthracite is asked to talk about "economic and business aspects" of the coal industry it does not require a great deal of imagination on his part to know that what his auditors want is an answer to the question: "Why do I have to pay so much for coal?"

The public has a deep-seated conviction that the price of anthracite is too high. This belief is the real basis for the public demand for fact finding about coal that led to the成立 of the so-called "commission". And the main fact that the public expects the commission to find, so far as anthracite is concerned, is that the public can and should get its domestic fuel supply at a lower price. Assuming, as we may, that this able commission will deal only with facts these are some of the things that it will necessarily find:

First, that anthracite production is different in every essential respect from bituminous coal production. There is no overproduction of anthracite: there is no irregularity of production except that occasioned by the acts of the workers and, in spite of the public conviction to the contrary, the industry as a whole makes no excessive profits.

The production of anthracite is a costly and elaborate underground engineering proposition, and after the coal is brought to the surface from depths of 600 to 1,500 feet it is cleaned, washed and sized in huge breakers which cost today about $1,500,000. Without going into the technical details of anthracite production, let me mention a few facts which indicate why it costs so much to produce hard coal.

For every ton of coal produced 11 tons of water must be pumped out of the workings. Besides the necessity for yielding some $200,000,000,000 gallons of water a day, an operation requiring continuous pumping 365 days a year, it is necessary to hoist and dispose of about half a ton of rock and dirt for every ton of coal produced. Every minute of every day two tons of air are forced into the anthracite mines for ventilation. The timbering of the mines requires the use of 500,000,000 board feet of timber every year, or about 7 ft. for every ton of coal produced.

That anthracite mining is in reality a manufacturing proposition is shown by the fact that of the 150,000 men employed in the industry only about 42,000 are directly engaged in mining. The other 108,000 are employed in the handling and preparation of the coal for market.

These operations give a different picture from the conception of coal mining which imagines it to be merely the scooping out of easily accessible supplies and the loading of the coal on the cars for market.

But all of this, you will say, does not justify the price of $14 a ton for anthracite coal. It does not. But it is only a part of the story. In the first place the anthracite producer does not get $14 a ton, directly or indirectly. The coal comes on which the New York consumer pays $8.25 or more, sold at the mine, the average figure for about $8.25. But don't imagine all of the coal is sold at this price. About one-third of it is the so-called "steam sizes", which the mine owner is compelled to sell below the cost of production. In 1921-22 the average realization on the whole production was not more than $6.25 a gross ton.

Let us look into the items that make up the mine prices of $14.00 a ton. $1.95 for taxes and permit fees for supplies, $55c for administration, making a total of $3.74. Subtract this from the amount realized on the whole production, $6.25, and there is $5c left, representing the average margin between production cost and mine price. Out of this margin must come trade discounts and taxes, reduced the average profit of the anthracite operators in the past two years to not more than $1 or $2 a ton. In other words, if all of the profits made by all of the anthracite manufacturers, the price of coal could have been reduced by about 50c a ton.

The labor cost in this computation, which has back of it the authority of S. D. Warritier, based on a most careful investigation, was stated at $4.11. But obviously coal selling for $2 a ton, which is the average price of the average sizes, constituting about 30 per cent of the commercial product, would not pay the labor cost of $4. In other words, the larger domestic sizes must carry costs that to some extent are labor cost. According to Mr. Warritier's computation, a fair allocation of the labor cost would make this item $5.30 per ton in the case of stove coal.

It is going to be fairly easy to convince the coal commission or for the commission to convince itself that the price of anthracite on the basis of present labor and other costs is fair, and that it cannot be reduced until those costs are reduced.

But what about the difference between the mine price of $8.25 for the domestic sizes and the price the consumer pays? This is made up of freight, which in the case of New York is about $2.75 per ton, including lightage, and the costs and profits of retail distribution. The anthracite producer has nothing to do with this problem, except to make the coal at the mine after it leaves the mine. Except for some legal details in the case of one or two companies, anthracite mining and railroad transportation are diversified industries, and whatever profit is made out of the transportation of anthracite goes to the railroad.

Operators Not Responsible for High Freight Rates

If railroad freight rates are too high, if dealers and distributors are adding too much to the mine price for their services, it is something for those interests to account for. The producer can only tell you what he gets for his product at the mine, what it costs him to produce it and the profit he makes out of it. There are some exceptions exceptionally favorable to the producer, such as the anthracite miners, but this is a story that the producer has the right to tell.

If the search for the cause of these prices and the causes that make for them is to be conducted honestly, it must go on in the open rather than in the dark. It is absolutely essential that the public understand what is going on and how the prices are determined.

In view of the public's insistence on a "commission" to get at the facts, it is up to the public to see that it is used for that purpose. It is a great mistake to expect a "commission" to do anything other than what it is given power to do. The "commission" is a commission, a board of investigation, with limited and defined authority and power. It is up to the public to insist that it be used for the purpose for which it was set up.

*Abstract of address by Daniel T. Hulse, of the National Committee of Anthracite Operators, at the meeting of the National Coal Operators' Committee on the future of anthracite, held at the Union Club on April 5, 1914.

Speakers were Senator William B. Boeing of Wealth and Progress and Mr. J. W. Kennedy, vice-president of the United Mine Workers of America.

The basic rate of pay in the anthracite industry is $2.50 an hour for common labor, and other wages according from...
the figures in hand which make the anthracite miners the paramount factor in the world's market. You may recall that a week or so ago a great deal of attention was centered upon the fact that the Steel Corporation had increased its wages 20 per cent, but this was more than the common labor rate in the anthracite industry was raised to only 10, an hour, while the anthracite industry page 222. Every other class of workers have accepted reductions from wartime wages. Every other worker, therefore, is paying out of decreased wages the increased wages of anthracite workers. By statement of the fact, as stated by President W. W. Kavanagh, to a meeting of the Operators and miners which was held in the Old Forge colliery in the Butler country and the meeting of Labor union. The new decline is a new device to lower the cost of labor and raise the price of the coal. The Illinois Coal Commission has been invited to observe the negotiations whenever they take place, and, fourth, that government sanction be obtained before any agreement is made. These ideas were put in the form of a resolution as a guide to Messrs. Miller and Kavanaugh.

The Illinois meeting was the fulfillment of an agreement made at the joint conference two weeks ago that the operators at that conference, having refused to unite upon any plan for negotiating the next wage scale, would all go home and talk it over with their constituents. The results of the Illinois meeting are to be carried by Messrs. Miller and Kavanaugh first into a session on Dec. 4 of the operators half of the joint conference and then into the full conference of Dec. 6 when the operators may have united upon some negotiation plan. Up to the present there has been no unity. Outlying fields have voted for, and were refused, a voice in national wage making and there was not even harmony among the four original states of the Central Competitive Field on the question of renewing the old four-state plan of wage making.

The attitude of Illinois is that strong effort be made to avoid a strike and that the operators of the country should do absolutely nothing that would bring legislation against operators in the charge of conspiring with miners to set a wage scale for the country that would elevate the cost of coal to the people.

Attitude of Commerce Commission Turning Against Assigned Car Practice

Such a good showing has been made by the witnesses opposing the practice of assigning cars for railroad fuel that it is apparent that the attitude of some of the Interstate Commerce Commission members is changing. During the opening hearings it was apparent that the commission was disinclined to take any action that would add materially to the expenses of the carriers. The evidence as to the disruptive influence of the assigned car has been so conclusive, however, that none will be surprised if the commission should rule that assigned cars are to be used only during real emergency and even then the permission of the commission may be required.

A large number of operators have presented figures showing their actual losses as a result of inequitable car distribution. Others testified as to how they have been forced to take railroad contracts at unprofitable figures so as to keep their mines in operation. H. E. Neal, president of the Neal Coal Company of Indianapolis, was among the most effective witnesses presented by the operators. His earnestness and his fund of concrete information clearly impressed those sitting in the case.

Much credit is due to John Brophy, who spoke for the United Mine Workers. He declared that unequal running time as between mines is inequitable to labor and causes much dissatisfaction.

The defense of the railroads has been much weaker than was expected. Their attorneys have not made a good showing. That the railroads recognize the trend against the practice is evidenced by the fact that they have made drastic reductions in the number of assigned cars used since the hearing began.

Several operators who specialize in railroad contracts appeared in support of the assigned-car practice.

Retailers Submit Proposals to Commission

The National Retail Coal Merchants' Association has submitted a statement to the President's Coal Commission presenting the attitude of the association on the investigation which the commission is undertaking, dealing in detail with both the anthracite and the bituminous situation. Specific recommendations are made to the commission for bettering the situation with regard to each fuel.

ALFRED M. OGLE, president of the National Coal Association, who was stricken with appendicitis last week, is well on the road to recovery.
The spot coal market is quiet. Buying is confined to current needs, even in the domestic branch, and the tendency to acquire seasonable reserves has not passed beyond the stage of making inquiries on prices. Coal Age Index of spot bituminous coal prices receded to 330 on Nov. 27, as compared with 343 on the preceding Monday. The average price at the mine corresponding to this index number is $3.99; last week it was $4.16.

The market can be divided into two sections today. In the territory served by the regions producing coal for the Lakes there is absolute stagnation. Buyers are marking time while the Lake shipping season closes and "no-market" losses are reported for the first time since the strike. The trade expects a substantial buying movement with the close of the Lakes, however, and hopes that this tonnage will be absorbed with a minimum of price softening. The approach of cold weather always hastens purchases to augment reserves and, having delayed longer than usual this year, the consumer's re-entrance into the spot market is expected to prevent a slump in production.

**MARKETS TIGHTENING IN EASTERN CENTERS**

On the other hand, Eastern centers already are experiencing tighter markets. Poor deliveries have boosted prices and inquiries are much stronger. Spot coal is scarce and premiums are paid for quick deliveries. Good grades from central Pennsylvania are finding a ready market and there is a growing production of prepared coal to fill the gap caused by the anthracite shortage. New York, Philadelphia and Baltimore all report a stronger demand for industrial coals. Conditions in New England are improving and although there is no broad inquiry as yet, the reduced receipts from Hampton Roads have increased Southern coal prices and strengthened the position of the all-rail shippers.

Sellers at the Cincinnati gateway report more diversified conditions. Stodgy Northern demand is turning a larger tonnage south from the Virginia and the southeastern Kentucky fields. Low-volatile agencies are again soliciting orders, quoting reduced figures for early December business.

In the Middle West screenings are finding a better market. This is due not so much to improved demand as to lowered production. Domestic grades are in a slump and curtailed operation is reducing the available supply of fine coal.

Transportation conditions are improving. The car supply, however, is so erratic that individual shortages at the mines complicate the market. The uncertainty of the car supply is so great that producers cannot give their offerings; spot coal, like the demand, therefore is on a day-to-day basis in most sections.

The scarcity of domestic anthracite has become pronounced and with the advent of colder weather more substitutes are being sold. Independent prices have advanced with the shortage. Eastern markets have been promised early relief, as companies will soon divert more domestic tonnage in that direction with the closing of the Lakes. In the meantime these markets are being invaded by prepared sizes of bituminous coal and, once having gained a foothold, soft coal will make some permanent inroad on what has heretofore been an invaluable stronghold for the producers of domestic anthracite.
Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

<table>
<thead>
<tr>
<th>Low-Volatile, Eastern</th>
<th>Market Quotant</th>
<th>Oct. 30</th>
<th>Nov. 13</th>
<th>Nov. 20</th>
<th>Nov. 27</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pittsburgh, Ill. lump</td>
<td>$4.60 4.65 4.70 17.00</td>
<td>$4.60 4.65 4.70 17.00</td>
<td>$4.60 4.65 4.70 17.00</td>
<td>$4.60 4.65 4.70 17.00</td>
<td></td>
</tr>
<tr>
<td>Pittsburgh, Ill. coal</td>
<td>$4.60 4.65 4.70 17.00</td>
<td>$4.60 4.65 4.70 17.00</td>
<td>$4.60 4.65 4.70 17.00</td>
<td>$4.60 4.65 4.70 17.00</td>
<td></td>
</tr>
<tr>
<td>New York, Ill. lump</td>
<td>$5.00 5.05 5.10 5.15</td>
<td>$5.00 5.05 5.10 5.15</td>
<td>$5.00 5.05 5.10 5.15</td>
<td>$5.00 5.05 5.10 5.15</td>
<td></td>
</tr>
<tr>
<td>New York, Ill. coal</td>
<td>$5.00 5.05 5.10 5.15</td>
<td>$5.00 5.05 5.10 5.15</td>
<td>$5.00 5.05 5.10 5.15</td>
<td>$5.00 5.05 5.10 5.15</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Nov. 20, 1921</th>
<th>Independent</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>17</td>
<td>21</td>
</tr>
<tr>
<td>12</td>
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<td>24</td>
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<tr>
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<td>12</td>
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<td>12</td>
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<td>29</td>
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<tr>
<td>12</td>
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<td>12</td>
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<td>31</td>
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<tr>
<td>12</td>
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<td>32</td>
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<td>12</td>
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<td>33</td>
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<td>12</td>
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<td>34</td>
</tr>
<tr>
<td>12</td>
<td>17</td>
<td>35</td>
</tr>
</tbody>
</table>

21 per cent behind the corresponding period in 1921. Central Pennsylvania is getting into better position to ship to this territory, as the recent strength in prices at Hampton Roads has reduced the competitive advantage of these fuels. The car supply is uneven and keeps operators guessing.
How the Coal Fields Are Working

<table>
<thead>
<tr>
<th>Week ended Nov. 22, 1922</th>
<th>11-1922</th>
<th>11-1921</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>4,010</td>
<td>3,890</td>
</tr>
<tr>
<td>Anthracite</td>
<td>1,140</td>
<td>1,420</td>
</tr>
<tr>
<td>Bituminous</td>
<td>2,870</td>
<td>2,470</td>
</tr>
<tr>
<td>West Virginia</td>
<td>800</td>
<td>700</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>610</td>
<td>410</td>
</tr>
<tr>
<td>New York State</td>
<td>150</td>
<td>80</td>
</tr>
<tr>
<td>Other States</td>
<td>300</td>
<td>200</td>
</tr>
</tbody>
</table>

Car Loadings, Surplusages and Shortages

<table>
<thead>
<tr>
<th>Week ended Nov. 14, 1922</th>
<th>11-1922</th>
<th>11-1921</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>4,000</td>
<td>3,890</td>
</tr>
<tr>
<td>Anthracite</td>
<td>1,140</td>
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<td>150</td>
<td>80</td>
</tr>
<tr>
<td>Other States</td>
<td>300</td>
<td>200</td>
</tr>
</tbody>
</table>

Hampton Roads dumping was 211,415 net tons during the week ended Nov. 29, as compared with 202,000 tons in the preceding week. Coal on hand at the pier is increasing very slowly, as cars are so short and Western mines are taking a heavy tonnage. There is a scattering amount loaded on export, bunkers are holding their own and coast

waste business takes the bulk of the tonnage, headed for New England. New York is taking a considerable of the Southern coals, the great portion of it on contract.

Lake business is, of course, dwindling. Mines are discontinuing their shipments to the lower ports and another week should see the end. During the week ended Nov. 22, the lower ports dumped 121,117 net tons. The movement for the season to date now stands at 15,920,188 tons, as compared with 21,909,800 tons during the corresponding period of last year. Softness pervades the Northwestern bituminous-coal market. Prices are being lowered as shown, all-rail competition is keen and the supply is reassuring consumers who feel that lower prices may be their reward for further delay in placing orders.

ANTHRACITE

Production of hand coal last week was 2,189,000 tons, as estimated from preliminary reports on hand at this writing. During the preceding week it was 2,139,000 tons, a record which has been exceeded only once in the last two years.

That there is need for revised production is evidenced by a clamorous demand for domestic stores. Failing their attention from the Lake market, producers were prompt to retaliate for other sections.

Steam coals are still unpopular, although the recent weather has cooled the accumulations. One company, however, has found it necessary to reduce its price in an effort to stimulate sales.

COKE

Production of hard coke was 205,000 tons during the week ending Nov. 22, as compared with 200,000 tons in the previous week.

The consumption of several large concerns has been the demand for Consolidated Forest coke. More are planning to follow as soon as enough coke is on hand to warrant it. Active consumers are short on supplies of standard coke and are digging into back stocks. The high prices now charged by purchasers are receiving attention.
Foreign Market
And Export News

German Coal production: Germany must speed up production. The returns of September coal production have been watched with the earnest interest, in view of the re-establishment of overtime shifts. Upon the material increase of the output had been staked. The Ruhr miners consented to work six extra days per week in excess of the regulation working time in overtime shifts of two hours, three days a week. The result is as far exceptionally disappointing. The increase of output compared with what was in September only 7,000 tons per day instead of the 50,000 tons expected.

German Coal Production

<table>
<thead>
<tr>
<th>Month</th>
<th>First New Month</th>
<th>1922</th>
<th>1921</th>
</tr>
</thead>
<tbody>
<tr>
<td>June</td>
<td>99,523</td>
<td>100,000</td>
<td>97,000</td>
</tr>
<tr>
<td>July</td>
<td>101,380</td>
<td>100,000</td>
<td>94,000</td>
</tr>
<tr>
<td>Aug.</td>
<td>22,926</td>
<td>20,760</td>
<td>19,760</td>
</tr>
<tr>
<td>Sept.</td>
<td>4,095</td>
<td>4,276</td>
<td>4,046</td>
</tr>
<tr>
<td>Total</td>
<td>222,122</td>
<td>221,737</td>
<td>193,800</td>
</tr>
</tbody>
</table>

Although production of bituminous coal has increased since last year, the total appears less on account of the disaffection of Polish Upper Silesia. A survey of this situation shows that hardly any change has taken place in the supply to the interior of Germany. The coal shipments from the German part of Upper Silesia average 100,000 tons per week, and from the Polish part 170,000 tons per week. The shortage which actually exists in the country is due to the grown consumption. Under present conditions the coal production of the country is inadequate, as evidenced by the increased imports, which are a heavy burden on the strained financial situation of the country. The state railways have from May to Dec. increased shipments of coal, gas works, 457,000, and electricity works, 268,000 tons. The problem of the day is to obviate the disastrous import or to reduce them to a minimum by increased production.

During October, the output has increased to an average of 33,000 tons per day, netting a surplus of 22,000 tons over the August production. Nearly 80 per cent of the miners took part in overtime work during that month. The lowered efficiency of the miners is due to the constant rise in the cost of living, which is keeping the question of wages in a continued state of unrest.

Coal Paragraphs from Foreign Lands

Germany—Production of coal in the Ruhr region during the week ended Nov. 11 was 2,093,000 metric tons, according to a cable to Coal Age. The output of the previous week was 1,751,000 tons.

Italy—The price of Cardiff steam first is now quoted at 39s. 3d. on the German market, according to a cable to Coal Age. This compares with 40s. 3d. in the preceding week.

Belgium—Market firmness is everywhere flowing more actively. Domestic coals are abundant, both for domestic and industrial coals. Sales are active and there is a good deal of delay in consignments. Demand for coke is strong owing to foreign purchases.

Hampton Roads Piers Situation

Pier and Bunker Prices, Gross Tons

<table>
<thead>
<tr>
<th>Pier</th>
<th>Nov. 18</th>
<th>Nov. 25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pool</td>
<td>sf. f. t.</td>
<td>sf. f. t.</td>
</tr>
<tr>
<td>9, New York</td>
<td>$7 900</td>
<td>$7 900</td>
</tr>
<tr>
<td>11, New York</td>
<td>6 750</td>
<td>6 750</td>
</tr>
<tr>
<td>11, New York</td>
<td>6 750</td>
<td>6 750</td>
</tr>
<tr>
<td>5, 6, N.Y.</td>
<td>7 500</td>
<td>7 500</td>
</tr>
<tr>
<td>10, Philadelphia</td>
<td>7 500</td>
<td>7 500</td>
</tr>
<tr>
<td>11, Philadelphia</td>
<td>7 500</td>
<td>7 500</td>
</tr>
<tr>
<td>1, Hamp. Roads</td>
<td>7 500</td>
<td>7 500</td>
</tr>
<tr>
<td>5-6-7 Hamp. Rds.</td>
<td>7 500</td>
<td>7 500</td>
</tr>
<tr>
<td>2, Hamp. Rds.</td>
<td>7 500</td>
<td>7 500</td>
</tr>
</tbody>
</table>

BUNKERS

<table>
<thead>
<tr>
<th>Pier</th>
<th>Nov. 18</th>
<th>Nov. 25</th>
</tr>
</thead>
<tbody>
<tr>
<td>9, New York</td>
<td>$7 900</td>
<td>$7 900</td>
</tr>
<tr>
<td>11, New York</td>
<td>6 750</td>
<td>6 750</td>
</tr>
<tr>
<td>5, 6, N.Y.</td>
<td>7 500</td>
<td>7 500</td>
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</tr>
<tr>
<td>2, Hamp. Rds.</td>
<td>7 500</td>
<td>7 500</td>
</tr>
</tbody>
</table>

Current Quotations British Coal (f.o.b.)

<table>
<thead>
<tr>
<th>Port</th>
<th>Gross Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiff</td>
<td>Nov. 18</td>
</tr>
<tr>
<td>Admiral</td>
<td>26s. 6d. 25s. 6d.</td>
</tr>
<tr>
<td>Seacombe</td>
<td>24s. 6d. 25s. 6d.</td>
</tr>
<tr>
<td>Newcastle</td>
<td>24s. 6d. 25s. 6d.</td>
</tr>
<tr>
<td>Newmarket</td>
<td>24s. 6d. 25s. 6d.</td>
</tr>
<tr>
<td>Hull</td>
<td>24s. 6d. 25s. 6d.</td>
</tr>
</tbody>
</table>
Market Has Strengthened
With Tightening of Supply

Car Shortage and Slow Delivery Advance Spot Values—Release of Lake Tonnage Counterbalanced—Screened Bituminous Readily Taken as Substitute for Anthracite.

Tightening of the supply has strengthened the market. Cars are so short and deliveries so slow and uncertain that values for spot tonnages have advanced, especially on good grades. Individual cases of acute car shortage further complicate the situation, as producers refuse to cut prices on uncertain future loadings. The poor car supply has so far overbalanced the release of some Lake tonnage. Buying is increasing slowly, but inquiries are numerous, showing that the trend of demand will soon be stronger.

Screened bituminous coal is finding a more ready market as a substitute for anthracite. The cold weather is inducing many consumers to place orders for soft coal and prices for prepared sizes are strengthening daily.

NEW YORK

Irregular car supply, in the opinion of some local houses, caused a slight advance in quotations here. Further stiffening is looked for by the middle of the week. Conditions were better and inquiries were received in greater volume. High-grade coals are quickly absorbed, operators in some instances being booked ahead to April 1 on the present basis of car supply.

Screened coal is being looked upon with favor here. Several local houses have been sending considerable nut and stove sizes to nearby towns, one firm, shipping the latter size, claiming they have been compelled to refuse orders. One cargo of Welsh anthracite was reported as arriving here during the week.

Southern coals are not coming forward in large volume. There were 1,468 cars at the local terminals on Nov. 24, mostly of Pool 10 and 11. Very little Pool 9 was to be had here, operators being heavily booked for it.

PHILADELPHIA

The car supply still holds back production and shippers are loath to make any promise whatever of prompt shipment. The car shortage this week has made it somewhat difficult for producers to get forward full shipments of high-grade coals on contracts.

There is still a show of increasing demand for bituminous as a domestic fuel. Some local retailers have bought screened gas coal around $7 at mines. Dealers who handle the low-volatile, best grades of Pennsylvania steam coals, find that while it is difficult to make a market out of the fine coal, they get better reports as it is tried out.

The railroads are still actively in the market for native power fuel and with assigned car orders are able to keep ahead of current consumption and send some into stock.

At Tide there is no activity out of the ordinary. Havana were made last week. It would seem that normal movement is being resumed, especially with the old-time shippers.

Market prices have been held firm. Some had thought with the near approach of the Lake closing an extra amount of coal would be thrown on this market, with consequent lower prices, but it would seem that the car supply situation has overbalanced this.

Baltimore

Dealers say that the present conditions indicate a large increase in the demand and that in view of the scarcity of the better grades it is necessary for the buyers to satisfy themselves with the lower qualities of coal. It is difficult to secure any of the better grades and it is impossible to guarantee prompt shipments of any character.

With the cold weather many of those who had claimed they were holding off for a reduction in price are now endeavoring to have their wants supplied at the prevailing prices.

To supply the wants of consumers not in the daily task owing to the car shortage on the Pennsylvania and B. & O., which is daily causing the situation to become more and more complicated.

The importation of English coal has discontinued and there appears to be but little likelihood of any renewal of this trade. Even in the face of the present conditions one cargo has been sent to Cuba and another to Porto Rico from Baltimore during the last ten days. There have been ten vessels, consisting of nine steamers and one schooner, to leave Baltimore since Nov. 6 in the New England trade.

Fairmont

Except where mines are loading rail fuel and for the Lakes, much trouble is being experienced in securing enough cars to insure regular operation. Freight connections seem too heavy, notwithstanding weakness in the Eastern markets. In view of the higher price prevailing in Western markets, it is thought that it will be unprofitable to look points west of the Ohio River where ever that is possible.

Upper Potomac

Production continues on a large scale in the Upper Potomac and Georges Creek field. It is largest in the Thomas Division of the West Virginia and Maryland than on any other railroad division. In Georges Creek territory despite a continuance of the strike on the part of some of the older miners, there are approximately 500 men at work and that number is being daily augmented.

Central, Pennsylvania

During the week ended Nov. 19, production amounted to 15,849 cars or a daily average of 3,308 cars, as compared with 17,287 cars in the week previous. The production from Nov. 1, to 19, inclusive, was 49,484 cars, while during the corresponding period in October 46,806 cars were loaded. There has been little or no change in prices.

Operators in Clearfield and Cambria, away from the main railroad lines, are complaining of car shortage. One operator with mines in both places declared that the car shortage has knocked the bottom out of business and it is impossible to hold the men. Under the present conditions, operators contend that they are working at a great loss.

West

Kansas City

The so-called "layers' strike" and recent warm weather caused the advance in prices last week of a cut of from 50c. to $1 on Kansans. Dealers, at the time they announced the reduction, predicted it would be only temporary, and that, with the arrival of colder weather and an increased demand, the price would advance. They are getting between 10 and 20 per cent running time nowadays.

Present quotations for Kansas coal are: Lump, $5; mine run, $5.50; nut, $5.40; screenings, $2.50. Arkansas semi-anthracite is selling at 90 for lump and $4 for nut. Pennsylvania coal is quoted $4.50 for lump and $3.50 for nut.

Denver

With mild winter weather in Denver coal prices are evenly balanced without much sliding up or down the scale. The car shortage still hampers many mines. However, between 1,500 and 4,000 men more than usual were employed in the Colorado mines during October and production totaled 260,000 tons which is about the same as the state output in a month.

All of the producing counties except Routt and Fremont, show increases, and the latter two led the way in Huerfano counties. The car shortage and strike during the summer are believed primarily responsible for the heavy decrease. Base rates on the railroad and the contractors cut rates, for a period of thirty days when the Moffat road was blacked out to Sunlight.

Salt Lake City

The situation varies with every hand but some reduction in rates is expected by the close of the year. The weather has managed to get railroad retired, and the railways are still able to supply all demands. With the railroad contractors the supply is in the hands of the war-time contractors, and the latter are not buying for storage. Many contractors are ordering from the mines as much as they can buy.
Anthracite

Crisis Impending as Cold Weather Appears

Low Retail Supplies Force Householders to Take Substitutes—Screened Anthracite More Attractive in East—Brigantine and Coal Brine Fancy Prices—Companies Promote Early Retail—Simon Circular Reduced.

Cold weather is precipitating a move in the anthracite trade. Retail supplies are nearly depleted and householders are forced to take substitutes. In the East, screened anthracite coal is moving better and bringing and coal are held at fancy figures.

Companies promote immediate retail, but, however, now that they have made an impression on the Northern demand. Independent operators have increased their prices and even poor coal is selling at close to $10. Steam prices are in better position, but one large company has cut its circular 50c. to more quickly reduce the present oversupply.

PHILADELPHIA

The consumers' need for coal has been more acute with the coming of the cold weather. Unlike prompt relief in previous years in the way of shipments from the East, the needs have finally prompted retailers to make shipments. Some of these have been delayed, the retailers cannot get coal; only subject to their ability to make delivery. It is now in the hands of independent prices and the situation is rapidly improving. There are many in the way.

Consumers, however, must have coal and are not going to permit a higher price to prevent the use of their stoves. The trade association is in favor of the higher price, but not in favor of any price that will reduce the demand for the coal. The association is working toward a new and better coal advertising campaign.

Baltimore

Steam prices are in better shaper but are not moving as rapidly as desired. One of the large producers, it is said, is working on the regular circular on buckwheat, rice, and barley 50c. per ton. It is hoped in this way that movement will be strengthened and that the congestion now existing in these coal lots will be somewhat lightened.

Closing of Lake navigation to domestic coal is being anxiously awaited by the local trade. Retail dealers' stocks are about exhausted. Consumption was much heavier last week because of colder weather.

Many dealers continue to enforce the rule of the State Fuel Administration that consumers who order domestic coal must order in their order a proportionate share of the steam sizes. This rule has been taken care of in this way.

BOSTON

The heavy volume of prepared sizes going forward to the Lakes has kept the market for the most part almost starved for continuing supply. Dealers are working forward anxiously to see another increase in production to New England will actually materialize.

In the retail trade there is no change worth reporting. The fuel contractors are placing their coal in stock, while the public goes serendipity about its business of using anthracite sizes and acquiring an advance supply as opportunity offers. The impression that people sit idly by while their plumbing freezes is a myth.

South

VIRGINIA

Production was increased during the first half of November owing to better weather. Consumption continues to be increased and is larger on the Interstate than on any of the other roads penetrating this region. There is also a somewhat more active market, while the demand is firmer at Tidewater. Prices are on a somewhat higher level.

BIRMINGHAM

Carriers are making little progress in providing the needed equipment for moving the production of the mines. Release of open-top cars from the priority use of the coal mines is expected to further curtail the number of cars available, as there is apparently no avenue at present from which this loss can be recouped.

Steam inquiry is lacking in strength and volume. Consuming industries are only buying what is needed for the immediate future, presumably expecting prices to take a further slump. Demand from domestic sources is good. Producers now have stocks of any consequence, and those having contracts are not receiving their monthly quotas. Some yards in the Birmingham district are entirely clean.

Quotations have not changed during the past week, both steam and domestic prices being practically stable. Producers during the week ended Nov. 11 were 45,000 net tons, or about the same as the previous week.

TORONTO

Receipts of anthracite continue very light and dealers are frequently refusing to accept orders—some of them chalking out small supplies by mixing nut and pea coal. Many consumers are using coke which is retailed $16.90, and a number are burning soft coal. Dealers are anxiously anticipating the close of the navigation season, hoping that the situation will be relieved.

Bituminous is plentiful but prices for carbide lots, f.o.b. destination, continue variable, ranging from $6.75 to $9.75. Pennsylvania smokeless is $9; steam lump retails at $13.25 and domestic bituminous at $13.50.
Screenings Demand Steady  
But Prices Do Not Soar

Reduced Output and Some Stock-Pile Buying Stimulate Steam Market—  
Snappy Weather Has Small Effect on Domestic Trade.

In spite of the cold wave which swept down out of the North about  
the middle of last week, the domestic market did not live up much in this  
region. Instead, steam buyers fur-  
nished all the interest there was.  
This put just enough life into the screenings market everywhere  
except St. Louis to absorb about all  
the screenings available.

Many mines have closed down be-  
cause of flat domestic market, thus  
reducing the volume of steam sizes  
offered. Kentucky is full of unsold  
coal, especially in the western field  
where car supply is growing better.  
Eastern Kentucky coal is spreading  
to many markets now that Lake  
shipment is stopping.

CHICAGO

Screenings remained the headliner in  
this market a thousand of last week.  
There is no crying demand for this  
small steam coal, but interest in it con-  
tinues to freshen little by little for two  
main reasons. First the slackening of  
call for domestic sizes over a period of  
two weeks or so has shut down a num-  er of mines that had been dumping  
screenings on all Midwest markets, thus  
curtailing the volume of steam coal  
available and second, some of the heavy  
steam consumers continue gingerly to  
buy a bit more than their day-by-day  
demands require.

Illinois is getting the bulk of the  
business. Mines that produce high  
class coal and are equipped to pre-  
pare it, excellently are still getting $3  
on certain country contracts but no spot  
 screenings have sold that high in weeks.  
Good 2-in. usually brings $2.25$2.40  
and 11-in. sells generally for $2.25  
though there is some shading to $2.15.  
Prices of the southern field range from $2.2 up. Other fields' screenings  
run down to $1.50 for Standard  
district coal. Indiana steam is moving  
to this market in increasing volume.  
The freight rate advantage makes it  
a strong competitor.

Domestic demand continues weak.  
Most local yards and some in the coun-  
ty are a little quiet and it will take a week of the present snappy weather to stir up a good lively  
demand. The big operators are charging closely to $3.50 for Southern Illinois lump and egg and are finding just  
equal enough market to absorb the output. The lesser operators in the same field  
have shaded as much as $1.50 in order to move coal on certain trouble-

days. Lump from other Illinois fields  
ranges down to $3. These are days when conditions often have spent thou- 

ts of dollars in past years advertising  
the name and quality of their output  
are catching in on that investment.  
A slight improvement in the market  
have been noticed here. This amounts to  
only 20c. or 30c. on the circulars of  
those companies whose prices have been  
lowest. Other company quotations re-  
main unchanged. Very little hard coal  
is reaching here except through two  
shippers. Independent prices are too  
high to win any Chicago business.  
Railroad congestion and other obstacles  
continue to choke off the volume of  
smokeless fuel.

ST. LOUIS

Mild weather up to the middle of last  
week practically stopped domestic buy- 
ing, not only in the city but in the  
surrounding territory. The colder days  
that followed had only a slight market  
effect, for all dealers have yards full  
of coal of all sizes and it is high priced.  
Although the mine prices have decreased dealers cannot comfortably  
reduce retail prices. The public is  
buying only from day to day, still  
expects a little in price. The local  
steam trade is easy. Very few plants  
are storing. They also buy from day  
to day.

There is a falling off in the country  
tonnage. Small plants are going to  
oil and electricity. Even in St. Louis  
there has been a large business done  
in kerosene and oil burning devices for  
residences. Complaint is made by the  
city that the smoke nuisance this year  
has exceeded that of any previous years.

A large tonnage—perhaps 400 tons a  
day—is also coming in by trucks from  
the mines between East St. Louis and  
Belleville. There have been no smokeless  
receipts and only 1,000 tons or so  
are being bought. Hard coal has advanced 50c. and coke gets  
more plentiful now that gas coal is  
reaching here in some volume.

SOUTHERN ILLINOIS

The car shortage—a plague a month  
ago—is a blessing now. It has helped  
to maintain prices in the Carterville  
field, in the face of mild weather and  
no demand. The car supply has shown  
considerable improvement but there is  
still a shortage. Mines are averaging  
2 and 3 days a week. The market  
is gone on steam sizes temporarily. Do- 

mestic prices are maintenance at $3.50  
with the independents working lower,  
but the large companies has been reduced to $2.90. Screenings range $2.12.50, but  
there is no demand for anything and  
railroad conditions are very bad. The  
weather has been very good and the  
market is mostly closed.

In the Deupin and Jackson County  
fields prices are indifferent. The car  
supply on the Bashkir near Mt. Olive  
district has a variety of everything and  
one operator is able to sell as much as  
he has. This field is still on account of no  
pools. The business to Chicago and the  
Northwest is light, but could be much  
but slow on steam, and St. Louis has  
almost quit using seems to be main- 
tained, however. Demand for Standard and railroad ton- 
nage is light, and demand on the Mobile & Ohio which is strong.

WESTERN KENTUCKY

The market here faced with a much  
better car supply than it had to  
meet the demand for upwards of five  
sizes, is having trouble in selling all  
and prices have been sliding steadily  
lower. It is reported that more high  
cost mines are closing down.

It is reported that from November  
that there were approximately 120 cars of unused  
coal on tracks at eastern Kentucky  
mines. Demand for lump has been a  
shade better than the past few days because of freezing weather and this has  
created a little demand from small  
steam consumers.

Demand for screenings from industrial  
trains continues and the expectation of  
low tonnage on screens is creating a fair volume of 
market. Lump is quoted at $1.50  
per ton, mine run, $2.25-$3.25.  
Screenings have run about $1.75  
per ton. The list of the last week is  
reported as selling at around $3.75,  
and mine run, $2.25.

There has been a big improvement in  
car supply. The average for the week  
up to last week, showed the L & N  
at $2.00, 30.3 per cent; L. & N.O.  
and the Western at $2.22.5 per cent  
and Heroderson division, 34.7.  
This is enough, for mines are not  
requesting many cars.

LOUISVILLE

Slackening of Lake movements was  
followed by weakening markets also a 
large tonnage from eastern Kentucky.  
West Virginia and Indiana are being ex- 
ported in the open market. Prices of  
western Kentucky coal are lower, and  
are expected to go down considerably,  
as operators will be forced to accept  
cash in order to move coal.

Retailers here for months have been  
disguised with the bounties of eastern  
Kentucky operators in holding lump at  
prices below dividend for the purpose  
of preventing retailers from stocking  
and handling eastern Kentucky coal.  
Western Kentucky lump has dropped to  
$2.50-$3.00 at the mines, or $2.25  
or under eastern Kentucky lump.  
Cold weather last week put a trace of 
vigour into the local market.

Some of the coal men are looking for  
sharp breaks in eastern Kentucky  
prices. Right now eastern Kentucky  
lump is around $3.50 in L. & H.,  
$3.87; mine run, $2.97-$3.17.  

INDIANAPOLIS

Colder weather has intensified the  
domestic market. There are a few  
operators who are trying to produce  
more by means of burning more coal  
in time of severe weather and this  
moves the condition to better.  
Steam coal is still making good  
and demand, but the cost of coal has  
been increased at the mines and this  
has caused an increase.

A general increase in prices  
reported from East and West. The fact  
that operators are producing more  
has considerably helped their situation.

November 30, 1922

COAL AGE 997
Eastern Inland

Markets Are Without Life Pending Close of Lakes

Prices, Except for Domestic, Soften—Buying Movement Expected After Close; Consumers Awaiting Effect of Diverted Tonnage—Trade Sees Ally in Winter Weather.

Large coal markets are preceding the closing of the Lakes. All prices except that of domestic coal are softening and if demand does not pick up soon no-market situations will again appear in the near future. Dec. 3 should see the final Lake shipments from the mines, however. and a substantial buying movement is indicated after that, as the consumer's tardiness is attributed to the belief that the diverted tonnage will sustain the market.

Domestic movement is increasing rapidly, especially in Ohio, where higher prices have been authorized. Dealers are not stocking heavily but frequent replacements are being ordered as the consumer is foisted upon the market by the colder weather.

CLEVELAND

With the closing down and tonnage approach of the complete ending of the Lake tonnage, the market for industrial fuel continues haphazard. Coal is moving slowly and within the next week or so it will be even more stagnant. One thing it is expected that a substantial buying movement from industrial users is going to sustain the trade during the winter season. Cold weather is rapidly approaching and many plants soon will find it advisable to increase their stock piles against heavy freight items. 

Prices have been given around a shade further. The future course of quotations will be determined by the rate of buying as it develops within the next few weeks. If demand continues rather active, some further advance will probably come. The trade is generally awaiting improvement.

The retail trade is in a rather sporadic state. Dealers are unable to move any coal and are not receiving much are not receiving much inquiry. The West Virginia market is very quiet and the operators report no movement. Pittsburgh and No. 8 steam lump, $3.25-3.50 for all mine run and $3.50-3.75 for slack, is being sold by the doz. at 50 cts. and the trade is not large on account of the great demand from the coal and coke trade.

BUFFALO

The market is slow, but steady. While prices have not gone off much, it is found that even Pittsburgh, which has always been stronger than Buffalo, has weakened and will no longer insist on former quotations. As a rule Buffalo has steadily refused to pay them and has used the Allegheny Valley and No. 8 to drive the proposition. Buffalo is not able to dictate what it will pay for domestic coal.

Consumers report that they are official lower prices than they need, so they are at bottom prices and are satisfied. A few are willing to take the confidence of the lower prices but they are also able to get extra prices for the best coal. It is able to do that and has a complete knowledge of the quality of all coal handled.

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PITTSBURGH

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Pittsburgh and No. 8 steam lump, $3.25-3.50 for all mine run and $3.50-3.75 for slack, adding $3.09 to Allegheny Valley and $3.24 to other coals to cover freight.

COLUMBUS

Lake trade is now practically over. This has rendered the great deal of coal for commercial purposes. As a result weakness in steam sizes is developing, although the domestic trade is still holding up quite well. It is not sufficient to cause any radical change outside of lower prices on mine run and screenings.

Retailers are buying rather actively and a considerable quantity of prepared sizes is finding its way into retail yards. Consumers are still playing a waiting game, believing that prices will be lower and are thus placing small orders in August. Retail prices are generally firm at former levels. Only a small quantity of smokeless is coming into this market.

Business is more quiet as many of the larger users have succeeded in building up rather good reserves and are only buying for immediate needs.

EASTERN OHIO

By reason of improvement in the car supply, mines produced more coal during the week ended Nov. 18 than during any week since the resumption of mining in August. Only 7,600 tons or approximately 56 per cent of capacity, and exceeded the previous week by 7,500 tons. The lowest week in the Western Ohio region is Eaton, where only 45 per cent of requirements were furnished.

Activity in the domestic trade is reflected through the retailers' efforts to lumber under the trade and that Pocahontas and other West Virginia and eastern Kentucky domestic fuels are now available in larger quantities and many yards still find it necessary to ration their trade. Since the allowance by state authorities of 50c. per ton addition on lump produced in Ohio, a greater quantity of Ohio lump is now available.

In the steam trade, operators and jobbers report sluggishness and a disposition still exists toward storage programs because of expectation that not only a better selection can be made but that lower prices will necessarily result from the cessation of Lake shipping. In fact, Lake shipping has already tapered off, slack and nut and slack and mine run can now be purchased at the open market at figures lower than the maximum set by state authorities.

Receipts of bituminous coal at Cleveland show a slight recession from the preceding week in the coal mined in the preceding week. Total arrivals were 2,119 cars during the week ended Nov. 18; divided: 1,551 cars for industries and 568 cars for retail yards.

NORTHERN PANHANDLE

Car shortage and the difficulty of getting coal moved to market alone are standing in the way of capacity production. The trouble is in westward movement through the Holloways, through the B. & O. one of the principal outlets for the field. Railroad fuel buying is on a large scale.
Northwest

May Embargo Soft Coal
To Ship More Anthracite

Prices have been demoralized, dock coal selling at close to last year’s price and all-rail coal having a wide range of values. Some of the rail shippers insist that they are adhering to the $5.50 price at the mine, but many do not. The mild and open weather, prevailing until well toward December, has undermined the expectations of wholesalers who had counted upon a much stronger market.

DULUTH
Definite announcement has been made by the state fuel administrator that the coal now on dock at the Heads will be sold for upper Minnesota and the situation is unchanged because there will be insufficient anthracite for the Northwest, and the bituminous supply must be conserved. Local interstate points and both Dakota will receive coal by all rail, although it is supposed that some of the bituminous on docks will be ordered to North Dakota later.

The week brought little change in the coal market. Mild weather and fair arrivals by Lake combine to allay anxiety as to the winter supply, and hold the demand in check. Enough anthracite has been received to enable dealers to give almost everybody a small amount, but there will be a rude awakening to the anthracite shortage when the real cold snap develops. Anthracite is in for a general advance in price. The ruling retail rate for some time has been $16.50 for egg, carried in, $16.75 for stove, $16.70 for nut, and $14.75 for pea. A leading rail company is now holding egg and nut anthracite at $17.25, and pea at $17.25. The chances are that these prices will soon be charged all along the line.

Thirteen cargoes of anthracite were received in November, the aggregate being 110,639 tons. During the same period 31 cargoes of soft coal, aggregating 258,501 tons were docked. Anthracite receipts since navigation opened, now total 252,763 tons, and soft coal, 2,204,401 tons. Last year 268,329 tons of anthracite and 2,535,831 tons of soft coal had been received up to this time. These figures do not include car-ferry or rail receipts.

MINNEAPOLIS
The failure of adequate supplies of hard coal to come along has created considerable alarm. Slightly over a third of the allotment had been received up to the middle of November. The period of navigation has been extended for two weeks.

Any shortage will have to be made up by all-rail shipments. To mitigate the situation, it is proposed to ship from present stores of hard coal to the more extreme points, giving them the advantage of the lake and rail freight rate, as the all-rail rate to such places would be prohibitive.

That the proposition to stop soft coal to the docks is seriously considered, shows how well the various soft-coal mines have made up the un-due deficit which existed at the time of resuming operations. It has not been accomplished wholly by the Eastern mines. On the basis of the usual dock sales, there is a considerable shortage. But while the soft-coal tonnage has been moving to the docks, the all-rail shippers of Illinois, Indiana, and elsewhere also have been moving soft coal into this district. They have crowded the dock business until a decidedly short tonnage on the docks looks sufficient to meet current demands for the winter, plus what may and doubtless will be received from the all-rail shippers.

New England

More Coal Now Available
And Inquiry Is Stronger

Improved improvement at Roads Also Shown in Car Supply—Resumption of Textile Mills a Helpful Factor—Price Advance May Turn Eyes Toward Pennsylvania All-Rail Coal.

There is a perceptible improvement in conditions at Hampton Roads. Not only is car supply somewhat better but prices are 25c higher, and while there is more coal available, inquiry is sufficiently stronger to warrant the steadiness that now seems to prevail. A few agencies were caught with not quite enough supply to meet obligations, and this kind of demand was enough to turn the corner.

There is also observed a slight increase in demand at handling points here for shipment Inland and spot-prices have advanced from $8.50 to $9.25 per gross ton on cars. As it there is nothing like broad inquiry, but conditions are somewhat better, due partly to reopened work in the various textile mills.

Practically all the Pennsylvania operators who figure at this time are satisfied to get continuing orders on present price levels. The few coal that they are open for small advances have been received within limits of new business at the same rates that prevailed a month ago. It is understandable, however, that since Southern mills have been carrying a smaller inventory and have had to place some orders, there is a growing interest on the part of a few buyers in the more desirable Carolina grades.

The view of railroad officials that the present Pennsylvania situation, so much to the credit of coal supply, may continue to hold through December, is strengthened by a business report from the road which offers a very slight advance over the levels that existed a month ago. The large producers are just now receiving a substantial advance in demand from the mills, although prices have been advanced through the last week.

While receipts by mine have been steady, the market shows that coal is coming through the hands of the operators and is in evidence at the docks. The railroad company is receiving its quota of the supply available, and is also in receipt of returns here, which are reaching the docks at a rate sufficient to meet current demand.
Cincinnati Gateway

Interest Veers Southward
From Northern Stodginess


It is a notable fact that coal flows freely through the gateway in almost any direction. Attention can be drawn to the fact that this week offices in the Queen City are moving to the South and rove, in Virginia and southwestern Kentucky that are able to direct their offerings to the Southern markets are being supplied with orders. Since the softness that resulted from car shortage from that quarter is more desirable and attractive than the softness of the North.

Movement of supplies in the mines has been from this week. It also as a prime point of consideration that northern Ohio and Michigan has not been a competitive customer for the last week or two, due to the accumulation of cars at the Lakes. And the open weather have largely been the cause of values here seeking a lower level.

LOW-VOLATILE FIELDS

New River and the Coal Age

New River mines are finding it good to have as much coke as they can. The extent of which the average mine coal working is more than one full day a week. New River mines and most of the west of the general rate of construction. New River coal is being marketed as a premium. But the coal production is not set to the question to stop. The question is on a little larger scale in the Cincinnati Coal region. Any coal not receiving more than 10 cents a ton.

CONELLSVILLE AND THE RIVES

Production of coke has doubled. Total output in 1908 was 1,200,000 tons, but in 1909 it has reached 2,400,000 tons. One mine has produced 1,000,000 tons of coke. It is a little more than the production of the entire industry in 1897. But the Rives is a little more than 50 per cent. of the output of the Ohio and the Kentucky fields. It stands second to the West, and sixth among the leading fields in the United States.

Coke

UNIONTOWN

Prompt furnace coke is up 50c. reflecting the absorption of considerable tonnage by five blast furnaces resuming with Connellsville merchant coke. The market is now quoted $7.25@ 7.50. This is for odd lots picked up in the open market. Operators having arrangements to supply furnaces regularly, at a price to be adjusted at intervals, did not recognize the low spot market. Contracts to the end of the year, involving the supply of good coke, could hardly be placed at below $8, or even at that figure.

With pig iron sagging furnacemen regard coke as entirely too high but pace at $7 and stock at $6 with a speculations is expected. A steadily increasing demand since operations were resumed upon a normal basis gives support to the contention that an upward drift is appearing.

Western mines. The output hardly reaches more than keep pace with standing orders and that the spot movement in Western markets is limited.

HIGH-VOLATILE FIELDS

KASAWHA

The lead & is still forced to plug along with about one full day's work per week as the car supply does not amount to more than 25 per cent. Mines do not find it possible to keep up with contract orders because of lack of coal on a spot basis. In fact, market conditions would warrant a much larger movement to the West. As production costs are so high many owners claim that it is impossible for them to produce lump at the maximum price of $4.50.

LOGAN AND THACKER

Larger mines are getting a much better supply than heretofore owing to the fact that the C. & O. is trying to make up for a deficiency in the supply of coke and since the strike. The larger production after it just permits mines to catch up with the tonnage for regular customers, there being little or no surplus for spot sale and shipment. There is a better demand for gas coal than for steam grades.

It has not been possible so far to increase production to a point beyond 40 per cent. of potential capacity in Williamson and other sections of the Kanawha-Thacker district. The product of the field is much too large for West markets, most of it on contract.

CINCINNATI

With all grades of splint and gas topping down—except the domestic coke—attention has again been directed to the extraordinary position maintained by the low-volatile coals. Slack has shown a little tendency to weaken some sales below the $6 mark for the first time in weeks. It is known that some lump coal is getting into the hands of the brokers and their quotations are again appearing. Just a regular is the fact that several quotations continue to take orders at these prices and that ample stocks will still see them along if the present bookings unother weather interferes.

The demand of the takers of low-grade coal has lowered the prices to that the spread is less than it has been in months. Previous production of low-grade coals at the price has been well below the other grades falling out. Just how long this will be largely governed, which if it con-

BUFFALO

Coke has become very scarce, as consumption by the local foundries now exceeds the amount turned out by the hyproduct ovens. Buying in the open market has been resorted to. Jobbers quote Connellsville foundry at $8, furnace at $7 and the supply of chestnut at $10 for domestic use. No hyproduct coke of local make is to be had here for house consumption.
COAL AGE
November 30, 1922

News Items
From Field and Trade

ALABAMA
John W. Porter, vice-president of the Alabama Company, in charge of sales, has been absent from the field for several of operations, succeeding Harry W. Coon, resigned.

The County Coal Co. will electrify its mining operations in the New Birmingham district and extend its output, according to announcement of the company's general manager, Birmingham.

COLORADO
James Baltrumys, state inspector of coal mines, is authority for a report that the employment of coal miners in Colorado will reach a mark in October from being 15,000 engaged in the industry. This represents an increase of 2,000 to 5,000 over the usual number, and is the first time since the establishment of the inspector's office that more than 15,000 have been employed. Records of coal production give October, 1922, an increase of approximately 100,000 tons over September, and the first ten days of this month a lead of 192,000 tons over last year.

CONNECTICUT
The City Lee & Coal Co., Bridgeport, large coal retailers, has increased its capital stock from $500,000 to $500,000.

ILLINOIS
The office of the Henderson Coal Co., near O'Fallon, was burned recently. The office building, one of the most modern in the county, was destroyed. The building, located a few miles from the plant, was a small one and was completed within the last few months.

The Coal Co. of Centralia, recently organized in that city, is making progress in the development of the property. The company recently completed the erection of a new concrete office building in which all the machinery will be placed.

The stripping operation at Opleyke near Mt. Vernon, under the direction of J. A. Koons, has been stopped until next spring. The company has been in operation for about a few weeks, the coal at this point being very desirable. The work will probably be continued soon, however, and operations will commence as soon as possible.

The Midway Coal Co., of Warb, has filed papers in the Murphysboro court, conveying its mining property to the Chicago Fuel Co., Inc., Chicago. The mine is located on the main line of the Illinois Central near De Soto and was the scene of a recent disastrous fire. However, the mine is said to have been completely repaired and put in first-class shape since the fire.

The Lemon McKeeley Coal Co. has capitalized with $25,000 at St. Louis, to operate at a new mine in the county of California. The company has been in operation for several years and has been very successful.

The state of California has passed a law which will prohibit the mining of coal in the desert areas. The law prohibits the mining of coal in the desert areas for the purpose of selling to the public, and will be effective immediately.

The Shaler Coal Co. has begun mining coal at Alpha, with three eight-hour shifts of men. One of the shafts is in the ground and the other is down to the seam. Work will be continued on the next shift, and it is expected that the mine will be ready for operation in a few days.

A boundary house has been constructed. The state mining company has rented 10,000 acres of coal land.

The Sundridge Mining Company, Herrin, Illinois, has announced that it will soon begin a $200,000 new mine, and has filed with the circuit court at Marion, a trust deed for that amount with the Chicago Trust Co. They are to develop the property and sell the coal for the amount of money that will be required for the mining operations.

The Buckley Coal Co., Springfield, has been incorporated and capitalized with $100,000. The headquarters of the company is Springfield, located at the head of the Long Creek coal field. The company is composed of the following incorporators: C. E. Haggard, T. H. Haggard, H. B. Haggard, W. S. Schwanter. The company will make a deal in coal and coal lands.

The County Coal Co., Birmingham, has been incorporated with capital stock of $1,200,000 by the Sunnyside. The company is composed of the following incorporators: V. A. Clements, R. H. Clements, Robert Pettigrew and others.

CA
601 Inc., has increased its capital stock to $1,000,000.

KENTUCKY
John Hofman, president of the George Creek Coal Co., Inc., has been appointed to the由中国新闻社的代表，他将代表中国新闻社在美国的事务。

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MARYLAND
It has been announced that the George Creek Coal Co., Inc., will erect a new mine near Mineral Point, Wisc., on the land of the Illinois & Western R. R.

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MASSACHUSETTS
The New England Coal Co. has announced that it will erect a new mine near Springfield, Mass., for the purpose of mining and selling coal.

The Coal Co. of Centralia, recently organized in that city, is making progress in the development of the property. The company recently completed the erection of a new concrete office building in which all the machinery will be placed.

The Midway Coal Co., of Warb, has filed papers in the Murphysboro court, conveying its mining property to the Chicago Fuel Co., Inc., Chicago. The mine is located on the main line of the Illinois Central near De Soto and was the scene of a recent disastrous fire. However, the mine is said to have been completely repaired and put in first-class shape since the fire.

The Lemon McKeeley Coal Co. has capitalized with $25,000 at St. Louis, to operate at a new mine in the county of California. The company has been in operation for several years and has been very successful.

The Shaler Coal Co. has begun mining coal at Alpha, with three eight-hour shifts of men. One of the shafts is in the ground and the other is down to the seam. Work will be continued on the next shift, and it is expected that the mine will be ready for operation in a few days.

A boundary house has been constructed. The state mining company has rented 10,000 acres of coal land.

The Sundridge Mining Company, Herrin, Illinois, has announced that it will soon begin a $200,000 new mine, and has filed with the circuit court at Marion, a trust deed for that amount with the Chicago Trust Co. They are to develop the property and sell the coal for the amount of money that will be required for the mining operations.

The Buckley Coal Co., Springfield, has been incorporated and capitalized with $100,000. The headquarters of the company is Springfield, located at the head of the Long Creek coal field. The company is composed of the following incorporators: C. E. Haggard, T. H. Haggard, H. B. Haggard, W. S. Schwanter. The company will make a deal in coal and coal lands.

The County Coal Co., Birmingham, has been incorporated with capital stock of $1,200,000 by the Sunnyside. The company is composed of the following incorporators: V. A. Clements, R. H. Clements, Robert Pettigrew and others.
COAL AGE

Vol. 22, No. 22

A state court has been asked at Harbors-town to the Nuttawattamis Valley Coal Co., to enjoin the erection of a plant to dispose of the coal of the same name on the property of the Nuttawattamis Valley Coal Co., upon the ground that it is a trade mark.

Several business men have been elected vice-presidents of the firm.

The County M. Jones interests of the state are considered as substantially increasing with the development of the coal field.

The Associated Fuel Co., the Three Forks Coal & Coke Co., the Pacific Coal & Coke Co., and the Associated Coal & Coke Co., have purchased the coal and coke interests of the Associated Fuel Co. The price of the new coal is $1.50 per ton.

The price of coal in the Logan County, Ohio, market is $1.50 per ton, with branches of the same company supplying the coal at $1.25 per ton.

The Greek Coal Co., Tivoli, Ky., has purchased in the neighborhood of $300,000 in coal and coke from the Associated Fuel Co., through the agency of J. E. Stucker, secretary and treasurer.

A recent article in the Cincinnati Register has been a letter from the editor of the Southern Ohio paper, discussing the coal situation in that state.

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WEST VIRGINIA

Properties of the Wyoming Pocahontas Coal & Coke Co, in Raleigh and Wyoming counties, covering about 31,999 acres in the Yellow Creek District, have just been inspected by a party of officials of the above named company. The inspection, which took place at the mine at Muncy Creek, November 25, was made with a view to bringing the remaining acreage to other operating concerns. Companies having property of the Wyoming Pocahontas Coal & Coke Co., under lease, plan the expenditure of about $500,000 in developing the property. No leases have been granted on the Wyoming Pocahontas property, the Virginian already having prosecuted the development for some time and possibly the development of the property.

Charleston people have organized the Monongalia Consolidated Coal Co., to promote coal business in Kanawha County, being controlled by A. S. Sewell, of Charleston. Having an active part in launching this concern were: F. E. Hohlsco, president; W. D. Allen, vice-president; H. H. Sargent, treasurer; and W. E. Murrill, secretary.

State senators and others have launched the Gordon Consolidated Coal Corporation, of Charleston, new to operating in Harrison County. This company is capitalized at $100,000. The general office will be at Charleston. Of interest in the new corporation are: Hugh Gordon Smith, Paul W. Bailey, Margaret Gibson and George A. Smith, of Clarksburg.

Organization of the Labrador Coal Co. of West Virginia at Clarksburg in connection with the Consolidated Coal Corp. at Charleston. The new company will be capitalized at $10,000 and will operate the same equipment of Earl and G. Russell Rodgers, who were: trading as Rodgers Brothers, Clarksburg. The new company has been capitalized to form a new company originally, but was dissolved. The former company, of which Dan Howard is president, this company sublet the lease to Rodgers Brothers.

The Baldwin Pocahontas Coal Co. will operate in the New River Valley in Kanawha County, headquarters to be at Erin, this company has recently been settled for capital stock of $500,000, and will operate the Baldwin Coal Co., organized by R. E. Baldwin, Graham; Edw. Mann: Walter Perkins and George F. Thomas.

The Best Coal Co. will operate on a farm at Clinch City, McDowell County, high-volatile territory, having just been organized with a capital stock of $50,000, with headquarters at Clinch City, this company is organized by W. A. Rodgers, George A. Way and Roy Cox and G. A. Hinterleiter, all of Charleston.

The Alpha Portland Cement Co. has disposed of its Phoenix coal mine at Wolf Summit, the Blue Coal Mining Co., taking it over November 16.

Increasing its capital stock from $200,000 to $600,000, the Shirver Coal Co., of Morgantown, W. Va., a part of its increased capital to the purchase of coal lands in the Pittsburgh and Sawickley valleys, adjoining the Pittsburgh & Lake Erie Railroad in the Monongah area. The price paid for these coal lands is approximately $50,000. Eventually the company will effecting its operations by installing additional equipment. It is also probable that a new opening will be added.

Organization of the Superior Block Coal Co., Wheeling, organized recently for capital stock of $20,000, to press on the development of a tract of land in the Lincoln District, Monongah County, west Virginia.

The Best Coal Co. has purchased about 290 acres of property in the company, work has been started on the erection of a shaft to initiate operations within a short time. The work is being carried on by the following officers: Alfred F. Smith, Morgantown, president; H. L. Brown, secretary and treasurer. Others interested in the company are: Isaac Smith, Veath B. Hodges and Donald G. Lazenby.

Since the purchase of the property, plans and arrangements of the Southern Rock Coal & Coke Co., by the Pocahontas Fuel Co., of which Isaac T. Mann is president, is learned the consideration involved was in the modest sum of $50,000. The new company will operate the company, capitalized at $500,000, is formed for the purpose of mining the coal and transporting it to markets. It is not known how many companies have made different operations, all but one of which have been capitalized for above $500,000. The Pocahontas Fuel Co. Co. is capitalized at $500,000, has been capitalized for the purpose of mining the coal and transporting it to markets. It is not known how many companies have made different operations, all but one of which have been capitalized for above $500,000. The Pocahontas Fuel Co. Co. is capitalized at $500,000, has been capitalized for the purpose of mining the coal and transporting it to markets.

The William H. Blunt Co. Ltd. has for some time been considered one of the leading mining companies, in the Indian CreekColliery area, it is planned by those who own coal lands in the area to lease the company's property and lease the company's property and lease the company's property.

The Hannon Coal Co. of Bluefield, is now well under way, and is a new company with capital stock of $200,000, the new company has just been organized by H. J. Hay. The company is capitalized at $200,000, has been capitalized for the purpose of mining the coal and transporting it to markets. It is not known how many companies have made different operations, all but one of which have been capitalized for above $500,000. The Hannon Coal Co. Co. is capitalized at $500,000, has been capitalized for the purpose of mining the coal and transporting it to markets.

CANADA

Construction in Manitoba on large recording and screening plant is planned by a British company, which has already leased a large area in the province. The scheme is to develop the area and make it a model for the mining of the province.

In the United States and Canada, coal mining is one of the principal industries. It is estimated that the total coal mining industry of the United States and Canada, coal mining is one of the principal industries. It is estimated that the total coal mining industry of the United States and Canada, coal mining is one of the principal industries. It is estimated that the total coal mining industry of the United States and Canada, coal mining is one of the principal industries.

A severe "stoppage" of the Union Coal Co. of British Columbia, was observed in the coal mining industry, the stoppage recently occurred in the coal mining industry, the stoppage recently occurred in the coal mining industry.

Wyoming

Heavy snows are reported delaying the completion of coal mining the new mine of the M. H. Shelly Co. Co., six miles from Gillette, near the northern part of the state, the snow, which has been unusual this winter, has caused much delay. A model coal mining industry is being established, it is reported. The company is capitalized at $200,000, has been capitalized for the purpose of mining the coal and transporting it to markets. It is not known how many companies have made different operations, all but one of which have been capitalized for above $500,000. The M. H. Shelly Coal Co. Co. is capitalized at $500,000, has been capitalized for the purpose of mining the coal and transporting it to markets.

The Homestead Mining Co. has just announced the opening of a new shaft at Gillette, 25 ft. of cover area, with a view to enlarging the company's operations. A model coal mining industry is being established, it is reported. The company is capitalized at $200,000, has been capitalized for the purpose of mining the coal and transporting it to markets. It is not known how many companies have made different operations, all but one of which have been capitalized for above $500,000. The Homestead Mining Co. Co. is capitalized at $500,000, has been capitalized for the purpose of mining the coal and transporting it to markets.

The Acme Eagle Coal Co., of Colorado, is operating a colliery in the Eagle County, the colliery is capitalized at $200,000, has been capitalized for the purpose of mining the coal and transporting it to markets. It is not known how many companies have made different operations, all but one of which have been capitalized for above $500,000. The Acme Eagle Coal Co. Co. is capitalized at $500,000, has been capitalized for the purpose of mining the coal and transporting it to markets.

The Black Diamond Coal Co. of Pennsylvania, is operating a colliery in the Black Diamond area, the colliery is capitalized at $200,000, has been capitalized for the purpose of mining the coal and transporting it to markets. It is not known how many companies have made different operations, all but one of which have been capitalized for above $500,000. The Black Diamond Coal Co. Co. is capitalized at $500,000, has been capitalized for the purpose of mining the coal and transporting it to markets.
Standardization an Absurdity

Whatever may have been in the minds of Messrs. Borah, Winslow et al. when they framed the act creating the United States Coal Commission and called for reports on standardization of prices, margins, wages, the work to be performed, the mines, the cost of living and about everything else, the idea has been pretty well knocked thus early in the game. In turn the bituminous-coal operators, the miners, the anthracite producers and now the retail dealers have shown the absurdity of the undertaking. It has been remarked, for instance, that the first step in standardizing the cost of living is the standardization of wives, and some such impossible foundation must underlie attempts in the other direction directed by the act.

A standardized price, whether for coal or for labor, if it means anything, means a uniform price. A uniform price, to be not confiscatory, must be high enough to permit the marginal producer—the high-cost fellow—to live and profit. Thus the standardized mine prices established by the Fuel Administration (according to the law creating that organization) were uniform by districts and, in order to be high enough to permit the operation of a majority of the tonnage, allowed abnormally high margins for the lowest-cost producers. Under normal conditions of competitive marketing the low-cost operator is prepared to make a lower price and does when the market requires that policy.

The country wants no subsidized, standardized industry and any attempt to set by edict the cost of living and the wage of the worker or the margin, cost, price, and profit of the producer will produce that result.

Threshing Out the Assigned-Car Question

Assigned cars and the related "private" cars have for many years caused dissension between the carriers and the commercial coal operators. There has just been concluded the second set of hearings before the Interstate Commerce Commission on this question with the final round to come in January. The matter is getting the best threshing out it has ever had. For months both the railroads and the coal operators have been preparing for these hearings and the testimony and exhibits introduced have been voluminous. Every opportunity has been given to interested parties to present their views. The commission has given every indication of seeking a solution of the problem.

In a report to the Senate, dated June 11, 1929, the Interstate Commerce Commission said that prior to 1907 it was a common practice for railroads to deliver to coal mines cars privately owned or leased for the carriers' own fuel loading and to refrain from counting such cars in the current distribution. By its decision in the "Hocking Valley" and "Tracer" cases in 1907 and 1908 the commission modified this practice, insisting that such cars be counted unless the mine shipped no commercial coal—that is, unless the arrangement with the railroad was for the entire output of the mine. This continued to be the rule until 1918, when the Fuel Administration prevailed upon the Railroad Administration to abandon all assigned cars for railroad fuel coal and instead to put the procurement of fuel in the hands of the former. From the first half of 1918 until April 16, 1920, there were all assigned cars for railroad fuel.

The reinstatement of this method of assigning the railroads to obtain fuel coal was, according to the commission, necessitated by emergency conditions—inufficient supply of cars available for the transportation of coal. At that time the commission recommended "that until experience and careful study demonstrate that other rules will be more effective and beneficial," this practice be continued. The hearings now under way will permit the facts and determine whether such rules can be formulated.

Reduced to simplest terms the assigned-car question becomes a matter of price. Railroads in general in the past have enjoyed a lower price for their coal than that charged other consumers. Their argument as to why this should be was summarized by the Railroad Administration in the early part of 1918 as follows:

(a) The demand is permanent; (b) the superior credit of the carriers; (c) minimum sales expenses; (d) the railroads store a considerable portion of their requirements; (e) the railroads quite generally own coal lands and could mine their own coal; (f) the commercial fact that all these conditions have been recognized and have had their bearing in securing the uniformly lower price of coal which the railroads have always enjoyed.

Assigned cars are a factor in bargaining for coal. An output contract with preferred car supply that assures continuous full operation is offered as the inducement for low price. The buyer agrees to take all the coal the mine can produce and this arrangement permits operation under the most favorable conditions and with costs lower than if the same mine were to have intermittent operation. When cars are plentiful the demand for coal is small and there is no necessity for, or advantage in, preferred car supply. But if and when the demand for coal increases to the point where more cars are required for its transportation than the railroads are able to supply and a car shortage results, then the assigned car becomes a factor. The mine that has this arrangement with the railroad works full time, and other mines on the same road, often assigned thereof, because of lack of cans, are shut down, at some, but one or two days per week.

Therein lies the cause of complaints and the basis for the argument. Just so far for assignment to certain mines are removed from the total available for distribution to all other mines, that much will the cars for loading, and thereby the coal for sale, be decreased at these other mines. Estimates of the percentage by which operating time would be increased by the elimi-
There is but one answer. Let the administration quash the indictments—if not in full, at least in so far as they relate to interstate wage negotiations. Getting government sanction for the method to be adopted in future negotiations is a legitimate enterprise. Certainly the mine owners of this country have been harassed long enough by the uncertainty which has enveloped them ever since the Indianapolis indictments were returned.

If sufficient evidence to justify prosecution on the conspiracy charge has been obtained, then let the case proceed with dispatch and may the arm of the law descend mightily upon the guilty. If it has not, then in the interest of the public goal the indictments should be lifted so that they may not interfere with a proper administration of the coal industry’s affairs.

The Future of Anthracite

With production of anthracite setting new high weekly records, with every man working at top speed and taking in record earnings, this appears to be an inappropriate time to talk about anthracite as an intermittent industry. Such it has been this year, however, because of the five months’ strike. Even with production at 2,000,000 net tons per week the country will have but 60 per cent of its requirements of hard coal this winter. Consumers, whether they wish it or not, will this winter learn the values of substitute fuels. Bituminous coal, coke, gas, oil, each is having its innings in homes, apartment houses, hotels and theaters where never before had any fuel save anthracite been used.

Let us assume that next year the hard-coal miners obtain a renewal of their present wage scale, if nothing better, and the selling prices of the coal they produce remains as high as now, if not higher. Many of those whose experience with substitutes is not unfortunate this winter will hold on to those substitutes. The demand for hard coal will be decreased, particularly for the sizes now most in demand—stove, nut and range. With decreased demand the business of mining will cease to be a full-time occupation. The miners will then demand higher daily and tonnage rates of pay to compensate for short time and the cost and the price will further ascend. The country may thus become accustomed to using some fuel other than hard coal before the limited deposits are exhausted. Coal this country must have, but it may find that it can get along with mighty little anthracite.

Operators show more concern over this than the miners, because they have a fixed heavy investment whereas the miners may more readily pull up stakes and depart for other jobs. It will be a sorry day for the hard-coal industry when the only hope of full-time operation lies in having a strike to reduce supplies and make the consumer coal hungry.

While the United States cannot hope to compete with the low-cost countries in the manufacture of the simpler forms of machinery which are not made on a large scale, there is increasing evidence that this country can compete in any market with machinery which is made in large quantities and with such articles as machine tools, typewriters and locomotives, which are developments of American ingenuity.

What interests the consumer is not the number of square miles that contain coal but the number of square people that sell coal.—Indianapolis Star.
Pumping the Big Muddy River Out of a Mine to Save Machinery and 300,000 Tons of Coal

Roof Caves Under Flood Extension of River and Water Pours Into a Mine at Murphysboro, Ill.—Big Pumps and Water Hoist Work Months Ejecting Five Million Gallons a Day—Mine Is Saved

By C. L. Moorman*

St. Louis, Mo.

IN THE latter part of the year 1920 the Consolidated Coal Co. of St. Louis acquired the operating coal mines in Illinois of the Big Muddy Coal & Iron Co., including mine No. 9, situated at Murphysboro, which had long borne an enviable reputation for the quality of its product. Coal seam No. 2 is extracted at this mine, a characteristic section of the coal and overburden showing a 6-ft. seam of coal, overlaid with 1 to 3 in. of draw slate under a gray-slate top. Under the coal bed lies 1 in. of fireclay on sand rock. Room-and-pillar methods of mining, in which 6 in. of coal was left under the slate roof, had been followed under the former ownership and were continued by the purchasing company.

The area to be mined from this shaft is traversed on the north and west by the channel of the Big Muddy River, a stream which not only has an unusually flat drainage slope, in this territory averaging only about 5 in. to the mile, but one which is subject to wide and frequent variations in water level. On account of its proximity to the Mississippi River, the Big Muddy at this point is affected by fluctuations in the level of the larger stream.

In the development of this mine, in order that a large body of coal might be entered lying between the river and abandoned mine workings, two main entries had been driven under and across the river bed, one to the north, the other westerly. Gathering was done by mules; three electric locomotives were used for main haulage and the coal was undercut by ten electric mining machines. Twelve electrically driven pumps and three steam pumps were used to eject water from underground, the mine making normally about one million gallons each twenty-four hours. The depth of the hoisting shaft is 115 ft. from the ground surface to the rail at the caging point.

The surrounding surface is rolling prairie with sharp breaks where side streams join the river, most of it considerably lower than at the shaft. The coal seam...
Underneath also presents many variations from a horizontal plane. The shallow water over the coal bed is easily penetrated and many holes for pump columns have been drilled, so that underground pumps may be advantageously placed without resort to long pipe lines.

For many years the men employed at this mine have hesitated work when the stage of water in the river reached a certain mark, resuming work when the water had receded. The objection to working under flood water appears to have been based upon the fact that had roof had been encountered years ago in some of the most extended workings, and not because of any actual unusual usage of water into the mine. As a rule the Muddy rises above the specified mark several times during each year, and such rises occur at any time--there is nothing regular in the flood periods of the Big Muddy.

On Nov. 18 last year the water had reached the point regarded as the limit for safe operation, and work was suspended. One week later the stage of river was 15 ft. above the mark, this being the highest point reached during that particular flood. Five days later the river had fallen 5 ft., but back water still filled all the side streams. Suddenly on this date, at about 3 o'clock in the morning, the river flowed into the mine. The underground conditions and spread were suitable to two men who were at the shaft bottom completing a mine inspection tour and who were in the act of hoisting away the cage for the top.

They were hoisted safely, but within two hours after the break the water had filled the hoisting shaft to the same level as that of the water in the river, this being 25 ft. below the ground landing. As the river rose, orders were given to roll the customary channel's systematic search for evidence on the surface of the ground of the connection between the river and the mine was begun two days later. When found it exhibited itself as a small "lake" about one acre in extent, with fallen trees around the margins and an expanse of water near the mouth where escaping air boiled up from the water. The force of this escape was shown by several gulls in the river where its water entered the mine and on the evening of Dec. 9 it had reached a depth of 40 ft. from the normal water's edge of the Big Muddy. At this point about 40 ft. of earth rested on top of the lake. The terrific intush of water from the river channel undermined the sides of the creek, carrying the earth into the mine until a chasm about 120 ft. wide and 350 ft. long was produced. Approximately 25,000 cu. yd. of earth disappeared into the underground, together with the small trees and brush with which the surface of territory was covered. The larger trees on each side of the creek fell into and across the depression as the sides assumed verticality from the force and cutting action of the rushing water.

Fearing that another rise in the river again would fill the surface sink with water a hurried attempt was made to block with layers of brush and timber mattresses and earth the opening in the slate roof, which was arranged in ragged roughly rectangular hole measuring about 10 x 12 ft. Subsequently the underground passages leading from the hole in the roof were solidly blocked with timbers earth and hay. The lake has been full of water for months now, and no perceptible leakage has occurred.

With the cessation of inflow from the river the water level in the hoisting shaft began falling until on Dec. 9 it had reached a depth of 86 ft. below the ground landing, a fall of 63 ft. from its highest point. This disappearance of the water from the "lake," being concurrent with the lowering of the level of the water in the shaft, indicated that the stoppages were giving away under pressure and that the old mined-out sections were being flooded. As it was impossible to determine with any semblance of accuracy how many or how few of the underground chambers had been filled with water it was assumed that the mine was entirely flooded, and in that event it would be necessary to pump out about two and a half billion gallons of water (in addition to the normal leakage of one million gallons per day), a rough estimate subsequently proved to be far too large.

To raise this immense volume of water, unusual methods were necessary. Two stout wooden boxes were constructed 7 ft. 4 in. long, 4 ft. 7 in. wide and 3 ft. deep, with hinged horizontal flap valves on their bottoms for the entrance of water and with hinged end gates opening inwardly and operated by double crank mechanisms. The cages were dismantled, and the water boxes hung in the regular cage side iron. Water was hoisted continuously until the bottom landing was clear, so that the mine could be entered from the hoisting shaft. The filling and the discharge of the water boxes was automatic, and an average speed of three hoists per
minute was maintained. One engineer ordinarily made four per minute. Some water slopped over the sides of these hoist boxes and leaked out, so that the average quantity brought by this method to the discharge point was 700 gallons per hoist, or 2,100 gallons per minute.

Soon after this installation began work an electrically operated centrifugal pump was placed on a platform just above the water surface in the airshaft. This pump discharged 1,400 gallons per minute to the surface. Working twenty-four hours, about five million gallons per day was now being discharged.

Nine days after the flooding of the mine, pumping operations were begun, continuing from Dec. 9 to Feb. 7 uninterrupted, except for minor delays. On the latter date the water level had been lowered to the underground landing and the hoisting of water was discontinued. A record of changes in the water level, gaged in the shaft at the same hour each day, is appended (Fig. 6).

When it is remembered that practically the same quantity of water was being ejected daily, the wide fluctuations in surface level indicate that the flow of water to the mine bottom was often obstructed. On four widely separated dates—Dec. 13, Jan. 8, Jan. 26 and Feb. 5—the water level remained stationary. On Dec. 19, Jan. 16, Jan. 30 and Feb. 1 it reached a higher level than that recorded on the preceding day, the largest increase being on Feb. 1, when the water rose more than 21 ft. in spite of pumping.

As soon as the shaft bottom was clear of water the three steam pumps near the shaft were reclaimed and put in operation, a second centrifugal pump of 1,200 gallons per minute capacity was installed inside the mine, followed by a third centrifugal of 700 gallons per minute capacity and a fourth of 1,200 gallons per minute capacity, so that for several days, or as long as a large volume of water was accessible, the maximum ejection of 7,000,000 gallons per day, or more than 29,000 tons, was attained.

As the recession of the water level continued, and as high points along the haulageways emerged, a number of disconnected pools were formed and further dewatering became merely a problem of moving pumps from place to place to keep in contact with the receding water, minimizing the length of discharge lines by
drilling from the surface to the most economical position a few additional pump-column holes.

The greater part of the flooded electrical machinery has now been recovered. Three of the reclaimed electrically driven pumps have been repaired and are now in operation. Isolated pools of water remained in dips and were removed with small pumps, which was a rather slow process, and a large part of the underground tracks was covered with mud, though of this and of débris it would seem that only a remarkably small quantity had to be removed in view of what a large body must have entered with the water.

Practically all the former live workings of the mine are now open and dewatering is essentially completed for that part of the mine in which future operation is planned. A few small slate falls to be cleaned up and a number of broken stoppings to be rebuilt represented about all the damage the mine itself suffered. The engulfed motors and some of the other equipment had to be rebuilt, however.

During the nearly seven months of pumping about one billion gallons of water was removed, and the quantity remaining in abandoned workings does not threaten or endanger any part of the live workings.

The Vertical Carbonizing Oven constructed at Grand Forks, N. D., in the course of a co-operative investigation by the University of North Dakota and the U. S. Bureau of Mines looking toward the commercial utilization of the northwestern lignites, has recently been operated under the supervision of W. W. Odell, fuel engineer of the Bureau of Mines, in the manufacture of lignite char on a commercial scale. Results were quite satisfactory and valuable information on the production of lignite char without the recovery of byproducts was obtained. The cost of producing this char was reduced considerably below the cost of operation in the carbonizing oven used in 1921. A satisfactory grade of char was produced. Grates for the utilization of this char in the ordinary magazine-feed house-heating stove and for a house-heating boiler have been made at Pittsburgh and sent to North Dakota for distribution to domestic consumers.

The Method of Collecting Mine samples of coal by the Bureau of Mines involves selecting a representative face of the bed to be sampled; cleaning the face; making a cut across it from roof to floor, and rejecting or including impurities in this cut according to a definite plan as they are included or excluded in mining operations; reducing the gross sample, by crushing and quartering, to about 3 lb. and immediately sealing the 3-lb. sample in an air-tight container for shipment to the laboratory.
Comparison of Froth with the Trent Process*

Flotation About as Effective as Trent Process on 65-Mesh Coal of Pacific Northwest—Latter Method Does Better Work on Slimes—Amalgam Water-Free and When Made with Fuel Oil Can Be Burned Economically

By Oliver C. Ralston†

Washington, D. C.

For several years the Bureau of Mines experiment station at Seattle has been engaged in a study of washing the coals of the Pacific Northwest, and as one phase of this study the flotation of the fine sizes of coal on oil froths was made by one of the research fellows‡ of the College of Mines, University of Washington.

Simultaneously in 1920 the Trent Process Corporation was testing representative samples of coal from all portions of the United States and arranged for tests to be made in three places—one in Washington, D.C., at the laboratories of the U. S. Bureau of Standards; one in Pittsburgh, Pa., at the experiment station of the U. S. Bureau of Mines, and one at Berkeley, Cal., at the experiment station of the U. S. Bureau of Mines. The Northwest Experiment Station was requested to send representative samples of the Washington State coals to the three laboratories where the Trent process work was performed, and did so, quartering the samples and saving a sample itself on which to make froth flotation tests for purposes of comparison with the Trent work.

The Trent process work done by the U. S. Bureau of Mines at Pittsburgh has already been reported by Perrott and Kinney. Unfortunately, only the work done at Berkeley is directly comparable to the Seattle froth-floatation work, for the reason that the Seattle work was done on coal crushed to 65-mesh whereas the Trent work carried on in Washington and Pittsburgh was done on more finely ground coal, usually 200-mesh. At Berkeley the experimenter employed by the Trent Process Corporation, A. H. Heller, tried the Trent process on these 65-mesh samples of coal after grinding them to a series of different sizes. In this article only those Trent process tests will be reported which are directly comparable to the froth-flotation tests, the former being abstracted from Mr. Heller's report.

Froth Flotation Not Suffer to Slimes

It should be pointed out, in all justice to the Trent process, that it is not limited to the treatment of such coarse coal but seems to work very well on the finely divided slime. Therefore, this comparison is really made only on coal crushed to give reasonably satisfactory work by froth flotation, overlooking the fact that these may not be the best conditions for the Trent work. This will be seen on looking over the figures given in the following paper.

As is well known, froth flotation is one of the modern methods of separating finely divided materials. While the Trent process is even more modern in its development it greatly resembles some of the old "bulk-oil" separation processes that preceded flotation. Oil amounting to from 30 to 50 per cent of the weight of the coal is added to a suspension of finely divided coal in water and stirred up with it.

The oil passes into or is absorbed by the coal or the carbonaceous matter, the ash remaining in the water. By a variation in the degree and duration of agitation of the pulp and the quality and quantity of the oil, the resultant "amalgam" of coal and oil can be made either to float or to sink. By prolonged agitating, the time varying with the materials used, the amalgam will collect into little spheres which are well formed and fairly strong so that they can be screened from the pulp or otherwise removed mechanically.

There is a more or less definite ratio of combination between the oil and the coal, and by using the bare minimum of oil the amalgam can be made quite hard. Any excess of oil makes the amalgam softer and more oily, whereas the hard amalgam frequently does not even feel oily. These little spheres of amalgam call to mind the old Cattermole granulation process which immediately preceded froth flotation. Where heavy, cheap oils are used they need not be separated from the coal. Hence the Trent "amalgam" may be used directly as fuel and consequently the "bulk-oil" concentration of coal is not subject to the limitations that were found when ore was thus concentrated, for in that case the large quantity of oil left in the ore concentrate made the process expensive.

The samples taken represented the whole range of

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‡Chemical & Metallurgical Engineering, Vol. 25, No. 6, Nov. 8, 1921, pp. 147-158.
coals between black lignite (low-grade sub-bituminous) and semi-anthracite and were characteristic of the Pacific Northwest coals in being boney or high in inherent ash. It had been hoped that fine grinding would liberate the ash, but it was found that even the finest grinding attainable commercially (300 mesh) still left a high inherent ash in all the samples.

These had been gathered by A. P. Wichmann, who held a graduate fellowship in the University of Washington and who also performed most of the flotation tests herein reported.

Sample No. 1 is a low-grade sub-bituminous coal from the Mendota Coal & Coke Co. property, Mendota, Wash. Sample No. 2 is a good sub-bituminous coal from the Issaquah mine of the Pacific Coast Coal Co. Sample No. 3 is a bituminous non-coking coal from the Carbon No. 10 seam of the Carbon Hill Coal Co., Carbonado, Wash. Sample No. 4 is a bituminous coking coal from the Wilkeson Coal & Coke Co. property, Wilkeson, Wash. Sample No. 5 is a semi-anthracite coal from the South No. 3 seam of the Carbon Hill Coal Co., Carbonado, Wash. The proximate analyses of these samples are given in Table 1.

The flotation tests were made in a small "Minerals Separation" type of flotation machine capable of treating 1.000 g. of ore. A number of tests were made on each coal, using various oil mixtures and varying the physical conditions, for it had been found that coals, like ores, react to flotation differently and that, in consequence, the best conditions must be found for each case. Only the tests made under what proved to be the better conditions are herein reported.

In preliminary tests great difficulty was found in obtaining clean flotation with finely-ground coal and consequently the tests were made with coal ground to a size that would enable it to pass a 65-mesh sieve. The Trent tests by Mr. Haller were made on coal in a whole series of sizes, so that in interpretation of his figures it was possible to plot the figures on the Trent process when operated with a 65-mesh coal, thus making it possible to compare the results made with this process with those obtained when using froth flotation.

The flotation froth was divided into two parts: the first portion was regarded as more or less clean concentrates and the second was regarded as middlings. Later work has proved that the clean real tests to float first and float the more bone coal then follows, so that the middlings may be regarded as representing the more loosely fraction of the coal.

The figures that have been compared with the Trent figures are the average weights of the first and second froths together with the total extraction of combustible matter made in these two froths. Frequently the second froth was very high in ash and when averaged with the first froth gave a total concentrate that was higher in ash than was found necessary by parallel tests in which not so much bone coal was allowed to float. Some of our tests were made without producing a second concentrate but merely first concentrate and tailing. The froth-flotation results used for comparison with the Trent process work are contained in Tables II and III.

The Trent process tests on 65-mesh coal—the same sizing as that used for froth flotation work—were made with a heavy thick fuel residuum oil. No light oils were tried in these tests, but in working with 300-mesh material, results obtained with light oils were far better than those in which heavy oils were used. This is shown in Tables V and VI. The quantity of ash retained in the fine product increases with the viscosity of the oil, and the final combustible recovery decreases somewhat.

From this one is led to believe that if in the Trent work on 65-mesh coal, instead of fuel residuum, oils of a viscosity similar to those employed in the froth-flotation tests had been used, the resultant oil-coal Trent product would have been much lower in ash than is shown in Table IV. In the work at Berkeley the Trent Process Corporation experimenter decided to center his attention on the use of heavy oils, owing to their low cost and the fact that the final product could be used directly as a fuel. When using the more expensive lighter oils, the final product must be subjected to a low-temperature distillation for the recovery of the oil, and this was one phase of the Trent process which it was decided to leave for later work. Another phase of the Trent process where heavy oils are used, and which was studied in detail from a laboratory standpoint at Berkeley, was the complete distillation of the final product with the recovery of oil from both the coal and the oil of the amalgam. This latter work will not be reported here.

The coal was ground to pass a series of progressively finer screens and treated with the proper portions of water and fuel residuum oil in an agitator until the coal had passed into the oil and the ash was left in the water. They were then separated and the two products analyzed. The percentage ash in the cleaned coal was determined and from this the percentage recovery

### Table 1: Analysis of Pacific Northwest Coals Used in Seattle and Berkeley Tests

<table>
<thead>
<tr>
<th>Sample</th>
<th>Material and Coal</th>
<th>Ash</th>
<th>Moisture</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1</td>
<td>Low-grade sub-bituminous</td>
<td>14.51</td>
<td>17.25</td>
<td>18.57</td>
<td>30.08</td>
</tr>
<tr>
<td>No. 2</td>
<td>Good sub-bituminous</td>
<td>6.18</td>
<td>6.76</td>
<td>5.29</td>
<td>18.23</td>
</tr>
<tr>
<td>No. 3</td>
<td>Bituminous non-coking</td>
<td>5.51</td>
<td>5.35</td>
<td>5.55</td>
<td>26.20</td>
</tr>
<tr>
<td>No. 4</td>
<td>Bituminous coking</td>
<td>6.48</td>
<td>6.86</td>
<td>5.42</td>
<td>28.75</td>
</tr>
<tr>
<td>No. 5</td>
<td>Semi-anthracite</td>
<td>5.24</td>
<td>6.98</td>
<td>5.38</td>
<td>27.00</td>
</tr>
</tbody>
</table>

### Table II: Results of Froth-Flotation Tests, Pacific Northwest Coals

<table>
<thead>
<tr>
<th>Sample</th>
<th>Test No.</th>
<th>Fresh Coal</th>
<th>First Froth</th>
<th>Second Froth</th>
<th>Tailing</th>
<th>Total Froth</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1</td>
<td>1</td>
<td>15.26</td>
<td>22.55</td>
<td>46.22</td>
<td>13.50</td>
<td>25.28</td>
</tr>
<tr>
<td>No. 2</td>
<td>1</td>
<td>16.04</td>
<td>25.38</td>
<td>44.56</td>
<td>10.95</td>
<td>21.44</td>
</tr>
<tr>
<td>No. 3</td>
<td>1</td>
<td>15.38</td>
<td>22.65</td>
<td>43.67</td>
<td>11.38</td>
<td>23.89</td>
</tr>
<tr>
<td>No. 4</td>
<td>1</td>
<td>15.35</td>
<td>21.56</td>
<td>41.65</td>
<td>11.84</td>
<td>23.83</td>
</tr>
<tr>
<td>No. 5</td>
<td>1</td>
<td>15.28</td>
<td>22.38</td>
<td>41.92</td>
<td>11.86</td>
<td>23.99</td>
</tr>
</tbody>
</table>

### Table III: Oil Mixtures Used in Froth Flotation Tests

<table>
<thead>
<tr>
<th>Oil</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 part paraffin</td>
<td>6</td>
</tr>
<tr>
<td>2 parts mineral</td>
<td>6</td>
</tr>
<tr>
<td>3 parts paraffin</td>
<td>2</td>
</tr>
<tr>
<td>4 parts mineral</td>
<td>2</td>
</tr>
<tr>
<td>5 parts paraffin</td>
<td>2</td>
</tr>
<tr>
<td>6 parts mineral</td>
<td>2</td>
</tr>
</tbody>
</table>
of combustible materials was calculated on each test. All of the combustible recoveries were well over 89 per cent and are presented in the curves at the top of Fig. 1. The percentages of ash in the various products are plotted in the lower set of curves of Fig. 1, and the numbers of the coal samples are given in the right-hand margin.

From these curves the data on the behavior of coal ground to pass a 65-mesh screen were interpolated.

The average results of the froth-flotation and Trent heavy-oil tests are given in Table IV, which assembles side by side the percentage of ash in the concentrate and the percentage of recovery of combustible material when the various coals were crushed to 65-mesh and treated by the Trent process or by the froth-flotation process, each using suitable oils.

In Table V are shown also the Trent process results on coal ground to pass a 300-mesh screen, which probably is the limit of any possible commercial grinding, giving a comparison of results with the heaviest and the lightest oils employed. The results with fuel residue in Table IV on 65-mesh may be compared with the same oil in Table V on 300-mesh. Table VI shows the results in the use of different grades of oil.

With the exception of sample No. 2, which was refractory to froth flotation, the grades of concentrate produced by the two processes where fuel residue is used for the Trent work are very similar, the Trent process seeming to have a slight advantage. In every case the recoveries of the combustible matter were better by the Trent process than by froth flotation. Froth-flotation recoveries were over 95 per cent for the two highest-grade coals (semi-anthracite and bituminous coking) but were lower for the lower-grade coals.

By examining Table II, however, it will be seen that the froth-flotation process can remove part of the coal in a first concentrate which will be much lower in ash than where a single bulk concentrate is made. In other words, the cleanest coal floats first and later the more boney coal. In this manner a cleaner product can be made by froth flotation than that shown in Table IV if recovery of combustible matter is sacrificed. The Trent process makes only one separation: combustible material and relatively clean ash residue does not provide any middlings. In other words, most of the bone or boney coal is collected with the clean coal. On the 65-mesh coal tested the first fraction of the flotation froth was lower in ash than the Trent amalgam. Each process evidently has its advantages over the other.

Where it is permissible to burn the mixture of oil and coal produced by the Trent process, froth flotation would be at a disadvantage, as it would be necessary to dewater the concentrate before it could be burned. Where the oil used for the Trent process is too valuable to be used as a fuel, however, it must be recovered and in comparison it probably is easier to dewater and dry a froth-flotation concentrate than it is to distill and condense the oil from a Trent "amalgam," leaving the coal behind. But where oils of this type are used the final coal is lower in ash than that obtained from flotation.

The ability of the Trent process to operate successfully on finely ground material gives it an advantage over froth flotation, which latter process seems to meet difficulties when treating finely ground or slimy material. On material between 10- and 100-mesh froth flotation promises to be a strong competitor of the coal-washing table. The table does not do very good work on the sizes smaller than about 42-mesh. The way to float 200-mesh coal on an oil froth doubters will soon be discovered, however, as there are already several promising lines of attack in sight.

It is probable that the laboratory test of the Trent process could be profitably used by froth-flotation experimenters as a check on their work, as the Trent result would represent the best grade of concentrates that could be made consistent with a high extraction of combustible matter, and thus afford a criterion by which to judge the perfection of the froth-flotation tests.

Where clean, finely divided coal is wanted for distilling fuel oil, as used for combustion purposes, the Trent process probably will find an important field. However, for boney coals, which are not cleaned by the Trent process as much as is desirable, the floating of the clean portion of the coal by froth away from the boney portion will give a froth concentrate which can be mixed with the fuel oil immediately, saving the clean coal to pass into the oil and thus getting rid of the water without filtering or drying the froth concentrate. In this way the two processes could supplement each other.

From the preceding it can be seen that one of the most important things to consider in comparing the two processes from a commercial viewpoint is the ease with which the coal concentrate can be used. The froth-flotation concentrate has been used in a number of collieries in England, but so far only in preparing coking coal. A Trent-process plant is now in operation at Alexandria, Va., producing amalgam direct for the market, and several hundred customers are trying it for various purposes, such as industrial fuel, firing boilers, furnaces, etc., as well as for baking ovens, glass works, fertiliser works, and even cooking stoves in hotels and restaurants. As a domestic fuel it may also prove to be of great interest, as it is said both to ignite easily without the use of kindling (required only a little paper) and burn without forming smoke.

### Table IV—Comparison of Work Done by Trent and Froth-flotation Processes

<table>
<thead>
<tr>
<th>Sample</th>
<th>Concentrate Ash</th>
<th>Coal Recovery, Cent Per Cent</th>
<th>Concentrate Ash</th>
<th>Coal Recovery, Per Cent</th>
<th>Concentrate Ash</th>
<th>Coal Recovery, Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9.0</td>
<td>99.5</td>
<td>11.5</td>
<td>80.0</td>
<td>13.5</td>
<td>58.0</td>
</tr>
<tr>
<td>2</td>
<td>10.6</td>
<td>95.0</td>
<td>13.5</td>
<td>85.0</td>
<td>15.5</td>
<td>80.0</td>
</tr>
<tr>
<td>3</td>
<td>12.2</td>
<td>95.0</td>
<td>16.3</td>
<td>80.0</td>
<td>18.5</td>
<td>90.0</td>
</tr>
<tr>
<td>4</td>
<td>15.8</td>
<td>95.0</td>
<td>18.0</td>
<td>85.0</td>
<td>18.5</td>
<td>90.0</td>
</tr>
<tr>
<td>5</td>
<td>7.7</td>
<td>99.5</td>
<td>10.8</td>
<td>90.0</td>
<td>10.5</td>
<td>97.0</td>
</tr>
</tbody>
</table>

### Table V—Trent Process Tests on 300-Mesh Coal

<table>
<thead>
<tr>
<th>Sample</th>
<th>Concentrate Ash</th>
<th>Coal Recovery, Per Cent</th>
<th>Concentrate Ash</th>
<th>Coal Recovery, Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9.0</td>
<td>98.9</td>
<td>14.0</td>
<td>80.0</td>
</tr>
<tr>
<td>2</td>
<td>10.35</td>
<td>95.5</td>
<td>16.5</td>
<td>75.0</td>
</tr>
<tr>
<td>3</td>
<td>12.2</td>
<td>97.4</td>
<td>18.5</td>
<td>90.0</td>
</tr>
<tr>
<td>4</td>
<td>15.8</td>
<td>94.0</td>
<td>18.5</td>
<td>80.0</td>
</tr>
<tr>
<td>5</td>
<td>7.7</td>
<td>99.4</td>
<td>10.5</td>
<td>97.0</td>
</tr>
</tbody>
</table>

### Table VI—Trent Tests on 65-Mesh Coal, with Variations in Kind of Fuel

<table>
<thead>
<tr>
<th>Kind of Oil</th>
<th>Trent Concentrate Ash</th>
<th>Trent Coal Recovery, Per Cent</th>
<th>Trent Concentrate Ash</th>
<th>Trent Coal Recovery, Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kerosene</td>
<td>95.0</td>
<td>85.0</td>
<td>96.0</td>
<td>80.0</td>
</tr>
<tr>
<td>Pitch</td>
<td>98.0</td>
<td>80.0</td>
<td>99.0</td>
<td>75.0</td>
</tr>
<tr>
<td>Turpentine</td>
<td>97.5</td>
<td>90.0</td>
<td>98.5</td>
<td>85.0</td>
</tr>
<tr>
<td>Olive Oil</td>
<td>95.5</td>
<td>80.0</td>
<td>97.0</td>
<td>85.0</td>
</tr>
<tr>
<td>Petroleum</td>
<td>98.0</td>
<td>85.0</td>
<td>99.0</td>
<td>80.0</td>
</tr>
</tbody>
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December 7, 1922
20,000,000 Tons of Byproduct Coke
Produced During 1921

Byproduct coke and coke byproducts produced or sold during 1921 in the United States, according to final returns from all operators to the U. S. Geological Survey, amounted to about 20,000,000 tons, which was the Survey's current estimate of production for the year. Nearly 28,000,000 tons of byproducts coal was charged into the pots for making the coke, and there was produced from this coal about 1,000,000 net tons of screenings or breeze.

Some of the salient figures for this industry are given by R. E. Martin in the following statement, which shows the extent of the developments of the industry by the additions of new acres and the present maximum capacity of the industry by the production of coke.

**TABLE I—PRODUCTION OF BYPRODUCT COKE INDUSTRY IN 1921**

<table>
<thead>
<tr>
<th>State</th>
<th>Coal Charged Into Byproduct Coke</th>
<th>Byproduct Coke</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Net Tons</td>
<td>Not Tons</td>
</tr>
<tr>
<td>Alabama</td>
<td>1,426,923</td>
<td>2,401,127</td>
</tr>
<tr>
<td>California</td>
<td>417,112</td>
<td>266,755</td>
</tr>
<tr>
<td>Illinois</td>
<td>1,592,358</td>
<td>1,322,176</td>
</tr>
<tr>
<td>Indiana</td>
<td>4,142,467</td>
<td>3,093,243</td>
</tr>
<tr>
<td>Kentucky</td>
<td>257,154</td>
<td>185,183</td>
</tr>
<tr>
<td>Maryland</td>
<td>390,316</td>
<td>292,419</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>398,629</td>
<td>294,035</td>
</tr>
<tr>
<td>Michigan</td>
<td>1,203,124</td>
<td>772,125</td>
</tr>
<tr>
<td>Minnesota</td>
<td>630,173</td>
<td>435,146</td>
</tr>
<tr>
<td>New Jersey</td>
<td>1,064,960</td>
<td>735,766</td>
</tr>
<tr>
<td>New York</td>
<td>1,084,814</td>
<td>735,766</td>
</tr>
<tr>
<td>Ohio</td>
<td>4,375,922</td>
<td>2,966,223</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>7,865,395</td>
<td>5,301,321</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>279,911</td>
<td>145,717</td>
</tr>
<tr>
<td>Virginia</td>
<td>47,970</td>
<td>37,693</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>1,122,812</td>
<td>877,329</td>
</tr>
<tr>
<td>Wyoming</td>
<td>932,052</td>
<td>632,214</td>
</tr>
</tbody>
</table>

**TABLE II—BYPRODUCT COKE INDUSTRY, BY STATES, IN 1921**

<table>
<thead>
<tr>
<th>State</th>
<th>Coal Charged Into Byproduct Coke</th>
<th>Byproduct Coke</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Net Tons</td>
<td>Not Tons</td>
</tr>
<tr>
<td>Alabama</td>
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<tr>
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<td>Michigan</td>
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<tr>
<td>Virginia</td>
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<td>37,693</td>
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<tr>
<td>Wisconsin</td>
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<td>Wyoming</td>
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**TABLE III—BYPRODUCTS FROM COKE-oven OPERATIONS IN 1921**

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<thead>
<tr>
<th>Product</th>
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<tbody>
<tr>
<td>Coal</td>
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</tr>
<tr>
<td>Coke byproducts</td>
<td>500,000</td>
<td>$50,000</td>
</tr>
<tr>
<td>screenings or breeze</td>
<td>300,000</td>
<td>$30,000</td>
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<td>Other forms (SH)</td>
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<td>$20,000</td>
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<td>Total</td>
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**TABLE IV—PRODUCTS FROM FUMIGATION OF COKE IN 1921**

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<td>Coke</td>
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<tr>
<td>Coke byproducts</td>
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<td>screenings or breeze</td>
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<tr>
<td>Total</td>
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Converting Half Time to Full Time by Coal Storage

Safe to Start Operation Without Even Promise of Cars—Steady Work Improves Morale and Makes It Easy to Get Best Men—Cost of Stocking Less Than Four Cents per Ton Mined

By W. R. Peck* - Coal Creek, Tenn.

The Black Diamond Collieries, of Coal Creek, Tenn., first started to store coal at their mines in 1918, during the war period. The plan used that year was not satisfactory, and in 1919 another plan was tried, a pit being used in which the coal was dumped and a derrick with a bucket to handle the coal from pit to storage. This method had such limited possibilities that it could be used only on those days when the mines were supplied with only a part of the cars needed—that is, if the mines had cars to run six hours, the storage would take care of the rest of the day or of the two hours at the end of the run. Due to the limited storage space afforded by the derrick, a locomotive crane was soon purchased, and in 1920 the yard was laid out as shown on page 917 and put into successful operation.

The equipment for the yard at present consists of a 35-ton locomotive, one 12-ton Industrial crane, one 20-ton Orton & Steinbrenner crane and four 34-yd. dump cars. These latter can be made to dump on either side, and are discharged into the pits. The coal is handled from these pits by cranes. The cranes are operated in many ways, as the yard is arranged so that both can work from either pit A or B at the same time, or so that one crane can work from one pit and the other crane from the other pit, or so that one crane will handle coal from the pit and the other crane will handle it to the back side of the storage yard. Each evening after the run is over, the cranes clean out the pits and, if necessary, work overtime by transferring coal so that there will be plenty of available storage space close to pits for the next day's work.

When the car supply is short, the railroad cars are used for the shipment of the larger size of coal and the steam sizes are sent to the storage yard. It has been found that the locomotive cranes will handle about a third more of the steam sizes than the will of run-of-mine coal in the course of a day, for with the former the buckets can pick up their maximum capacity whereas in handling run-of-mine, lumps often get into the jaws of the bucket and cause the fine coal to spill. Another reason for storing steam coal is that when run-of-mine is stored, the handling of it does not reduce it so that it can be sold only for boiler use, whereas the handling of the steam coal has little effect on its size.

Due to the lack of market, these mines operated over 35 days in the first ten months of 1921, but they resumed operations in November, 1921, on reduced wages and operated three to four days per week until May 1, 1922. From that date until the present time they have operated six days per week, with a car supply averaging for that period only 60 percent; this six-day per week operation is due entirely to the storage yard.

Regardless of the many mines that went into the production of coal, the one great and that always controls the operator and the miner is that of "We railroad cars." The fact that the Composer's new position should give careful consideration to the short-

*Engineer, Black Diamond Collieries.
COAL AGE

Vol. 22, No. 23

A storage yard of this kind at the mine is a benefit to the operator and miner, it is an assistance to the rail-
road company upon whose lines it is located, and it is indirectly an aid to the public. Its advantage to the operator is self-evident, for by giving practically continuous operation it materially reduces his costs of operation, maintenance and overhead; it aids the miner by assuring him of regular employment, and these mines have found that this advantage to the mine worker is a benefit to the operator also in that steady employment attracts the best laborers—the men who want to work six days per week, and who save their money, the laboring men that can go to the pay window with a smile and be greeted with a smile, for most operators now realize that the man who draws good pay and saves it is by far the best workman. The storage is an aid to the railroad and to the public in that no matter how late empties are placed, they can be loaded out that day, thus giving a quick turnover of the empty cars.

In the month of October these two mines, for they are small operations compared with the big producing mines of the North, produced a total of 25,990 tons of coal: 21,258 tons was shipped, 7,836 tons was placed in storage, and 3,998 tons was loaded out of storage and shipped. In fact the 11,834 tons of coal was handled by one of the two cranes. This tonnage was handled at a cost of 0.063¢ per ton, including the cost of operating and maintaining the locomotive, the "six spot," which of course paid its way in the handling of railroad cars alone, as you can see from the chart that it placed empties by going to the "Y" after them instead of waiting until the railroad crew finished other switching and was able to place them. The storage-yard cost on the whole mine tonnage was 0.037¢ per ton.

The cost of the installation of this storage was, in round numbers, $10,000 for pits, railroad tracks and the experiment with the derrick. The pits are concrete, A being 44 ft. long, 22 ft. wide and 8 ft. deep, with a trestle so that railroad hopper-bottom cars may be dumped if necessary, whereas the two pits at B, one on each side of the track, are 120 ft. long, 10 to 12 ft. wide and on an average 4 ft. deep. Concrete retaining walls hold the track between these pits.

Fortunately this coal has so far shown no signs of heating. Thermometers are kept in the stockpile at all times and are read at regular intervals; the coal

WITH A PILE LIKE THIS ON HAND THE RAILROAD NEVER PLACES A SINGLE CAR IN VAIN

Any slack car which is not filled out under the derrick can have its quota completed at this stock pile and so can be billed out and if cars are put in so late that they cannot be loaded that day from the mine, the slack pile is handy and the railroad may
is piled to a maximum depth of 30 ft., and the highest temperature so far recorded has been 96 deg. F. On Oct. 31, 27,000 tons of coal was in stock, with room for approximately 13,000 more tons, for the yard has a maximum capacity of 40,000 tons.

RELYS ON EXPERIENCE, DESPITE CAR SHORTAGE

Some may wonder how this company expects to dispose of this storage coal without loss with the present railroad car supply, which, in fact, seems to be getting worse instead of better. This company is relying on its past experience, for on Dec. 1, 1920, this yard had 13,000 tons of coal, and on Dec. 24 it was bare, ready for the shutdown of Jan. 1, 1921. This coal was moved at a good profit. What has happened in the past is quite likely to occur again. In this connection it may be said that for accounting purposes this coal is credited to the mines as if it was sold at the cost of production and storage, and when moved a loading charge is deducted from the selling price.

Of course all mines do not have ground available that can be used for the storing of coal, but where it is possible to put in a storage yard with equipment that can handle the mine or mines at their full capacity for a day’s running time, it is a paying investment, even if the coal is finally moved only at cost. The profit is in steady operation, in a better class of mine labor, in better satisfied men and in a good organization that will hold together for the better times ahead.

Springs Steady Gate Hooks of Horn Dump

BY CECIL ROWE

SOMETHING when using horn dumps the bugs of the endgate of the car fail to engage in the stirrup or lifting hook, allowing the car to tip over without the endgate being opened. When the cars used are large and the material to be dumped is heavy, the contents come against the door with much force and several men are required to pry it open. In consequence much time is lost at the tipple. To overcome this difficulty two devices have been used. In Fig. 1 the pivot to engage with the end lugs of the door was held from swinging by placing a helical spring on either side as indicated. In Fig. 2, which was for a different style of car, the stirrup was held in place by a piece of spring steel securely fastened to the top timber by bolts. The device shown in Fig. 1 was found to be much more satisfactory than that shown in Fig. 2, for the helical springs steadied the shock of dumping much better and for a long time continued to return the stirrup to its normal position. The spring steel shown in Fig. 2, soon became distorted, making a frequent change of that part necessary.

[Diagram of gate hooks and explanation]

LEGISLATION EMPOWERING THE ADMINISTRATION PLAN for the reorganization of the government’s executive machinery probably will be introduced during the December session of Congress. If the draft of the bill cannot be perfected in time to ensure action during a session which necessarily must be devoted largely to appropriation bills, it will be taken up at an extra session which it is believed will be called next spring. It is understood that the administration bill will not provide for a Department of Public Works. There will be a reorganization, however, of public works activities under an assistant secretary.

[Chart of operation for October 1920: "Six-spot" is the locomotive of the coal company which operated in keeping the mine in operation. It will be noted that only nine days in the month were sufficient work to hand to carry the mines.]
How to Make Stubborn Pumps Pick Up Water

By JOHN WALL, Sr.

In MANY mining districts of the United States are small and comparatively few mines that cannot or think it unnecessary to afford a complete mechanical department. In those the pump tender is held more or less responsible for the successful operation of the pump or pumps under his charge.

Nothing perhaps causes so much annoyance in the operation of gathering pumps as a failure to advance them as the workmen extend. In consequence the tail pipes often become excessively long. Furthermore, in pumping from working places on foot, it is necessary to run the pump for some time in order to insure that the place be thoroughly dried. A stop valve is used, however, in each suction line.

In order to operate gathering pumps successfully under the conditions mentioned and yet run the pump until the limit of suction is reached, better method probably can be defined than to connect the water cylinder and tail pipes with the permanent spraying system by small pipes having stop valves. The pump and tail pipes usually can be primed at any time, and to insure that the pump will not "lose its water," also to prevent injury to the packing in case the pump is allowed to run on air for a long time, a stream of water can be allowed to enter the pump, continually from the spray line or the discharge line, and the suction line can be connected by a small bypass with a stop valve.

But it sometimes happens that no provision is made for priming the pump and keeping it primed, and the pump is then put to his "wits' end" and to get the pump to "pick up its water" if the pump valves and packing are in doubtful condition they should be tended. They may need scraping and greasing or turning over. This attention soon help much to make them seat properly.

Use Short Siphon for Priming Pump

When it is known that the pump is in good condition and that the only disadvantage under which it is laboring is the length of suction line, the latter may sometimes be partly filled by siphoning from a suction vessel near the pump. The pump draws water through this vessel and is stopped as soon as the tail pipes are filled almost to the level of the water supplying this vessel.

Another way of helping the pump to get into effective action consists in allowing the nozzle of a suction line, where it is long, to get water and air alternately at short intervals until the pump "catches" and "holds" the water. The principle used probably is that of the air lift, the atmospheric pressure is able in support is higher, making up gas and water than if only water was allowed to enter the suction column. The nozzle should be so arranged that it can always be lifted above the water, large curls attached to rigid pipes should have a chain attached; the latter should be swung over a pulley and a swivel joint used in the pipe line so that the nozzle can be lifted for inspection or air scaring.

The pump works on the principle that the difference of pressure between that end of the water cylinder that is connected with the suction, and the outside atmosphere, forces water through the suction line and into the pump. In common sifting practice this pressure is applied gradually as the water cylinder, valve chambers and suction pipes become depleted of air by exhaustion; but by suddenly applying this difference of pressure, wonderful results are obtained in overcoming the obstinacy of pumps to the "picking up of water."

Some station pumps that are provided with large pipes are shut down during week-ends and if the pump is not careful to make the last run on clear water and shut down before the pump gets on air, he is likely to have much trouble on Monday morning.

I remember being called to assist in priming a large triple plunger pump that had been closed down during a weekend and had lost all water both in the suction line and the discharge column; the valves were dried out and warped, and a crew of men had to carry water from the pump 100 ft. distant for two hours before this pump could be made to do its duty, although it had only 100 ft. of tail pipe and a 4-ft. lift.

Some of the mine officials were much concerned, as this trouble seemed likely to occur weekly. The assistant superintendent accidentally hit on the plan of applying the atmospheric pressure suddenly, as just stated, and the results have been most gratifying. I have tried the kink myself on many occasions. Even when the pump had been operated by ordinary methods without success until the water cylinders became warm and so long that any mechanic would have pronounced the attempt hopeless, this method never failed provided the pump valves and packing were in good order.

The method, which is as follows, requires a valve in the suction line close to the pump: Start the pump with the valve on the suction line open. Allow the pump to run until little air is being discharged from the waste or starting pipes. Then close the valve on the suction line and allow the pump to run from 5 to 10 minutes longer. That period over, open the valve on the suction line very quickly, then watch the water come. I tried this method also on a large 10x18-in. triple plunger pump with 400 ft. of tail pipe, an 11-ft. lift and no priming water. The pump had a reputation for obstinacy but it was pumping water 15 minutes after starting and the pump mentioned earlier as causing so much trouble can at any time after a weekend shutdown be made to operate successfully without priming in from 15 to 20 minutes.

In the General Study of the heat of distillation of coal, being conducted at the Pittsburgh (Pa.) Experiment Station of the U. S. Bureau of Mines, the problem of the effect of the inert atmosphere in which the distillations are conducted has been studied. In a series of special tests, atmospheres other than nitrogen and hydrogen were tested. Illinois coal which gave 60 c.c. of gas and an exothermic reaction of 22.5 cal. at 600 deg., in nitrogen, gave, in hydrogen, an endothermic reaction of 12 cal. with gas absorption amounting to 60 c.c. All other coals of the series gave gas evolution in nitrogen and gas absorption in hydrogen. This means that the net reaction heat during distillation is dependent on the partial pressure of hydrogen in the reaction products. This heat effect with hydrogen is regarded as the most important development of the whole research.

In the course of tests made at Pittsburgh, Pa., by the U. S. Bureau of Mines, lignite char has been found to burn to a gas containing a higher proportion of carbon-monoxide than that from coke. To determine if this relatively high carbon-monoxide content with lignite char is to be attributed to the smaller size of the char, coke of the same size as the char will be burned on the next tests.
Safety Precautions at Dolomite Prevented Explosion From Killing All the Men in That Mine

Blast Took Place in Intake Airway and Burned Tipple Roof a Long Way from Mine, Yet Spread Over Only a Limited Area of the Workings, Thanks to Safety Provisions

By H. S. Geismer
Birmingham, Ala.

LOCAL dust explosion caused by three cars running wild down an 880-ft. 30-deg. slope resulted in the death of ninety persons and the injury of fifty-five more at Dolomite No. 3 mine of the Woodward Iron Co., near Birmingham, Ala., Nov. 22, 1922. The coal seam which the mine develops is flat but it is approached by a steep slope which serves as an air intake and double-track haulageway to the outside. The trip of cars broke loose at the tipple—a revolving dump handling the cars without uncoupling—and ran back into the mine the full 880 ft. without jumping the track. The gathering sidetrack is about 300 ft. from the foot of the slope. One of the cars ran into the loaded cars standing at this sidetrack, the rest of the cars being scattered along the empty track and badly shattered in consequence.

The explosion occurred almost at the foot of the slope and must have been caused by a cloud of dust stirred up by the runaway cars. The dust was ignited either by a flash caused by the cars coming in contact with a 3,300-volt feeder cable suspended along the side of the slope or else by a flame from the 250-volt trolley wire that the wrecked cars pulled down from its supports. At times the mine generates a little gas in its advanced workings but none could have been present at the point of the explosion, as it is directly in the intake current, where 60,000 cu.ft. of fresh air enters the mine. The explosion traveled back up the slope, coming out of the mine mouth and setting fire to the timber work on top of the tipple. It also traveled into the mine along the main haulageway a distance not to exceed 1,000 ft. To the right of the main haulageway a few brattices were destroyed and to the left of that roadway the explosive force traveled several hundred feet.

The lead-covered feeder cable from the outside is carried down along the side of the slope to a substation a few hundred feet inside of the foot of the slope. Most of the machinery in this substation was damaged by the explosion and the mine fan at No. 2 airshaft, which ventilates this mine, was shut down when the current went off. This fan is equipped with an auxiliary gasoline engine and within three minutes after the explosion the fan resumed operation, and ventilation throughout the mine was immediately established except in a restricted area where the brattices were destroyed.

The explosion occurred about 3 p.m. and by midnight all the bodies had been recovered and the mine was in practically normal condition.

Of the ninety killed, probably about two-thirds met death instantly, the others being killed by afterdamp. Every inside foreman, including the master mechanic, the motor inspector and the section foreman, lost his life. Four hundred and seventy-five men were in the mine at the time of the explosion and the loss of life from afterdamp would undoubtedly have been much higher but for the number of exits that the mine contains.

The seam was originally opened forty-two years ago with No. 1 slope; this was later followed with No. 2 slope and the workings were connected. Later No. 2 airshaft was sunk to reduce the air travel, and this was followed a few years ago with No. 3 rock slope, where the explosion occurred. The connected workings extend several miles along the outcrop of the seam and have penetrated about four miles at right angles to the outcrop.

In all the forty-two years of operation no explosions have occurred. Open lights are used by the miners and electric haulage equipment and mining machines are installed throughout. Gas occasionally is encountered.
are no large cracks in them through which coal can leak to be scattered along the haulageway.

Dolomite mines are within four miles of Ensley and Bessemer and not more than twelve miles from Birmingham, which accounts for the large crowds that were on hand within a few hours after the explosion. Before nightfall all the roads leading to the mines were blocked with automobiles, and a company of the Alabama National Guard, assisted by deputy sheriffs, was needed to hold back the sightseers and the anxious friends of those inside. All the officials of the Woodward Iron Co., from President Frank H. Crockard down, were on hand and remained until every man in the mine had been accounted for. They were tendered the assistance of more trained rescue men than they could use. This is the first large explosion that has occurred since the Alabama Workmen's Compensation Act of 1919 went into effect.

Large Trolley Wheel for Heavy Current

Recent tendencies in mine-haulage practice are toward the use of larger and larger locomotives which can handle correspondingly heavy trips. This, of course, means heavier currents to be collected from the trolley line, and to meet this condition the Ohio Brass Co., of Mansfield, Ohio, has brought out a 6-inch trolley wheel and a 6-inch harp.

The wheel is made of bronze and has a graphite bushing. Around the bushing is a reservoir filled with grease at the factory. The harp collects the current from the wheel through phosphor-bronze contact springs. The pivot is set forward of the axle so that the harp trails freely.

A self-aligning harp made in both the 4- and 6-inch sizes has also been developed and placed on the market. A spring brings the fork casting into line with the pole head when the wheel is not on the wire. This simplifies the task of replacing the wheel in case of dewirements and also enables the harp to operate especially well through frogs and crossings which are in many instances the cause of much annoyance to the motorman.
Humidifying Air Currents in Mines in Utah

The Utah Mining Law and State Industrial Commission
— Efforts to Reduce Danger of Mine Disasters
— Requirements of the State Mining Law in Regard to Dust

In conversation with a friend, a short time since, mention was made of the progressive character of the mining law of Utah. The law was described as being particularly enlightening and containing stringent and true items designed to make mine disasters less frequent, if not impossible. In that connection, allusion was made to the efforts of the State Industrial Commission.

A little later, being interested in the subject of humidifying mine air, as recently discussed in Coal Age, I looked up the Utah regulations pertaining to the wetting of mines in that state. In the revised statute of 1898, I found (Sec. 1516) the following reference to the question of watering:

"Water system: Every owner, agent, manager or lessee of mines within the State of Utah shall provide and maintain a water system for the purpose of conducting water to the face of each and every working place and throughout the entire open part of the mine, in sufficient quantities for sprinkling purposes to wet down the dust that shall arise and accumulate in and around the mine: provided that in mines or parts of mines where, by reason of the conditions of the mine, moisture derived from the introduction of steam into the air current or both, such sprinkling shall not be necessary. And it shall be the duty of the superintendent, mine foreman and inspector to see to it that this is done."

In addition to this, I found that the Industrial Commission had issued certain "safety orders." After drawing attention to the requirements of the state laws, among the electric fan system just given, the circular of the commission continues as follows:

"It is further ordered that when and if requested by the mine operator, mine superintendent or foreman, or when conditions warrant, by the Industrial Commission, the water system be so designed that a hose of sufficient length provided for each working place can be paid out on the working place, so that the miners can keep their own working place wet for a distance of at least 50 ft. back from the face. Also, such hoses shall be provided by the operators for each and every miner who may make request therefor.

"It is further stated that, when the miner has requested the hose, it is his duty to keep his place wet. Further, "that any person who shall by act of omission or willfully damages any part of a sprinkling system or is guilty of any violation of this law creating the industrial commission."

Not long ago, in an address describing the mining of coal in Utah, Chief Engineer, A. C. Watts, of the Utah Fuel Co., spoke as follows:

"Not the least among mine-safety precautions are the electric fan systems, used in many of our mines, and the sprinkling system. Both of these systems were used by the Utah Fuel Co., as far back as 1889, or 1890, in its Castle Gate mine. At that time, the officials of the company became convinced that coal dust would explode without the presence of air. In order to eliminate the frequency of local dust explosions, the management caused all shots to be fired from the outside, by electricity.

INSTALLATION OF WATER SYSTEM AND SPRINKLERS FOR WETTING DUST

"As a further precaution, a complete water system was installed in the mine and sprinklers were employed to thoroughly wet down the dust. The intake air was also humidified by means of an atomizer, using steam to atomize the water. Later, a state law was enacted making sprinkling compulsory in all mines not naturally wet. In complying with this law, the common practice is to use hose, short lengths of which are attached to the pipe system or other source of supply."

"It is the custom in our mines to flatten the end of the hose with a stiff wire, so that the water issues in a thin wide spray. In this manner, the sides, roof and floor of all roads and passageways are thoroughly wet down and kept wet. Our company has adopted the plan of running the water pipes up each room and supplying the miners with hose, 20 or 25 ft. long, which are kept attached to the ends of the pipe line. Each miner is required to keep the cuttings and dust in the place thoroughly wet.

WATERMEN EMPLOYED TO SPRINKLE ALL WORKING PLACES

"In one of our mines, the men are required to sprinkle every two hours. The machine cuttings are carefully piled up, wet down and loaded out in special cars. When these cuttings do not make a full car, minor-coal is added to top off. The sprinkling of the rooms is not left entirely in the hands of the miners, but regular sprinklers or watermen are employed to wet down the rooms also. It is customary to wet the cuttings of mining machines while the latter are being run."

"Only the other day, I was asked how much water was needed to make the mine safe. Now, I will not claim that this wetting can make a mine absolutely safe; for that word must be used conditionally. However, after some figuring, I estimated that we require one gallon of water for every 100 sq. ft. of surface, three times a week, in order to keep the dust in a wet condition.

"We consider that the dust is wet down when it will ball up, or being squeezed moderately in the hand, will show the imprint of the fingers. Some of the mines make enough water, in certain sections, to sprinkle other sections that are dry; and the necessary connections are made to utilize the inside pumps. In all cases, however, connections are reinstated with the outside pumps, so that, in case of fire, it will not be necessary to depend wholly on an inside pump, which might not be available at the time. Many mines turn exhaust or live steam into the intake during the night."

It has occurred to me that these remarks and references to humidifying in the mines of Utah, are of interest to coal readers, in connection with the discussion to which I have referred.

CHARLES M. STODDARD

Underground Official Positions

RESPONSIBILITIES OF MINER, SUPERINTENDENT AND OTHERS—WHICH FIREPLACE DUTY IS MOST IMPORTANT?

Wheq writing on the subject of "Where Coal Mining Pracres Could Be Materially Improved," William Allan has drawn attention to several points where mining industry is more or less fallible, both in practice and equipment.

At the close of his article, Mr. Allan has incidentally called attention to a question that most interest all America. The question is supported by the offering of a prize, by a large mining company in England, for the best answer to the question, "What is the most important job on the colliery?"

Now, every mine official has his own particular part to play, and his own work to perform to ensure the safe and economical operation of the mines: the man who makes the coal and those who sell the coal are, of course, the most important in the mine.

With regard to the underground official in the mines, the peculiar and fatiguing duties of the foreman and miner, it must be acknowledged that the superintendent in the responsible head who must answer to the owner or employer for every transaction in the mine.
Self Interest Is Chief Bar to Active Cooperation

Previous cooperation of employees

Self interest, the dominant factor—

Access attained in proportion as this principle is recognized.

Many suggestions have been made, from time to time, by workers in Coal Age, in regard to different methods of securing the cooperation of employers to make the business more profitable. It has been urged that mutual benefit can be derived by mine officials setting their men regularly for the purpose of discussing subjects pertaining to their work.

The aim in such meetings would be to establish familiar social relations between the officers and men. Most mining men recognize that many suggestions of practical utility and value can be obtained through an open discussion of the problems that daily arise in the mines. It is generally admitted that this social intercourse will produce kindly feelings and result in the active cooperation of every worker.

Enlisting Men's Interest

In order to succeed along these lines, however, the first essential is to enlist the interest of the men. An interest in the success of a co-operative effort will do more toward securing their hearty co-operation in the performance of each one's part in the work. Otherwise, efforts in this direction will fail, as has been proved time and again in similar undertakings.

It will be generally admitted that the determination of the class of industrial workers depends primarily on the amount of remuneration received for the work performed. On the other hand, the chief interest of the employer lies in the profits derived from the business. In each case, it is evident that individual, selfish interest is the determining factor. Herein lies the basis for the antagonism that so largely prevails between employers and their employees.

Now, the common acceptance of any industrial enterprise is that it is the indispensable property of those who have invested their money in the undertaking. The paid employee, whether working on a wage or salary basis, is considered merely as an auxiliary factor whose interest begins and ends with the remuneration he receives for his services.

Wages and Profits of Business Diametrically Opposed

But, without calling into question the truth of this acceptance, it is quite evident that such a doctrine absolutely removes the worker from manifesting the most interest in the economic welfare of the industry. In those having a definite monetary interest, the two factors being diametrically opposed, make a clash on this basis almost inevitable.

A broader acceptance of industrial economics, however, has demonstrated that greater material benefit results, both to the industry and the community it serves, when the conservation of the energy of the worker is desired. This knowledge has given rise to much judicious welfare work on the part of large employers of labor.

Nevertheless, however, beneficial these efforts may be, they fail far short of engendering any permanent personal interest in the daily operation in which one is employed as a factor. Too often, the welfare work of large companies is regarded, by their men, as a matter of policy rather than one of principle, and a harmful suspicion lurks in the mind and renders these efforts abortive.

Old Relations Giving Place to New Assures Industrial Peace

The present industrial crisis demonstrates clearly that the old principles of relationship of employer to employee must give place to one of mutual dependence, before any permanent industrial peace can be assured. The assumed independence of capital and dependence of labor, by keeping with the principle of equal rights, which is the foundation of our government.

Briefly stated, success in industry depends on the hearty co-operation of every factor in the undertaking; and such co-operation cannot be secured without a mutual recognition of the independence of labor, and, by keeping with the principle of equal rights, which is the foundation of our government.

So deeply does the element of self interest enter every undertaking, that the problem of securing industrial peace must be approached at this point. Only in proportion as this principle is recognized will success crown our efforts to promote harmony and bring about peace and prosperity in business.

Every Worker Should Feel Himself Part of the Business

Every wage earner must certainly be aware of the fact that if the business in which he is employed is a financial success, he is assured steady employment. This knowledge should be a sufficient incentive to him to insure his hearty co-operation and efforts to make the undertaking profitable. It should make every worker work as though the business was his own.

Much has been said about the application of the Golden Rule in business. I regret to say that, in the present and past history of industrial relations, the Golden Rule is recognized more in the breach than in the observance. Unfortunately, for industrial peace and prosperity, the moral sentiment of mankind is yet in its infancy.

Speaking of practical suggestions for improvement as coming from the men, it is well known that these suggestions are always recognized as to which they are given. Many practical and industrial workers are reluctant to suggest a new plan or method of performing their work, fearing that this would be regarded as reflecting on the present management.
Too often, it must be acknowledged, that men who have expressed their honest and practical opinion, in all sincerity and good faith, have found themselves marked down by some one higher in office, who may fear their ascendancy in the scale of promotion.

On this account, it is not strange that many workers regard well meaning efforts on the part of the management as schemes to trap the credulous. The credulous are invariably a class comprising the most honest and industrious workers who have the best interest of the operation at heart and who would, if given opportunity, prove themselves progressive factors.

GLEN GLONN.
Washington, D. C.

America a Modern Utopia
The ideal in life the beacon light ahead—Ideals spur to action by which worth-while deeds are accomplished.

PRIMARILY, Bolshevism was reared in Russia, under the crude teaching of Lenin & Trotsky, and the transition that has taken place from the first upheaval till now is nothing short of remarkable. It is an attack on corruption, oppression and brutality, the people, ground between the upper and nether millstone of monarchical austerity and political greed, groped for light in an effort to work out their own salvation.

The struggle has been that of a downtrodden people who had to grapple with a brutal and hostile world—hostile at least to their ideals—with which, at no far distant day, I believe the world must conjure.

It was not Lenin or Trotsky that caused this enormous upheaval. It was the ideal that shone as a beacon light at the end of the struggle. Washington and Lincoln, today, are not revered so much for what they did as for the ideals for which they strove. Every worth-while accomplishment is only made possible by the ideal that shines as a beacon ahead.

IDEALS THAT HAVE NEVER BEEN REALIZED IN ANY LAND

From the latter end of the fifteenth century when Sir Thomas More wrote his "Utopia," philosophers down through the ages have conceived ideals for which, like Sir Thomas, they have suffered martyrdom. But, the world is better today for those ideals.

Sir Thomas More's "Utopia" (Good Faith) describes an imaginary commonwealth that inhabited an island. The people lived in peace and harmony through the practice of their ideals. It was accounted piety to prefer the public good to one's private interest. To seek one's own welfare at the expense of another was unjust and a crime.

Can we hope that this picture of tranquil life is a foretaste of the future of this country? It must be admitted that our economic condition, as present, is not a happy one. It is rather a reflection on our boasted enlightenment. Hoarded wealth and absolute penury are next-door neighbors. On every hand, affluence and plenty are in sharp contrast with everlasting grind and want.

Reflecting on this present state of affairs we are led to ask ourselves, is this in keeping with our boasted ideals that "All men are created free and equal?" Communism, in the generally accepted meaning of the term, may be all wrong; but the ideal of human brotherhood and equal rights can never go wrong. Such ideals train men's minds to a higher plane of living and open to us view vistas of America as a modern Utopia.

While there are dishonest men in all phases of industrial activity, the vast majority of our fellows are honest and painstaking, while grasping for the light of progress in their efforts to "Make trade a Christian possibility. And individual right no general wrong."

ALEXANDER BENNETT.
Panama, Ill.

Inquiries
Of General Interest

Developing a Steeply Inclined Seam of Coal
Main slope driven three or four abreast; on the full dip of the seam—Gangways or levels turned right and left on the strike.

HAVING in hand the development of a steeply inclined seam of coal, varying in thickness from 8 to 10 ft., roof to floor, I am desirous of ascertaining the best plan to adopt, looking to the economical extraction of the coal and operation of the mine.

The inclination of the seam varies from 42 to 45 deg. from the horizontal. The topography of the ground is such that I could drive a 20-deg. slope, on the strike or end of the coal, and proceed with the development in that way. Although the plan does not appeal to me as the best one to adopt when taking all into consideration. I want to ask, would it not be more economical to drive a double-compartment incline on the full dip of the seam and use cages or skips having a capacity of, say, two cars of coal? I should be pleased to have the friendly suggestion of Coal Age and its practical readers in regard to this problem.

R. E. RUSSELL.
Evanston, Wyo.

The meaning of this correspondent is not clear in respect to the proposition of driving what he terms a 20-deg. slope on the strike or end of the coal. This statement would seem to suggest that the seam outcrops or reaches the surface along a line having an inclination of about 20 deg.; and it is proposed to drive the main slope heading at some distance inside and parallel to this cropping.

Such an interpretation assumes that the term "strike" and the expression "end of the coal" are used by the correspondent in a general way. The strike of a seam being level, it would not be possible to drive a 20-deg. slope on the strike. Again, the expression "end of the coal" is generally used in reference to the butt or end of the coal.

The proposed driving of a 20-deg. slope, in the manner suggested, does not appeal to me as a practical proposition in the working of this seam. In general, the main heading in the development of a highly inclined seam should be a slope driven on the full dip of the seam. In a large development, the main slope headings should be driven three or four abreast so as to provide separate return air-entries for each respective side of the mine, the center headings being made for the main haulage road and shafts.

To the right and left of these main slope headings, gangway levels are driven at such distances apart as will provide a suitable length for the elevator cars driven up the pitch from the gangways. The gangway levels are driven in pairs, one entry being the haulage road and the other the air-source and drainage level.

At the mouth of each level, there must be arranged a landing where the cars can be ran on to the platform of an incline cage operating in the main slope. The cage can be arranged to hold two cars at a time if desired. Some prefer self-hauling skips into which the cars are dropped at each landing and at the mouth of the mine. This, however, necessitates handling the coal twice and is not recommended if the coal is soft and easily broken.

Cost of Sinking Slope
Length of slope: estimated from the vertical fall on a given inclination.

Calculating the amount of material extracted.

I HAVE been asked in an inquiry to compare the cost of sinking a slope 8 x 10 ft. in section. The slope is driven at a 25 per cent grade and has a total fall of 40 ft.; but the length of the slope is not given. Kindly explain how the cost of sinking this slope can be calculated.
Examination Questions Answered

West Virginia Mine Foremen's and Firebosses' Examination, Charleston, 1922

Selected Questions

Question—Draw a diagram showing the shape of the coal mine that would be required to mine 100 tons of coal per day. Assume that the coal seam is horizontal and 10 ft. thick. The width of the coal seam is 20 ft. The height of the mine shaft is 100 ft.

Answer—The mine should be a deep shaft with a vertical shaft and a horizontal drift. The shaft should be 100 ft. deep and the drift should be 200 ft. long.

Question—What is the maximum distance that a shaft can be sunk without support? Assume that the coal seam is horizontal and 10 ft. thick.

Answer—The maximum distance that a shaft can be sunk without support is 100 ft.

Question—Calculate the volume of air required to ventilate a mine with a ventilation rate of 6,000 cubic feet per minute. Assume that the mine is 1,000 feet long, 200 feet wide, and 100 feet deep.

Answer—The volume of air required to ventilate a mine with a ventilation rate of 6,000 cubic feet per minute is 6,000 cubic feet per second.

Question—What is the maximum weight of air that can be safely handled in a mine? Assume that the mine is 1,000 feet long, 200 feet wide, and 100 feet deep.

Answer—The maximum weight of air that can be safely handled in a mine is 6,000,000 pounds.

Question—What is the maximum weight of air that can be safely handled in a mine with a ventilation rate of 6,000 cubic feet per minute? Assume that the mine is 1,000 feet long, 200 feet wide, and 100 feet deep.

Answer—The maximum weight of air that can be safely handled in a mine with a ventilation rate of 6,000 cubic feet per minute is 6,000,000 pounds.

Question—What is the maximum weight of air that can be safely handled in a mine with a ventilation rate of 6,000 cubic feet per minute? Assume that the mine is 1,000 feet long, 200 feet wide, and 100 feet deep.

Answer—The maximum weight of air that can be safely handled in a mine with a ventilation rate of 6,000 cubic feet per minute is 6,000,000 pounds.

Question—What is the maximum weight of air that can be safely handled in a mine with a ventilation rate of 6,000 cubic feet per minute? Assume that the mine is 1,000 feet long, 200 feet wide, and 100 feet deep.

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Answer—The maximum weight of air that can be safely handled in a mine with a ventilation rate of 6,000 cubic feet per minute is 6,000,000 pounds.
Kennedy Predicts Coal Famine in New York; Learoyd Says Danger is Past

At a joint meeting of the Women's City Club and the City Club of New York held in the Town Hall, New York City, Nov. 27, Thomas Kennedy, chief of District No. 1, United Mine Workers of America, declared that New York City will be facing a coal famine after the first big snow or snow storm.

Mr. Kennedy said he had just returned from an inspection of the mines and that a famine may occur. "The railroad strike has tied up the coal cars, notwithstanding all reports to the contrary," Mr. Kennedy declared. "The railroads are not able to haul the coal from the anthracite region, and with the first big snow or snow storm New York City will be facing a coal famine."

Arthur S. Learoyd, Assistant State Fuel Administrator, had declared previously that, barring a catastrophe, New York City would be able to pull through without a famine. There is no shortage now, he said, but the coal received is of poor quality. He said he looked for the supply to increase from now on, because the transportation situation has improved and coal arriving at this port cannot be shipped to distant points in winter.

Mr. Learoyd outlined the activities of the State Fuel Administration to control an equitable distribution of coal and eliminate profiteering. He said that the State Fuel Administrator had no control over mine prices, which were the basic source of the cost of coal to the consumer.

Mr. Learoyd said that under the direction of the State Fuel Administrator an auditing firm has examined the books of twenty dealers in New York and as a result of their examination had discovered only two cases in which a question regarding the fairness of prices arose. These questions, he said, involved only 50c. of the price and were based on varying opinions as to the propriety of the amount.

Senator Borah of Idaho, who was to have been the principal speaker, was unable to attend. He telegraphed Miss Mary Garrett Hay, president of the Women's Club, who presided.

Daniel T. Pierce, chairman of the general policies committee of the anthracite operators, also addressed the meeting. An abstract of his address appeared in Coal Age last week.

Pennsylvania About to Collect Tax on Hard Coal and $200,000 in Penalties

Following receipt at Harrisburg, Pa., of information that the U. S. Supreme Court had sustained the Pennsylvania Supreme Court, which had held that the 1921 anthracite coal tax law is constitutional, it was announced by Samuel S. Lewis, Auditor General, that he would proceed at once to collect the coal tax due the commonwealth as the result of settlements effected after the companies had filed their first reports during January and February of this year. These reports covered the period from the effective date of the tax law, in July, 1921, to the close of the calendar year of 1921. The amount of tax due for that period was $3,273,310.61. Of this total but $2,288.58 has been paid to the state; having been received from various small coal operators.

A penalty of 1 per cent a month will be collected from those companies which refused to pay the tax pending the appeal. The penalty is collectable sixty days after the date of the Auditor General's settlement, and it is estimated that on the average the companies are six months in arrears and that the total penalty will be between $186,000 and $200,000.

The tax on this year's anthracite production cannot be collected prior to May 1, next, the Auditor General believes. The reports on the production of the anthracite mines during the third quarter of the calendar year are not due in Harrisburg before Feb. 1, 1923. If the companies desire a longer period to which to file they can obtain fifteen days additional by making application in writing. Settlements cannot be made until after the reports are checked up and then the companies have sixty days in which to make payment before the 1 per cent a month penalty becomes effective. It is estimated that the tax will amount to between $6,600,000 and $7,000,000 a year in normal years.

Deputy Attorney General Hall has announced that he will ask the Dauphin County Court to enter judgment against the seventy anthracite companies which have appeal cases pending at Harrisburg. These companies made a stipulation in filing their cases that in the event of the U. S. Supreme Court upholding the State Supreme Court, and the lower court on the question of constitutionality, judgment would be entered and no further appeal would be taken.

This action will leave but a few cases which may be argued before the Supreme Court. The cases of the Philadelphia & Reading Coal & Iron Co., involving over $500,000 in taxes, and of the Mill Creek Coal Co., involving a small sum, decided in the Dauphin County Court a week ago, related to questions relative to the assessment and method of assessment of the tax and other matters not allied with the main issues in the U. S. Supreme Court case.

The Philadelphia & Reading company, it is said, may take an appeal from the Harrisburg decision which held the act unconstitutional, the opinion following the same general lines of that in the original case.

Several other cases, involving the right to tax coal used in production at the mines, the taxing of by-products and of river coal, are yet to be decided by the Dauphin County Court.

A tax of 12.5c a ton on domestic anthracite coal will result from the tonnage tax, according to a computation made by the General Committee of Anthracite Operators.

"Based on the value of anthracite production in 1921, $442,924,084, this tax would amount in 10,047,001," says a statement of the operators.

Two companies shipping to Philadelphia have increased the prices of broken and cpr coal 10c. In 70 per ton and on other domestic sizes 10c.

Navy Asks Bids for Coal Needs Till June 30

For Ships and Philadelphia Navy Yard

Bids on coal needed by ships and the Navy Yard at Philadelphia, Pa., during the remainder of the fiscal year, which ends June 30, 1923, are asked by the U. S. Navy Department. The coal must be best quality blending coal or substitute run-of-mine with at least 40 per cent lump, suitable and authorized for the naval service and must be furnished from cars on the Navy Acceptable list. Coal must be reasonably dry and practically free from slate, dirt, sulphur and other foreign substances, subject to the usual inspection and tests, and must weight 2,240 lb. per ton.

Tenders for ships' use are divided into three classes. Class 1 is for 15,000 tons, to be delivered in New York Harbor between Dec. 15, 1922, and June 30, 1923. Class 2 is for 4,000, to be delivered monthly at Philadelphia—during January, 1,000 tons; February, 1,000 tons; and March, 1,500 tons. Class 3 provides for 100,000 tons delivery to be made at Hampton Roads, Va., between Dec. 16, 1922, and June 30, 1923.

For the Philadelphia Navy Yard, 7,000 tons in all, or 1,200 tons needed between Dec. 15 and June 31, 7,000 tons between Dec. 15 and March 31, and 30,000 tons between Dec. 15 and June 30.

APPRAISAL OF THE COUNSEL'S WORK AFTER THE Wikipedia article on the case was published, several changes in the story were made. A few minor changes drift back to work right along and the output increasing the shortage of navy being quite a deterrent. The holiday being cut out meant not so much, quite a little. A few articles and the like, the only those in early Sunday morning, that is, when the double houses and the Republic played for the New England Steel Co. was literally down in places and two hundred hurt, who are now in the Brewer House. Two other men, a woman and several children received little besides. The Brier Hill Coal Co. has suspended operations indefinitely in order to install some new equipment.
Illinois Mining Institute Wrestles with Mine Power Problems: 72 New Members

What is the best kind of coal fired under a coal mine's tunnel? Can the cost of the country standardize an adequate method of comparing this coal? In what sort of test should mine power be measured? How should it be distributed between the two systems? These and other questions were asked of Mr. C. H. Girard, the new president of the Illinois Mining Institute, by thirty-two students meeting at the University of Illinois, during the annual meetings on Friday and Saturday, Dec. 1 and 2, and work back to the mining fields of the state with some new ideas to think over.

The conference was opened by a paper read by A. J. Holm, research assistant professor of mining engineering at the university, who had been making an exhaustive study of the physical selection of mine power under the co-operative agreement between the university, the state and the U. S. Bureau of Mines, and who, having encountered all sorts of difficulties which he knew in advance he was going to meet, had the problem before the Institute and asked for suggestions just as he was laying the same plans for measuring the same amounts. In addition, at the meeting the Institute heard a discussion by Harold E. Culver, who is also working under the co-operative agreement. Mr. Culver is trying to work out a method of testing coal using coal deposit in the state, his research thus far leading him to suspect that the "well-known" coal measures of the region may not be so well known as they will or may be much more constant in coming years' minds. J. C. Quade described, with the aid of a projecting lantern, the new No. 1 Mine of Rig Creek Coal Co., Inc., the company of which he is chief engineer. All this took place Dec. 1 in the student union building at the university.

That night the Institute banqueted, with John G. Milliken, research assistant professor of mining engineering, "speaking" by William Hall, Thomas Hinch, J. E. Myron (who is a member of the miners' union), P. F. Jensen and Martin Bock. The well-known miner's song, "The Story of Coal," was shown. The next meeting the Institute members visited the university laboratories and experimental station, where they saw new ideas in coal mining demonstrated and where they got firsthand information about the new Waltz plan for measuring coal, a machine which was developed at the university and whose application to coal recovery is being made by the mining department.

Before the Institute adjourned that afternoon it had decided that it should take a brief trip next summer, leaving the date and plans to be charted by the Institute's executive committee. It was decided that the following members were elected: President, John G. Milliken; secretary, Robert C. Gay; secretary-treasurer, John G. Milliken; treasurer, A. J. Holm; members of the Board of Directors, J. C. Quade, W. A. Hinson, J. E. Myron, J. P. Schilling and the Board of Directors of the University of Illinois.

Midwest Waterway May Be Built

There is much agitation in Mississippi River towns as well as in the principal Eastern and Middle Western cities, to increase the water traffic along the river. The construction of the long proposed waterway from Lake Michigan to the Gulf of Mexico is a project of great importance to the middle West. As the Missouri, Mississippi, and Illinois rivers form a waterway from the source to the mouth of the Mississippi, it is possible to make a new waterway between the two last mentioned, which would be a great boon to the commerce of the United States.

Illinois to all points on the Mississippi River from New Orleans up to Dubuque or farther north. The West Kentucky Coal Co., of Paducah, had arrangements partly completed in September for barging railroad and steam coal to St. Louis, where dock and yard sites were located. Other receiving points were to have been Cape Girardeau, Cairo, Crystal City, East St. Louis, Alton, Wood River and Hannibal. The low stage in the river channel caused abandonment of the project at that time.

Freedom for Howat Unlikely, Though New Officials Oppose Industrial Court

Recent affirmation by the Kansas State Supreme Court of the Cherokee County sentence of August Dorchy, deposed vice president of district 14, United Mine Workers, ends for the time all talk of Alexander Howat, deposed president of district 14, and the other agitators who went to jail with him early this year, being freed. Subsequently, the Supreme Court overruled an application by Dorchy's lawyers for a rehearing, but allowed a writ of error, which will permit the case to be taken to the U. S. Supreme Court. Howat's appeal was handled in a similar manner some time ago, and the United States court decided it had no jurisdiction.

Howat and Dorchy both are now in the Crawford County jail at Girard, Kan., serving sentences of one year each for calling a strike in the Crawford and Cherokee county mines of the Mackie company in violation of an injunction by Andrew J. Curran, judge of division No. 1, of the Crawford County District Court. They already have served four months of six months' sentences in the Cherokee County jail at Columbus, Kan., for violation of the Industrial Court law in connection with the same strike. At the end of the four months they were released pending an appeal. It was while at liberty by reason of their appeal that they were arrested in Crawford County and began serving the sentences which will expire next April. The denial of Dorchy's appeal, following the Supreme Court's act of some months ago in denying Howat's, will send the two men to the Cherokee County jail upon their release from the Crawford County jail, to serve the remaining two months of their six months' sentences.

Howat's and Dorchy's penal history is further complicated by indeterminate sentences by Judge Curran for contempt of court. These are to be served in the Crawford County jail until such time as the two men shall consent to testify before the Kansas Court of Industrial Relations. Unless something intervenes to prevent, they will begin when Howat and Dorchy are released from the Cherokee County jail.

Since the November elections a new movement has developed among labor organizations in Kansas for the release of Howat.

"Labor organizations seem to interpret the election of Jonathan Davis as meaning that Mr. Howat should be set out of jail," Governor Henry Allen said. "I have received numerous requests in the last few days asking that I release Howat. He has been in jail now for more than two months, with no income. If it is to be said that he has been in jail after repeated violations of the Kansas Industrial Court law, for contempt of court. It is within the provisions of the Legislature to repeal this law if it seems fit. The fact remains that Howat was found guilty of violating a state law, and as far as I am concerned he must remain in jail."

Howat sympathizers received no greater comfort from Judge Curran when they approached him a few weeks ago with a petition for the release of Howat and his fellow prisoners on parole. Judge Curran was defeated at the polls in November, and both Jonathan Davis, Democrat, who will succeed Governor Allen, and Daniel H. Wooley, Republican, who will succeed Judge Curran, are avowedly opposed to the Industrial Court law. It is not considered likely that Governor-elect Davis, pitted against a Republican Legislature, will be able greatly to change present conditions. He will, however, have the power of parole, as also will Judge-elect Wooley.
Western Pennsylvania Operators Organize To Assist Commission Probe

Western Pennsylvania coal operators have perfected an organization to map out plans to assist the United States Coal Commission in its investigation of the industry. They held a meeting for the purpose in the William Penn Hotel, Pittsburgh, Pa., Nov. 28. Samuel A. Taylor was chosen chairman and Richard W. Gardiner secretary of the committee.

A committee of five was appointed to represent the various interests at the gathering. C. W. Gibbs was chosen to represent the Freeport Thick Vein Association and M. D. Kirk the Pittsburgh Coal Producers' Association. The independent operators will choose a member and the non-commercial operators a member, and a fifth is still to be chosen. An annual output of about 50,000,000 tons of bituminous coal was represented. The committee to be chosen will co-operate with the bituminous operators' special committee under the auspices of the National Coal Association.

J. B. L. Hornberger, vice-president and controller, announced the withdrawal of the Pittsburgh Coal Co. Mr. Hornberger said, however, his company was in no way unco-operative, and he hoped the work of the national organization of the industry as represented by their bituminous operators' special committee

Operators will be assessed 4 mills per ton of production for the period from October, 1922, to April, 1923, to pay the legal and other expenses incident to the work. John W. Davis, former self-appointed general of the United States, has already been retained as advisory chairman of the national committee. Another of equal ability will probably be employed, it was stated.


Mining Congress to Assist Coal Commission

The American Mining Congress has appointed a committee to co-operate with the President's Coal Commission. The committee is composed of the following; R. A. Taylor, Carl Scholz, J. H. Allport, R. V. Noree, Cyrus Cameron, Howard Eavenson and W. H. Cummings.

Railroads Pledge Co-operation with President's Coal Commission

Any assistance within the scope of the American Railroad Association will be rendered the President's Coal Commission, a large committee of transportation men, in the hope that organization will be continued. The conference was pronounced a complete success. No formal plan for cooperation was adopted. It was generally made clear that the entire transportation must be united in its efforts. R. H. Alden, president, American Railroad Association; Judge R. V. Fichler, Illinois Central R. R.; Pennsylvania R. R.; D. D. Coxe, American Central Association; M. J. Gallahy, American Railroad Association, W. A. Norcloth, Louisville & Nashville R. R., and S. W. New York.
Vol. 22, No. 23

COAL AGE

Shortage of Domestic Sizes of Anthracite

Will Be 40 Per Cent, Says Spens

After a survey of the present coal situations in Pennsylvania, New Jersey and New York, it is apparent that, although there is sufficient coal in the United States, there is a definite and mounting shortage of domestic sizes of anthracite coal. Paul Partsch, C. E. Spens, of the Bureau of Business Economics, has just issued a report on the subject which indicates that the shortage in these sizes, which will amount to approximately 40 per cent, exists at present.

The available sizes of domestic, as well as those of all other anthracite mines, have been allocated to the various states in proportion to their normal consumption, and every effort is being made for equitable distribution along these lines, but the shortage of coal allocated to any of the neighboring states the latter will be short just as much coal, and the effect might be far-reaching, the Federal Fuel Distributor points out. In other words, the situation is general, and attempts at fixing the law into one's own hands will only tend toward the same and shortage all around.

In addition to all of this is the ever-present necessity to provide the consumer with a sufficient amount of substitute substances as soon as possible, anthracite, bituminous coal, coke and wood, Mr. Spens states. There is an ample supply of steam coal. It is a comparatively simple matter for people to learn how to supplement domestic sizes of anthracite with the smaller sizes, and there is no restriction on the amount that may be purchased and stored.

Watkins and Posten Prove Interesting

Witnesses at Assigned-Car Hearing

Rather than interfere with the orderly development of the mines of his company, Thomas H. Watkins, testifying in the assigned-car case, told the Interstate Commerce Commission that he would rather have used one thousand coal cars. The loss of these private cars means a direct loss of $35,000 a year, he ventured. Mr. Watkins said it is profitable to use these because it decreases the losses occasioned by unloading of the railroad companies to furnish cars regularly. Mr. Watkins has been one of the outstanding opponents of the assigned-car practice for many years. His testimony on this subject has been of great importance by the Interstate Commerce Commission in arriving at a decision, as to its right to the President.

E. L. Nowack, president of the New York Coal Co. and of the Interstate Coal & Dock Co., scentedly impressed the audience with his contention that the assigning of cars and keeping them at the alternate point of the rail system should be given to the President.

The railroad companies for all practical purposes have to pay a high rate of interest. He pointed out that only 10 per cent of the car owners are employed in the properties which supply the railroad companies with coal. The remaining 90 per cent of the car owners are engaged in producing the output going to other industries. To the other 90 per cent which includes a high daily wage in the state, over the idle time, much of which is occasioned by lack of cars.

The men in the mines handling railroad fuel, Mr. Posten said, have an annual wage entirely out of proportion to the annual earnings of men in other coal mines and out of proportion to the earnings of the other industries. This is a peculiar case of disassociation of the railroad workers, especially those whose positions require training and skill. They are tempted to seek higher wages by the fact that they are working either in large lower paid mines than they themselves desired.

In answer to questions from the bench, Mr. Posten explained why there is a surplus of coal-mining labor. One of the principal reasons, he said, grows out of the frequent periods of car shortage. During these periods the price of coal goes up to a point where a large number of small mines can be brought into operation. So as to take full advantage of the short time they will have to operate, they offer labor better than the regular scale. He cited this example: A blacksmith who is receiving $8 a day at a well-equipped mine is offered $10 by one of the mines expecting to operate during the period of high prices. As a result the well-equipped mine has to break in another blacksmith. As prices fall the smaller mine closes up and its blacksmith is looking for a job.

This example, when applied to thousands of miners, was cited as a common one and together with other causes was one of the main causes for the surplus of labor.

In addition Mr. Posten made a plea for the storage of coal by all large consumers. He declared it would be profitable to the consumers and would do much to stabilize the coal industry. He cited the practice of the Standard Oil Co. and other concerns which operate plants where great losses would entail were they forced to close, who store coal successfully. Had the railroads stored all the coal they could in 1921, he said, it would have resulted in large savings to them and might have averted the strike.

Mr. Posten told Commissioner Atchison frankly that the service orders of the commission are frequently disregarded. When coal mines were supposed to have first call for open-shop equipment, other commodities were using those greater popularities. In the case of the divisions of the coal of New York Central line, he said, had 100 per cent car supply when others had had only 20 per cent of the cars necessary to take care of the tonnage the mines had to offer.

Dr. Smith, Governor Marshall and Judge Aischuler, of the President's Coal Commission, have attended some of the sessions of the hearing and have interrogated witnesses.

Ohio Fuel Administration Disbands; Emergency Considered Past

On Dec. 1 the Ohio Fuel Administration ceased to function. The administration was called into being as an emergency and had been functioning slightly more than one month. It was disbanded upon the recommendation of C. J. Neal, Administrator, and Governor Harry L. Davis on the ground that the emergency it was created had passed and that the matter of fair price and adequacy of supply had been established. The administration spent about $15,000 out of the total appropriation of $1,045,967.

In disbANDING the administration machinery Governor Davis commended the personnel of the office for their efficient work, stating that the people of Ohio had been saved more than one million dollars by the functioning of the administrator and his staff.

Attention is called to the fact that the law creating the administrator is in force and able. If another emergency occurs another administrator can be named and will be able to start work at once.

Illinois Chamber of Commerce Avoids Union Trap Regarding Herrin Prosecution Fund

"It's none of your business" is the substance if not the words of the Illinois Chamber of Commerce in replying to the demand of the United Mine Workers for a statement as to how the money is being spent which the union has raised for the prosecution of the Herrin massacre case. The union, exerting every effort to make it appear that the prosecution of the men charged with slaughter of non-union miners at Herrin, June 22, is nothing more or less than an attack on unionism, wrote a letter to the chamber asking seven carefully phrased questions about the defense fund. While this letter was dated Nov. 14 and appeared in newspapers throughout the state Nov. 17 and Nov. 18, it did not reach the chamber in Chicago until Nov. 21.
Agreement with Miners at Chicago on Wage-Making Plan for Country Seems Unlikely

Chicago, Ill., Dec. 5.—On the eve of the second joint conference of miners and operators at Chicago, Wednesday, Dec. 6, it was evident that no agreement with miners on a new wage-making system for the country was likely. After two days of preliminary sessions the operators were ready to propose on Wednesday to the miners that district agreements be made to replace the present plan, which expires April 1.

It was almost certain that President Lewis and his miners would refuse such a plan and the indications were that nothing else would be offered by the operators. In such a case Lewis would call the Jan. 3 wage conference on the assumption that the old four-state Central Competitive Field remains in existence until supplanted. Nobody guesses what would be the result of that.

The operators' advance meeting started Monday but did not make any definite decisions because Delegate Michael Gallagher, of Ohio, and the three men from Indiana, including Phil Penna, chairman of the joint conference, did not arrive until Tuesday. The Indiana men were delayed by a difficulty arising out of a check-off dispute. By Monday night it seemed evident that no decision could be made upon proposing to re-establish the four-state plan, which is so favorably regarded by the union. Many changes were for district agreements or nothing, feeling that some new element may be injected into the situation before January and that the four-state plan needs federal approval before it can be adopted again. The bulk of sentiment was for proposing district agreements, no matter what the outcome.

On Tuesday, when the last delegates got in, this sentiment did not materially change and the battle of the adjourning districts for the creation of a national policy committee went nowhere, though it was fought hard. At most a committee was named to draft a resolution proposing that a district plan be adopted together with provision for arbitration in case of dispute and with a flexible scale to allow regions such as central Pennsylvania to maintain non-union competition. On this committee were both friends and foes of this plan, which everybody knew would be refused by the union as soon as they got a chance at it.

Tidewater Exchange Members Invited to Join Plea for Cut in Demurrage

Charles A. Owen, Edward Adams and James E. Manter, receivers of the Tidewater Coal Exchange, Inc., in dissolution, have sent a letter to members of the exchange inviting them to become partners to its case in presenting to the Interstate Commerce Commission a petition seeking to reduce the demurrage charges collected on coal at New York, Philadelphia and Baltimore during the two years preceding the filing of complaint, on Nov. 6, 1922, the period during which the commission has authority to order refunds.

The receivers state that they are primarily interested in this matter only so far as it concerns members of the incorporated exchange. At the same time, as they are satisfied that there is more than a fair chance to have refunded a substantial portion of these demurrage charges, which appear to have been illegally assessed, they feel that all members of the trade should be given an opportunity to join with the exchange in this matter.

Spens to Remain Until Jan. 1.

Urged by President Harding, C. E. Spens will continue as U. S. Fuel Distributor until Jan. 1. By that time, the President believes, it will be possible to declare the coal emergency at an end and suspend enforcement of the fuel distribution act.

At the expiration of his sixty days' leave of absence from the Chicago, Burlington & Quincy R.R. Mr. Spens held a conference with the President relative to his future plans. Mr. Spens is reported to have been satisfied that the emergency had been sufficiently relieved to make it unnecessary for him to remain any longer. In compliance with the President's wishes, however, he agreed to remain.

Illinois Miner Draws $301 in a Single Pay

Averaging $2.69 an Hour

Laurels for high, wide and handsome pay drawing might descend upon E. Friese, a miner employed in the New Zeigler No. 2 mine at Zeigler, Ill., operated by the Bell & Zoller Mining Co. Friese was among the first two weeks in October by earning $301.28, which netted him $276.24 after various deductions had been made. The deductions were $4.71 for supplies, $14 for powder and union check-off, and special dues totaling $6.34. Computing his pay by the hour, this man can be credited with earning at the rate of $2.69 per hour.

Woodin Asks Aid to Curb Gougers

With improved prospects for larger coal deliveries, William H. Woodin, State Fuel Administrator for New York, Dec. 4 took steps to curb profiteering in the prices of steam sizes of anthracite coal, which he has recommended to householders as a suitable substitute for domestic sizes. After a conference with a committee of anthracite operators Mr. Woodin sent a letter to newspapermen of New York City stating that the mine owners had agreed to give emergency aid to parts of Brooklyn, and this relief probably would become effective within forty-eight hours. Similar aid for other sections of the city supplying from inadequate fuel supplies, it was explained, may be given if the situation requires.

Announcement that several railroads had stopped coal deliveries to the Northwest via the Great Lakes was construed by coal dealers to mean that additional shipments probably would be turned into New York and other Eastern districts.

While he could not authorize a maximum price for domestic sizes, such as nut, grate and egg coal, because the mine prices of such coal varied, Mr. Woodin said he wanted information from persons from places which had been charged too much for coal, particularly the steam sizes. He said that buckwheat sizes should range from $8.20 to $10.50 a ton.

Short-Circuit in Powder Keg in Cherokee Mine Blast Traced to Carelessness

Carelessness in transporting powder within the mine was the cause of the explosion, Nov. 28, in Harlanss Mine No. 6, near Cherokee, Kan., operated by the Cherokee Coal Co. Under terms, according to a report by James R. Woodin, Kansas State Mine Inspector, the explosion occurred in the stube, while the agent in the charge of a 25-lb. keg of powder with the positive end of the blasting and the metal frame of the motor of the car on which the powder was being handled. A short-circuit was caused, which ignited the powder.

Mr. Woodin declared the agent George Calhoun, mine foreman. Mr. Matheson, the agent who was carrying the exposed powder keg on the stube. The Kansas mining law requires that all powders handled by electric motor should be protected by an insulated box. The metal frame of the motor which was carrying the powder at the time of the explosion had been turned off, and the locomotive placed of wood floor beneath it had been broken to such an extent that the terminals of the battery were exposed.
Cold weather has injected more life into the domestic bituminous-coal market but has failed to stimulate the sale for industrial fuels for the country as a whole. Steam prices continued to advance last week, more than counteracting the strength in domestic fuels. Coal Age Index of spot bituminous coal prices dropped to 326 on Dec. 4, as compared with 350 on Nov. 27. The average steam price stood at $2.97, a drop of 4c. from the previous week.

**Strongest Markets in Eastern Sections**

Eastern sections present the strongest market today both for industrial and prepared coals for home consumption. Good steam grades are increasingly difficult to obtain and this distinct evidence of a growing scarcity has enhanced the values of medium and low qualities. Transportation conditions make deliveries difficult and requests for trucers show how closely the consumer has been buying. Although buyers feel that the flurry is only temporary and will be relieved now that the Lake season has closed, the market is very sensitive, as evidenced by immediate price raises when demand increases even slightly.

Consolidation of Lake shipments has had a depressing effect on Eastern Island markets and the Cincinnati territory also has felt the softening tendency caused by the diversion to commercial channels of 1,000,000 tons per week of Lake coal. Consumers are not apprehensive over a coal shortage despite the warnings issued by the trade that transportation conditions undoubtedly will be inadequate when severe weather comes. With prices far from showing any stiffening, industrial users have no incentive to make forward commitments and demand is not commensurate with output. Domestic coal, on the other hand, is increasing in price and cold weather is steadily enlarging the market. Control of prices in Ohio was suspended Dec. 1, which has resulted in a better movement of home-mined coal within that state.

Chicago and Midwest markets have experienced enough of a pick up in demand to hold prices firm. Domestic buyers are taking coal sparingly and steam users are still extremely cautious. Screenings are steadily stronger, however, evidently because large consumers are not so sure they can get the necessary tonnage so promptly at a later date. Kentucky fields—eastern and western—are in a price battle, with the latter taking more of the domestic business by selling at slashed figures.

The Northwestern market is full of soft coal. Steam demand is only fair but wintry weather has strength-
ened domestic coals. Docks are cutting prices on industrial fuels to meet all-rail competition in the lower part of the region and the markets in this section are upset.

Consumers of domestic anthracite are now faced with an immediate shortage. Colder weather has increased consumption to the point where retailers are unable to cope with the demand. Thus the householder is forced to buy substitutes for the desired family sizes. Buckwheat is moving better, coke and briquet sales are improving and bituminous coal in domestic sizes is in increasing demand in Eastern sections where hard coal has always been used.

The Pennsylvania state tax, having been upheld by the Supreme Court, has caused two companies to increase domestic prices 10c.@20c. at the mines. At this writing no price changes have been announced by the balance of the old-line producers, although the tax question is the subject of much comment in the trade. Independent quotations are higher, much of the coal moving at the increased prices recently authorized by the Pennsylvania fuel authorities.

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

#### Low-Volatile, Eastern

<table>
<thead>
<tr>
<th>Market</th>
<th>Nov. 6 1922</th>
<th>Nov. 29 1922</th>
<th>Nov. 27 1922</th>
<th>Dec. 4 1922</th>
</tr>
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<tbody>
<tr>
<td>Pitts. No. 8 mine run... Cleveland.</td>
<td>3.60</td>
<td>3.60</td>
<td>3.60</td>
<td>3.60</td>
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<tr>
<td>Pitts. No. 6 screenings... Cleveland</td>
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#### High-Volatile, Eastern

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<th>Dec. 4 1922</th>
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<tr>
<td>Pitts. No. 8 mine run...</td>
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<tr>
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#### Midwest

<table>
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<th>Nov. 27 1922</th>
<th>Dec. 4 1922</th>
</tr>
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<tr>
<td>Frankin, Ill. lump... Chicago</td>
<td>3.50</td>
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<tr>
<td>Frankin, Ill. screenings... Chicago</td>
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<tr>
<td>Central, Ill. lump... Chicago</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
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<tr>
<td>Central, Ill. screenings... Chicago</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
</tr>
<tr>
<td>Ind. 4th Vein lump... Chicago</td>
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<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
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<tr>
<td>Ind. 4th Vein screenings... Chicago</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
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<tr>
<td>Ind. 5th Vein lump... Chicago</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
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<tr>
<td>Ind. 5th Vein screenings... Chicago</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
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<tr>
<td>Standard lump... St. Louis</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
</tr>
<tr>
<td>Standard screenings... St. Louis</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
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<tr>
<td>West Ky. lump... Louisville</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
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<tr>
<td>West Ky. screenings... Louisville</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
</tr>
<tr>
<td>West Ky. mine run... Louisville</td>
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<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
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<tr>
<td>West Ky. mine run... Chicago</td>
<td>3.50</td>
<td>3.50</td>
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#### South and Southwest

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<tr>
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<th>Nov. 29 1922</th>
<th>Nov. 27 1922</th>
<th>Dec. 4 1922</th>
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<tr>
<td>Big Seam lump...</td>
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<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
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<tr>
<td>Big Seam (washed)...</td>
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<td>3.50</td>
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<tr>
<td>S. Ky. lump...</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
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<tr>
<td>S. Ky. screenings...</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
</tr>
<tr>
<td>S. Ky. mine run...</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
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<tr>
<td>S. Ky. mine run...</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
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<tr>
<td>Kansas lump... Kansas City</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
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<tr>
<td>Kansas lump... Kansas City</td>
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#### Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

<table>
<thead>
<tr>
<th>Market</th>
<th>Nov. 6 1922</th>
<th>Nov. 29 1922</th>
<th>Nov. 27 1922</th>
<th>Dec. 4 1922</th>
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<td>Broken... New York</td>
<td>5.50</td>
<td>5.50</td>
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<tr>
<td>Broken... Philadelphia</td>
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<td>5.50</td>
<td>5.50</td>
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<tr>
<td>Pig... New York</td>
<td>5.50</td>
<td>5.50</td>
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<tr>
<td>Pig... Philadelphia</td>
<td>5.50</td>
<td>5.50</td>
<td>5.50</td>
<td>5.50</td>
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<tr>
<td>Pig... Cincinnati</td>
<td>5.50</td>
<td>5.50</td>
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<tr>
<td>Pig... Chicago</td>
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<tr>
<td>Pig... St. Louis</td>
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<tr>
<td>Pig... Kansas City</td>
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<tr>
<td>Range... Philadelphia</td>
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<tr>
<td>Range... Cincinnati</td>
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<tr>
<td>Range... Chicago</td>
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<td>5.50</td>
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<tr>
<td>Range... St. Louis</td>
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<td>5.50</td>
</tr>
<tr>
<td>Range... Kansas City</td>
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<td>5.50</td>
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</tbody>
</table>
How the Coal Fields Are Working

Percentage of coal shipped by rail and river, as reported by the U.S. Geological Survey in the July 5th issue of The Weekly Report:

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan. 1</th>
<th>Apr. 1, 1922</th>
<th>Aug. 1, 1922</th>
<th>Nov. 5, 1922</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>15.3%</td>
<td>15.7%</td>
<td>15.2%</td>
<td>15.5%</td>
</tr>
<tr>
<td>Aug.</td>
<td>15.1%</td>
<td>15.8%</td>
<td>15.4%</td>
<td>15.7%</td>
</tr>
<tr>
<td>Sept.</td>
<td>15.0%</td>
<td>15.7%</td>
<td>15.6%</td>
<td>15.7%</td>
</tr>
<tr>
<td>Oct.</td>
<td>15.0%</td>
<td>15.3%</td>
<td>15.5%</td>
<td>15.6%</td>
</tr>
<tr>
<td>Nov.</td>
<td>15.5%</td>
<td>15.8%</td>
<td>15.7%</td>
<td>15.8%</td>
</tr>
</tbody>
</table>

The table above shows the percentage of coal shipped by rail and river for the specified months, indicating a consistent trend with minor fluctuations.

Car Loadings, Surpluses and Shortages

<table>
<thead>
<tr>
<th>Week ended Nov. 18, 1922</th>
<th>All Cars</th>
<th>Coal Cars</th>
</tr>
</thead>
<tbody>
<tr>
<td>99,094</td>
<td>205,024</td>
<td></td>
</tr>
</tbody>
</table>

For the previous week:
- All Cars: 95,309
- Coal Cars: 188,312
- Total: 283,621

For the same week in 1921:
- All Cars: 790,363
- Coal Cars: 168,438

Surplus Cars

<table>
<thead>
<tr>
<th>Week ended Nov. 15, 1922</th>
<th>All Cars</th>
<th>Coal Cars</th>
<th>Car Shortage</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,945</td>
<td>100,000</td>
<td>158,236</td>
<td>174,496</td>
</tr>
<tr>
<td>Nov. 8, 1922</td>
<td>8,406</td>
<td>2,046</td>
<td>45,529</td>
</tr>
</tbody>
</table>

For the same date in 1921:
- All Cars: 140,000
- Coal Cars: 60,000

Coal Age Index for Week of Dec. 3, 1922: Average spot price for bituminous coal at the Colorado coal fields, weighted in accordance with the importance of the deposits, showed a decline of about 15 per cent from the previous week. The average was 15.3 per cent, a decline of about 1 per cent from the previous week. The average was 15.3 per cent, a decline of about 1 per cent from the previous week.

accumulations are not as heavy as they were two weeks ago. Dumpings during the week ended Nov. 30 amounted to 256,727 net tons as compared with 211,415 tons in the previous week. The Western and line trade is more attractive, but the slow return of cars does not permit a heavy movement in the next few weeks. The movement to coal is therefore reaching Tidewater to amply fill all orders.

Lake business is nearly over. Dumpings during the week ended Dec. 4 were 541,175 net tons—521,456 tons cargo and 19,719 tons vessel fuel. This week's tonnage shows a large decline. The movement for the season to date is 15,978,132 tons as compared with 28,171,449 tons in the corresponding period of last year. There is plenty of soft coal at the Head-of-the-Lakes to supply adjacent markets and the all-rail shippers can be relied on to furnish the requirements of the lower end of the territory.

ANTHRACITE

Production of anthracite was 2,174,000 net tons during the week ended Nov. 25 as compared with 2,191,000 tons in the preceding week. Thanksgiving Day idleness is expected to reduce the output for the week ended Dec. 2 to approximately 1,800,000 tons.

Domestic users face a certain shortage, and buying of substitute fuels is increasing. Certain producers stopped shipping to the Lakes on Nov. 25 and the supply for Eastern centers is expected to increase soon. The Lake dumpings at Buffalo dropped to 98,230 net tons last week as compared with 161,450 tons in the preceding week. Steam coals are in better shape with the colder weather, although the output is still tophave.

CORE

Production of beehive coke was 285,000 net tons during the week ended Nov. 25 as compared with 264,000 tons in the previous week. The Connellsville output was heavier than for any week since the first week in 1921. Prices are firm but there is no great market activity shown.
Foreign Market
And Export News

British Output Recedes Slightly

Continental demand has fallen off in Wales, owing to the depreciation of European currency, especially the French franc. Prices are fairly well maintained, however, although slight variations occur owing to growing congestion at the ports. There is excess of the smaller and lower grade coals.

Production during the week ended Nov. 18 was 5,376,000 gross tons, according to a cable to Coal Age, as compared with the preceding week's output of 5,441,000 tons, the record for the year. Foreign buyers hope a price cut will follow the heavy production.

Despite the recession in Continental demand, South American markets are very active. This is due mostly to the absence of American competition. The weakness of small coals is attributed to slackness of the patent fuel industry, though bunkers are selling fairl well.

The North England market is affected to the same degree as in Wales. Orders, however, are still being booked for the United States, and the Argentine and the East are also in evidence. Collieries are in need of fresh business as long as contractors call for full quantities.

French Collieries Still Active

Nord and Pas-de-Calais collieries remain active. Sized coals for domestic uses are still extremely scarce. Demand for industrial coals exceeds the present output.

Imports of British coal by France are increasing—999,000 tons in October as against 886,000 tons in September—but, owing to the present high rate of sterling and to the liveliness of the demand, French collieries are not yet feeling the pinch of this competition.

The situation of the Loire and Center fields is much improved, as is also the case in the southwest, whence a good export trade to Spain and Italy is being carried on. Owing to the fall of the mark, shipments from the Sarre to South Germany are now decreasing; but German railways remain important. Substantial supplies of Sarre coals also go to Switzerland and Austria. Production of the Sarre in September was 985,000 tons, as compared with 1,019,000 tons in August. Pit head-stocks on Sept. 30 were 467,000 tons, 75,000 tons less than on Aug. 31.

Germany delivered to France, during the first ten months of 1922, 3,650,000 tons of coke on reparation account, against an amount due of 3,923,000 tons. She under-delivered 66,000 tons of coke in August, 9,000 tons in September and 25,000 tons in October. France needs about 650,000 tons of coke per month, against which she can only reckon in the near future on a supply of 550,000 tons. In order to offset the monthly shortage of 100,000 tons, French ironmasters have purchased this month 20,000 tons of British coke and are trying to obtain, but rather unsuccessfully, an increased supply of Belgian coke.

FRENCH OUTPUT IN SEPTEMBER (IN METRIC TONS)

<table>
<thead>
<tr>
<th>District</th>
<th>Sept., 1922</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nord and Pas-de-Calais</td>
<td>419,966</td>
</tr>
<tr>
<td>(Non-devastated mines)</td>
<td>424,234</td>
</tr>
<tr>
<td>(Devastated mines)</td>
<td>346,159</td>
</tr>
<tr>
<td>St. Ritten (Loire)</td>
<td>340,614</td>
</tr>
<tr>
<td>Lyons (Bianzy mine, etc.)</td>
<td>324,522</td>
</tr>
<tr>
<td>Center fields (Clermont-Ferrand)</td>
<td>103,281</td>
</tr>
<tr>
<td>Southern fields</td>
<td>155,257</td>
</tr>
<tr>
<td>(Alais district)</td>
<td>154,741</td>
</tr>
<tr>
<td>(Toulouse district)</td>
<td>51,355</td>
</tr>
<tr>
<td>Western minor fields (Nantes)</td>
<td>4,936</td>
</tr>
<tr>
<td>Southwestern minor fields (Herault)</td>
<td>5,192</td>
</tr>
<tr>
<td>Nancy (Houidemi mine)</td>
<td>348,327</td>
</tr>
<tr>
<td>Lorraine field</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2,519,723</td>
</tr>
</tbody>
</table>

Coal Paragraphs from Foreign Lands

GERMANY—Another increase in the price of coal, this time amounting to 30 per cent, is announced. Unwashed fats are now 19.748 M. per ton.

SPAIN—The Central Hullera Asturiana having been dissolved, each mine owner is offering coal at the best prices he can obtain. This has made competition which is attracting buyers.

INDIA—The market is steady. Supplies are adequate. Quotations are: Bengal first, Rs.28; Bengal good second, Rs.26; Rs.27; English, Rs.38, and African, Rs.27.

United States October Exports

Exports of coal and coke from the United States during October amounted to 494,990 tons of hard coal, (396,622 tons last year); 1,728,428 tons of bituminous coal, (1,530,384 in 1921), and 38,613 tons of coke as compared with 22,256 tons last year. For the ten months ended Oct. 31, 1922, there were 1,549,241 tons of anthracite exported, as compared with 3,540,606 tons last year; 7,966,158 tons of bituminous coal, (18,603,929 in 1921), and 244,904 tons of coke, (220,507 tons last year).

Trade Dull at Hampton Roads

Continued car shortage, with resultant lack of supplies at the piers, featured the week's business here. Only 26 to 30 percent of normal supply of cars was reported, and the trade was reflecting this situation in its dullness.

Demand and supply maintained the ratio of the week before, the continued lack of coal in large quantities having caused a lethargy among buyers. Coastwise and export business were weak, although bunkers moved with considerable bulkiness. Prices remained approximately the same. Two ships cleared for export last week.

Hampton Roads Pier Situation

N. & W. Piers, Loudoun

<table>
<thead>
<tr>
<th>Car in hand</th>
<th>Tons dumper</th>
<th>Tonnage waiting</th>
</tr>
</thead>
<tbody>
<tr>
<td>315</td>
<td>444</td>
<td>427</td>
</tr>
</tbody>
</table>

C & O Piers, Pier

<table>
<thead>
<tr>
<th>Car in hand</th>
<th>Tons dumper</th>
<th>Tonnage waiting</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>444</td>
<td>427</td>
</tr>
</tbody>
</table>

Pier and Bunker Prices, Gross Tons

<table>
<thead>
<tr>
<th>Bunker</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hoard, field</td>
<td>7.60</td>
</tr>
<tr>
<td>Maroon, field</td>
<td>7.60</td>
</tr>
<tr>
<td>Thompson, field</td>
<td>7.60</td>
</tr>
<tr>
<td>Leete, field</td>
<td>7.60</td>
</tr>
<tr>
<td>Donlan, field</td>
<td>7.60</td>
</tr>
<tr>
<td>Nash, field</td>
<td>7.60</td>
</tr>
</tbody>
</table>

Current Quotations—British Coal

<table>
<thead>
<tr>
<th>Port</th>
<th>Quotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charlton</td>
<td>20.50</td>
</tr>
<tr>
<td>Haydock</td>
<td>20.50</td>
</tr>
<tr>
<td>Penarth</td>
<td>20.50</td>
</tr>
<tr>
<td>Barry</td>
<td>20.50</td>
</tr>
<tr>
<td>Porth</td>
<td>20.50</td>
</tr>
</tbody>
</table>

December 7, 1922
Signs of Growing Scarcity Cause Upward Price Tendency

Unusually in Obtaining Good Coals Increase Even Lower Grade Advance—Consumers Buy Closely—Market for Coal Trigger Basis—Anthracite Stanton Moves Domestic Cuts.

Good coal is increasingly difficult to procure. This district evidence of the growing scarcity caused prices during the week and even the lower grades registered advanced. Transportation conditions make delivery difficult and requests for tramps indicate how closely the consumer has been buying. Although purchasers profess to believe that the flurry is only temporary and will be relieved now that the Lake season has closed, the market is on a hair-trigger basis, as evidenced by the rising prices with the slightest increased demand.

The shortage of anthracite is moving more domestic sizes. Producers are finding this outlet very attractive and additional mines are now running in prepared coals. High-volatile seems to have the edge on this business because of the brighter and cleaner appearance of the coal.

NEW YORK

Indications point to a more active market, and better prices. Inquiries are more frequent. The low quotations prevailing here for domestic coal do not prevent foreign coal from being shipped here. Reports show that large consignments are being run off the ports and reported as arriving at the local harbor last week.

The reminiscences of the Fuel Administra
tion that substitutes for anthracite coal would wherever possible be made in the demand for bituminous coal, are in the air. The effect may be not only a temporary, but a permanent change in the market. The Fuel Administration's new coal policy is likely to be the real point of the situation. To this may be added the fact that the demand for coke is increasing and the supply is not keeping pace with the increased needs. Many plants are running at a premium and operating poorly because of inadequate fuel supplies.

The decline of the domestic coals in the last week is due to the increased use of the imported coals. There were several 1,000-car lots shipped from the Atlantic and all places were reported as having contracts. There were reports that nearly all the coals brought during the past week were sold.

Baltimore

Prices continue about the same level as the run of several weeks past, with the possible exception that pools 71 and 9 are shaded off a bit from the prices demanded ten days or two weeks ago when there was an especially sharp call for the better-grade fuels and the price trend was sustained over the usual gap above pool 10 quotations.

At this writing there is still very little base of real pool 71 offering and this is worth $4.50 per $5. Pool 9 is now offered at $4.25 per $5, although 8 is coming around 84, although $4.25 might be a nearer quotation. Pool 10 is quoted $4.25 and 18 is $4.50. There is no demand for less than $4.50 per $5. The gas-coal market is not of much importance at present, although there are some quotations. Pool 64 is offered at $4.50 per $5. While the coal supply situation is still normal, and the credit at the same time is

FAIRMONT

Prices were not materially affected by the cessation of Lake shipments during the closing days of November. Mines not shipping railroad fuel are not getting much of a car supply except on Monday of each week and there is much idleness among the mines in the northern part of the state. Much difficulty is being experienced in getting through to Western markets owing to the shortage of equipment.

UPPER POTOMAC

At the end of November production was on a larger scale than at any time in several years. Here being a weekly output of over 100,000 tons in the territories embraced within the membership of the Upper Potomac Operators' Association. Production is especially large in the Upper Potomac. The output of some parts of the Georges Creek region the output is limited but operators are managing to increase production notwithstanding the condition that miners have refused to return to work.

DENVER

Coal trade here remains at a low ebb because of the continued warm weather. Domestic demand is nearly stagnant but industrial call is a little better and slightly improved car supply is beginning to show in the past few days, with some improvement in every phase of this demand. Production improvement is swifter in all of the surrounding Rocky Mountain States but this may not be accepted by the fact that Colorado was less affected by the strike than were the others.

KANSAS CITY

The price reduction of $1 a ton on some coals shipped from the mines in Kansas City, Nov. 22, has failed to cause any noticeable increase in the demand. The weather continues mild. City folk are able to keep their homes comfortable with gas grates and ovens, and in spite of the assurance of dealers to the contrary, are holding off buying in the hope that there may be a further drop in price. Operators in this section are stripping their farms of dead wood and lumber scraps.

The demand for industrial coal remains normal, with only occasional shortage in supply due to lack of cars. Operators estimate the mines of this district are producing 40 to 50 per cent of normal.

SALT LAKE CITY

The car situation has improved considerably and, as a result of resumed mild weather, losses will soon be entirely due to market conditions. Production is now around 50 per cent. The demand for small sizes is still decreasing. Dealers are buying for current use only, except in a few cases, in the belief that operators will soon reduce prices. Operators are not contemplating any price change in this direction.
Anthracite

More Smaller Sizes Moving; Substitutes Sell Better

Upholding of Pennsylvania Tax Causes
Two Companies to Raise Prices—Lake
Dumpings Dwindle—Producers Promise
Increase in Eastern Shipments—Cold
Weather Halts Decline in Small
Steam Sizes.

Cold weather has brought the con-
sumer to an abrupt realization of
the urgent need of substitute fuels.
Purchases are being made unwillingly
and sparingly, but more and
more of the smaller sizes of hard coal
are being moved and the sale of coke,
briquets and domestic bituminous
coal is improving. At this writing
the high court decision upholding the
Pennsylvania tax has resulted in two
companies increasing prices of bro-
en and egg coal, 15c.$20c., and
the other domestic sizes 10c. Indepen-
dent coals are moving at the higher
figures recently authorized by the
Pennsylvania fuel authorities.

Lake dumpings are declining—
98,230 tons last week, as compared
with 151,450 in the previous week—
and producers now promise an early
increase in Eastern shipments. Buck-
wheat is stronger and the cold
weather also has checked the decline
in the smaller steam sizes.

PHILADELPHIA

Increasing prices, both company and
independent, have engaged the attention
of the trade recently. First was
the announcement of the State Fuel
Commission which had investigated
claims of the independent producers for
increased prices. As a result of this
investigation the producers prices up; and
which of $1.10 were approved. Some indepen-
dents selling at $9.50 were
allowed an increase of $1 on prepared
sizes, while some of them advanced
pav to $8. Following the decision up-
holding the Pennsylvania tax act, one
of the companies advanced broken
stove, nut and pen 10c, and egg 20c.,
making the circular quotations as fol-
lores: broken, 8c.; egg, stove and
pen, $6.30, and pen, $6.30.

However, it is the almost utter lack
of coal that is causing the retailer
extreme anxiety. The independents
still continue to be the heaviest
shippers locally and as a result of new
prices, retail advances to $165$17 are
to be expected.

The steam market is in fair condi-
tion, but all sizes are still to be had
without difficulty. Buckwheat appears
about the same size, due to the colder
weather, and also to the fact
that the retail trade is taking a slightly
larger share of this size. Inasmuch as
the retail men often take this size
to get the larger coals they are also in

turn insisting on their trade taking a
proportion of it. Rice is the weakest
of the trio, and barley still inclines
to betterment. Some sizes are still
readily obtainable at last week's quo-
tation on the market.

BALTIMORE

Hugh C. Hill, president of the Balti-
more Coal Exchange, has tendered
his resignation to Governor Ritchie, as
a member of the Maryland Fuel Distribu-
tion Committee. In coal circles this
is regarded as the first move to end
the putrid state of the state com-
mittee, which after all has been able
to accomplish little that would not have
come about by the regular routine
of trading.

The situation continues tense, al-
though there is a slight betterment for
the time being due to the fact
that the weather has been mild for a
week past. The great rush of househol-
ders to obtain their supplies is slight;
the market in most instances is up
by a slight extent. Dealers point to
the fact that after nearly 1,500 cars
were received in October, the November
receipts were reduced to about 1,000 cars.
So far, while promises have been made
for a better movement for December,
there is no indication that the month's
receipts will run above those for
November. The disinclination to use
soft coal continues.

BOSTON

The local retail situation shows little
change. Dealers are having a most
uncomfortable time with certain of the
fuel authorities who seem here to at-
tempt more drastic regulation of deliv-
eries than is suggested elsewhere.

The colder weather has caused con-
siderable anxiety through the territory,
but among the trade there is a distinct
feeling that if we can tide over
the next three or four weeks we shall
then be rather better supplied than is
possible. That the producing companies
have stopped shipping to Buffalo for Lake
shipment on Nov. 23 and already it is apparent
that New England shipments will measurably in-
crease during December.

BUFFALO

The Fuel Administration reports that
it is about three weeks behind its emer-
gency orders, and yet there is no great
amount of unfulfilled orders on hand.
They understand the situation fully.
They know that the reports of "not a pound
of any sort of fuel" is the fault of the
complaint, and that either the distribu-
tion committees are unable to get
enough coal, or that it is too expensive for
the end users.

The rate of independent shipments
is still very slow. Dealers are in the habit of
refusing to ship quantities larger than
are absolutely necessary.

The sale of independent anthracite
is brisk. Dealers are so glad that shippers
are in the habit of functioning and
supplying the demand for this coal
that 30,000 tons were shipped to Duluth
and Superior, 27,500 for Chicago, 5,100
for Milwaukee, 4,000 for Sheboygan, 2,500
for Racine, 2,000 for Kenosha and 1,000
tons for Port Huron. Freight rates are
strong at $1.50 to Racine and Port
Huron, $1 to Sarni, 80c. to Sheboygan,
60c. to Chicago, 50c. to Milwaukee.

NEW YORK

Consumers are realizing more now
than ever that in order to keep their
fires going they must use substitutes in conjunction with the domestic coals.

The situation was favorably impacted by a few days of mild weather. Demand
increased considerably and retail dealers
found themselves swamped with orders.
It became apparent that substitu-
tions elsewhere would have to be taken as
deliveries would be made. Dealers were
enabled to move much of their back-
wheat stocks, as well as luminescent
coal, coke and briquets.

The affirming of the Pennsylvania law
by the higher courts came in the
considerable statement by one in the
absence of an official statement, profes-
sing to know how this would be treated on
by the consumer by the producer.
It was rumored that some of the larger
independent producers who have been
selling their domestic coals at between $9
and $10 were considering the advisability
of increasing slightly their prices
for those sizes.

Buckwheat was stronger and there
was more or less increased activity in
rice and barley. Demand for those
coals increased because of the colder
weather. Considerable of the coals
have increased slightly since September,
and quotations in some instances were lower than those
on the current price tabulations
which are for the better grades.

South

BIRMINGHAM

Several days of continued cool
weather has further stimulated the
domestic demand and will probably
continue to do so. There is a decided
reaction in the sales of fuel if it holds up long enough. As it is,
however, the situation is regarded as being rather quiet, with good busi-
ess on small lots. Domestic demand has been
about the same size, and the prices have been about the same as what
they were in January, with the exception of sizes
producer's coal. Producers have been
able to supply trade requirements, due to our shipping conditions,
and have held the line on the production in that direction. Indica-
tions are that demand will not be
exceeded on the plains, nor will
the demand be able to support a higher price.

In the coal markets there has
been very little change. We can report
more than 85 per cent of the available
stock in the warehouses, and with
few exceptions the current prices
have remained at the same level
throughout the entire year, and
prices on the spot have been
protected.

VIENNA

Production levels have not been
changed. There is a rather
considerable increase in the prices
of the higher grades, due to the
smaller supply and the increased
demand.

While prices of the higher grades
have been increased, there has
been no corresponding increase
in the lower grades.
Chicago and Midwest

Cold Breezes Stimulate
But Few Signs of Life

Market Generally Remains Slow, Though Small Pick-Up Absorbs Part of Big Volume of Coal Available—Prices Do Not Vary Much.

The wave of windy, raw weather which swept this region from the Lakes into the South during the past week had only mild effect upon the coal market. It did stimulate buying a little but domestic consumers bought sparingly, still counting on a further drop in prices, and steam buyers were extremely cautious. It was to be noted in more than one market, though, that screenings were in steadily stronger demand, evidently because large consumers are not so sure they can get screenings to any volume they may call for.

All company list prices on domestic lump and egg sizes from the best quality fields are said to have been maintained, Franklin County and 4th vein Indiana lump still bringing $2.50 in most cases, but in other fields quotations have been reduced. There is not sufficient demand for domestic sizes to absorb the lower grades even at their lower prices, which run down to $3. In Kentucky the old battle between East and West goes merrily on, with the western fields winning business by selling domestic sizes at half the price of the former.

INDIANAPOLIS

Colder weather has stimulated the retail business slightly, but there is not the activity there should be or that the retailer has had in the time at the start of the year. The domestic consumer continues to buy his supplies in one- and two-ton lots and there are few shipments in Indiana that are filled. Prices show little increase on domestic sizes, both to industrial and domestic consumers. The domestic increase is approximately 25c. A ton on most of the prepared sizes, with national and foreign continues to retail at around $12.50 and $13.

Operators say there is a slightly more active demand for steam coal. Screenings have advanced about 30c. a ton but the strength of the busy sizes does not seem to be as much. A prominent retailer of Indianapolis is authority for the statement that there is a greater percentage of Indiana prepared coal being sold now than at any time for years.

LOUISVILLE

While it had been expected that eastern Kentucky would be forced to drop prices on prepared sizes, the weather man sent snow and cold weather during the week, with the result that demand toward lower prices was checked for a time. It is admitted, however, that $6 to $7 a ton for eastern Kentucky prepared sizes is now the usual price in the market, including freight in. A local steam buyer recently put an order in for 5000 tons for fast southern Illinois to be delivered.

Demand for steam coal continues full to the last week of the month, but comparatively slowly. Indiana and Kentucky crumb coal still brings $1.25 a ton, with very small yard stocks on hand and $1.25 a ton, with very small yard stocks on hand and screenings $1.00 a ton. A good supply of domestic is on the market and has been selling $1.00 a ton, but there is real difficulty in

as they have loaded it out of their yards. Western Kentucky coal has been moving into this market some St. Louis and Southern business. As a whole the field is doing fairly well considering lack of general demand. Lump coal is quoted at $2.00 a ton, the average being about $3.75; mine-run, $2.50 to $3.00; screenings, $1.25 to $1.75.

WESTERN KENTUCKY

As a result of cold weather and snow as far west and south as the western Kentucky coal fields, retailers' demands for prepared coal as well as steam-plant fuel have picked up, and this has aided in clearing many big orders, which were held for coal when cold weather sets in.

ST. LOUIS

There seems to be no desire on the part of the public to buy coal. People are still watching for a reduction in prices. The Laclede Coal Co. on the 10th announced a cut of 50c. per ton on everything for the first half of December. Their costs are not of standard grade and this has no effect on the other dealers.

This mild weather has played its part in reducing demand for coal in the city. Steam buyers too are slow and buy only from day to day. Somewhat similar conditions prevailed throughout the central districts. Everyone expects lower prices. Colder weather is the only hope. Very little anthracite, coke and smokeless is moving in.

SOUTHERN ILLINOIS

Mild weather, public indifference and a few of the independents cutting the prices have kept things barely going. There is no demand for domestic sizes in the Carterville field. Nut is extremely slow. The only change has been that totals have picked up in the demand for screenings, but this has not altered the prices much. A few of the independents are still selling nut at about $400 and lump at $4.50 and under, while the association operators in the Carterville field are holding it at $5.50 on domestic sizes.

Mines are working only two or three days a week, there are no orders, some because of no cars. Everybody is looking for colder weather. Railroad tonnage is light. Local conditions south of St. Louis, in Clay County and Du Quoin field except that the demand there is slower for everything and the car supply is not good on the Illinois Central. In the Mt. Olive field everything is hard to move but a little domestic is going north and west. Steam is slow, although the last few days a week there are few bids for an improvement.

No change in prices is expected.

In the Standard field there are "no bills on hand at nearly all mines, all the same time, on practically all sizes. Car supply has been about a week a week but the mines do not seem able to work over that even if cars were plentiful. Prices vary from $1.25 on screenings to $3.50 for lump in both Mt. Olive and Standard fields is light, except on the Mobile & Ohio.
Eastern Inland

Market Feels Depression

With Release of Lake Coal

All but Domestic Prices Slump—Cars Still Short and Deliveries Slow—Cool Weather Quickens Domestic Demand—Removal of Prices Restrictions Enables Movement in Ohio.

The release of 1,000,000 tons of Lake Coal per week has had a depressing effect on the Eastern Inland market. Prices have slumped on all coals with the exception of domestic. Receipts are not greatly increased, however, and there is now just a tendency of prices to hold firm. Cars are still short and deliveries slow.

Domestic coal is in active demand with the colder weather. The removal of the Ohio price restrictions is causing a better movement of tonnage within the state. There is no shortage, but retailers are busily replenishing their stocks at prices which remain firm.

CLEVELAND

The market for most grades, save domestic lump, continues to show signs of weakness. Demand eased off in rather pronounced degree last week due to the Thanksgiving holiday and the unseasonably warm weather. Buying in the spot market is dull, and consumers seem to be content to confine purchases to immediate needs.

The virtual closing of the Lakes has made it necessary for shippers to divert tonnages formerly, absorbed by the Northwest into local markets. That fact has increased the available supply and is one strong reason of the present pull. Many consumers have been waiting in the spot market, and condition, with prices showing no indication of stiffness, industrial users have had no incentive to make forward commitments.

Both screenings and No. 8 slack are down about 25c. Screenings are quoted at $2.80@$3.15. Slack is selling $3@$3.40. Stocks are not heavy and many industrial consumers have not more than two weeks' supply.

The total Lake movement for the season will exceed 18,000,000 tons. This is about 3,000,000 tons greater than was expected to be moved in September.

COLUMBUS

With the closing of the Lake trade cars were more plentiful for a time, permitting increased production, but this situation is now changing and there is abundant scarcity of cars. Prepared sizes are still holding up. Dealers are buying more with lower temperatures prevailing. Retail stocks are on fair and developing rather. Retail prices continue firm at former levels. The disbandment of the Ohio Fuel Administration Dec. 1 is not expected to change retail prices materially, at least for a time being.

Steam business is more quiet. Steam plants have sufficient reserves for the present and are buying mostly for current needs.

Ohio domestic users have to depend largely upon Ohio grades as well as those from the closer fields of West Virginia and Kentucky for their supplies as practically no Pocahontas or other smokeless is coming into the market. Anthracite is also scarce, and little is to be had at present.

BUFFALO

The trade keeps up only fairly well. Either the shippers have sized the consumption and demand up badly or the conditions are still quite abnormal. It was confidently claimed for some time after the strike ended that the consumers were not buying as much as they were using and that they would soon run short. Then it was held that the car shortage was increasing so fast that it would soon become impossible to move coal.

Both of these claims are now to a certain extent given up, for the large consumers say that more coal is being delivered than they need and the car shortage is still increasing and the railroads are not buying much more coal than they need.

Prices have a downward tendency, but quotations remain at $5.00@$5.25 for Youngstown gas lump; $3.75@$4.25 for Pittsburgh and No. 8 steam lump; $3.25@$4.50 for all mine run; and $3@$3.25 for slack, with Altoona tipping at $6.75.

EASTERN OHIO

Because of inadequate transportation, production during the week ended Nov. 25 receded somewhat as compared with the preceding week. Output was 338,000 tons, a decrease of 9,000 tons under the previous week and about 54 per cent of potential capacity. It would not be accurate to charge the low production of some 200,000 tons solely to transportation disability as Lake shipping programs are now concluded, and a larger quantity of coal is seeking disposition in local markets.

Even with restricted operations the demand is not commensurate with the output. Consumers are making steady inquest of some of the more conservative buyers, who have placed in some stocks at higher prices than those now prevailing, as well as on the export fuel before laying in further supplies.

Fuel control was suspended in Ohio effective Dec. 1, and no action re- spective to the consumers is expected except to those with delivered prices, because the allowance to them under state control was not sufficient to cover cost of handling. Steam prices have fallen during the week and prices on lump sizes to b. mines remained at the same level.

Cleveland industries and retail yards, during the week ended Nov. 25 released 2,343 cars of bituminous coal; 1,717 of which were for industries and 626 cars for retailers. This was the third largest week during the past two years.

Based on the quantity of coal now on hand at the lower docks and in transit, it is quite likely that at the present rate of Lake transportation, some 300,000 tons will be left over.

DETROIT

Bituminous coal is a little more plentiful than in recent weeks. The larger proportion of the supply reaching Detroit is still coming from mines in Ohio. Smokeless is deficient in supply and not always readily obtainable.

There is apparently little active interest in the market on the part of local buyers of steam coal. Retail dealers are not in a position to display coal promptly in stock. The market presents the impression of being in theexpectation that some development will occur which will enable them to stock up at lower prices.

Three-quarter lump from the Pittsburgh No. 8 district is quoted $4.50; mine run, $3.50; slack, $1.50. Hocking lump is $4.50; egg, $6; mine run, $3.50; nut, pen and slack, $2.75. Fairmount 2-in. lump is $4.50; mine run, $3.50; slack, $2.75@$3. Four-inch lump from West Virginia, Kentucky, is also egg, with mine run, $3.75, and slack, $3.50. Smokeless lump and coke holds around $3 with run of mine $6 and slack not quoted.

PITTSBURGH

The local market has become quiescent. Consumers appear to be very well supplied by regular consignments and only occasionally enter the spot market. Again, there has been no further movement of coal. The shipping season has reached conclusion, exclusive of the domestic trade, from all accounts as to supplies.

The market has developed widespread differences according to coal grade and quality of coal. Some Pittsburgh steam coal is quoted steady at $2.75, while Cambria coal is more or less firm near $3.75. Most of the high-grade coal being quoted at $4.25, and gas, of the grade of Slump and in type, being quoted at $4.25, and gas, of the grade of Slump and in type, being quoted at $4.25, and gas, of the grade of Slump and in type, being quoted at $4.25.

For particular buyers buying yard coal on a stand-by basis, the latest price is at a premium of 10¢ a ton, with industry, on account of the scarcity of gasoline, is still actively buying.

NORTHERN PANHANDLE

With the closing of the Lakes, it is easier to make up the West market. W. & L. and coal beds having been hit. The coal of the Ohio type, however, is still active.
Scramble for Hard Coal

Continues Hopelessly On

Throughout the Northwest's hard-coal shortage to be expected from Lake shipping. Presentations of all sorts have been made but the coal has not been forthcoming. Prices have been for two or three weeks on the point of flight but business decency and various influences of restraint have operated to prevent it. However, there is no telling where quotations will go when the navigation season closes Dec. 15 and all-rail hard coal begins coming in.

The Northwest is full of bituminous coal. Nobody is worrying for a minute about that. Industrial demand is fair and domestic trade has been sufficiently stiffened by the wind and comparative cold of the past week to keep yards reasonably busy. Docks with a good deal of various bituminous coals on hand have begun calling prices to meet rail competitors. This has not started any orgy of buying far even the reduced dock prices do not underbid the Illinois and Indiana coal reaching the lower part of this region. It has been many a year since the markets of the Northwest were so badly off balance as they are now.

DULuth

Contrary to expectations shipments to the Island of Lakes showed an increase this week, but even a pick up will do little to alleviate the anthracite shortage. In all 47 cargoes arrived at Duluth Superior harbor, six of which were hard. These ships made port in two day. Some were reported must be on fire being burned.

The coal in Duluth - has not made any appreciable difference in the market of $9.25 for lump and 7$ for screeners which has prevailed for some time. It is a known fact that there is a considerable movement of coal here which will begin next week. The dock trade in southern Minnesota has been cut out and the Traffic administration has been very reasonable in the prices charged to those who were accommodated.

Comparative figures show the demand of the markets here. Last year there were $18,000,000 of business. In all 10,600,000 tons of business were brought up. This leaves only 6,400,000 tons when navigation closed and about 4,000,000 tons will be brought here before navigation closes.

In anthracite the situation is different. It is estimated that only about 2,900,000 tons will arrive here this year which must be added to the 400,000 tons on docks when navigation opened. Last year 1,841,000 tons were brought here. The average for the last five years is 1,700,000 tons of anthracite. This means a considerable shortage. There are government figures.

MILWAUKEE

The coal market is unusually quiet due to fine weather. However, dealers report a steady demand locally and dock companies are shipping out coal a little more satisfactorily. There seems to be an entire absence of concern both in the city and country as to the adequateness of the winter supply. Prices continue on the old basis, with the exception that one company is receiving 50c. per ton more for anthracite than the trade generally. A modification of the present schedule of hard and soft coal prices will probably be made on Jan. 1.

In November, 15 cargoes of hard coal, aggregating 128,139 tons, reached port, making the season's receipts of hard coal to date 270,251 tons, as against 338,677 tons during the same period last year. Soft coal receipts for November number 40 cargoes, aggregating 2,927,565 tons, the season's receipts of soft coal 2,927,665 tons. Last year the soft coal receipts to date aggregated 2,557,383 tons.

MINNEAPOLIS

The soft-coal market is supplied sufficiently from all sources to keep it pretty well upsted. The dock prices have had to be cut to meet rail competition. Rail shippers claim to have held their coats of the few better grades. The best southern Illinois coal is held at $5.50 with reductions from that figure, at the mine, for some of the different grades. The freight to the west is $3.50 making the price on track, $2.95—a figure which is considerably below the dock list prices.

There is no indication of much support to the market from any direction, outside from what may follow cold weather. Industrial requirements are confined to small tonnages. Buyers are fighting hard for lower prices, and will not lay in stock beyond current needs. Hard coal has been impossible to get anywhere near the anthracite allotment of 750,000 tons, being 60 per cent of 1,250,000 tons which is assumed as a normal store. Up to the end of November, somewhere around 300,000 tons of hard coal had been received at the upper docks.

New England

Expected Improvement

Fails to Materialize

Actual Buying Falls Far Below Tonnage

Looked For—No Heavy Buying Likely

Till Well Into New Year—Movement to Tide Ample for Spot and Contract Needs.

Improvement in the market predicted a fortnight ago has not materialized. The amount of buying then in prospect slopped off considerably, and it took much less tonnage to meet requirements than was then expected. From present indications there will be hardly any comprehensive buying until 1923 is in full swing.

Pocahontas and New River coals are again reaching Hampton Roads in volume. While accumulations are not what they were sixty days ago there is ample coal on wheels for bottoms arriving. The Western and line trade have been more attractive as to price, especially in the case of proposed sizes West, but cars are not being received by the Western roads in sufficient number to permit heavy tonnages in that direction. Enough coal is being forced to Tidewater to take care of any possible spot demand in addition to the usual contract movement.

Current quotations both at the Virginia terminals and at re-handling points here reflect better inquiry sales being having been made at 50c. at 75c. less than during the latter part of November. Today $7.25 is an average quotation for cargo sale at Hampton Roads, while $8.50 at $8.75 is the range on cars Boston to Providence for Inland delivery.

Other than scattered purchases by the industries practically the only buying is on the part of certain of the railroads. There is still a small tonnage being received from England for speculative purposes, and there is also a fair tonnage of high-volatile being purchased for the same requirements all-rail from Pennsylvania. Prices on both are at a minimum, and we have been told of cars coming from 84.50 cwt. net ton f.o.b. mines or in the case of English coal at more than $8 c.f.f.

Quality grades in central Pennsylvania being held at steady prices. Output is not large and near operators are able in spite of car shortage to make prompt shipment and also keep themselves two to three weeks ahead on orders.

At the New York and Philadelphia piers there is no improvement. Coal is still a drug on the market, and few operators are hard enough to take big to absorb heavy demurrage charges.
Smokeless and Domestic

Feature Inland Trading

Market on Domestic Sizes Holds Firm—
Price Cuts Continue on Fine Coals—
Smokeless Trade Still on High Plane—
Open Weather Prevails.

Smokeless and domestic business occupy the center of the stage so far as Inland trading is concerned. So far the market on domestic sizes has held firm in the face of the various drops that have been recorded since the closing of the Lakes, but with its ever-increasing volume of slack in its wake there has to be a giving away point somewhere and the cuts in price continue on the residue.

Smokeless business continues on the high plane it has occupied for months. More and more shipments, however, are falling into the hands of brokers, with the result that there is a full swing of business on the low-volatile lump and egg sizes around $7.50c-$8 even while straight-out selling agencies are taking the same business at $5.13 a ton providing that the purchaser will wait his turn.

The weather still remains open—a fatal condition for this time of year from the coal man's viewpoint.

CINCINNATI

The absence of any active buying from the steel mills and the byproduct plants has been the last of one of the agents upon which this market has rested. For weeks these industries have been a strong prop to the trade and without their gas and byproduct coals have fallen to a level where they are worth little more than the steam grades. The drop in price on nut and slack too has been given deep consideration and it would surprise no one to see an attempt to boost the domestic offerings in order to make up the mining costs. Trading from Michigan points has been slackened because of the clean-up of the coals that were standing as a surplus at the Lake ports.

Down the river came a consignment of 2,000 tons for the local harbor and Louisville. This, however, made no appreciable impression on the local prices, which are below those set by the former state fuel administration.

December opened with the following retail quotations: Pocahontas lump, $7.50c-$8.11; mine run, $7.75c; egg lump, $10; nut and slack, $7.50.

LOW-VOLATILE FIELDS

New River and the Gulf

New River mines are still limited to about one day's operation per week. Several times recently the price at Tidewater had softened considerably simply because of the fact that operators have been called upon to ship more coal to tidewater. The C. & O. not being in a position to handle the Western movement. There have been slight "no market" losses because of the fact.

Conditions in the Gulf region are not unlike those in the New River district. The fact that there is a better Western demand than there is in the East is not helping prices. Despite the fact that the market is quiet, the output hardly suffices to fill standing orders.

PocaHontas and Tug River

A considerable tonnage which has been going to the Lakes from the Pocahontas region is now available. The Western movement, however, is still somewhat short of the demand owing to limited rail facilities. There are more cars available for Eastern shipments than to the West and it is that condition which still prevents producers from doing the maximum amount of business in Western markets.

The Tug River mines are affected to the same extent as Pocahontas operations by difficulty in securing anything like an adequate supply of open-tops. Of course, some of the fuel is flowing to Tidewater but the demand is nearer par in the West and prices are better there.

HIGH-VOLATILE FIELDS

Kanawha

Inland West markets have softened under the diverted Lake tonnage. The field is not finding it possible to ship much coal to the West on a spot basis, for the mines as a rule are not working more than one full day per week. Not more than one-fifth of the capacity tonnage of the field was being produced late in November. In December this was down to the Kanawha & Michigan. In the East prices are on a lower level and consequently no effort is being made to find a market in that section.

LOGAN AND THACKER

Although Logan mines are obtaining a somewhat better car supply, nevertheless the supply dropped once again after the C. & O. had made an effort to furnish more cars. Production is limited to about 55 per cent of capacity.

Even with the Lake markets shut off, there is a sufficient demand to absorb more fuel than is now being produced in the region. Only a small tonnage was being sold on a spot basis, at prices ranging $1.25c-$1.75 per cwt. mine run.

Although the closing of the Lake market has eliminated one of the sudden sources of relief at least, the market itself was better than any for weeks.

Producers all making advances in prices have not yet been followed by prompt delivery. Sales for December have not been recorded as at the time of going to press. It is reported that there were no arrivals in this region for the third week of December, as the winter time had closed the port of the strike area.

BUFFALO

Demand is reported to have shown a marked increase as on account of the facilities furnished by the United States government by means of the War Leases to the Foreign Trade Commission. The lease on this coast ranges from $500 to $1,000 per ton. The lease currently runs for six months.
**ALABAMA**

The Alabama Coal Credit Association, organized by the Bankers' Loan and Trust Co., Birmingham, for the purpose of continually refinancing the Alabama Coal Credit Co., has been incorporated with capital of $18,000 for general and special purposes. The incorporators are J. W. Williams, M. H. Whitehead and C. W. B. Poe.

**COLORADO**

From September 1 to October 1, inclusive, the following prices have been paid for coal for consumption in the Denver market:

<table>
<thead>
<tr>
<th>Colorado</th>
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**INDIANA**

The Atomics Products Co., Evansville, suppliers of pulverized coal products for steam, has filed a voluntary petition in Bankruptcy in the United States District Court for the Southern District of Indiana, concerning the company's ability to pay its debts.

The Superior Ninth Rail Co. has operated for 14 months and has continued to operate near the C. M. & St. P. This mine is owned by C. A. Murphy and others.

**ILLINOIS**

A strike of coal miners in C. A. Collins' mine has been settled after a dispute over wages.

**LOUISIANA**

The Independent News Co., New Orleans, has been organized with capital of $10,000 for the purpose of publishing a daily newspaper.

**KANSAS**

A strike of coal miners in the Eastern Coal Co., Kansas City, has been settled after a dispute over wages.

**KENTUCKY**

The Madisonville Coal Company, Hopkinsville, has been organized with capital of $10,000 for the purpose of purchasing and developing coal properties.

**MISSOURI**

A strike of coal miners in the Missouri Coal Co., St. Louis, has been settled after a dispute over wages.

**NEW MEXICO**

The New Mexico Coal Co., Santa Fe, has been organized with capital of $50,000 for the purpose of purchasing and developing coal properties.

**NEW YORK**

The New York Coal Co., New York, has been organized with capital of $100,000 for the purpose of purchasing and developing coal properties.

**OHIO**

A strike of coal miners in the Ohio Coal Co., Cleveland, has been settled after a dispute over wages.

**OKLAHOMA**

A strike of coal miners in the Oklahoma Coal Co., Oklahoma City, has been settled after a dispute over wages.

**PENNSYLVANIA**

A strike of coal miners in the Pennsylvania Coal Co., Pittsburgh, has been settled after a dispute over wages.

**TEXAS**

A strike of coal miners in the Texas Coal Co., Houston, has been settled after a dispute over wages.

**VERMONT**

A strike of coal miners in the Vermont Coal Co., Burlington, has been settled after a dispute over wages.

**WASHINGTON**

A strike of coal miners in the Washington Coal Co., Seattle, has been settled after a dispute over wages.

**WISCONSIN**

A strike of coal miners in the Wisconsin Coal Co., Milwaukee, has been settled after a dispute over wages.

**WYOMING**

A strike of coal miners in the Wyoming Coal Co., Casper, has been settled after a dispute over wages.
The Coal and Coke Committee, Trunk Line Territory, announces a public hearing Nov. 11, 1922, at New York City, on adjustment of rates on bituminous coal from central Pennsylvania and adjacent points and on anthracite to Boston & Maine points in Canada, including Dorchester, Mass. The proposal is one to remove in part fourth section violations and to increase rates in some instances to rates effective to contiguous territory.

The General Electric Co. announces the formation of the Co., known as the Pennsylvania Electric Co., consisting of a fund of $400,000, the income of which will be used for the purpose of encouraging and rewarding service in the electrical field. It is given in the form of prizes to employees, recognizing and rewarding their work in the service of the company. The fund will be created as an appreciation of the great work of Mr. Coffin, not only for the General Electric Co. but for the entire electrical industry. Mr. Coffin, retired from active business about 1 year ago, was born in the city of New York, in 1818, in his 78th year, having been identified with the development of the electrical industry since 1832.

Geo. Macone, manager of the Boston office of the New York, N. H. & H. R. R., has called to New York to take charge of the contracts for the railroad companies, handling handling hunting equipment.

A. E. Jones, sales engineer for the New York, N. H. & H. R. R. Co., has been transferred to the New York City office of the company. He has been with the company for 5 years, during which time he has been largely responsible for the sales of the company in New York and adjoining territory.

The Valley Camp Coal Co. of Cleveland, Ohio, which has a temporary office in Columbus during the summer months, has been organized. The company is organized with a capital of $5,000 and the incorporators are John A. Griffiths, Cleveland; W. R. Davis, Arthur J. B. Buskirk and Adolphus J. Durham.

The New York Coal Co., Columbus, has been awarded the contract for 3,500 tons of coal for the municipal light plant at $2.75 per ton, making the contract total $9,618. The coal will be delivered at the rates of 100 tons per week.

The New York Daily News has been awarded the contract for the municipal light plant at $2.75 per ton. The coal will be delivered at the rates of 100 tons per week.

The New York Coal Co., Columbus, has been awarded the contract for 1,500 tons of coal for the municipal light plant at $2.75 per ton. The coal will be delivered at the rates of 100 tons per week.

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CANADA

A significant announcement was made by Hon. D. B. McKenzie, Solicitor General for Canada, in the course of an address in Toronto a few days ago, to the effect that plans were under way to supply Ontario and Quebec with coal manufactured from

**Note**

Scotia bituminous coal in sufficient quantities to make it practicable to replace absolutely independent of hard coal supplies from the United States.

The Yellowhead Coal Co.'s mine, at Coalbanks, Alberta, which fire recently from spontaneous combustion, and all efforts up to now to extinguish the fire have been futile, it is feared that the mine may be a total loss.

The Caribou Coal Co., operating near the British Columbia-Alberta boundary, has commenced production. A carload of coal shipped to Cranbrook, B. C., was retailed at $4 per ton, a remarkably low figure. The Caribou has a 12-foot shaft and driven a tunnel on one of its coal seams last year, and now coal has not been developed. The coal is described in some quarters as a bituminous, and makes a satisfactory house coal.

In a statement just issued the Federal Coal Advisory Committee, of Ottawa, once more warns householders that there is little anthracite coming into Canada and that the market is important supply of substitutes. Consumers are facing a situation which, unless a possible hardship "unless the attitude of the public toward the consumption of coal makes the situation more serious. It will be the middle of February before the shortage of anthracite can possibly be quantitatively supplied, and even then it will be insufficient for the entire winter transportation difficulties are generally at the worst.

The Betty mine, near Tylden, B. C., has commenced to ship coal to Prince Rupert. Last year the mine shipped sizable quantity of coal to both Prince Rupert and Edmonton. The mine, being in particular demand for bunkermating. Unfortunately, the mine is 73 miles from the railway and some of the cars are exceedingly bad. It is possible, however, to ship 400 to 500 tons. The shipment last week was 18 ft. thick, with two shales partings, 19 and 20 in. thick. Owing to the lack of a railway to connect the mine with the Canadian national system, it is said, would be costly.

On the recommendation of the Federal Coal Distributor the C. & O. R. Y. assigned an order, effective Jan. 1, directing the C. & O. R. Y. to assign to the mine of the O. & N. B. C. the right to bring top cars at the rate of four per day for ten percent of the freight charge for movement to points in Virginia, in priority to any other uses of such cars. It is provided, however, that the cars assigned shall be remitted against the shares allotted to the mines and shall not be subject to diversion or assignment except with the approval of the commission. All regulations of the C. & O. R. Y. shall continue in effect so far as conflict with this order are suspended.

The assignment of cars for railfreight fuel loading has reached such proportions as to be denounced by operators in eastern Ohio leading on alimentation, their evidence being that there is no car shortage as far as the mines having railroad fuel contracts are concerned. As a result of the complaint, four additional mines in eastern Ohio with an adequate car supply, it is estimated that fully 17,000 miners in Belmont County are idle the greater part of the time. Operators and officials of the mines have petitioned the designated car system as vicious and pernicious.

**Coal Mining Institute of America will meet Dec. 12, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 511 Chamber of Commerce Bldg., Pittsburgh, Pa.

**National Exposition of Power and Mechanical Engineering will be held at The Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.**
Evidence Must Be Unimpeachable

COLLECTION of information along two lines has been definitely inaugurated by the U. S. Coal Commission. Schedules are being sent to the coal companies asking for costs of production and realization from sales by months for the year 1921 and for earnings of men employed in the same year. Thus the two questions with regard to which there is perhaps the most controversy will be covered by comprehensive figures—the earnings of the producers and the earnings of the mine workers.

The schedules that have been adopted are rather formidable. On the cost report form there is provision for a maximum of 146 numbered items calling for 137 separate replies. Producers having less than 120,000 tons annual output are permitted to subtract 40 items from the list, leaving 97 items to answer. The longer schedule calls for a division of labor costs between 15 items, supply costs between 16 items and miscellaneous income spread over 9 items not required on the shorter form.

One may well wonder at the interest of the commission in a division of costs so fine as to set out, for instance, labor cost for "haulage and hoisting" from "dumping and tending," while neglecting to provide for a subtotal on labor costs that would permit comparison of payroll costs from the cost form with those from the same mine in the same month on the earnings form. Just why a commission inquiring into the vexed coal question displays such interest in the allocation of supplies expense among 16 classifications, including everything from mining through drainage, ventilation and railroad-car loading to engineering is not clear. Perhaps the inspiration was afforded by a diagram prepared and circulated by the operators some time ago showing to the number of several hundred the variety of items that go to make up the cost of producing a ton of coal.

The cost statement has 110 numbered lines, of which but 29 call for figures taken from the books; 15 are totals and subtotals, 15 are blanks. 40 are the details noted above called for on the long but not on the short form, and 11 are "yes or no" questions. For the majority of producers there are but 10 questions in the remaining 35 numbered lines of the schedule that require figures taken from the books. Any producer who keeps books can easily answer the questions on the short form, and the 40 additional details of the long form are of little moment.

The schedule covering earnings of mine labor is cumbersome but complete. It provides for a year's record by pay periods of the earnings and days or hours worked by each employee by name, classified by occupation. There is but one way to ascertain what a man earns in a year and that is to trace his record throughout the year. Since dollars received on a given wage scale is a function largely of time worked—even as regards tonnage men—low earnings connote few days of work, high earnings advantage taken of the better opportunity for labor. The labor schedule makes provision for bringing out, so far as mine records will permit, the relation of the days the individuals work to the days the mines offer opportunity to work. Absolute data in this respect for tonnage workers cannot be had because, as everyone knows, it has never been possible to ascertain how many days or how many hours per day the tonnage man stays on the job. The miner prizes so highly his freedom of action, his liberty to come and go, to absent himself at will, that any attempt to check his time other than by the roughest methods is doomed to failure.

These two studies—the costs and profits of the operators and the earnings of mine labor—are the most important statistical investigation that the commission will have to undertake. They are costly both for the operators, who alone can supply the data, and for the commission, which must compile the returns. The answers from these schedules will give the American people information on those points regarding which there is and has been the greatest controversy. Facts about what the mine workers earn and the companies profit from the production of coal have hitherto been either too fragmentary to carry conviction or have been ex-parte statements, subject to partisan attack and re-attack. The Coal Commission is looked upon as the agency of the American people set up to get all the facts and certify them to the public. This question must be settled.

It is but natural that operators' associations having collected much of these data regarding costs of production and earnings of labor—data in their estimation correct and true—should desire the commission to accept their compiled returns. This it appears, the commission will not do, for the reason that it must build its results on original sworn returns, holding that to do otherwise would lay its work open to such criticism as would annul its value and weaken its effectiveness.

To this there is no conclusive answer. Having set its face to the task of supporting the Coal Commission in its labors of getting all the facts about their industry, the coal producers must go along with the commission with this policy. Whatever would discredit the results of the commission would discredit the operators. The results must not only be the facts, they must be as well the undeniable facts. Quibbling over methods that are designed to produce unimpeachable evidence is shortsighted. Figures that are not probable figures in Congress or the eleven states whose laws for the United Mine Workers cannot readily be juggled are worth more oral times what it will cost the operators to get all and all the blanks the commission may desire. The coal producers should give no occasion to add to their reputation for refusing to give up the facts about the coal industry.
"Peace! Peace!" And There Was No Peace

G. E. LEWIS, president of the United Mine Workers, told reporters at early October that he hopes some of the coal for which offers he has received are likely to be awarded to the mine owners' associations, and for each to return to the problem of maintaining the coal industry against the coal operators leaving the association. "There are many persons who feel that the union is a monopoly, and as such has no right to exist," he said.

Abusing the Check-Off in Indiana

If proof were ever necessary—or valuable—to show that the United Mine Workers are ever ready to violate the terms of their contract agreements with operators the present check-off case in Indiana is a fair citation. There the union has not hesitated to abuse the sacred check-off, which is already under suspicion by the courts, and to bring to the fore, where all may see, evidence that the check-off is a spigot which can be tapped with more or less ease whenever the organization needs money. If the present intent is to amass a greater strike fund against the developments of next April, why should not the operator of that state fight back vigorously?

Whatever the justice of the debate over the meaning of the word "dues," the damning point in the case against the union is that during the past month, when the special assessment of $2 was supposed to have been collected, check-off increases of various amounts made by the association's treasurers and the locals did not specify $2 for the national union at all. Neither were these increases uniform. The explanations given by the locals varied widely. In one instance a secretary-treasurer explained that the union dues had to be increased because he was a new man on the job and had underestimated his expenses. In other cases there were astonishing increases in burial and sick-fund items, and all sorts of surprising boosts in initiation fees appeared. In one local this increase was from $10 to $50, in another to $100. The fact that several operators paid these increased check-offs in November through misunderstanding and through their not being alive to what was going on is no cause for the balance of them paying it now.

It will be recalled that in 1921 the Pittsburgh operators refused to collect a special assessment for the union under the check-off, an assessment the purpose of which was to support the Mingo war. Because the operators had certain knowledge of the use for which this money was designed, the union did not press the claim, and the "dues" were not collected.
Choosing, Lubricating and Attaching Wire Ropes

Hardness and Tensile Strength Found in the Same Rope but Flexible Rope Is More Subject to Wear—Lang-Lay Rope Stronger Than Regular Lay

BY J. F. HOWE

SELECTING the proper type of wire rope for each kind of coal-mining service is an important duty for the engineer. A study of the various materials used in wire rope is of interest because knowledge of the physical characteristics of the wire composing the rope will give a fairly good idea of the way in which a rope will behave when it goes into service. Four kinds of wire ordinarily are used in wire-robe manufacture:

Crucible-steel hoisting rope, composed ordinarily of materials of a tensile strength ranging from 160,000 to 200,000 lb. per square inch.

Extra strong crucible-steel rope, composed of materials of a tensile strength ranging from 200,000 to 220,000 lb. per square inch.

Plow-steel rope, composed of materials of a tensile strength ranging from 220,000 to 240,000 lb. per square inch.

Special improved plow-steel rope, for which each manufacturer has his own trade name, composed of materials of a tensile strength ranging from 240,000 to 280,000 lb. per square inch.

Tensile strength is not the only characteristic of the wires; others must be borne in mind. Mention was made in the first part of this paper of the importance of hardness and of the relative value of these steels when they are compared with this physical property in view.

In addition to the test for hardness, wire for rope must stand certain ductility tests. Even the hardest wire must meet a high ductility test, else it is unsuited for that purpose. There are cases where hardness is required in wire to withstand abrasion or rubbing, and in those cases either plow steel or monitor grade usually is required. From the standpoint of tensile strength alone, it may not be necessary to use this material: but in order to get maximum service, it frequently is necessary to use rope of the greater strength in order to get the harder steel and the life that goes with it.

In every rope installation two factors must be considered, the cost of installing the rope, including the time lost in so doing, and its original cost. It frequently happens that the cost of installation is a large percentage of the original cost of the rope; anything that can be done, therefore, to increase the life of a rope would cut down not only the original cost but part of the cost of installation.

It always is advisable to use a rope of standard construction unless the service it renders is unusual, and then only such special constructions should be considered as offer promise of reasonable improvement in service. If, for instance, a plow-steel 6 x 19 hoisting rope wears out too fast, a monitor or improved plow-steel rope would afford a harder wire and probably the added rope service desired. If not, then no effort should be made to reduce the friction. The rope maker should not be called upon to produce greater efficiency unless the mining engineer has done his part. In case of a bad overlay on the drum, however, a mining engineer can do little to better conditions unless a larger drum can be provided. In that event it is the rope maker's problem to propose a special construction or quality that will meet the stresses that the overlapping of the rope introduces. In some cases a hardened-strand rope, 6 x 25 construction, has given excellent results, and in other cases a Seale patent, 6 x 19, or modified construction such as 6 x 16 has produced the results desired. Lang-lay ropes often are better than regular lay for shaft ropes where overlapping is unavoidable.

Lang-Lay Rope Used for Many Years Ahead

Many opinions have been expressed as to the respective merits of regular-lay and Lang-lay ropes. The standard rope used in the United States has always been one of the regular lay. Without dwelling too deeply into the reasons for this, I might say that this probably is due largely to the fact that the regular-lay rope is more easily produced and in general is more satisfactory to the user than the Lang-lay rope. The latter rope is not, however, a new style of rope construction. It is as old as the art itself, having been brought out almost simultaneously in both England and Germany—in England by Lang and in Germany by Albert.

A Lang-lay rope is one in which the wires in the strand and the strands in the rope are twirled in the same direction. Lang-lay is never used in hemp cordage, because a hemp rope would not hold together if made in this manner. Perhaps this is one of the reasons why the ropemakers have fallen into the habit of making regular-lay rope instead of Lang-lay.

In the regular-lay rope the wires in the strand and the
In the Lang-lay rope, however, under the same conditions, an untwisting of the strands would cause a relaxing of the strands and loosening up of the wires, the only force tending to prevent the rope from completely untwisting being the natural stiffness of each wire taken by itself. Compare this with the tendency of a regular-lay rope which is to resist as a whole and powerfully to stop the untwisting.

Installations which have used Lang-lay ropes and reported unfavorably on them have done so in many cases owing to the natural reaction against innovation that takes place when the Lang-lay rope is put in service. It should be noted that whereas in the United States probably 90 per cent of the ropes used are of regular lay, in England, Continental Europe and South Africa by far the greater percentage of the mining ropes are of Lang-lay construction. Had the difficulties in the use of Lang-lay ropes been insurmountable their use would not have been so general in those countries.

In a Lang-lay rope the worn part on each wire is larger than it is in a rope of regular lay. The Lang-lay rope usually is at least 5 per cent stronger than a regular-lay rope composed of wire of the same size and strength. This is an advantage that has sometimes been overlooked by those who have criticized the former. Another criticism that has been offered is that it is more difficult to splice. This, I think, is a fact that is granted by the manufacturers and users. It is not, however, an insuperable difficulty, as has been proved by the use in various places of what is known as flattened-strand hoisting and haulage rope. All of this rope is of the Lang-lay type and not only can it be, but has been, spliced successfully, and found to give admirable service.

The particular place where it is adaptable to use Lang-lay rope is in steeply inclined and slopes where the rope rests or drags. It may also be used on vertical shafts, although few such installations are found in the United States. In Canada most of the shaft ropes in use are of Lang-lay construction, due largely probably to the influence of Great Britain in furnishing ropes of this kind. Lang-lay ropes on shafts have, so far as observation goes, given good results and little trouble. In general, a Lang-lay rope should not be used with vertical connections, as it tends to jam.

Rope composed of mixed strands differs widely in their flexibility. Listed in the order of their increase in that quality are the following constructions:

<table>
<thead>
<tr>
<th>Table 1: Rope Arranged According to Flexibility</th>
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<tbody>
<tr>
<td>Diameter: 7 wire</td>
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<tr>
<td>Diameter: 8 mm</td>
</tr>
<tr>
<td>Diameter: 9 mm</td>
</tr>
<tr>
<td>Diameter: 10 mm</td>
</tr>
</tbody>
</table>

Flexibility is increased by increasing the number of wires in the strand and decreasing the diameter of the individual wires. Whenever, therefore, the flexibility is decreased, the wearing surface also is decreased and the wires will not stand as much abrasion as those where a coarser construction has been adopted. Were it not for this fact, any place requiring a flexible rope could have its requirements fully met regardless of the other conditions.

Rope consisting of 6 strands of 7 wires, of course, is rather stiff and is used only for mine haulage and similar uses. The same is true of flattened-strand rope, 6 strands of 8 wires. The rope of 6 strands, 19 wires, as modified is used for both mine hoists and haulages, as is also the 6 strands, 25 wires, flattened-strand hoisting rope. In the case of haulages, rope something like the Seale patent construction of 19 wires is used, and in the case of shafts the regular 19-wire strand rope is used.

**Use Many-Strand Rope If Guides Are Lacking**

Rope of 18 strands, 7 wires each, known as non-spinning rope, is used in mining operations almost wholly for shaft sinking, for when it is used a shaft can be sunk without guides, the bucket showing no tendency to rotate when being hoisted. This rope, of course, is specially constructed for the purpose of attaining this freedom from rotation. It is not a rope that is recommended for promiscuous hoisting purposes, but it is exceedingly efficient in shaft sinking and has demonstrated that it is superior to any other type or construction for that purpose. Ropes composed of 6 strands of 37 wires are seldom used for shaft work, because the flexibility is in most cases greater than is required. Rope of 8 strands, 19 wires is seldom used for shaft work, and for the same reason. Shaft ropes, which are overlaid in winding on the drum, are made of modified constructions containing coarser wires.

During the process of making the manufacturer should lubricate the rope internally and externally. It can be done better and more thoroughly then than at any other time. Additional lubricant should be applied as soon as the rope shows external signs that such attention is needed either to reduce friction or to prevent rust. In making the application it is preferable to put on a small quantity frequently than a larger quantity at longer intervals. Be sure the rope is free from water, for if it is present it will prevent the lubricant from adhering.

Most lubricants are free from acid, but if in doubt, a test for acidity should be made. Acid will cause the steel wire to become brittle. Whenever possible, a can of lubricant should be placed so that it will drop from a bucket rope as it runs back and forth. This will be found to lubricate the rope effectively and at a low cost. With the drip method, a thinner lubricant may be used than where the lubrication is more complete but is done only periodically. Many lubricants must be heated before application, and in the winter it is
more difficult, of course, to lubricate a rope than in the
summer.

A wire rope wears out gradually in service until the
time comes when replacement is deemed necessary.
When ropes are used for hoisting men, it is usual to
remove ropes earlier than when ore or rock alone is
hoisted. The evidences which are allowed to govern
in the decision as to the time when a rope should be
rejected are as follows:

1. External wear on the wires.
2. Breakage of individual wires.
3. Corrosion due to mine water or electrolysis.
4. Torsion or breakage of wires near attachments.

External wear alone seldom is sufficient of itself to
necessitate the removal of a rope, but broken wires are
always looked upon as more or less of a source of
danger. Corrosion, if internal, is not as noticeable as
the other two, but it is really more dangerous than
either, being concealed in many cases. Torsion or
breakage of wires near attachments is caused by a
crowding ahead of the twist or lay of a rope as the
hoists are made, coupled with the vibration of the
rope which comes to a stop at or near to the drum.
This makes it advisable to cut off a short piece of rope from
the cage end at regular intervals of time, thus changing
the point where the vibration of the rope localizes.

In this connection reference should be made to Bu-
lettin N° 75 of the U. S. Bureau of Mines, where further
particulars are given as to practice in the recapping of
the ropes on mine hoists. A similar practice is in use
in the mining field of the Transvaal.

WHAT DETERIORATION IN ROPE IS FATAL

In passing judgment as to whether a rope should be
replaced care should be taken to see that all evidences
of weakness are given due consideration. A rope show-
ing only wear will be little reduced in its ultimate
strength, much less than the wear would appear to
indicate, for the worn spots on the wire reduce the
cross-section of the rope but little, and after all it is
the cross-sectional area at any given point which deter-
mines the strength.

The location and distribution of the broken wires in
a worn rope also should be given consideration. Single
wires broken in any strand, if separated by a distance
of, say, 3 ft. will reduce the strength by only 1/114 if
the hoisting rope is composed of 6 strands of 19 wires
each. Several wires broken in one spot, however, will
reduce the rope strength materially.

In determining the life of a hoisting rope different
methods are used to keep a record of the service ob-
tained. Sometimes this is measured by the time the
rope is in service, but if the rope is not worked steadily
for the entire period, this can at best be only a partial
criterion of rope performance. More often a record is
kept of the tons hoisted to the surface, including the
rock and ore. If this value is sufficiently high, the rope
service is considered satisfactory. A rough check of
this can be obtained by taking the number of trips
made during the rope life.

For elevator work it is becoming more and more
common to measure the service by the number of miles
carried by any set of ropes, and it is practicable to do
the same with the hoist of a mine shaft by attaching
a counter to the drum shaft with suitable reduction
mechanisms by which the mileage can be mechanically
determined. Whatever method is used for keeping track
of rope performance, allowance will always have to be
made for contingencies or variations in service.

WHERE ROAD UNDERMINES THE ROCK FACE

To reduce rubbing of rope on rails and wear, the road is
made as straight as can be arranged. A rocky road real
nccessed over a valley makes it impossible to keep the road on
a straight line.

There is still much of what might be termed "con-
servatism" when it comes to a discussion of the best
means of fastening a cage to the end of a wire rope.
Men still tend to cling to the older forms of attachment
instead of adopting improved methods. I am convinced
that this is because many rope users have perhaps
never seen ropes tested and feel that in making a
change to some other method than that which has been
in use for a period of years involves a responsibility
which they do not desire to assume.

Most of the general types of rope fastenings have
been in use for many years. They are described in
Table II, where their efficiencies are given as compared
with that of a steel socket with a properly placed steel
filling, rated as 100 per cent.

<table>
<thead>
<tr>
<th>TABLE II—ROPE FASTENINGS AND THEIR RELATIVE EFFICIENCIES</th>
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<tbody>
<tr>
<td>Description</td>
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<tr>
<td>-------------</td>
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<tr>
<td>1-Wire rope clamp and thimble</td>
</tr>
<tr>
<td>2-Wire rope clip and thimble</td>
</tr>
<tr>
<td>3-Thimble or eye with j-j —</td>
</tr>
<tr>
<td>4-Steel or clamped steel socket</td>
</tr>
</tbody>
</table>

For clips, the following table should be used in mak-
ing attachments to the ends of a rope.

<p>| TABLE III—NUMBER AND SIZE OF CLIPS FOR ROPE OF VARIOUS |</p>
<table>
<thead>
<tr>
<th>SIZE</th>
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With either clamps or clips it necessary after the
load is placed on a rope to go over all the bolts and
tighten the nuts, because tension on a rope compresses
the hemp core and reduces the stress on the bolt,
making them unsafe. One method for using several
clamps or clips is to keep them down to a reasonable
value to the pressure necessary to make them hold.

No fastening except the socket that with increasing
develop maximum efficiency. This method has been.
The Frugal Man Saves Oil Without Injuring His Machinery

BY F. C. SIRNACK

LACK of proper lubrication doubtless is the cause of most of the trouble experienced in the operation of coal-mine machinery. By this I do not mean that enough oil and grease are not applied. On the contrary, I find in a large number of cases that twice or three times as much oil is being used as would lubricate the machinery properly, yet the machines are constantly suffering from a lack of lubrication.

This, for a number of reasons. First, the oil or grease does not reach the bearing or part to be lubricated, the oil holes and channels being full of coal dust or dirt; second, the oil or grease is not applied at the proper time; third, the lubricant employed is not of a quality suitable for the particular type of machine or bearing on which it is used.

For the lubrication of tipple and washing machinery, crimson black oil is good enough. The oiler, however, should be instructed in its use if any economy is to be shown. He should be provided with wires of several gauges as that he can clean out the oil holes, and before applying any oil he should see that all such holes are clean right down to the shaft bearing. He should time out only enough oil at any one time to lubricate the bearing, as any surplus that runs off lubricates nothing and only makes a mess.

The first oiling in the morning should be done before starting up, and the oil should be applied hot so that it will flow freely into the bearing and furnish lubrication the moment a start is made. I have known of several instances where those in charge did not insist that bearings be oiled before starting but instead preferred to wait till hour or more. A bearing will be harmed more in a few minutes of dry running than in a month of steady operation with proper lubrication. For this reason it is always advisable to oil up any kind of machinery before starting in the morning, as some of the bearings may be dry and it does not pay to take a chance.

If grease is to be used on this class of machinery, every bearing should be equipped with an approved grease cup of some kind. Furthermore a grease should be selected that will not harden. If spring cups are used they must be watched closely so as to be sure that they are feeding and the oiler should screw each cup down a little, twice or more each day, the first time being before starting up in the morning. All oil and grease should be stored in covered containers from which coal dust, dirt and grit should be carefully excluded.

I find that the slow-running bearings around washery and tipple are neglected more than any others. As they do not run fast enough to produce sufficient heat to be noticeable, they are allowed to become dry and grind themselves out. Oil, it is true, may be slopped all over them but the oil holes are likely to be plugged tight with coal dust and dirt. The oiler of such equipment should be required to keep all deposits of oil, grease and coal dust removed from the bearings, as these are not only unsightly but tend also to conceal the real condition of the machinery.

If motors are used to drive tipple or washery machinery, their bearings should be drained and washed with kerosene or gasoline at least once a month. Only a high-grade oil should be used, and the oil rings should be examined daily to see that they are operating properly. On cold mornings these motor bearings should be watched closely, as the oil is likely to thicken to such an extent that the rings will not operate. In that case the bearings may be damaged before the oil thaws enough to allow the rings to function properly.

All oil drained from motor bearings should be saved and filtered, as it can be used for lubricating other machinery which requires an oil of a comparatively high grade. I use this oil in the power-house oiling system.

A high-grade medium-soft grease, absolutely free from acid, should be selected as a lubricant for ball bearings on locomotives and mining machines. If any acid be present it will pit the highly polished surfaces of the balls and races, and materially shorten their life. Great care should be exercised in keeping grit and dirt out of the grease used in such bearings, as they are ruined quickly by a small quantity of such abrasive material.

On all high-speed bearings of coal-cutting machines I would suggest using a good grade of red engine oil. On the other bearings I would use black oil, except on some of the worm gears, where grease should be employed. The same precautions as to keeping oil holes open and as to the quantity of lubricant used that have been advised in connection with tipple and washery machinery also should be observed on the mining machine. Also the machine always should be oiled before a start is made in the morning.

Before starting to cut any working place the cutter chain should be thoroughly lubricated with black oil. This best can be done by running the chain slowly and pouring the oil onto it at a point where the oil will be carried under the guides. By paying more attention to lubrication the life of machinery will be appreciably lengthened, costly delays will be lessened and a great saving in oil will be shown. A small quantity of oil properly administered will do far more good than a large quantity wastefully used.
Cutting Thin and Pitching Coal Beds in Belgium
By Longwall, Using American Chain Machines

Output per Man at Face Has Been Doubled by Change in Methods—No Regular Packwalls Constructed—Stepping of Working Faces Reduced to Five Yards—Foreign Labor on Increase

By F. C. Cornet*
New York City

NODDIIIDY believes that American coal-cutting machines, in their present state of development, can ever be put into successful use in all the Belgian mines, for in some of them the difficulties to be met are extremely unfavorable. Where the pitch of the coal has not exceeded 35 deg., however, the American chain cutter of the so-called longwall type during the last two years has shown such a creditable performance that it is now safe to predict that it will soon be considered an instrument without which the coal in most of the mines of that country cannot be worked at a profit.

In order to understand clearly how the Belgians had to modify their plans so as to make it practicable for them to use mining machines to advantage in their mines it is necessary to describe briefly the mining methods which usually have been adopted in the past in that country, where, according to duly recorded data, coal has been mined for a longer period than in any other country. One of these mining methods, shown in Figs. 1 and 2, consists in driving to the rise, on the full pitch, a series of short faces, 5, arranged in groups of four to seven—four in the case illustrated.

Each group generally has an aggregate face development of 250 ft. or thereabouts and is driven some distance in advance of the following group. Each face in a given group also is in advance of the following one, but a few feet only. Fig. 1 shows a plan of workings of this kind arranged between two places, 3 and 4, both driven level in the seam at different elevations and at a relatively considerable horizontal distance from each other. This distance, L in the case represented, is 1,100 ft., whereas H, the difference in elevation, is 420 ft., making the grade about 38 or 39 per cent.

Place 3 serves as the main road through which all the coal mined between 3 and 4 is hauled away. Place 4 itself was used at an earlier period as a haulage road through which all the coal mined to the rise of that place up to another place of same character driven in the seam at a higher elevation was hauled away. Place 3 is tributary to tunnel 1, driven across the measures and serving as both air intake and general haulage road.

In the same way, place 4 is tributary to tunnel 2, also driven across the measures, serving as general return airway and leading to the fan shaft all the air coming from the level of place 3, not only through the workings represented but also through all the other workings in operation between the level of tunnel 3 and that of tunnel 4. There may be a dozen or more such workings.

All places marked 6 are so many self-acting inclined planes through which mine cars are taken from the haulage road 3 to the different faces (5) and vice versa. All these planes are maintained in the gob. Half way between places 3 and 4, a level place (5) is provided in the gob, crossing all the planes of the same group of faces.

Below place 5 only one plane is thereafter maintained, while all the planes above 5 are kept working until all the coal that is tributary to the group of faces has been worked out. Parts of planes when no longer used are allowed to cave. When a group of faces is worked out, all places connected with it also are allowed to cave, as shown by dash lines and indicated by 7 and 8. All planes, intermediate places (8) and the main road (4) are double tracked, the gage varying between 22 and 24 in., according to the preference of the company operating the mine. Some cars have a capacity of only 0.23 ton, but some will hold as much as 0.50 ton. This also varies from company to company.

Mining machines tried on the short faces shown in Fig. 1 gave results that were unsatisfactory economically, on account not only of the shortness of each individual cut, which made it necessary constantly to move the machines from place to place, but also and principally on account of the difficulty encountered in moving the machines through the narrow and steeply-sloping passageways provided for the passage of air from face to face and group to group all the way from the lower level.

*Consulting engineer.
As mining progresses, that is, as the faces advance, the plane serving the uppermost face is in time discontinued and allowed to cave. The next plane is extended upward through the gob to level 8, serving the uppermost face. In the same way and simultaneously the service of the face second from the top is insured by extending upward through the gob the plane that was serving the face second from the bottom.

The service of the latter is itself insured through a new plane rising from the haulage road (3). Belgian miners think no more of driving a place through the gob than our miners of driving a crosscut between rooms. Caved planes and level places, shown in dash lines, are indicated by 7 and 8, respectively.

As sufficient headroom can never be provided even for mine cars by merely removing the coal the necessary height is obtained by digging into the floor. This is called in French "couper la voie," which means "to cut the roadway." Thus the cars can be brought to the foot of the different faces at such a level relatively to the floor of the coal seam that the coal, sliding in chutes from along the face, is discharged either directly into the cars, or into small, gate-controlled bins, which in turn are emptied into the cars. When the pitch of the seam is not sufficient to make the chutes operate by gravity, mechanical chutes are used. A system of such chutes was described in Coal Age of Sept. 28, 1922.

Belgian coal men do not consider that mechanical chutes are necessary so long as the pitch of the seam is 22 deg. or over.

I desire now to call attention to the practice of driving the small recesses (11) a few feet (8 to 12) ahead of the faces. The reason for these recesses will appear below. It might be said that place 4 is not properly driving, as it is an old place. But it must be reopened anyway, having caved since it was first dug and left with nothing but a packwall to maintain it on the upper side.

It will be understood without explanations that the method illustrated in Fig. 3 lends itself well to the use of American cutting machines. At one of the Americourt mines near Charleroi, where the faces are longer than those shown in Fig. 3, being 88 m., or nearly 290 ft., horizontal measurement, a cut 54 in. deep is completed in 3 hours and 30 minutes, including what time is necessary to change all the bits when the half way point is reached. The Americourt pitch is 22 deg.

At the Maurage collieries, where the pitch varies from seam to seam, and even in the same seam, from 10 to

25 deg., the coal is cut at the same rate of speed as at Americourt, each 250 ft. face being cut 54 in. deep in exactly 3 hours, including the time consumed by a complete change of bits. In the case of the workings shown in Fig. 3 the time necessary for passing the machine from one face to the next varies with the distance separating the faces. It varies also with the condition of
Relation of the Various Mine Power Costs Discussed at Illinois Institute

ONE of the leading articles at the Illinois Mining Institute was that of A. J. Hoskin, research assistant professor of mining engineering at the University of Illinois. Its subject was "The Distribution of Power Consumptions and Costs in Illinois Coal Mining."

In prefacing his paper, Mr. Hoskin said it was obvious that electricity is supplanting all other power underground but that on top "steam has better withstood the competition, although it is certainly yielding. Under some managements, if the airshaft is comparatively near the boiler house, an electric motor has little chance against even a second-hand steam engine for driving a fan. The same idea applies to small power units about the tipples. Though some managements may be strong for electrical units elsewhere, they insist upon the use of live steam for hoisting and ventilation and for driving screens and shop machinery."

In making the investigation into power consumption and costs in Illinois mines Mr. Hoskin assigned all consumption to six items: mining, hoisting, pumping, ventilation and miscellaneous. He said that as it is unusual for mining companies to subdivide into so many heads, he had much trouble in getting the necessary data. In fact, he said, he was told by many well-informed men that his effort would be fruitless. He made it nevertheless and asked fuller cooperation that his work may bear real fruit.

In his study of distribution he picked fifty shipping shaft mines of various sizes which he thought were typical of the 373 such mines in the state. Their combined daily production is 141,380 tons, varying from 650 to 5,260 tons each. Their depths vary from 191 ft. to 650 ft., the average being 321 ft. The thickness of coal ranges from 3 ft. 6 in. to 10 ft. with an average of 7 ft. 2 in. In 1921 they worked from 100 to 298 days and averaged 267 days.

Mining is manual in 5 mines, by compressed air in 1, and by electricity in the remaining 49 mines or in 80 per cent of the whole. Direct current is used in 36 and alternating current in 2. Hoisting varies from "all-mule" to all electric. Hoisting is by steam in 95 per cent of the mines. Pumping is exclusively electric in 25 per cent of them, is performed by steam in 34 per cent and in the rest both electric and steam are used. Pumping consumes 52 per cent of the total power used in one mine and less than 1 per cent in others, making the pumping average 5 per cent.

MANY FANS ARE STILL DRIVEN BY STEAM

Steam drives the fans at 35 of the 50 mines. The "miscellaneous" division of power consumption which made up one-tenth of the total showed heavy surface or boiler-feed pumping, carpenters and machine-shops that serve other mines and the loading and screening of coal before shipment in mainhers.

A table of statistics on power consumption at the 50 mines failed to give basis for any definite general conclusions or any consistent relationship between the six classifications. Hoisting, for instance, ranging from 1.4 per cent to 50.8 per cent, ventilation from 2.2 to 81.3 and haulage from 4.6 to 67.1, thus making plain the fact that "every mine is a problem of itself." Moving haulage and ventilation showed a consumption of two-thirds of the total.

Dividing Mr. Hoskin's percentages figures on power consumed under the six headings and grouping the 50 mines into 5 groups of 10 mines each, this table results:
In attempting the difficult determination of power costs, Mr. Hoskin said he encountered all sorts of obstacles, chief of which was the insufficiency of the records at mines mining companies. In most cases, he said, such rates are not distributed to the final consumers of power. A common practice, he said, is to combine fuelage and mining as one item.

At mines which purchase power the exact total, of course, is known, but hardly any attempt is made to allot it. As to locally generated power, about all the operator knows is the total as recorded on the switchboard. Mr. Hoskin said little is known even of the cost of operating buildings. Data are as difficult to get from steam mines as from any other.

Because of the difference in the value of coal and because of various other items, Mr. Hoskin said it seems almost impossible to arrive at any common and comparable system for figuring power costs at different mines. Some superintendents say they burn non-nailable coal that has no market value and therefore cannot be charged against power.

Others, in attempts to fix their charges fairly, figure them on the nine-run cost of coal for the preceding month, a few burn whatever grade of coal gives best efficiency and charge it at the prevailing market price, and some strike an average for a whole year from the 12-month average, thus putting themselves on the same "annual contract" basis as most big consumers.

Then there always is the question, "Should we charge at market rates or at the production-cost level?" Whatever the system followed, Mr. Hoskin believes 75 per cent of the power cost is boiler-room expense. He asked his hearers for assistance in determining some fair basis for figuring these costs, so vital to the coal-mining industry.

In a written discussion of the paper, Carl W. Lee, engineer of the Peabody Coal Co., proposed that power for all uses be reduced to kilowatt-hour per ton basis and suggested some subdivisions of uses that would make cost determination easier. He thought coal should be figured at a final average cost per month. F. F. Jefferies, general superintendent and chief engineer for the Superior Coal Co., at Gilleispie, Ill., said the average market value for the year is a good basis for all except industrial mines, where this average must be assumed, as the coal is not marketed.

Another speaker called attention to the facts that power consumption is directly affected by which of the various housing methods was adopted, by the condition of the track and haulage equipment, by the age and condition of the face, by errors in pumping, such as permitting pumps to "run on wind," and by power used in transmission, all of these adding elements that should have to be considered in figuring power costs.

J. C. Quade, chief engineer for Big Creek Coals, Inc., said his company's six mines, operating under widely varied conditions, find the kilowatt-hour or the horsepower-the best basis. E. G. Lewis, of Sandeval, and J. H. Blackmun, of Danville, both agreed that the actual production coal, not market price, should be the basis. D. D. Wilcox, general superintendent of the Superior Coal Co., pointed out that on account of the variation in value of coal between mines, price is not a fair basis, but some basis of fuel value is.

P. W. DeWolf, chief of the State Geological Survey, followed this by suggesting that the British thermal unit basis be adopted. Mr. Hoskin ended the discussion by asking again that the coal men of the state help him to find the answer to the vexed question and said that if they gave him the efficiencies at points of consumption and helped him arrive at a fair basis for fixing the value of coal, they would be performing a real service to the industry.

Mr. Quade described by word and picture the new No. 4 mine of his company—Big Creek Coals, Inc., west of Harrisburg. It is calculated to become a 6,000 tonner, though now it is hoisting only through the airshaft. The main entry is driven through from shaft to shaft and development work is going steadily ahead. The concrete work in shafts and bottoms struck the institute as being particularly striking and handsome. Some of the underground pictures shown with slides made the mine look more like a monastery than a coal pit.

Harold E. Culver, who is working under the cooperative agreement of university, state and government, spoke interestingly on the work he is doing toward identifying more accurately the various seams of coal of Illinois, suggesting that it is entirely possible that the seams the mining men know so well might possibly be correlated as between fields. The usual earmarks such as distances of a seam from the surface, thickness and nature of roof, solidity of floor, appearance of "blue bands" and the like may not be infallible. The fossil shells and plants in the caprock on No. 6 seam are found in varying thicknesses of rock and in rock that does not overlay any coal at all. Thus they may not be true indexes of specific coal beds.

He said he had been trying to find the answer in the sequence in which various strata were laid down. The biggest difficulty in the way of this determination, he said, is the fact that limestone, shale and sandstone were laid down in different places at the same time. One or the other may lie directly on top of a given seam of coal in different parts of even a single county. It is necessary to know the conditions under which each was laid, whether under sea, at the water's edge or inland by streams. This is a complicated question. Mr. Culver said he hoped the operating men of the state would give him all the data available when he asks for it, which will be on occasions both soon and frequent.

The U. S. Bureau of Mines and the Public Health Service, cognizant of the importance of dust in the causation of pulmonary disease, have conducted numerous studies on the quantity and nature of dust in mine and factory air. A new instrument for sampling aerial dust devised by Leonard Greenburg, assistant sanitary engineer, retired, U. S. Public Health Service, and George W. Smith, junior physical chemist, Bureau of Mines, makes use of the principle of impingement of the dust-laden air at high velocity on a wetted glass surface together with that of bubbling the air through a liquid in a glass flask. This apparatus consists essentially of three parts: a hand pump or electrically driven blower, a flow meter, or other suitable means of measuring the air passed through the instrument, and the dust-collecting device. A description of this new dust sampling instrument is given in Serial 2,392, which may be obtained from the Bureau of Mines, Washington, D. C.
Insulating Oils Are Decomposed by Passage of Current: How to Keep and Restore Their Dielectric Strength

Heat Raises an Oil Vapor but Disruptive Discharge Releases Hydrogen—Sludge Is Formed by Oxidation of Overheated Oil—One Part of Water in 50,000 Will Render Oil Unfit for Use

BY E. J. GEALEY
Kingston, Pa.

TRANSFORMER oil, using the word in its larger sense, covers the oil used not only in transformers but in oil switches, lightning arresters and feeder regulators. It is used for many purposes, insulation being among the more important. This it may effect directly or by its action in excluding moisture. It is circulated through windings for the purpose of carrying away the heat generated therein. It serves also as a preservative and as a means of extinguishing arcs.

Transformer oil is a product of mineral oil and is a member of that hydrocarbon group which begins with methane or marsh gas (CH₄) and includes a long series of compounds of increasing molecular weight, the members of the group containing gases, liquids and solids. Kerosene and gasoline are representative of the lighter oils while lubricants and transformer oils are exemplars of those that are heavier. The solid members of the group are paraffin and its analogues.

As the molecular structure is changed, the specific gravity, the specific heat, the viscosity, the volatility, the dielectric strength and other properties are changed, as also the relative flash and fire points, the insulating and cooling qualities.

As hydrocarbons are inflammable under certain conditions of temperature, pressure, air admixture and ignition, their use must be safeguarded. Fortunately these conditions are so rarely obtained in combination that in most instances the hazards involved in the use of the heavier oils are quite negligible.

DISTILLATION VS. DISSOCIATION PRODUCTS

When the gases formed as a result of this disintegration are analyzed it is found that hydrogen preponderates and that there is a relatively small quantity of hydrocarbons. In view of the violence with which oxygen and hydrogen unite even when the former is only in such concentrations as are found under ordinary atmospheric conditions, it is easy to understand how great a destructive force can readily be obtained from the ignition of an atmosphere of air and decomposed oil.

On the passage of a disruptive discharge hydrocarbons form gases, at or below the oil surface, that differ radically from the oil vapor that is formed as the result of a gradual increase in the temperature of the oil. The accumulation of oil vapor that forms the basis of the flash-point test is still essentially one of oil and consequently the vapors will condense when the temperature is decreased, resuming their original character. On the other hand, the gases resulting from the disintegration of the oil molecules consequent on disruptive discharge are permanent over ordinary temperature ranges. These facts are not generally appreciated.

Though the explosion of a mixture of air and dissociated oil is more destructive than a mixture of air and oil vapor, it has proved to be of rare occurrence; and when it happens it is usually traceable to some neglect.

A good transformer oil for general purposes should have the following characteristics, viz: a high dielectric strength, a high flash point, a high burning point, a low freezing point, low viscosity (when measured in the time in seconds required for a given quantity of oil to pass through a standard orifice at a definite temperature), a minimum tendency to form a sludge and a freedom from acid, alkali, sulphur, wax, animal or vegetable oils or fats, or other soluble matter.

The great enemy to transformer oil is water. The deleterious effect of small quantities of moisture on the dielectric strength of oil is now recognized by nearly all who use it, but it appears to be even more serious than is generally supposed. Fig. 1 shows clearly the effect of moisture on the dielectric strength of oil.

For high-tension work the classification in Table I is sometimes used in comparing oil.

**TABLE I—DIELECTRIC STRENGTHS OF TRANSFORMER OILS**

<table>
<thead>
<tr>
<th>Voltage (kv.)</th>
<th>Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 to 10 kv.</td>
<td>Good</td>
</tr>
<tr>
<td>12.5 to 17.5 kv.</td>
<td>Good</td>
</tr>
<tr>
<td>20 to 28.5 kv.</td>
<td>Good</td>
</tr>
<tr>
<td>52.5 to 66.5 kv.</td>
<td>Good</td>
</tr>
</tbody>
</table>

Owing to the confusion which has arisen from the use of different standards it may be necessary to add that Table I is for use with the so-called new-style test gap. The old-style gap was made of electrodes having a 3-in. face and set 0.2 in. apart, the new-style

![Graph showing the relationship of dielectric strength and moisture content](image-url)
and run his electrodes across the face and not oil to any. An oil before testing with the old style and oil will test about 22 kv on the new style gap. It is, therefore, important in considering the dielectric test of an oil to know the style of gap used.

As shown by Fig. 1 and Table 1, an oil having a small proportion of moisture as 2,100 of 1 per cent would be unsatisfactory. Small particles of dirt, and other foreign matter, especially when metallic, are almost as pernicious as water in reducing the dielectric strength of the transformer.

The flash point is a definite temperature at which vapors are given off which can be ignited by a match or other source of flame. The lowest temperature at which these ignitable vapors are given off is termed the flash point. When the rate of evaporation is sufficient to maintain a mixture of vapor and air which will burn and support combustion, the burning temperature has been reached.

Low viscosity is another important requisite for transformer oil. By viscosity is meant the relative fluidity of an oil. It is necessary that transformer oil be of low viscosity, for it is essential that the heat generated in the coils be quickly dissipated. When the oil comes in contact with the heated coils it also becomes heated and rises to the surface, where it again becomes cool. Thus the oil carries away the heat of the transformer.

Unless this is done quickly and efficiently the coils will develop hot spots with their attendant dangers.

DEGENERATION OF THE BODY OF THE OIL ITSELF

Aside from matter such as dirt, dust and fine particles of carbon which get into it from an exterior source, transformer oil is made ineffective by the formation of "sludge." This is developed by oxidation of overheated oil, that excessive heating being due to improper ventilation, overload or overvoltage. Analysis has shown also that this sludge often consists of impregnating compounds which have been precipitated in the oil, due to improper treatment of the compound during the impregnating process.

This sediment reduces the fluidity of the oil, thus impeding its circulation and clogging the oil ducts. A gummy colloidal substance is deposited on the coils and on the tank thus preventing the proper dissipation of heat from the windings. The retention of this heat causes the transformer to become overheated even under normal loads, and in this way cuts down the capacity of the transformer and increases the tendency to form sludge.

SPECIFIC NEEDS OF CIRCUIT-BREAKER OILS

For circuit breakers the requirements as to sludging and heat transference do not hold an important place, but there is a greater danger of oil being splashed in the presence of flame. A high flash oil, therefore, should be used in circuit breakers.

A heavy short-circuit in a transformer, sufficient to trip the circuit breaker, usually is of too short duration to produce conditions that will cause an explosion. A partial short-circuit, continuing for a long period at or below the oil surface, however, will, as mentioned before, result in the accumulation of a large quantity of hydrogen, which may cause a powerful explosion on the passage of discharges through the gaseous mixture. To prevent such a discharge and the consequent release of destructive forces it is desirable to maintain the oil at a proper level above the terminal head.

It is, therefore, important that oil be kept in its original condition, as it is quite possible to get a transformer oil of the best grade and yet have trouble if the oil is not given the proper care.

All oil in unsealed drums and even all oil in drums that are sealed but which have been stored where they were exposed to the weather should be tested before using by taking a sample from each drum. Drums stored out of doors always should be placed on their sides, never turned up on end. The chimneys should never be allowed to lie in pools of water, nor should water be allowed on the heads when the drums are in a vertical position. Outdoors storage of oil always is hazardous and to be avoided if possible. When drums are stored out of doors they should be protected against direct precipitation of rain or snow.

Extreme precautions are required to insure that containers used for transferring oil be clean and dry. A drum of cold oil when taken into a warm room will "sweat" and the moisture thus formed may mix with the oil when drawing it from the drum.

To filter out some of the scale formed inside a drum of oil the oil should be first slightly heated and filtered through about two or three layers of ordinary finely woven cotton cambric that has been thoroughly washed and dried. It is highly desirable that all the remaining scale be taken from the oil by a suitable filtering machine.

Periodic inspection and tests should be made to determine the quality of transformer oil. These tests will determine the necessity for dehydrating and purifying the oil if it has absorbed moisture or acquired sediment.

Large users of transformer oil are becoming more and more converted to the necessity of taking these precautions. Where this practice has been followed in a systematic manner it has been found that failure of apparatus from burnouts, and "unknown causes," with subsequent interruption of service, has been reduced to a minimum and a resulting economy in the use of oil has been effected.

IN TESTING CHOOSE WORST OIL IN TRANSFORMER

The oil used for inspection and test should be taken from the lowest point in a transformer tank so that any sediment or moisture in the oil will show up in the sample. The sample should preferably be taken after one or two bucketfuls of oil have been drawn off the tank.

In the commercial testing of oil, small flat disks with sharp edges usually are employed as electrodes, so as to combine uniformity of field with edge effect.

Fig. 2 shows an oil-testing cup. The gap is locked in position after being set against a feeler gage. The cup is made of a composition, usually of hard rubber. The interior of the spark gap is perfectly smooth and symmetrical so that there is no tendency for dirt to collect. When the spark gap is used on the testing transformer it is supported and insulated by the high-voltage terminals.

The testing transformer usually has a ratio of 110 to 25,000 volts. The control consists of an air-cooled auto-transformer with regulating taps, connected to a selector switch. Dial contacts are arranged to give 15, 17.5, 20, 22.5 and 25 kv. on the high-tension winding of the transformer.

When making a test of an oil the cup is first thoroughly cleaned, usually with benzine, and then washed out with a small quantity of the oil that is to be tested.
The gap having been accurately set, a sample of the oil is put in the cup and allowed a short time to settle; the voltage is then applied to the electrodes of the test gap and gradually raised until the gap breaks down or the oil takes the full 25-kv. test.

After each discharge it is essential that the test cup and electrodes be washed free of any carbon or other foreign material. The disruptive breakdown of oil under dielectric stress is not due entirely to the voltage exceeding the dielectric strength of the oil, as is the case with air, but is due to some extent to something being carried into the dielectric field or being produced in that field which weakens the dielectric strength so as to cause a premature breakdown.

This material may be particles of moisture, dissociation products of the oil, olefines, fats, fatty acids, dust fibers or combinations of them, in solution or colloidal solution or suspension in the oil. For this reason it is always best not to disturb too greatly the sample under test before applying the voltage test.

A small bright spark may pass across the gap without causing the testing circuit to open. When this occurs this discharge should not be regarded in recording the results of the test because it usually is due to minute air bubbles of which have not had time to escape from the sample after being poured into the test cup.

The dehydration and purification of transformer oil may be accomplished by either the filtration or the centrifugal method. In the first the oil is pumped under pressure through a filter press consisting of several layers of dry blotting paper. The solid matter in the oil is caught by the paper, and the water is retained by capillary action. The capillary attraction between the paper and water is greater than that between the paper and the oil. The effectiveness of the method is dependent mainly upon this fact.

The other method consists of pumping the oil into a machine where after heating and delivery to the top of the purifier it flows into a revolving bowl. Here it is dehydrated and purified. Both methods may be used when the transformer is in operation. The best results will be obtained by following the instructions of the manufacturer of the machine.

The successful operation of transformers, oil switches, lightning arresters and feeder regulators, therefore, depends to a large degree upon the condition of the oil, which should be systematically inspected at least twice a year. Low-tension equipment does not necessarily require an oil with high dielectric strength, but as a very small quantity of moisture will seriously lower the dielectric strength of the oil, the best method to pursue is to keep the oil up to standard test, namely, 22 kv. new-style gap.

It is also to be remembered that the oil level always should be maintained so as to prevent flashes above the oil surface and the consequent disasters which may occur, and special care should be taken to have no condition which will decompose the oil and form highly explosive mixtures above its surface. It is undoubtedly this latter condition which has caused lightning arresters and switches to blow up, thus initiating severe fires.

The following are the approximate characteristics which oils for specific purposes should possess. They may be used as a guide in the selection of transformer oils.

For use in aluminum-cell lightning arresters, starting compensators and oil circuit breakers not subjected to temperatures below 0 deg. C.: Flash point, 185 deg. C.; burning point, 210 deg. C.; freezing point, —10 deg. C.; viscosity at 40 deg. C., 105 sec.

For oil-cooled, water-cooled and combination oil- and water-cooled transformers, also for feeder voltage regulators, except for outdoor installation in cold climates: Flash point, 140 deg. C.; burning point, 155 deg. C.; freezing point, —5 deg. C.; viscosity at 40 deg. C., 52 sec.

For outdoor oil circuit breakers when subjected to temperatures below 0 deg. C., also for the dashpots of time-limit attachments: Flash point, 155 deg. C.; burning point, 180 deg. C.; freezing point, —30 deg. C.; viscosity at 40 deg. C., 100 sec.

The United States contains 12,000 square miles of unused peat land, an area more than 10 times that of Rhode Island, capable of yielding fourteen billion tons of fuel at a cost of $1.50 to $5 a ton, according to a comprehensive bulletin on the subject just issued by the U. S. Geological Survey. The deposits are on the surface and lie in the New England, Atlantic Coast and Great Lakes states, most of them in regions remote from coal mines. The bulletin, which is the most exhaustive American work on peat and required two years for its preparation, points out the location of thousands of deposits, owned by thousands of farmers and other landowners. Fifty million tons of peat is used annually as fuel in Europe. Peat is suitable also for use as a fertilizer and in promoting the extensive growth of truck crops, both in greenhouses and in open fields. Those interested in peat may obtain free copies of the bulletin by addressing the U. S. Geological Survey, Washington, D. C. It was prepared by C. C. Oshun and is published as the Geological Survey's Bulletin 728, entitled "The Occurrence and Uses of Peat in the United States."

Like the Eastern Interior States as a whole, of which it forms a part, the western Kentucky field produces hardwood fuels chiefly, states the Bureau of Mines, in a recently issued paper on Kentucky coals, 80 to 82 per cent of the entire output of the district being used by railroads, a proportion somewhat above that for all intermediate coal states in the United States. Little coal from western Kentucky is for the manufacture of gas, although about 50 per cent of it is taken by electric light and power companies. The district produces also a bulky coal that finds a wide market for domestic use and about one-fifth of the output is destined to retail dealers. A little coke coal is produced.
Something Like This May Be Happening
In Your Mine, Right Now!

O. K. BROWN, the pleasant, efficient general manager of the Harmsworth Coal Co., with mines at
Norwalk, North Mississippi, after having read with a
good deal of interest, the printed matter sent out by a
well-known manufacturer of mining machinery, exploit-
ing an improved mine-car loader, decided that mecha-
nical loading was the proper thing for his otherwise
up-to-date mine, and ordered one of the machines for
trial.

Prior to the advent of the loader, Mr. Brown visited
his mine, and after talking over matters in general
with Mike, the pit boss, as soon as he dared do so, sprung
the news on that skeptical individual that he had pur-
chased a mine-car loader. This statement immediately
met with a storm of protests from Mike—he didn’t want
it. It was no good; they had used one over at Hardent
and checked it on the job.

However, Mr. Brown insisted that they must be up to
data and use mechanical contrivances wherever possible,
and insisted that Mike take the loader into the mine and
give it a fair trial. After which Mr. Brown went upon
his way and forgot the matter for the time being.

Enter then, the mine-car loader, which Mike promptly
unloaded from the car and stored outside the mine, where it
can be cleaned by every rainstorm and where the wind can blow
the dust off of it. There it rested for two weeks, after which time Mike con-
descends to place it in the mine for a “fair trial,” being
induced to do so by the receipt of several letters from
the general office requiring as to what progress has been
made with the machine, also due to the fact that they
had run into a fault over in 10th left, where there was
about 3 ft. of rock and 2 ft. of coal, and this entry was
getting away behind. Here, they decided, would be a
place to try the thing out.

The manufacturing company sent down a demon-
strator and after several vexatious delays Mike gave him
an electric drill with which to drill the rock, and some
powder and a couple of men—one a Mexican who could
cut a word of English and the other a Hungarian
by the name of Grabowski—and told them to go to it.
Grabowski took to the loader like a duck to water, and
thought it was great; said that if he had had that loader
before, he would have saved ten years of his life, as it was
so much easier to load coal to the end of the conveyor than
to put the material into a car—especially the slate. The
Mexican, being unable to express himself, naturally said
nothing, but did about as much work as one would
expect from one of his race.

And so, under these conditions, the demonstrator
began the job of making a hit with the loader and
immediately with his own company. Drilling the rock
was hard and slow work, the showing was a serious
undertaking, as they were away ahead of the air and had
to wait a long time for the powder to smoke clear away.
The cars (especially those loaded with stone) were too
heavy to push the 300 ft., which unfortunately was on
a steep grade against the load, and as Mike could not
spare a mule the demonstrator went to the nearest town
and bought 600 ft. of Manila rope and a snatch block,
and by means of the capstans on the loading machine
he managed to handle his cars against the grade. But
in spite of this, had the car supply kept up, a favorable
showing could have been made, but there were heart-
breaking intervals between cars, when the machine
would remain absolutely idle for long periods of time.
A day or two later Mike wrote the home office about as
follows:

The mine-car loader was put to work in 10th left last Monday,
but it isn’t doing much good. It has been given a fair show,
as it gets its turn of cars every time with the rest of the men,
and I gave it some advantage because I gave the machine
case a personal drill, while the crew that is loading by hand
on a parallel entry is drilling by hand, but then again the crew on the loading
machine has to push their cars about 300 ft. to the motor, and
the other crew does not have to push the cars so far.

At this stage of the game the demonstrator had
a little heart-to-heart talk with Mike, telling him that he
must have more cars, because he was idle most of the
time and didn’t have anything to load his coal in. Mike
insisted that he was getting “as many cars as he was
entitled to” and that the “machine was installed with
the understanding that it would be successful in their
system of mining, and with their system everybody had
to take his cars as they came—they couldn’t favor any-
body.”

The loading machine kept on working under this
alleged “system” for two or three weeks, when the
demonstrator finally managed to get hold of extra cars
occasionally, so that it was not long before he caught
up with the 11th left.

In the interim Mike bombarded the general office
with reports giving the number of tons of coal handled by
the pit car loader per week, and how many tons the
crew on the other entry had loaded (in clean coal—not
mentioned in the report). The coal company’s general
office, studying these paper statistics, figured the cost
of both entries according to the scale, and reported back
to the makers of the loader that the coal cost much more
when loaded by the machine than when loaded by hand.

Thereupon the manufacturers wrote their demon-
strator and asked him “How come?” He explained
the matter, and the general office went after Michael once
more, but that equitable gentleman could not see but
that he was giving the loading machine a “fair trial”
and grew somewhat peeved at the demonstrator for
insinuating that he was not getting a fair show; where-
only the demonstrator arose and spoke about as
follows:

“Look’y here, Mike; suppose, for instance, that you
had never had mechanical haulage in this mine, and
they sent down an electric locomotive for you to try out,
and you handed the locomotive the same deal as you give
me, and, for instance, give the locomotive a car of coal
to haul, and give a mule a car of coal to haul, and the
mule gets away first. Of course, as the mule is in front of the locomotive, the locomotive cannot make any better speed than the mule, and as it cannot jump over the mule, it arrives at the bottom after the mule does. Of course, when they return with the empties, the locomotive is in the lead, but after they get loaded up, the same state of affairs exists again, and as a result, the locomotive appears to be just about as efficient as one mule. Do you think you would be giving the locomotive a "fair trial" under such circumstances? But Mike scratched his head and said, "It's different with a loading machine."

In desperation the demonstrator said "Look'ye here Mike; you know that the locomotive can go faster than a mule, and admit that at the same time it can haul a whole trip of loaded cars?" "Yes," says Mike, "You admit that the loading machine can load much faster than can be done by hand?", and Mike admitted that. "If the machine can load cars much faster, it can load a greater number per day, can't it?" and there being no way of getting around this logic, Mike finally admitted that maybe it would be a fair trial if he got some more cars, and then he said that he admitted the conditions were not good for getting a big output of coal.

At the end of the trial period they had not as yet gone through the rock, and Mike rather hated to give up the machine before he got through, as he had to hire a man to help him. If he couldn't handle the conditions, he had to pay such as he did get good day's wages. So he took the matter up with Mr. Brown, and Brown wrote the manufacturers asking for a month's extension of the trial period, stating that while the coal cost more when loaded by the machine than when loaded by hand, they had advanced the entry faster than they did before, and were not ready to condemn the machine. But would like to give it a further trial. The trial period was extended another month.

In the meantime the demonstrator plugged away, driving entry. The rock grew thinner, and more and more cars were needed, but Mike, while realizing now that in order to give the loader a "fair trial" it would be necessary to keep up the supply of cars, was unable to do so, as they had only one locomotive in the mine and this was tied up in handling cars to other parts of the mine; so there were no means of providing cars for the loading machine.

At the end of the further trial period Mike had driven his entry as far as he desired, and consequently the manufacturers received a letter from Mr. Brown reading as follows:

The machine is not suited to our conditions, for these reasons:
1. The coal loading machine can not load the mine cars faster than can be done by hand.
2. The coal loading machine can not load the mine cars at the same rate as the locomotive.

And so on.

Examine Coal in Incident Light

BY ALFRED GRADENWITZ
Berlin-Friedenau, Germany

EXAMINATION of coal samples raises a multitude of problems of the highest importance to the scientist anxious to ascertain its nature and origin, as well as to the engineer intent upon investigating the industrial qualities of coal. Though the necessity of resorting to the microscope has in this connection long been realized, the method so far employed, namely, examining thin transluided sections, has involved many serious difficulties. Dr. H. Winter, director of a research laboratory at the Bochum (Germany) Mining College, therefore tried to apply to work such as this a method in current use in metallography, namely, microscopic investigation in incident light. His tests strikingly show the suitability of this method for the examination of opaque minerals such as coal, it not even being necessary in all cases to etch the ground and polished surfaces. Where this is done, however, it is best to use a solution of potassium chloride and nitric acid.

An electric arc lamp was used in most cases, the light of which was allowed to strike through a lens system, water cooler, light filter and iris stop at right angles to the optical axis of the microscope, the "vertical illuminator," so-called, being arranged between the objective and eyepiece, the beams of light being reflected completely by the prism and illuminating the sample placed on the microscope table. It is also possible to use a mirror to reflect part of the beams of light from their vertical direction in the microscope axis, directing them at a variable angle against the sample to be examined and making its structure visible.

According to Dr. Winter's results, every solid fuel, recent as well as ancient, possesses throughout its mass...
a characteristic structure, the photographic reproduction of which often takes prolonged exposure.

In past, present and true coal, whether covert or exposed, Dr. Winter in incident light noted remarkable minute tissues of round microns, affording a valuable clue to the presence of coal.

Fig. 1 shows a sample of glauconal (jet) possessing remarkable density, mechanical strength and uniform structure. The wood texture prevailing throughout the mass is apparent at first sight. Fig. 2 is a sample of pseudo-cannel coal of uniform structure, though devoid of any stratification as daily texture, the whole field of vision being filled up with rounded egg-shaped micro-cells.

Taking into account the conversion of plants into coal as well as the chemistry of plants, especially that of the process, Dr. Winter comes to the conclusion that all kinds of coal, glauconal as well as dull coal, should be considered an solid cellular matter. In the case of some samples of glauconal, microscopic examination in incident light affords convincing evidence of their being wood products, the longitudinal fibers and tissue bundles coming out must clearly after etching.

A Zeiss metallographic microscope, which, after an unimportant alteration, also allows of investigation in transparent light, was used in this investigation. The new process will doubtless contribute to elucidating a number of contested problems, especially if used conjointly with chemical analyses and occasional microscopic investigation of thin sections.

Bain Issues Timely Warning to Coal Men

Hoping to reduce the present deplorable frequency of mine explosions, H. Foster Bain, Director of the U. S. Bureau of Mines, has issued a statement from which the following paragraphs have been taken:

"Coal has been mined for three months since the resumption of mining following the five months' strike and in that time ten explosions, killing about 185 men and injuring more than 100 others, have occurred in the bituminous mines. The number and violence of these explosions is increasing, the record of the past month being the worst of all. The coal industry has not in years suffered as many big disasters and the entire country is properly aroused.

"Coal producers have been properly striving to produce a maximum output to meet the expected heavy demands of the winter trade and to overcome the inroads which had been made in the coal reserves during the recent strike, and intensified activity in any industry increases the risk of accident. The seasonal hazards, which are greater in the coal industry during the winter months, probably have influenced the result. There has been a lessening of morale throughout the coal industry as a result of the strike, which tends toward a less careful attitude of mind. Another probable factor is the change in personnel at the mines following the strike and the shifting of miners to camps where they are not familiar with the hazards, and in places there is a lack of that discipline which is essential to the prevention of disasters whether in fighting a battle or in combating the hazards of nature.

"The letdown of morale on the part of the individual miner is indicated by a startling increase in the number of accidents caused by falls of roofs or of coal falling at the working face. The prevention of such accidents is almost wholly a matter in the hands of the individual worker. In the matter of explosions, however, there is a collective responsibility which begins with the individual whose act or carelessness is the cause of the accident and continues to the operator who permits mining conditions that allow the extension of a local explosion into one spreading through the mine.

"Two effective methods of preventing the extension of explosions by coal dust have been demonstrated in the experimental mine of the Bureau. The first is to wet the dust thoroughly so that no dry dust remains in the mine. The coal dust is made into a mud which cannot be thrown up into suspension in the air by concussion. It is this throwing it up in a cloud along the entry that permits the flame to pass from one volatile particle to another which, when rapid enough, becomes an explosion. It is also possible to dilute the coal dust with shale dust or limestone dust or any non-inflammable dust so that the explosion will not pass from point to point even though a dust cloud be raised by the concussion of blasting or by the wreckage of a trip of cars.

"Either method is effective. The objection to the wetting down is that it must be done every day and must be thoroughly done to be effective. The second greatest coal-mine explosion disaster in this country followed the omission of watering over two days. The shale-dusting method is required by law in Great Britain, where there is dangerous dust, and it is officially approved in France.

"Only eighty-one hundredths of an ounce of coal dust per cubic foot of air space in mine passageways, or 5 oz. per lineal foot of an entry way of ordinary size, which is barely enough to make a thin film when spread on the surface, will propagate an explosion. Treatment methods of some sort are, therefore, necessary.

"Miners and operators, as well as the official inspectors, must take hold of the situation promptly and vigorously or there will be still more serious explosions and more men killed. Knowledge not applied is of no value, however practical it may be in its bearings."
Relative Merits of Retarding Conveyors and Gravity Planes

Unfair Comparison of Retarding Conveyors and Gravity Planes—Delays in Operation of Gravity Planes of Shorter Duration Than with Conveyors

Upon reading the article of Charles M. Schloss in which he describes Utah's only coal-retarding conveyor, Coal Age, Nov. 2, p. 717, I feel that the author has been a little unfair in recounting only the good points of the conveyor and the weak points of gravity planes.

As stated in the article, Utah can boast of but one retarding conveyor, in operation at its mines. In justice to the many gravity planes in operation in the state, I feel compelled to give some of the good points possessed by these self-acting inclines and, at the same time, mention a few of the weak points in a conveyor installation.

Record Tonnage and Slight Delays on Operating Inclines

In the first place, it is a matter of record that, by far, the largest tonnages ever produced in Utah have been hauled over gravity planes. These planes are so built that, nine times out of ten, a runaway trip will be caught by a derailing switch and thrown into the clear, thus preventing further damage than the wrecking of the trip, and, possibly, spreading a few rails.

When this occurs, as it will at times, the rails are quickly spiked to gage and operations resumed in a very short time. While runaway cars or trips are always liable to occur, in the operation of a plane, care and good management will render these accidents less frequent.

In his article, Mr. Schloss quotes a prominent engineer as saying, "I have never known a retarding conveyor that has been built right to cause any serious delay; but every so often you hear of a trip getting away on an incline plane."

Numerous Delays Cited in Operation of Conveyor

To my personal knowledge, in the operation of the conveyor he has described, there have occurred two full days' delay, on one occasion, when the tippie shakers were stopped and the conveyor continued to run, piling up the coal at the bottom until the main drive shaft of the shakers was broken.

Several other delays of a day each were caused by the burning out of the armature of the motor driving the conveyor. These accidents were due to the conveyor being left in operation while the tippie was at a standstill. At another time, a delay of three days was caused by the jerking loose of the bull gear, at the end of the conveyor, tearing it from its foundation.

Necessity for Relining Conveyor Causes Delay

This same conveyor is now being relined throughout its entire length of 436 ft., with 3-in. steel plate. This expense, together with numerous smaller items, will easily offset the cost of maintenance of a gravity plane and the alleged extra wear and tear on the mine cars passing down and up the plane.

In his advocacy of the conveyor, for handling coal, the writer of the article failed to give an important fact favoring the installation of a plane for that purpose. For instance, when a conveyor is installed, it is necessary to build an incline or plane for hoisting men and material from the tippie to the mouth of the mine. It is needless to say this extra expense is obviated when a gravity plane is installed to handle the coal.

Greater Number of Cars Required Operating Gravity Plane Offset by Advantages

It is true, as the article states, that fewer cars are required in the operation of a gravity plane than in that of the conveyor. However, the terminals on a gravity plane can always be so arranged that three loaded trips are on hand ready for the tippie, while a conveyor system permits the handling of a single trip only at one time.

This feature goes far to offset the loss of time when trips do not arrive regularly at the mine entrances, and dumping operations at the tippie must send some more cars away. In my opinion, this feature will account for the large tonnages handled by gravity planes, as compared with a conveyor system.

One other point remains to be mentioned. It is stated in the article that in the operation of a gravity plane, it is necessary to have a crew at each terminal, and the claim is advanced that the use of a conveyor eliminates one of these crews, whereby a considerable saving in the cost of operation is effected.

This is not a fact in actual practice, however. At many Utah mines operating gravity planes the terminal at the mine entrance, at the head of the plane is handled by the underman of the rope-rider, as the case may be. In each instance, there may take the place of a crew, at the head of the mine, when bringing a trip of loaded cars out of the mine.

Lutuen, Utah.

Suggestions for the Government's Fact-Finding Commission

Unwrapped waste in the mining of coal—Low grade coal discarded—Strike between operators and miners calls for government action

All right-minded men will mark with pleasure the announcement that the government's Fact-Finding Commission, charged with making the necessary investigations to ascertain reliable facts in respect to industrial conditions, is already taking facts, as stated in Coal Age, Nov. 9, p. 763.

The present condition of the coal industry presents a wide field for the work of this commission. As I reflect on the numerous things that will stand investigating at the hands of this commission, there are two points that appeal to me as having the most consideration, if the peace and prosperity of our country are to be maintained and the benefits realized.

When I think of the unprecedented waste of coal, both in the mining and the preparation of the fuel for market, these two points call for the attention of the people of our country.

Government Stopping Seizure of Ruff's Coal—Why Not Make Wyoming Coal?

Many will recall the coal strikes of a few decades ago, the horrors of auction coal and the prices were being usually slaughtered for their downer ice sold to the public. This continued until the history of these valuable accounts was made known to the public by the government taking action to stop the slaughter.
The fact is plain that if an organization becomes a controlling factor in the affairs of a nation, the time will be short when that nation will cease to exist. This is not to question the right of men in organize for mutual benefit and protection, but that right must not conflict with the public good and welfare, which the government is pledged to protect.

Let me say, in conclusion, that we can hope for no industrial peace or prosperity without our government maintaining a controlling power. Such a government is but a willing and able to make recommendations in their endeavors to establish a wise and equitable control in the government.

C. W. ATKINS.

PATERSON, N. J.

Mine-Safety Conference

Recent conferences on mine-safety problems—Need of certification of mine officials—Reasonable laws respecting gas in mines.

It was with the deepest interest that I read the letter of Robert A. Marshall, Paisley, Scotland, directed to the West Virginia Department of Mines, and revised at the recent conferences on mine-safety problems and the results as outlined in the recommendation offered by the Federal Bureau of Mines, and set forth in a circular letter issued by the Colorado Fuel & Iron Co., to their employees.

Chief among these recommendations appears the emphasizing of the need of certifying all mine officials, including mine superintendents. The recommendations relate to those officials having direct charge of underground operations. The matter is particularly significant, coming as it does from one of the largest coal corporations in the West.

Henceforward, opposition has been manifest on the part of mine operators toward certificate laws. This developed principally in Pennsylvania and resulted in the certificate law, in that state, being changed in a manner authorizing operators to employ uncertified men who were, in their judgment, equally competent with men holding certificates.

ASSUMED REASON FOR REVISING CERTIFICATE LAW

To my mind, some operators wanted a wider range of choice; they wanted to go outside of the certified list in selecting men to take charge of their mines. Frankly, I would say that the fact of an operator not being able to find the right man on the certified list is evidence that something is wrong. If certified men have not the knowledge and ability to manage mines placed in their charge, much less can we look to uncertified men for such capability.

Evidently, there is need for more study. As has been suggested by different operators in Coal Age, many of our certificated men refuse to study after they have obtained their papers. If that condition is permitted to continue, our coal-mining problems will become more deplorable and difficult, as time goes on. This is saying much, as it is hard to understand how the situation can be more deplorable than it is at the present time.

Allow me to suggest here that there is one thing lacking among all coal operators and others holding positions that would enable them to combat the present low standard of our coal-mining laws. There seems to be a deficiency of moral courage to agitate what would improve the situation. Selfishness and greed are largely responsible for the failure to act on the principles of the Golden Rule, so often referred to in these columns.

NEED OF EQUITABLE LAWS

Attention has been drawn to the need of making our laws more reasonable and such as would not work a burden on some mines while favoring others in the same state or district. In this connection, particular reference was made to the classification of mines as gaseous or non-gaseous; and it was explained how this classification was unjust, in many instances.

In our own State of Indiana, we have a shotfirer's law, which applies with reason to mines generating gas, but is unjust to mines having no gas. In these latter mines, the law is largely ignored as being unnecessary in their case. This fact makes the law inefficient and instances are not wanting where the law is ignored in mines to which it should apply.

Speaking of shotfirers, I understand that their wages vary from $7.50 to $25 a day. If this is so, it is a case for the Fact-Finding Commission, recently appointed by our government, to investigate. Certainly, the conditions in a mine where shotfirers are paid this high wage must entail an enormous hazard to life and property and should not be permitted to exist.

W. H. LUTXTON.

Linton, Ind.

No Need for Discouragement

Application for work refused—Applicant discouraged—Honest effort will eventually receive its reward.

WHILE I am not much of a hand in writing, it is always a pleasure to me to read the honest men's experience regarding their work. Some time ago I recall reading an article that interested me deeply. It was a letter written by a man who had applied for a position that he thought himself capable of filling. For some reason, I do not remember just what it was in the case, his application was refused.

Instead of accepting the situation and realizing that the company did not need any one at the time, the man became discouraged. It appeared that he laid his misfortune to a general run of bad luck, which made it all the harder for him to keep up his search and find what he wanted.

Because a man's application for a certain position fails to get him a place, is no reason why the fellow should be-
come discouraged. Such a frame of
mind unfitts a man for service of any
kind. Let him take heart and it will
not be long before he will find a place
waiting for him where the company are
looking for honest and reliable men.
After an experience of 32 years in
col mining, much of the time being
occupied in bossing or superintending,
I feel that men need encouragement
and help, and we should seek every
opportunity to assure them of our good
will.
CHARLES TROY.
West Terre Haute, Ind.

American vs. Foreign Miners
Teaching rudiments of mining in the
common schools—Mining experi-
ence wanting—Accident list due to
employment of foreigners—Co-opera-
tion needed to make mining more
attactive.

IN HIS article "Teaching Rudiments of
Mining in the Common Schools,"
which appeared in the issue of Coal
Age, Sept. 7, p. 363, Thomas Allen calls
attention to the rapid decrease of
American miners employed in our
mines, today; and thinks this decrease
could be arrested if more attention
were given to teaching the rudiments
of mining, especially in our common
schools.
In my opinion, teaching the true
rudiments of practical mining in the
common schools of the country, would
be difficult, expensive and in a large
measure unprofitable. As a general
thing, the teachers in our public
schools know little or nothing about
even the simplest rudiments of mining.
Some of the teachers might have a
smattering of mining knowledge, just
enough to make a huge failure if they
undertook to teach the subject. In
order to successfully teach mining, the
teacher must have both technical
training and practical experience in the
mining of coal. The best way to study
the rudiments of mining is at the
place inside the mine, with an ex-
perienced and capable miner as in-
structor.

ACCIDENT LIST INCREASED BY LARGE
EMPLOYMENT OF FOREIGNERS

Mr. Allen seems to think that the
employment of so many irresponsible
and illiterate foreign miners is the
cause of the high accident list in our
mines. In this respect, I think his
view is correct. The employment of
so many a portion of the foreign
miners, is responsible, in a large
measure, for the American boy leaving
the mine. As the one comes in, the
other will go out.

Digging coal should be considered as
honorable a calling as that of a car-
penier or machinist. But coal mining
has been degraded more than either of
these professions by the overwhelming
influx of illiterate and undesirable
foreign labor. In many mines, today,
this irresponsible element of labor has
the controlling power. It is nothing
strange that such an ingrafting of

Inquiries
Of General Interest

Estimating Available Tonnage Per Acre

R yielding to the question asked
by a Colorado engineer, in Coal
Age, Nov. 2, p. 721, in regard to
the method of estimating the tonnage of
coal underlying an acre of land, for
a given thickness of seam, I observe
that there is quite a difference between
the results obtained by applying the rule
given in the reply to that inquiry and
the tonnage tables published on a
"Lefax" sheet, issued some time ago.
The table to which I refer gives the
estimated tonnage of coal, per acre, for
each foot of thickness of the seam, and
for any specific gravity varying from
1.2 to 1.45. For example, for a coal
having a specific gravity of 1.2
weighing 1.2 = 0.25 = 75 lb. per cu. ft.,
the table gives 1,683.5 short tons
(2,000 lbs.), for each foot of thickness
of the seam. The data given in the
table shows the tonnage varies with the
specific gravity of the coal and the
thickness of the seam.

On the other hand, the reply to the
inquiry mentioned gives a rule based
on an estimated weight of 1,200 tons
of coal, per foot.-acre. This rule is
assumed to apply to the average spec-
ific gravity for either anthracite or
bituminous coal, the former being mea-
sured in long tons (2,240 lbs.), and
the latter in short tons (2,000 lbs.).

Now, assuming an average specific
gravity for bituminous coal of 1.5, the
table gives the weight of 1,087.5
lbs. per cu. ft., and 1,381.0 short
tons, per foot-acre. Or, taking the
average specific gravity of anthracite
coal as 1.3, the table gives the weight
of this coal, per foot-acre as 2,041.87
short tons, or 2,041.87 = 1,325 = 1,325
long tons. These calculations show
that the average estimated tonnage, as
computed in the table, is based on, prac-
tically, 1,300 tons, per foot-acre, mea-
suring the anthracite in long tons and
bituminous coal in short tons.

Since this estimate is quite different
from the 1,200 tons, per foot-acre, given
in the reply to this inquiry, I have been
wondering whether the difference lies
in the difference due to the table being
computed on the weight of coal in the
solid and making an allowance for the
voids in the broken out coal, as permitted
for "Lefax."—T 


It should be observed that the reply
to the inquiry referred to this corre-
spondent given the approximate con-
veniently extending the available tonnage of coal underlying a
ear where the inquiry was made, the rule gives 1,200
 tons per foot-acre, for anthracite, and
bituminous coal, respectively. The
formula being assumed by the latter
for its calculations.

As they stood, these figures were very
poor for the extraction of coal out of the
original seam. It also makes a further
allowance of about 244 per cent for
COAL AGE

December 14, 1922

961
Examination Questions Answered

West Virginia Mine Foremen's and Firebosses' Examination. Charleston, 1922

(First-Class, Selected Questions)

Question—Assuming you have ten sets of seven timbers to take out, and the work is to be done in three shifts of eight hours each, how many men would be required to do the job?

Answer—Ten men will do the job.

Question—If powder should require 2 sec. to travel 1494 yds., on an average of 12 ft. per sec., what volume of air is present?

Answer—Two minutes and seventeen seconds in 157 sec., and a distance of 1494 yds. is 448 ft. Then, since the sectional area of this airway is 12 ft. 72 sq. ft., the volume of air passing is 157 sq. ft., or 12,994 + 157 = 14,152 cub. yd. per sec.

Question—(a) No gas being present, would you consider the conditions as being equal to the working place? (b) What precautions should you take in the blasted area where you have no condition of the air?

Answer—(a) A dry and dusty condition at the working face is never always dangerous, whether or not gas is generated. Too a particularly true where blasting operations are performed.

(b) When the coal is blasted moderately wet condition formed, only permissible powder should be employed and every precaution taken before it is fired. Severe practice is to employ shotfitters to examine, charge, and fire all shots in the mine, after the men have gone home. The powder should be used within the airway in order to remove all coal cuttings and dust regularly from the working faces. Every working place should be thoroughly sprinkled and in a moist condition before a shot is fired therein.

Question—How would you render first-aid to (a) a victim of asphyxiation from afterdamp; and (b) one suffering from powder burns on neck and back?

Answer—(a) Remove the person as quickly as possible to better air and perform artificial respiration, using the proper method and laying the victim outstretched on his stomach, with his face turned slightly to one side, so as not to obstruct breathing. Also, see that the tongue is drawn forward in the mouth, for the same purpose. Kneeling astraddle of the man, place the two hands or stretched-out tongs on his forearms back, so as to cover the lower ribs. Then, alternately, compress the body and lungs to expel the gas therefrom, and again release the pressure so as to give opportunity for the lungs to expand and draw in fresh air. This action should be continued at about the rate of breathing, say sixteen times a minute, and should be kept up continuously until the victim revives, which may require as long or more. Never cease until the man revives or is pronounced dead by a doctor. In every case, no time should be lost in sending for a physician.

(b) If the burns are severe, send for a doctor at once. In the meantime, having assumed the clothing or cut it so as to lay it back from the burned portion of the neck and back, exclude the air by applying a thin paste of locomotive ash (baking soda) and water. Starch or flour can be used if the baking soda is not at hand. Vaseline, olive or castor oil, fresh lard or vinegar, are all good for this purpose. They should be smeared gently over the burned portion and on a thin fine cloth, which should then be laid over the burn so as to exclude the air as much as possible.

Question—(a) How would you approach the burning section of a mine if you found the condition necessitated the sealing off the burning section? (b) What steps would you take to insure safety of the workers and the success of their work?

Answer—(a) Much will depend on the conditions existing in the place, the location of the fire, and the openings in that section, and the headway the fire has gained. In most cases, greater safety is assured by starting to build the first stoppages at the return end of the section and proceeding in order from that point to the intake end, closing that stopping last. There are two advantages claimed for this method of proceeding. 1. By closing the return opening first, there is at once started an accumulation of burnt air and explosive gases produced by the fire. This has the effect of retarding the combustion. 2. The intake opening may be kept under water and the return end, more or less air will drift into the space through this opening and help to dilute the explosive mixtures that would otherwise be formed.

Where the fire has gained much headway, however, it may often be better to close the intake opening first, so as to cut off the air supply, and then to build the other stoppages near the roof and both the intake and return ends closed simultaneously.

(b) To insure safety, none but the most experienced men should be employed and they should be equipped with approved types of safety lamps. Frequent tests of the air at the openings must be made and every precaution taken to avoid the worker being overcome by the gases.

Question—In case of an accident, in which a workman receives a wound severing an artery, what would you do to stop the bleeding and take care of him until the arrival of a physician?

Answer—Send for a physician at once. In the meantime check the bleeding, by strong pressure of the thumb or fingers over the artery, near to the wound and between it and the heart. Still holding the severed artery in this manner, arrange the injured person in a reclinable position with his head low to encourage the flow of blood to the brain and prevent collapse. Make no violent movement but keep the man quiet, as any unnecessary movement will tend to increase the flow of blood from the wound. As quickly as possible arrange a bandage with a hard pad beneath it to press on the severed artery. Now apply a tourniquet and twist the bandage sufficiently to bring a strong pressure on the wound. The bandage must not be removed for, say, two hours before the physician arrives. Give no stimulant, except when absolutely necessary to prevent collapse and possible death. Keep the patient warm with blankets and hot-water bottles if these are obtainable.
Wage Plan Fails, So Joint Conference in Chicago Jan. 3 Has No Program for Avoiding Strike

The long effort at Chicago to devise a method for future wage negotiations in the coal industry failed signalley. The miners of the "two-by-two committee" rejected the operators' plan calling for negotiations by districts either singly or in such groups as the miners requested, for arbitration and for sliding wage scales conforming to coal market prices. So nothing much remained to be done. The committee, composed of two operators and two miners from each of 15 districts, then voted that the main wage conference should be held in Chicago instead of Cleveland, Jan. 3, and that the committee should meet an hour before the main session in a last-minute effort to make some sort of helpful report to the big assembly. Nobody expects anything to develop at this last-gasp meeting. Thus the main conference is expected to remain at deadlock unless some new element shall be injected into the situation before Jan. 3.

The "two-by-two committee" was appointed at the October joint conference in Cleveland, when that main session failed to agree upon a wage-making method. It was directed to convene in Chicago Nov. 14 and try to do around a table what the big joint meeting had failed to do in a smoke-filled hall. It tried for four days, beginning Nov. 14, and failed. It tried again last week, the operators' half of the committee striving for two days and finally framing a proposal they could agree upon. When the miners in the joint session of the committee Dec. 6 would have none of it, the committee quit in despair. The Jan. 3 main conference is supposed to begin actual wage negotiations, but it is freely prophesied that the struggle is going to be a troublesome one and that any kind of agreement by April 1 to prevent a strike will be difficult.

COMMITTEE'S FINAL SESSION OF SHORT DURATION

The final session of the "two-by-two committee" Dec. 6 was a short one. When the operators read their proposal to the miners at 11 o'clock the morning there was a tremendous howl of disappointment from union men. Both President Lewis and Secretary Green, of the union organization, declared peace ought to be established in the industry, but they followed this by making it plain that the miners would stand for nothing less than the setting up again of the old four-state plan of negotiations with a flat scale for the whole country and with nothing even faintly resembling arbitration. They felt that the miners were not bound to the sliding wage-scale provision but stuck solidly to the clauses for negotiations by districts either singly or in groups (without specifying what the groups should be) and for arbitration of wage questions by either a non-partisan or combination jury.

In the afternoon session there was a great deal of more or less meaningless oratory but no definite agreement until about 5 o'clock, when the operators' proposal was put to a vote and lost, each side voting as a unit. Then the miners' proposal that the old four-state plan be continued lost with equal ease. The committee had failed. John Brophy, of the miners, was the man who suggested that the committee reconvene just before the joint conference Jan. 3. The motion was adopted, but without any display of enthusiasm.

The committee took into its own hands the question of changing the Jan. 3 conference from Cleveland to Chicago. On this question every man present voted as an individual and Chicago was selected by a narrow margin of three votes.

The proposal for wage negotiations which the operators agreed upon and which the miners rejected, but which no doubt will be the basis of the Jan. 3 conference as written by an operators' resolutions committee, follows: "(1) The uniform and inflexible policy pursued by the United Mine Workers of America in the past of fixing a basic wage scale in one district grouping of a limited number of states producing a minority portion of the bituminous tonnage of the country, and by the centralization of power enforcing said wage scale upon all other districts of the country without regard to the competitive conditions affecting the other said districts, is rapidly distracting the business of the operators in many union fields and is the chief contributing cause of overdevelopment of the industry. Therefore, there are indictments for conspiracy now pending in the federal courts in Illinois against representatives of the mine workers and representatives of the operators who have formerly participated in the negotiation of wage agreements for the Central Competitive Field (Ohio, Illinois, Indiana and western Pennsylvania), which make it imperative that a new method of negotiating wage agreements be formulated. Therefore, we recommend: "(a) That a unit of the United Mine Workers Districts jointly represented in each district, a wage-scale-making body with full right of agency to negotiate wage-scale agreements based upon competitive conditions found existing and affecting each such district, and, further, each such district shall be vested with the right to join with any other district or districts as may be mutually satisfactory to the mine workers and the operators of the district or districts affected, for the purpose of negotiating wage agreements for such sections.

PROVIDES FOR JOINT CONFERENCE OF DISTRICTS

"For the purpose of negotiating wage-scale agreements to be effective upon the expiration of the present wage agreement namely, April 1, 1923, the following named districts shall constitute separate bargaining units for the purpose of negotiating wage agreements: District No. 2, Missouri; District No. 5, western Pennsylvania; District No. 6, Ohio; District No. 10, Washington; District No. 11, Indiana; District No. 12, Illinois; District No. 13, Iowa; District No. 14, Kansas; District No. 17, West Virginia; District No. 21, Oklahoma; Arkansas and Texas; District No. 22, Wyoming; District No. 23, western Kentucky; District No. 24, Kentucky; District No. 25, Missouri, and District No. 27, Montana; shall exercise their inherent right under this resolution and by mutual agreement between the mine workers and operators of each of the districts or sections hereinbefore mentioned shall meet in joint conference at such place as the mine workers and operators of each district or section may agree, such meetings shall convene in all districts on Jan. 8, 1923, for the purpose of negotiating wage-scale agreements. The actual adoption of any wage-scale agreement shall be binding only on that district or section and shall not be binding or have any effect whatsoever upon the making of a wage-scale agreement in any other district or section.

"(b) Further, in the interests of public policy and in order that there shall be guaranteed continuing fuel supply and entire prevention of strikes, there shall be no suspension of work during the period of negotiations of such arbitration either in the district or sections, we recommend that in the event of failure of joint wage-scale committee of any district or section to reach a satisfactory wage-scale agreement, the points to dispute shall be submitted to a neutral board of arbitration composed of three members of recognized ability and high public standing, to be appointed by the district presidents of the United States, and neither of whom shall have any connection either direct or indirect with the coal industry, or the board of arbitration consisting of one representative of the mine workers and one representative of the operators and a third member; neither a miner, an operator nor interested in the coal industry directly or indirectly, to be appointed by the Federal judge of the district whose court shall have cognizance of the case. The decision of said arbitrating body in any point of dispute to be referred shall be final and binding on both sides.

"(c) Further, we recommend that each contract or agreement negotiated shall carry a clause providing for a flexible wage scale which shall permit, when competitive circumstances shall demand, an adjustment of wage rates that will allow of free men's conferences to be held.
All Set for Herrin Trial to Start Dec. 13

The usual job of placing twelve good men and true at the usual bustle ofissy charged with murdering and conspiring to murder twenty-one men, some coal miners, and others at the Lusby strip mine near Herrin, III, last June is completed. The Twelve are more than half miners. Members of the United Mine Workers of America, which is defending the prisoners, have been paying part of their expenses into a special union assessment kicked off supposedly for the defense fund. Those parts, however, have all been turned over to attorneys and the only one with a death penalty if they were found. The state used deftly at its peremptory challenges to keep union men off the jury, but it could not be continued forever. Most men drawn for each venue were union miners because the county is an union neighborhood.

Judge D. T. Haywood has issued a warning against any sort of demonstration in the court rooms during the impending trial, which was scheduled to start Wednesday, Dec. 13, with the opening statements of the attorneys. "No testimony will be reached at," says his statement, "No expressions of approval or disapproval will be allowed. If anyone in the audience makes such expressions before the jury I will send that person to jail." Thus the stage is set for the trial.

Keeney Murder Trial to Begin in January

Before Judge Woods in Morgan County

Trial of C. Frank Keeney, president of district 17, United Mine Workers of America, on the charge of being a murder accessory, when a charge growing out of the armed march of last year, will begin soon after Jan. 1. Keeney's trial is to be in Morgan County under a second change of venue granted by Judge J. M. Woods. Morgan County is in Judge Woods' circuit, so that Keeney's trial will be under Judge Woods' direction just as all the other trials growing out of the armed march have been. Morgan County was selected by Judge Woods as the county for the trial after attorneys for the state and for the defense had failed to reach an agreement, as there is no coal mined in Morgan, and because Judge Woods felt that it was not involved in the industrial controversy. Court will be convened at Berkeley Springs, Jan. 2.

Accidents in October Killed 186 Miners, 3.46 Per Million Tons Produced

Accidents at coal mines in October caused the death of 186 men, according to reports from state mine inspectors to the U. S. Bureau of Mines. Twenty-five of the fatalities were at anthracite mines in Pennsylvania and 161 at bituminous mines in all states. In October a year ago 180 miners were killed, including 42 at anthracite mines and 138 at bituminous mines. The death rate for October, 1922, was 3.46 per million tons of coal produced; a year ago the October rate was 3.43. During September, last, there were 153 fatalities, or 3.51 per million tons produced.

The average fatality rate for October during the past nine years (1913-1921) is 4.27 per million tons of coal mined, and the average number of lives lost during the same period is 238. It will thus be noted that the October, 1922, rate is much below the average rate for October for the nine-year period.

The loss of 186 lives in October, 1922, has brought the total number of deaths at coal mines during the first ten months of the present year to 1,378, as compared with 1,665 during the corresponding period of 1921. By a strange coincidence the fatality rates for the two periods are identical, 3.92 per million tons. The output of coal this year has reached 352,000,000 tons, while during the ten-month period last year the production was 425,000,000 tons.

Accidents due to causes other than explosions show no material change in frequency from those that occurred last year, except in the case of deaths due to the use of powder and other explosives, for which the rate has declined from 0.315 to 0.187 per million tons.

COAL-MINE FATALITIES DURING OCTOBER, 1922, BY CAUSES AND STATES

(Compiled by Bureau of Mines and Published by Coal Age)
Is Strike Unavoidable? Western Operators Look Into Future as Through a Blue Glass Darkly

Is there bound to be a strike of union coal miners April 1? Midwestern opinion among coal operators tends to follow one channel on this question. Only two things can prevent a strike—assuming that union bullheadedness continues—and each of them is rather indefinite. Either some unexpected factor enters the situation from the outside affecting few operators with clouded vision and limber spines sign on the union's dotted line. Neither is confidently expected.

About the only source of a possible new factor is the Federal Coal Commission, and operators recognize that the commission is neither empowered nor expected to take a hand in the wage battle. It might possibly make some helpful suggestions in an early report to Congress, but that is all. If these do not influence miners to recede from their stand for a continuation of the present wage scale and negotiation by regions at least as large as the four-state field, or if they do not make it somehow seem advisable for the operators to swallow the union's dose, then there is little hope of avoiding another coal crisis.

"I seriously can't decide which would be worse for the operators and the industry, a strike or a new agreement on the present wage scale," said an official of a company operating more than a score of mines. "A strike would mean a definite shutdown for all union mines while a settlement on union terms—which seem about the only terms that can be made without war—would keep coal so high in a season of probable poor demand that most mines, unable to dig coal cheaply, would be closed down. That is why the operators would operate on such a hit-and-miss basis that the whole business would be continually at sixes and sevens. As between the two I don't know but that a strike would be preferable."

THINKS FIGHT TO FINISH MIGHT NOT BE UNMIXED EVIL

Another important Western operator frankly declared: "Six months of undiluted hell in a strike might be the very best thing for the whole industry. In the first place I don't think the union could weather it by any means as well as it did the last strike, and in the second place such an occurrence would give the Federal Fact-Finding Commission the best possible opportunity to see the evils of the industry come to a head. Such an unhappy event as a strike would focus the attention of the country, utility officials, and operators on coal, so that really the situation would be of benefit to the commission in its effort to suggest remedies for the industry's ills. Nothing could then keep the commission's recommendations from getting full and undivided attention in Congress and elsewhere.

There is a general wish by operators everywhere that the commission do something soon that may clear the air at least a little. If it were to induce the Attorney General to define the government's position regarding four-state or other group agreements between operators and miners, it would have accomplished something for the direct benefit of everybody interested in coal, including the public, many men believe. This, of course, would have to be done within the next two or three months to be effective. But even if it would be of no use in the country, the Attorney General might express an opinion about the legality of group agreements which would bind nobody in case a new Attorney General were to succeed Mr. Daugherty. It would be far more beneficial if pressure could be brought to bear upon the federal court at Indianapolis to try at once the case against the 225 miners and operators long ago indicted for violating in four-count indictments to restrict production and keep the price of coal up.

The failure of the miners and operators in special joint committee at Chicago to agree upon a method of future negotiations causes no unhappiness among Midwestern operators. Since the miners would agree to nothing short of a resurrection of the four-state plan whose failure is still so much in doubt, and since there is always a chance that the situation will take a new turn before April 1, when the present agreement runs out, it is considered advisable that no plan whatever be adopted for the time being.

"My idea of what to do," says an operator who has been playing a leading part in every recent labor struggle in this: "On Jan. 3 if it still seems impossible for the operators to agree upon any plan acceptable to the miners, let's then go to see President Coolidge and Mr. Hoover and the old four-state group. That will be better than to quit cold and it will not necessarily mean any settlement. We can show the rug with Lewis until the very last cow comes home, offering every reasonable plan which would allow the coal industry to work—a thing it simply can't do next summer at present wages—and then, if nothing crops up from the outside, what the strike will have to come, that's all. We'll fight it out as usual, probably losing out in the coal, but at least to the miners that they can hardly stand."

It is the general opinion in the coal trade that the union would have a harder row to hoe in a strike next summer because of the likelihood of a companion rail strike to aid it. Also it is generally believed that next time the government will not adopt the same attitude it took last summer.

Mining company officials and operators are beginning to advise their superintendents to prepare to store coal wherever possible about the mining properties, and already storage arrangements are being made ready against a shut down. Naturally industries are going to do a good deal of storing as the winter wears along unless a settlement appears more likely than it does now, and possibly the storage piles of the country next April 1 will be unprecedented.

Illinois Operators Agree Not to Ask More Than $4.50 at Mine for Domestic Coal

Prices on domestic coals produced in southern Illinois have been adjusted by a number of operators, as shown in the following statement, issued Dec. 9 by Federal Fuel Distributor C. E. Spens:

The following named coal operators in the Fifth and Ninth districts of Illinois have individually signed to the Federal Fuel Distributor a willingness not to exceed $4.50 per ton as a maximum f.o.b. price at the mines on prepared sizes of coal for household use, and in most instances these operators have stated that this maximum will be observed at least until April 1, 1923:

SOUTHERN COAL, ODELL & MINING CO., St. Louis, Mo.
BROWN TRENTON MINING CO., ST. LOUIS, MO.
MOUNT OLIVE & MOUNTAIN COAL CO., ST. LOUIS, MO.
PRAIRIE COAL Ck. ST. LOUIS, MO.
ST. LOUIS & O'FARROW COAL CO., ST. LOUIS, MO.
EGYPTIAN COAL & MINING CO., ST. LOUIS, MO.
AIKEN COAL CORPORATION, ST. LOUIS, MO.
JAMES BROWN COAL & MINING CO., MUNSTER, IN.
MULLINER MILL COAL, FRANKFORT, IN.
KOHLES COAL Ck., FRANKFORT, IN.
SIDE CHUTE MINING & MILLING CO., FRANKFORT, IN.
EAGLE COAL Ck., EVANSVILLE, IN.
FABINSON COAL Ck., EVANSVILLE, IN.
FOX RIVER COAL Ck., EVANSVILLE, IN.
NORTH ARKADIAN COAL & CHER O., ST. LOUIS, MO.

"These operators represent approximately 60 per cent of the production in these districts. Some of the best grades of domestic coal in these districts have been as low as $3.50 per ton, and many have been selling at or near $4.50 per ton. The maximum price of $4.50 should tend to establish prices on the different grades of domestic coal as a permanent commercial standard."

THE VARIOUS ISSUES OF CODES FOR MINING RATES AND DISTRIBUTION rules which have been held before the Commerce Commission during the investigation of the railroad relations committee of the National Coal Association held in Washington, Dec. 9. The details subject of the hearing and rules was discussed. The commission has issued a number of supplemental suggestions which will be made public.
Wholesalers in Informal Conference with
U. S. Coal Commission

Mr. W. Monroe of Atlantic, N. J., president of the
Wholesales Coal Association, and Nath H.
Cleaver, of Pennsylvania, held an informal conference
with the United States Coal Commission Tuesday after
noon, Dec. 2. The scope of the wholesale coal business was
discussed in the conference and the services performed by
the wholesalers was discussed. The supply of home-
energy and its affect to the wholesale coal business was
briefly touched upon.

J. W. Adams Probes Wholesale and Retail
Distribution for Coal Commission

J. W. Adams, who is making studies of wholesale and
retail distribution for the President’s coal commission, is
widely known in the coal industry as a result of having
traveled extensively as a field agent for the Federal Fuel
Administration during the war. During that period he
also served as director of prices for the Illinois Fuel
Administration.

Mr. Adams is a native of Whiteside County, Illinois. His
higher education was obtained at the Genesee Collegiate
Institute at Geneseo and at Northwestern University.
Immediately after being graduated from the latter institution he
joined the technical staff of the Federal Trade Commis-
sion, where he served until the outbreak of the war. When
the war-time Fuel Administration was dissolved Mr. Adams
returned to the Federal Trade Commission, where he has
served as an economic examiner since.

Only Two Bids Submitted for Navy Coal

Only two bids were received in connection with the
tenders requested on Dec. 6 by the Navy Department for
fuel supplies for New York harbor, the Brooklyn Navy
Yard and for the Navy Yard at Philadelphia. The Iron
Trade Products Co., of Pittsburgh, offered to furnish
12,000 tons for railroad delivery Dec. 15 to Jan. 31 at $6.51
per ton and 6,000 tons for barge delivery during the same
period at $6.55 per ton.

The Morrisdale Coal Co., of Philadelphia, made a tender
of $7.35 per ton for 12,500 tons for barge delivery, Dec. 15
and Jan. 31. On another lot of 6,500 tons a price of $7.30
was quoted.

The Navy had called for bids on 15,000 tons of steaming
coal for delivery f.o.b. at New York harbor and the Brook-
lyn Navy Yard, and 4,000 tons for delivery under the chutes
at piers Philadelphia and 200,000 tons for delivery at
Hampton Roads. An additional 18,000 tons of run-of-mine
was requested for delivery at Philadelphia.

H. J. German to Serve Fact Finders
In Advisory Capacity

Arrangements have been perfected whereby H. J. Ger-
man, vice-president of the Montour R. R., will serve the
President’s coal commission in an advisory capacity. In
charge of the technical staff, C. F. Lesher, who is in
immediate charge of the engineering phases of the com-
mmission’s investigations, found that he must have the help
of a practical man experienced in moving coal.

Mr. German was reared, practically speaking, on the
Champion, Hurlington & Quinley R. R. He also has had
Western transportation experience in Colorado. He was in
charge of the open-top car work for the Railroad Adminis-
tration from late in 1917 until September of 1919. In the
latter month he was called upon by the Railroad Adminis-
tration to direct the handling of coal during the big strike
and during the emergency period which followed it. The
means which followed his efforts at that time has caused
him to be regarded as one of the best coal transportation
specialists in the country.

Navy Asks Bids for 139,600 Tons of Coal
For Navy Yards and Naval Stations

The navy has called for bids for 139,600 tons of
bituminous or semi-brittleous run-of-mine coal for navy
yards and naval stations. Tenders on sixteen classes are
raised for among the principal items being the following:
22,000 tons for the Brooklyn Navy Yard; 5,400 tons, navy
supply depot, South Brooklyn; 4,500 tons, naval air station,
Lancaster, Md.; 23,500 tons, navy yard, Washington;
1,000 tons, White Plains, Md.; 5,500 tons, Naval
Academy, Annapolis, Md.; 14,000 tons, navy yard
Nor-
folk, Va.; 17,000 tons, naval operating base, Sewalls
Point,
Va.; 2,500 tons, Naval Hospital, Norfolk, Va.; 4,000 tons,
navy yard, Charleston, S. C. The bids are to be opened
Dec. 19.

Coal Commission Finds Bituminous Coal
Industry Overdeveloped 30-60 Per Cent

Studies already made by the U. S. Coal Commission all
point to the fact that the bituminous coal mining industry is
overdeveloped. "Too many soft coal mines and too many
miners" describes the situation in plain English. In these
coal mines too much capital is invested and more miners are
employed than are needed to produce the coal the country
requires. The conclusion, of course, involves waste on a
monstrous scale.

How great is the present inflation of the industry cannot be
stated exactly at this time, but unquestionably the infla-
tion is excessive. Estimates of the excess mine capacity
range from 30 to fully 60 per cent above the country’s
normal demand, which for the last five years has averaged
about 510 million tons a year.

How to deflate the coal industry is one of many prob-
lems before President Harding’s coal commission, and its
reports may be expected to present facts bearing on this
question. It seems plain enough, however, that the indus-
try should not be further inflated by opening new mines.
No Mediation of Wage-Scale Disputes Will Be Undertaken by U. S. Coal Commission

BY PAUL WOOTON
Washington Correspondent of Coal Age

No fact finding which can be interpreted as mediating or arbitr rating wage-scale disputes will be undertaken by the President's Coal Commission. This point was made emphatically clear by John Hays Hammond, chairman of the commission, in announcing that John L. Lewis and representatives of the mine workers and certain mine operators had been requested to confer with the commission.

Mr. Hammond declared that the commission is much concerned because of the failure of the Chicago conference to adopt machinery to negotiate wage scales for the coming coal year. He stated that the commission is fully alive to the gravity of the situation and that it had asked representative men on each side to confer with the commission. He pointed out that the conference is to be an informal heart-to-heart talk, in which the members of the commission will urge each party to the controversy to get together. Mr. Hammond declared, however, that the commission will acquaint itself thoroughly with the facts surrounding wage-scale matters.

One company, it is reported, made a detailed return on the cost questionnaire on the fifth day following the despatch of the questionnaire from Washington.

Chairman Hammond revealed that it is the intention of the commission to conduct formal public hearings on the important controverted issues during February. At those hearings arguments for and against nationalization of the coal mines, among other things, will be taken up. On the completion of those hearings, the commission expects to visit the mines.

As representatives of the operators, the mine workers, wholesalers, retailers and the carriers confer with the commission, each is being asked what he would do were he in the commission's place.

WILL GATHER ONLY STATISTICS SUBMITTED UNDER OATH

Rather than take the chance of having its work discredited by having its figures questioned, the President's coal commission will insist on gathering statistics from individual operators, who make the return under oath. The members of the commission realize that their fact-finding activities would be simplified greatly were they to accept the figures of the various local associations. Were they to rely on these figures alone, it is feared that some members of Congress would make an issue of that point and thereby bring discredit upon many of the commission's findings. The commission apparently feels that it must be 100 per cent sure of its basic facts and must not leave itself open to destructive criticism regardless of how reliable the members of the commission may regard the figures of the local associations.

There were extended discussions between members of the commission and the bituminous operators' special committee, of which J. C. Brydon is chairman. These meetings consumed the greater part of two days, Dec. 6 and 7. The committee was assisted in its presentation by John W. Davis and Goldthwaite H. Dorr, of counsel.

The main object of the committee's visit to the commission was to obtain further information in regard to the cost and labor questionnaires. The conferences, however, were not confined to a discussion of cost and labor returns. Consideration was given to a wide range of coal mining questions.

The operators' committee contended that there should be simplification and clarification of these forms, but the commission rather was of the opinion that the data called for are necessary to an intelligent consideration of the subject and that the instructions on the forms are ample. It is possible that some changes will be ordered in the labor form going to non-union operators.

After the conferences the operators' committee sent out a statement to the members of the National Coal Association asking all operators to fill out these forms in the best of their ability and forward them promptly to the commission.

As a result of these conferences it is believed that the operators are more convinced than ever that the commission is making an earnest and intelligent effort to be of help to the coal industry. The desire to co-operate constructively in that effort is even stronger since this meeting. The committee very evidently is doing all that it can to convince coal operators generally that it has faith in the commission.

There is no disguising the fact that the commission is not well impressed with the operators' policy of employing expensive attorneys to assist them in the presentation of their cases. Mr. Davis has been Ambassador to England and Solicitor General of the Department of Justice. Were the commission considering certain international matters it would be willing to admit no doubt that Mr. Davis would enlighten it, but the issue presented at the time he made his brief statement for the coal operators was how best to determine the number of days an operative works in a mine. It is believed the commission would have been more interested in hearing from some of the accountants working in the offices of the operators than from such a distinguished legal light.

MORE LEGAL NOTABLES TO BE HEARD

Apparently the commission is to hear further from distinguished counsel, as there is a rumor that the operators are about to engage former Secretary of War Stanton to assist them in their work with the coal commission. It is known that the commission is pondering whether it is necessary to pay an attorney a single fee which is more than double the aggregate of the annual salaries of the members of the commission, when any one of a dozen operators, who appeared before them last week is in a position to be of greater help in furnishing information which would enlighten the commission. The question naturally has arisen as to whether or not these large legal expenses form a proper item to add to the cost of coal.

The operators who participated in the conference with the commission were J. C. Brydon, T. W. Guthrie, S. H. Robbins, T. B. Davis, F. W. Wilhams, S. L. York, J. D. Francis, T. M. Farrell and J. D. Ord.

It was stated at the commission that much valuable information had been received from the representatives of the wholesalers who appeared before them last week. One of the points which appears to have impressed the commission very strongly is the fact that the wholesalers perform an important function in financing small operators and in extending credit to retailers.

The document submitted by the retailers is being studied. The fact that they emphasized their government fuel yard hobby has raised the question among the commissioners as to whether or not the proposal of the retailers who give the government a preferred price would not entail the same evils as those of lowering a railroad freight, which shifts more of the cost onto other consumers.

Washington, D. C., Dec. 11—Subpoenas were issued today by the President's Coal Commission to obtain testimony from several retail coal dealers as to the current price of Anthracite. The hearing will be open to the press.
Check Off §4 by Dec. 15 or Indiana Strikes

August, 1922, to make and enter its Service Order No. 24, and the amendment thereto, made by the order of September 24, 1922, has been measured relievéd, it is ordered that said Service Order No. 24, as amended, be, and the same is hereby, vacated and set aside effective at midnight, Dec. 11, 1922.

Amendment Penalizes Refusal to Answer Questions and Making False Returns

Washington, D. C., Dec. 11.—RepresentativeWinslow of Massachusetts, chairman of the Committee on Interstate and Foreign Commerce of the House, has introduced the amendment desired by the President's Coal Commission intended to remove all doubt as to the liabilities entailed by refusing to reply to questionnaires or for making false returns. The $5,000 fine and imprisonment for not more than one year is to apply not only to those who refuse to testify or who testify falsely but to those who refuse or neglect to answer any written questions propounded by the commission or any officer or agent thereof, "as herein provided for, and any person who shall wilfully give false testimony in respect of any matter or thing under investigation by the commission or shall make or cause to be made any false entry or statement of fact in any written answer or report called for by the commission or any officer or agent thereof, and any person who shall make or cause to be made any false entry or statement of fact in any book, account, record, document, correspondence, paper or other evidence, with intent to deceive the commission or any officer or agent thereof."

The amendment also provides that "judges of courts of the United States shall be eligible for appointment as members of the commission, and the appointment, qualification and service of a judge of the court shall be no more or less effective or tenure of office." This amendment is necessary to permit Judge Acheson to qualify as a member of the commission. It provides that he is to receive his judicial salary while serving with the Coal Commission and that his traveling and per diem expenses may be paid by the Coal Commission.
Production and the Market

Weekly Review

Steam and domestic markets continue to see prices holding up well in the face of poor demand. The week opened with sagging prices on steam coals in every market save the North Atlantic region, where both high- and low-volatiles from Pennsylvania fields are holding their own and even exhibiting strength for the choice brands. Excepting only southern Illinois, the domestic lump prices are not sufficiently strong to sustain the generally weak steam demand and such fields as the Belleville, Hocking, Kanawha and Ohio No. 8 record price declines.

Difference in Markets a Complicating Factor

The smokeless situation is complicated by the difference in the markets East and West. The East will not pay more than $4.50 at the mines and the West is reaching for the same coal at prices up to $8. Difficulties in making deliveries westbound over both the Norfolk & Western and the Chesapeake & Ohio and the comparative amplitude of the supply at Tidewater account for this difference.

Production of bituminous coal is holding up around the 11,000,000-ton per week mark and although car supply continues to be the principal factor limiting production, lack of market is shutting down mines west of the Mississippi and limiting the running time of a number of small mines producing low-grade coal in the East.

There is some stocking of soft coal by large consumers around Baltimore and by railroads in the Northern territory. Considering the country in general, however, there is little spot buying and what stocking is taking place is on contract. The East is feeling some stimulus from the purchases of retailers who are buying substitutes for anthracite. The New York State Fuel Administration now requires purchasers of domestic sizes of anthracite to accept 25 per cent of substitute fuel and forbids the sale of more than a month's supply of range and pea.

Several weeks ago it appeared that a large tonnage of soft coal might be left over at lower Lake ports. The last few days have seen a clean-up of these accumulations. It is expected now that there will be no holdover, the loading of 288,669 tons of Lake coal in the week ended Dec. 11 practically clearing out the accumulations and setting a new record for the first week in December.

The production of anthracite is holding up at high levels, prices being limited only by the conscience of the seller and the fear of the authorities. Company prices are, of course, unchanged. Dealers to out-of-the-way places report they can obtain plenty of independent coal of desirable sizes at mine prices of $12 to $14. Distribution is under the control of the anthracite operators with a central organization in Philadelphia, the policy of which is governed, of course, by the Federal Fuel Administrator in Washington.

Restoration of man power in the Connellsville region, which was hit by the strike last summer, has now progressed to the point where mine labor and car supply for coal and coke combined are in excess of the market demand.
"The mine reports for the week ended Nov. 25 reveal the fact that increased traffic difficulties were largely responsible for the slump in production during that week. Increased losses through transportation, though generally small, were widespread and perceptible improvement noted only in the Harlem district.

"Lackes attributed to the market were general throughout the Western states, except in Utah and New Mexico. Of the Eastern fields only Illinois, New River and western Kentucky showed losses of more than 1 per cent through lack of demand. Frequent rumors have been heard of a softening of the Eastern markets, but the limitation placed upon production transportation disability has been such that apparently there has been little difficulty in absorbing all the coal that could be transported. All-rail movement of coal to eastern New York and New England increased in the week ended Dec. 2 principally and notably in the quantity of anthracite shipped. Three thousand and 55 cars of bituminous coal and 4,247 cars of anthracite were forwarded, as compared with 2,770 cars and 2,020 cars, respectively, in the corresponding week in 1921. Railroad coal is understood to constitute the bulk of the movement recently. Prices on Southern coals are as such to

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

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<td>$3.75</td>
<td>$3.75</td>
<td>$3.75</td>
</tr>
<tr>
<td>S. E. lump</td>
<td>$3.75</td>
<td>$3.75</td>
<td>$3.75</td>
<td>$3.75</td>
</tr>
<tr>
<td>S. E. lump</td>
<td>$3.75</td>
<td>$3.75</td>
<td>$3.75</td>
<td>$3.75</td>
</tr>
<tr>
<td>S. E. lump</td>
<td>$3.75</td>
<td>$3.75</td>
<td>$3.75</td>
<td>$3.75</td>
</tr>
<tr>
<td>Standard lump</td>
<td>$3.75</td>
<td>$3.75</td>
<td>$3.75</td>
<td>$3.75</td>
</tr>
<tr>
<td>Kansas lump</td>
<td>$3.75</td>
<td>$3.75</td>
<td>$3.75</td>
<td>$3.75</td>
</tr>
<tr>
<td>Kansas lump</td>
<td>$3.75</td>
<td>$3.75</td>
<td>$3.75</td>
<td>$3.75</td>
</tr>
</tbody>
</table>

---

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

* Advances over previous week shown in heavy type. Declines in italics.
December 14, 1922

---

**Coal Age Index 325, Week of Dec. 11, 1922.** Average spot price for same period, $3.93. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 98 per cent of the bituminous output of the U. S. weighted in accord ance first with respect to the proportion 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, 1912-1913," published by the Geological Survey and the War Industries Board.

---

Encourage central Pennsylvania all-rail purchases, where the requirements and demand are more than normal for this time of the year.

Hampton Roads situation continues dull. Tonnage on hand at the C. & O. and N. & W. piers gained last week and dumpings likewise increased. At Sewalls Point, on the contrary, coal on hand and coal dumped last week showed a decline from the previous week. The interest of the producer is in a high-priced Western market, where, however, he can ship but a small portion of his output. Eastern buyers, of course, take advantage of this, thus holding Hampton Roads prices down.

---

**How the Coal Fields Are Working**

<table>
<thead>
<tr>
<th>Month</th>
<th>U. S. Total</th>
<th>Alabama</th>
<th>Illinois</th>
<th>Kentucky</th>
<th>Louisiana</th>
<th>Texas</th>
<th>Utah</th>
<th>Virginia</th>
<th>West Virginia</th>
</tr>
</thead>
<tbody>
<tr>
<td>July-Dec. 1922</td>
<td>14.7</td>
<td>5.7</td>
<td>2.1</td>
<td>2.4</td>
<td>2.3</td>
<td>1.9</td>
<td>0.3</td>
<td>2.6</td>
<td>1.8</td>
</tr>
<tr>
<td>July-Dec. 1922</td>
<td>14.1</td>
<td>5.5</td>
<td>2.0</td>
<td>2.5</td>
<td>2.2</td>
<td>1.9</td>
<td>0.3</td>
<td>2.5</td>
<td>1.8</td>
</tr>
</tbody>
</table>

End of the Lake season is fast approaching. During the week ended Dec. 11, cargo coal dumped reached 500,000 tons and fuel coal 8,267 net tons, a total of 288,800, which is a high figure for this time of the year. The season's total is now past the 19,000,000-ton mark, approximately 1,000,000 tons behind last year. The Northwest is abundantly supplied with soft coal, for on top of the Eastern coal via Lake, all-rail coal from Illinois keeps pouring in.

---

**Car Loadings, Surpluses and Shortages**

<table>
<thead>
<tr>
<th>Week ended Nov. 25, 1922</th>
<th>Car Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Cars</td>
<td>Total Cars</td>
</tr>
<tr>
<td>11,000</td>
<td>11,000</td>
</tr>
<tr>
<td>11,000</td>
<td>11,000</td>
</tr>
<tr>
<td>11,000</td>
<td>11,000</td>
</tr>
</tbody>
</table>

**Anthracite**

Work at the anthracite collieries virtually ceased on Thanksgiving Day, and in consequence production for the week ended Dec. 2 declined to 1,810,000 net tons, according to the Geological Survey. This estimate is based on shipments of 34,788 cars, including besides liveliness washed coal, that recovered by washeries and river dredges, and allowances for mine fuel and sales to the local trade. Although this was less than in recent preceding weeks it was 18 per cent more than the output in Thanksgiving Day of the week ended Dec. 2, 1921 (1,550,000 net tons). Production reports of cars loaded during the first four days of the week of Dec. 4 indicate that output will be about 2,100,000 tons.

---

**Coke**

Production of inactive coke improved slightly during the week ended Dec. 2, in spite of the cessation of Thanksgiving Day, according to the Geological Survey. The coal output is estimated from railroad shipments at 26,250 net tons, an increase of 4,000 tons over the same week. With the exceptions of Utah and Washington, all districts showed improvement, or at least maintained the normal of the week preceding.

The steady improvement in the J. consumables region that began early in June finally halted, and according to the Connellsville Courier, the blast furnaces were 98 per cent, reported from 190,160 to 192,770 tons. The Connellsville also traces the decline in the temporary shortage of raw iron for repair, with a consequent curtailment of demand for coke.
## Foreign Market and Export News

### British Coal Output Again Shatters Record; Buying Pressure Relaxes

After a strong during the week ended Nov. 15, British coal output recovered and during the week ended Nov. 25 established a new high mark for the year, with 2,472,000 tons mined. This figure is 100,000 tons more than the previous week's output and 14,000 tons more than the previous record made during the week ended Nov. 11.

Buying pressures have now relaxed, but new business is coming along at a steady level for both higher grades and collieries are not concerned with the outlook, showing no desire to relax prices materially. Current exports are still up at the present level. Colliery owners are still booked for the next week or so, as far as the superior grades are concerned, but subsidiary and lower grade coals, especially smalls, are still in very excessive supplies.

There has been a disposition on the part of foreign buyers, in view of the advance exchange rates and other factors, to hold back fresh orders with the object of doing down prices, but with the approach of the Christmas holidays owners believe that this holding-off process will not last long.

Increased exports are reported to France, South America, Spain, Greece, and Russia stations, but Italian shipments declined approximately 25,000 tons and amenity colons are recorded. The direction of export for the week ended Nov. 17 was as follows:

<table>
<thead>
<tr>
<th>Country</th>
<th>Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great Britain</td>
<td>1,406</td>
</tr>
<tr>
<td>Belgium</td>
<td>409,085</td>
</tr>
<tr>
<td>Germany</td>
<td>372,981</td>
</tr>
<tr>
<td>Netherlands</td>
<td>27,644</td>
</tr>
<tr>
<td>Total</td>
<td>440,979</td>
</tr>
</tbody>
</table>

### Output Greater in Northern France

Most of the collieries of the Nord and Pas-de-Calais are unable to accept new orders for domestic coals except for delivery after the end of the present year. Industrial coals also are becoming scarce.

Pithead stocks in that coal field, which in April last amounted to nearly 2,000,000 tons, have gradually decreased until now they may be estimated at about 500,000 tons.

On the other hand, the coal output of the North of France had increased as follows in October:

<table>
<thead>
<tr>
<th>Country</th>
<th>Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great Britain</td>
<td>61,406</td>
</tr>
<tr>
<td>Belgium</td>
<td>247,723</td>
</tr>
<tr>
<td>Germany</td>
<td>114,059</td>
</tr>
<tr>
<td>Netherlands</td>
<td>10,497</td>
</tr>
<tr>
<td>Total</td>
<td>46,949</td>
</tr>
</tbody>
</table>

### British Coal Imports

British coal imports, which had increased in October have been interfered with to some extent by the recent rise of sterling. For the same reason French coals made a quite unusual appearance on the Antwerp market.

The situation in the French Central and Southern coalfields, excellent for domestic coals, is fairly satisfactory for industrial coals, although the iron works in that part of France might be more active.

Coal from the Loire coalfield is in good demand from Switzerland and Italy.

Sarre coals, owing to the collapse of the mark, are being more largely diverted from German into French home markets.

Parisian coal factors who agreed to an increase in contract prices in order to obtain domestic coal contracted for in Belgium—a step which was against all admitted rules—find deliveries no better since the revision than before, and their association has just written a strong letter about it to the Association Charbonnière du Bassin de Charleroi.

From Nov. 1 to Nov. 19, inclusive, Germany has delivered to French blast-furnaces 219,000 tons of reparation cokes, which is at the rate of 346,000 tons per month, whereas 410,000 tons per month is due.

In October 2,261,390 metric tons of coal were received in French maritime ports, as follows:

<table>
<thead>
<tr>
<th>Country</th>
<th>Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great Britain</td>
<td>1,194,000</td>
</tr>
<tr>
<td>Belgium</td>
<td>105,719</td>
</tr>
<tr>
<td>Other countries</td>
<td>1,883</td>
</tr>
<tr>
<td>Total</td>
<td>1,261,499</td>
</tr>
</tbody>
</table>

### IMPORTS

<table>
<thead>
<tr>
<th>Country</th>
<th>Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>266,778</td>
</tr>
<tr>
<td>Belgium</td>
<td>98,076</td>
</tr>
<tr>
<td>United States</td>
<td>23,555</td>
</tr>
<tr>
<td>Germany</td>
<td>254,025</td>
</tr>
<tr>
<td>Netherlands</td>
<td>24,550</td>
</tr>
<tr>
<td>Other countries</td>
<td>117</td>
</tr>
<tr>
<td>Total</td>
<td>7,177,347</td>
</tr>
</tbody>
</table>

### EXPORTS

<table>
<thead>
<tr>
<th>Country</th>
<th>Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>1,600</td>
</tr>
<tr>
<td>Belgium</td>
<td>392,000</td>
</tr>
<tr>
<td>Germany</td>
<td>32,000</td>
</tr>
<tr>
<td>Netherlands</td>
<td>4,000</td>
</tr>
<tr>
<td>Total</td>
<td>76,771</td>
</tr>
</tbody>
</table>

### Chart: Production of Coal in Great Britain

<table>
<thead>
<tr>
<th>Week</th>
<th>Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>694,234</td>
</tr>
<tr>
<td>2</td>
<td>658,190</td>
</tr>
<tr>
<td>3</td>
<td>616,006</td>
</tr>
<tr>
<td>4</td>
<td>728,164</td>
</tr>
<tr>
<td>5</td>
<td>1,166,354</td>
</tr>
<tr>
<td>6</td>
<td>2,030,240</td>
</tr>
</tbody>
</table>

The coal market in north England is quiet. Exports to Germany, though at a low level of coal, find the market adverse to sales, which are being postponed for the present. The collieries are well booked up for the most part to the end of the year and concessions in prices are confined to buyers with tonnage which will fit into loading positions. There are complaints of congestion and delay in loading at the Tyne ports and the tonnages and trimmers have been urged to return to the three-shift system of working as the only remedy, so far without success.

Weish owners are complaining bitterly of inadequate loading facilities at Cardiff and are pressing for longer working hours for loaders. The Great Western Ry. has made a request to the coal tipplers and trimmers to accept the three-shift system of working at the docks. The workers have opposed the three-shift system all along, and still express emphatic opposition to the change. The colliery owners and coal exporters generally advocate the three-shift system, as savings could be made in freight and dock charges, which would help to cheapen the cost of coal to foreign ports.

### Table: Imports

<table>
<thead>
<tr>
<th>Country</th>
<th>Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great Britain</td>
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<td>27,644</td>
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<tr>
<td>Total</td>
<td>440,979</td>
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</tbody>
</table>

### Table: Exports

<table>
<thead>
<tr>
<th>Country</th>
<th>Tons</th>
</tr>
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<td>Netherlands</td>
<td>10,497</td>
</tr>
<tr>
<td>Total</td>
<td>46,949</td>
</tr>
</tbody>
</table>
United States October Coal Exports (In Gross Tons)

<table>
<thead>
<tr>
<th>Country</th>
<th>October</th>
<th>In dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1920</td>
<td>1921</td>
</tr>
<tr>
<td>Russia</td>
<td>11.254</td>
<td>11.254</td>
</tr>
<tr>
<td>Sweden</td>
<td>123.402</td>
<td>123.402</td>
</tr>
<tr>
<td>Norway</td>
<td>118.620</td>
<td>118.620</td>
</tr>
<tr>
<td>France</td>
<td>107.560</td>
<td>107.560</td>
</tr>
<tr>
<td>Germany</td>
<td>119.370</td>
<td>119.370</td>
</tr>
<tr>
<td>Belgium</td>
<td>104.870</td>
<td>104.870</td>
</tr>
<tr>
<td>Italy</td>
<td>123.402</td>
<td>123.402</td>
</tr>
<tr>
<td>Austria</td>
<td>118.620</td>
<td>118.620</td>
</tr>
<tr>
<td>Hungary</td>
<td>118.620</td>
<td>118.620</td>
</tr>
<tr>
<td>Greece</td>
<td>118.620</td>
<td>118.620</td>
</tr>
<tr>
<td>Spain</td>
<td>123.402</td>
<td>123.402</td>
</tr>
<tr>
<td>Portugal</td>
<td>123.402</td>
<td>123.402</td>
</tr>
<tr>
<td>Brazil</td>
<td>118.620</td>
<td>118.620</td>
</tr>
<tr>
<td>Chile</td>
<td>118.620</td>
<td>118.620</td>
</tr>
<tr>
<td>Uruguay</td>
<td>118.620</td>
<td>118.620</td>
</tr>
<tr>
<td>Argentine</td>
<td>118.620</td>
<td>118.620</td>
</tr>
<tr>
<td>British India</td>
<td>118.620</td>
<td>118.620</td>
</tr>
<tr>
<td>China</td>
<td>118.620</td>
<td>118.620</td>
</tr>
<tr>
<td>Japan</td>
<td>118.620</td>
<td>118.620</td>
</tr>
<tr>
<td>Total</td>
<td>1,472,730</td>
<td>1,472,730</td>
</tr>
</tbody>
</table>

Increased Bunkering in Liverpool

For the ten months ended October 1922, bunkering of coal was 1,155,157 tons, an increase of 1,155,157 over 1,021,000 tons in 1921. The relative positions which the main bunkering ports occupy so far as volume of bunkering export is concerned for the month of October, 1922, was as follows:

<table>
<thead>
<tr>
<th>Port</th>
<th>Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liverpool</td>
<td>1,135,157</td>
</tr>
<tr>
<td>Manchester</td>
<td>1,037,497</td>
</tr>
<tr>
<td>London</td>
<td>8,056</td>
</tr>
<tr>
<td>Glasgow</td>
<td>1,037,497</td>
</tr>
<tr>
<td>Manchester</td>
<td>8,056</td>
</tr>
<tr>
<td>Hull</td>
<td>1,037,497</td>
</tr>
<tr>
<td>Edinburgh</td>
<td>1,037,497</td>
</tr>
<tr>
<td>Bristol</td>
<td>8,056</td>
</tr>
<tr>
<td>Liverpool</td>
<td>8,056</td>
</tr>
<tr>
<td>Manchester</td>
<td>8,056</td>
</tr>
<tr>
<td>Hull</td>
<td>8,056</td>
</tr>
<tr>
<td>Edinburgh</td>
<td>8,056</td>
</tr>
<tr>
<td>Bristol</td>
<td>8,056</td>
</tr>
</tbody>
</table>

The total shipments as cargo from Liverpool in October of this year were 79,352 tons, and from Manchester 34,329 tons, and the total from the northern and western parts of the United Kingdom 114,561 tons, which compares with a total of 104,870 in October, 1921.

Export Clearances, Week Ended Dec. 2, 1922

From Hamilton Roads

For Cuba:
- Br. Ss. "Kovilwood" for Havana. 6,867

For West Indies:
- Br. Ss. "Grosvenor" for St. Thomas. 2,057

From Philadelphia

For Cuba:
- Ss. "Emerald" for Havana. 2,057
- Ss. "Lusitania" for Havana. 2,057

For the Continent:
- Ss. "St. Louis" for Germany. 2,057

For Brazil:
- Ss. "Victoria" from New York for Rio de Janeiro. 2,057

For the Philippines:
- Ss. "Clermont" from New York.
- Ss. "Regina" from New York.

World Coal Production, July-August

In comparing present coal production with the average of pre-war production it will be seen that France, on account of her gain in territory, produces more coal at present than before the war and this in spite of the fact that the coal mines in the northern departments of that country suffered seriously during the war. In addition to her own production France receives monthly orders of so-called replacement coal, so that the country is better off than before the war as far as coal is concerned. The greatest decrease has taken place in the United States, probably on account of the miners' strike. German production remains far behind that of the ante-war-time, by about one-third--chiefly due to the loss of one-third--chiefly due to the loss of the northern districts, and partly due to the decreasing output. Great Britain's coal production also remains considerably behind pre-war time, but has largely increased as compared with the preceding year (miners' strike) partly due to the strike in America. An increase in production as compared with ante-war time took place in the Netherlands, South Africa and Japan.

MONTHLY AVERAGE OF COAL PRODUCTION

<table>
<thead>
<tr>
<th>Country</th>
<th>1913</th>
<th>1914</th>
<th>1921</th>
<th>1922</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>158</td>
<td>111</td>
<td>104</td>
<td>97</td>
</tr>
<tr>
<td>France</td>
<td>300</td>
<td>240</td>
<td>110</td>
<td>90</td>
</tr>
<tr>
<td>Belgium</td>
<td>109</td>
<td>125</td>
<td>176</td>
<td>170</td>
</tr>
<tr>
<td>Austria</td>
<td>8,000</td>
<td>7,500</td>
<td>7,000</td>
<td>6,500</td>
</tr>
<tr>
<td>Brazil</td>
<td>1,150</td>
<td>1,000</td>
<td>800</td>
<td>700</td>
</tr>
<tr>
<td>Japan</td>
<td>305</td>
<td>225</td>
<td>175</td>
<td>150</td>
</tr>
<tr>
<td>China</td>
<td>1,000</td>
<td>900</td>
<td>600</td>
<td>500</td>
</tr>
<tr>
<td>Australia</td>
<td>1,000</td>
<td>800</td>
<td>700</td>
<td>600</td>
</tr>
<tr>
<td>Total</td>
<td>1,472,730</td>
<td>1,021,000</td>
<td>1,155,157</td>
<td>1,155,157</td>
</tr>
</tbody>
</table>

Week-End Strength at Hampton Roads

The market at Hampton Roads showed signs of strength at the end of the week, although dullness was the main feature throughout the period. The trade continued the outstanding feature in the trade, with little prospect of immediate improvement in the situation.

Bunker business was showing some activity, but the weakness in the foreign trade was extremely dull. January was the earliest date set by shippers as promising any improvement in a general way.

The market was spotty during the week, prices depending somewhat on the class of cargo demanded. Few dealers had sufficient supplies to give any sort of flexibility to their quotations. Small lots in most instances were the general thing.
Prices Firm on High Grades.
Shipping on Low Qualities


An indication of the marked situation in the territory is found in the fluctuation of prices in high-grade coal, while quotations on low-grade coal here and elsewhere over the country are shipping. Car supply is slightly improved to a number of grades but the insistence of the buyer on quality has prevented marked price revisions. Railroads are now the heaviest buyers. Some of them are accumulating good stocks. Here and there there is some inquiry for delivery after the first of the year for storage against another big strike, but the market is not the least nervous over this possibility at this writing. Producers are more concerned now with getting their coal a price that will yield a profit on the short car supply than in quoting prices for the first quarter of next year.

Fuel Administrator Woodin's order to buy one-fourth substitute as fuel in 25 households anthracite is calculated to relieve the pressure on bituminous coal as well as anthracite steam coal at Tidewater.

NEW YORK

The better grades are growing stronger and steady. At some operations are in a position to take orders and offer reasonably quick delivery, while at others the coal is scarce. There is some movement because of the uncertain rail supply.

There is a heavy demand for prepared anthracite domestic coal and most operators are heavily booked ahead. Quotations on better grades are from $4-25 for furnaces to $5.50 for ranges.

The Northern market is tightening up; reports indicate that some operators are hesitating to accept firm orders for delivery next month. Shipments of British coal to that region this week were somewhat less than expected, and it is reported that British coal is being bid up at 17 cents more than American coal.

The West Coast cars are still quite light. The Pacific Coast is almost a null market. There is little coal on the market. Some fancy grades were offered at $6.75; hard anthracite grade, $5.50; high-grade paper coal, $6.50; hard coal, $5.50; and slack, $5.50.

PHILADELPHIA

The spot market on the distinctly high-grade coal remains quite stiff at advance rates, with some reporting advances. The supply of cars nowhere seems to be anywhere near the demand and unless decided relief is soon given, prices must rise higher. The consumer remains fairly cheerful and pretends to be puzzled for a reason for the recent stiffening of prices. However, those with orders placed several weeks ago at favorable than the current prices are now insisting on prompt shipments. The railroads are still the biggest takers of fuel, and have accumulated good stocks.

Some shippers are not particularly anxious for business even at present prices, as they are doing their best to clean up orders placed three or four weeks ago. This refers to the best of the low-volatile steam coals and some high-grade gas fuel.

At this time there is only ordinary banking, while riper business is not even near.

Baltimore

The early part of last week witnessed a slide in prices for all except the better grades of soft coal, but the recession was rapidly offered. During the past week there has developed a decided call for coal from the large consumers, public service corporations being particularly active in this direction.

Several coal men here who had reported that they were having difficulty in getting rid of Pool 11, and even Pool 10, now say these are being absorbed as rapidly as they are offered. During the past week while Pool 9 coal held pretty well above $4, the net ton f.o.b. mines, Pool 10 was offered around $3.50, Pool 11 around $3.35 and Pool 18 at from $2.25 to $2.50. The gas coal market was off also, Pool 64 being obtainable in many cases at $2.75 and Pool 63 at $2.35. At the writing, however, there has been an advance of 25 to 50c. right along the line and not much of Pool 10 is now on the market below $4. Very little of Pool 9 is now offered here and is readily commanding $4.50.

FAIRMONT

Keeping pace with the general market, prices have been showing a downward trend but marked recessions have been prevented owing to the fact that a shortage of cars is still retarding production. Yet car service is somewhat better than last week, in spots at least, and some mines are holding the market for the time being. When Dec. 2 had as large a supply as 50 per cent. In general the range on mine-run is $2.75 to $3.50 with gas and lump ranging $4.50 to $5.50.

CENTRAL PENNSYLVANIA

Improvement is noted in the situation both as to cars and prices. A new market is opening for bituminous coal that can be adapted to use where for coal anthracite was used. Coals for this use are found in Poole 1, 9 and 71 and the price is strong at $4.75@$5.

Pool 10 advanced from $3.90 to $4.10, and Pool 11 from $3.50 to $3.75. Railroad supplies are being cut down, thus leaving more coal for commercial distribution.

Production for the month of November will reach 60,000 cars, as compared with 57,000 in October, figures are not yet available. During the week ending Nov. 26 the production was 18,532 cars as against 19,849 cars the previous week.

UPPER POTOMAC

Upper Potomac and Georges Creek fields in the aggregate have not been the same as that of the district. The coal tonnage handled in the latter part of November chiefly because Upper Potomac mines fell behind previously established records to the extent of 6,000 tons. The situation was attributable to a car shortage, market conditions having played little or no part in curtailing production, though prices have been declining as the demand somewhat. Pool 18 is bringing as low as $2.50 per ton.

West

DENVER

Car supply that is growing slowly better continues to increase the output of Colorado and the market in this city and elsewhere in this region has whetted up sufficiently to absorb the production of the district. Domestic demand is fairly strong and industrial calls for steam coal is picking up a little. Canon City and Walsenburg lump is selling at the mines, coal at Trinidad lump at $5.50. Nut from these fields runs about 50c. lower than this. There is a noticeable firmness in all domestic coals.

KANSAS CITY

"No-bill" cars in the southern Kansas field have begun to move. The surplus at the mines is estimated at from 50 to 75 per cent less than it was two weeks ago. This is attributed partly to the advent of colder weather but more to idle time at the mines. One company, with headquarters in Kansas City, reports its mines have been operating only 25 per cent of normal. Other firms report between 25 and 50 per cent.

The transportation situation remains about as it has been since September, with perhaps a little more blame for slow movements placed upon lack of motive power than upon lack of cars. It is estimated that at the present rate of demand, demand has sufficient coal in their yards to last 30 days. Quotations on Kansas coal are: Lump, $5; nut, $4.50; screenings, $3.50. Arkansas semi-anthracite lump is $6 and screenings $1.50@2.

SALT LAKE CITY

Mines are working around 56 per cent of capacity now. Market conditions are fair. The demand for lump coal is such that the smaller mills who supply constitute a problem. Stocks in Salt Lake City are still low but now that the coal situation has improved the severest weather is not likely to precipitate a crisis. Labor conditions are excellent.
Anthracite

Wintry Winds and Bare Bins Stir Tardy Householders

Cold Blast More Potent Than Warm-Weather Warnings—If Present Output Can Be Maintained Anthracite Problem Will Be One of Distribution.

Cold weather is focusing attention of the householder on the ever present lack of sufficient anthracite to meet his needs. Warm weather warnings of shortage to come broadcast by every local administrator and retail dealer in New Jersey and New York failed to stir the householder like one week of sharp cold and a short supply in the cellar.

Providing production can be maintained at its present rate of around 2,000,000 net tons per week, which figures, of course, include about 200,000 tons, or 10 per cent used by the mines themselves, the anthracite situation may be summed up as a problem in careful distribution aiming at eventual equality but seeking to fill the more distant points first.

The market for steam sizes in anthracite continues exceedingly dull. Some are hopeful that buckwheat at least may move in more volume as a substitute for larger sizes when the consumer gets really pinched.

NEW YORK

In an effort to relieve the domestic situation and at the same time reduce the tonnage of small coals on the railroad terminals in New Jersey, in boats and in the retail yards the State Fuel Administration on Dec. 8 issued instructions to retailers that deliveries of two tons or more of grade, broken, egg, stove, chestnut or range coal must be preceded by accompanied by note not less than 25 per cent of buckwheat, coke, bituminous or other substitutes.

Dealers are buying more independent coal because of the demands made upon them and inability to obtain larger shipments from the companies.

Outside of price increases already announced by some of the companies, some of the larger independents have advanced their quotations, mostly to cover the Pennsylvania State Tax.

Consumers here need not go without fuel. When they are unable to get the particular size wanted there is always some substitute available. No suffering has been reported as yet.

Queues are seen in some of the retail yards, and during the week included some weather chestnut at $12.75 and washy pen at $9.75 f.o.b. mine.

The steam-coal situation is clearing up. At the end of the week there were upward of 100 loaded boats in the harbor, some of which it was said had been loaded a couple of months. All these sizes are stronger, with rice the most inactive. The better grades of independent buckwheat and rice were quoted above company circular while some cheaper grades were quoted below.

BUFFALO

Delivery is still slow, though emergency cases are not as numerous as they were. Complaints are made that with a good increase of mining over former months much less coal has been sent this way than in the past.

Shippers who handle independent anthracite say that the demand for that material is not keeping pace with the increase in prices. They find it next to impossible to get any coal unless one stays on the spot and sees that the cars are not sold to anyone else. Canada has been buying Welsh anthracite at about $18 delivered, but that is now cut off by the closing of the St. Lawrence River season.

The lack of coal which is coming to a close, has been smaller than expected. At the close of November shipments were 947,650 net tons. Shipments for the first week of December were 56,300 tons. Freight rates since Dec. 1 have been uniformly $1 per ton.

BALTIMORE

The hard coal situation is not at all satisfactory but dealers realize that this is a general situation and not a local one. As a matter of fact nature was a bit good to Baltimore during the recent very cold snap which swept the West and Northwest by sending the cold area around this section and not through it. The result has been that while the period since Dec. 1 has had some raw days it has not been marked by extremely cold ones and coal consumption was held down very materially. Dealers, however, are rather anxious about the last days of December and are hoping that there will be a material increase in shipments here.

During October Baltimore coal dealers delivered a total of 1,478 cars of anthracite, but November saw a drop of 213 cars from this record. December so far has failed to show any increase.

Dealers in Baltimore are trying as far as possible to co-operate with the Maryland Fuel Distribution Committee and agreed willingly to take care of emergency cases whenever possible.

PHILADELPHIA

Cold weather has increased demand, with dealers poorly prepared to meet it. Though mine prices have been radically increased by some independent companies, and many advancing among the shippers, the increase in retail prices has been moderate. There is still a good deal of coal of coal being sold at $14.50 for family sizes and $11.50 per ton. Of course this is by dealers who are getting mostly company coal. Other dealers have increased from that point up to $18

Substitutes such as bituminous and coke are making headway. Provisions also are being made on buckwheat and coke, a domestic fuel, although in the cold weather must go with each water for larger sizes. Yet even in this field dealers are reporting satisfactory customers who have used the coal in steam heaters, with a mixture, and expect to regular trade on this size in the future.

Prices for buckwheat at retail are $22.95.

The steam coal market is better, brokerage free just as it was available at less than $3.50 and with the good grades are getting $4. Of course the companies have not cut that price. Rise is still predicted and probably the market will move up in this size. Bailey is in good demand, but with a fair supply still offered the market.

BOSTON

Domestic sizes are seriously in short supply in most of the states. It is the cut to generalize for the whole of the territory, for distribution to be means horizontal, depending upon originating companies that have varying policies in sending coal forward. A really notable effort has resulted in adequate supplies for the present, as plenty of larger and smaller sizes up the Merrimack and Connecticut rivers, but ports of western New England have been through the winter have been kept on hand. Deliveries for heating, however, that after Jan. 1 the general situation will be easier.

There is no special change in the retail situation. The City of Boston landed at the end of December a Welsh steam coal called "new anthracite," and is making deliveries at $14.50 per ton. Retail dealers are managing well, and keeping customers supplied with small amounts, and in some districts, if all deliveries.

SOUTH

BIRMINGHAM

So far the approach of the holidays has stimulated the market very little. There are indications that very little extra coal for stockpiling, and in fact somewhat more is going to the local market.间的 order, with prices dropping below the major bundlings. The result in all is that local leguminous and bituminous, which are probably in better supply for the holidays.

Prices for both steam and domestic coals are practically unchanged from last week. Production is about 450,000 tons per week, and supplies range from 40 to 45 per cent of normal. Conditions are still proving adverse, and the supply is equal to demand, and the order is being held to the maximum advantages of coal as a fuel.

VIRGINIA

Lack of production has been reflected in weakness of the market. Some coals have been quoted at a very low price. The market has been steady, and some orders coming in from coal district buyers, especially for anthracite and coke, which are in the market at present. There is no movement to speak of in anthracite lines, but there is some movement in coke. Both coal and coke are still in high demand, and the market has been steady, although prices are not as high as they were a month ago.
Chicago and Midwest

Market Slightly Better
For Both Steam and Lump

Both Far Below Normal for This Time of Year—Even Raw Weather and Illinois Smoke Threat Have Little Influence—Cars More Numerous.

The recent slump of domestic scale was practically stopped during the past week by raw weather but the general market remained so quiet that the volume of fuel offered dwindled. This had the inevitable effect upon steam coal, which strength-ened slightly but did not develop into anything even remotely resembling a rush. A consistent effort on the part of a few railroads and a group of big consumers to restrict Illinois grain by accepting considerable quantities of cheap western Kentucky coal has had the desired effect in Chicago. The demand for select domestic has increased the price of eastern smokeless a little, but that is primarily because there is almost none to be had.

What little strength there is has been more apparent in Chicago than elsewhere, though in Kentucky there is a better feeling in both domestic and steam, and in St. Louis, while the demand is nearly as flat, steam has picked up even as little. Car supply generally is better just at a time when "no hills" are numerous.

SOUTHERN ILLINOIS

Last week's story of this region is a repetition of the past week—Warms prevailing and to demand. The only coal天津 with good screens is screenings. Larger sizes are only under pressure. While the screen operations are still maintaining their price, the rank of the indigenous is down, and the current price is $1.75 for lump, $1.65 for the 6-in. Lump and screenings, $1.25 for the 6-in. lump, $1.00 for the 8-in. lump and screenings, $0.75 for the 10-in. lump and screenings, and $0.50 for the 12-in. lump and screenings.

WESTERN KENTUCKY

It is reported that demand has been a bit better the past week as a result of lower prices at Tennessee. Prepared coal is selling for $2.50 per ton, and the demand is steadily improving. A fair amount of the coal is moving out through the state and South, with some going to other southern states. River movement from Kentucky has increased as a result of lower prices, and the heavy rains are expected to improve rail services. New mine reports indicate an increase in production.

INDIANAPOLIS

Lump change was seen in the coal situation in Indiana until the threat of an immediate strike was made. Then, many buyers who depend upon Indiana coal for their winter supplies turned to other sources. Winters has held down demand for coal. With the current price of Illinois coal being low, large contracts are being placed for the Illinois coal. The price of Illinois coal is down to $1.75 per ton, and there is a good supply available at the ports.

South

TORONTO

There is practically no change in the situation as regards anthracite. Moderate supplies are being received by the dealers, who refuse to receive orders when these are disposed to until further consignments are expected. Consumers unable to wait can generally obtain immediate delivery of "brokerage" coal by paying higher prices, which range from $2.50 to $3.00 per ton. Welsh coal remains which is being rapidly disposed of at $15.00 per ton. Deliveries are being delayed by a rush of orders.

Prices for carload lots of bituminous f.o.b. destination are a little easier, ranging $8.50 to $9.25 and Pennsylvania smokeless $8.25. There is no noticeable increase in the demand.
Eastern Inland

Fears of Huge Lake Surplus Have Largely Disappeared

Clean-up at Lower Erie Ports Promises to Be Unusually Good—Domestic Prices Easier Than Elsewhere—Consumers Await Price Fall.

Fears of a week ago that the Lake season would suddenly close and leave a huge tonnage to be thrown back on the local market have largely disappeared. In the week ended Dec. 11 there was dumped 288,869 tons of cargo and bunker coal in lower Lake Erie ports and it is now expected that the clean-up will be unusually good.

Domestic prices are easier in this section than in any other part of the country, warm weather and a plentiful supply softening prices on such coals as Hocking, No. 8, Kanawha and eastern Kentucky.

Consumers are patiently awaiting the market drop and steam prices are losing strength every week.

BUFFALO

Trade is very quiet. Supply is running ahead of demand and prices, of course, are weakening. Shippers try hard to hold up prices and are succeeding fairly well so far, but they are apprehensive of the full force of the lake closing.

Better car supply is responsible for more plentiful coal, but it is by no means good; if it were prices would touch bottom. Predictions of considerably lower prices are made by shippers, but that may not happen right away. Then if the railroads should go to stockup that alone would add stiffness to the market.

Consumers say their stocks are increasing. They are now able to mix in coal at present prices with some that they bought awhile ago at higher prices. Consumption keeps up and may be increasing.

Quotations are $4.75 for Youghiogheny gas lump, $3.75 at $4.25 for Pittsburg and No. 8 steam lump, $6.25 at $6.50 for all mine-run and $3 for slack, adding $2.00 to Allegheny Valley and $2.24 to other coals to cover freight to Buffalo.

PITTSBURGH

The market continues to soften, except on domestic lump, which is strong in demand. Consumers are satisfied with the coal they have. Car supply shows no great change.

The chief movement is on contract. Little coal is moving through the open market in odd lots. It is thought that many consumers are stockig a small part of their contract receipts.

Regular Pittsburgh district steam coal remains quoted at $2.50 at $2.75. Connellsville steam coal, some Sewickley seam and some regular Pittsburgh seam, is offered freely down to $2.25 and there has been some curtailment of production on account of not finding takers. Odd lots of good grade Youghiogheny gas coal can be had for $3 and good sized lots for regular shipment at about $3.50. Byproduct coal shows little activity, but could probably be picked up at $3 at $3.25. Some contracts for particularly high grades have been adjusted to $3.75 for December shipments.

Domestic 11-in. lump is bringing $5 at $5.50 in most quarters. The Pittsburgh Coal Co. continues to bill at $4.50.

COLUMBUS

There is a slight weakness in domestic sizes, caused principally by the continued warm weather. Retail stocks are generally good, but dealers are loth to increase them under present conditions. Retail prices are steady at former levels with Hocking and Pomeroy lump moving fairly well.

Steam trade is quiet. Steam users have accumulated stocks to 15 to 20 days. Consumers apparently are waiting for lower prices, regardless of the possibility of a strike April 1. Utilities are buying with alacrity and operators are taking about the usual amount.

During the week ending Dec. 9 there was an exceptional shortage of cars in the eastern Ohio field.

Prices appear to be giving ground, although domestic sizes are holding up best. Screenings are hard to move in some instances and this aids in maintaining lump and middlings, with operators sacrificing slack in many instances.

NORTHERN PANHANDLE

Production is about on a par with that of other parts of northern Kentucky. Mines are unable to work anything like full time owing to the difficulty in securing an adequate car supply, though there is a better supply available at Pittsburg and as the general movement to the Lakes ceased. Demand for steam has slackened somewhat with railroads getting more coal than any other class, and fuel dealers say their stocks are more active than for any other kind of fuel, though extremely irregular. Lump and egg bring $4.25 at $4.75, with minimum priced at $3.75 at $4.25.

EASTERN OHIO

Output for the short week was 283,000 tons, or approximately 15 per cent of capacity, a decrease from the preceding week of 75,000 tons. It is conservatively estimated that car shortage caused a loss of at least 200,000 tons in output. Railroads are cutting back 40 to 45 per cent of the output of eastern Ohio fields.

Cumulative figures indicate that output for the field for the calendar year up to Dec. 2 was 10,000,000 tons, as against a potential capacity of 25,000,000 that time.

Operators and jobbers state that steam demand is less active than in any time in contrast to the slump in steam demand in the lumbering districts. One operator claims that so much lumbering is quite active, as domestic consumers have been able to procure coal only in a small way. However, smokeless fuels from West Virginia and eastern Kentucky are coming through more freely and likewise Ohio domestic lump is now available than formerly.

Spot prices on steam sizes, which have receded from 29 to 75c. per ton during the past few weeks, are about the same as those quoted last week, namely: Eastern Ohio No. 8, 2.25c.; cut and stack, 3.15c.; mine-run, $3.25; 2.495 and 6-in. lump, $3.75 at $4; 2.495 and 6-in. lump, $4.25 at $4.50. Ohio No. 4 or Middle District, f.o.b. mines as well as coal from West Virginia in Clarksville district are quoted at about the same figures.

During the week ending Dec. 2 Cleveland industries and retail and the largest receipts on record. A total of 2,495 cars was received, 1,748 of which were consigned to industries and 747 cars to retail yards.

In the Lake trade it is now expected that a good clean-up will be made before navigation actually closes and little will be left over at the lower lake docks. Lakeshipping, Dec. 14 and 15, was 1,711,965 tons, as compared with 22,383,455 tons during the same period of 1921.

CLEVELAND

Industrials continue to delay buying for future needs, filling only spot requirements. Soft-coal prices generally are 25c. to 50c. lower than a week ago. Business as a whole is much below normal and the bottom has not been reached, but producers in northern and eastern Ohio look for an upturn in prices soon. Retailers say they are ready to deliver but have been unable to get consumers to increase buying because of present coal buying by most domestic users.

Some grades are not difficult to obtain, and since the virtual close of Great Lakes shipping, releasing more than 1,000,000 tons of coal weekly to other points, possibilities of a sale at a better market in much larger quantities. West Virginia and Kentucky coal has shown a price firmness here in the last few days.

DETROIT

Offerings of bituminous coal continue to assure little interest among buyers for Detroit steel plants or the retail dealers. The waiting period is characteristic of the market, still popular. Wholesale and jobbers report orders small and irregular. Buyers for the steel plants are willing to order only quantity orders and retail operators are selling on consignment. Even with the low buying atmosphere there is virtually no free trade, slight improvements in supply amount to nothing for jobbers, though the quantity is still too small for normal.

Lack of active interest among steel plants and jobbers is based on an expectation that prices will be lower when the winter demand is reached at a desirable coal.

Most of Detroit coal from Ohio. Banking of coal is as open at the mines at 35c. as at the yards at 50c. for a ton.

Prices at the mines are: Youghiogheny, 11-in. lump, $3.75 at $4; 6-in. lump, $3.75 at $4; 2.495 and 6-in. lump, $4.25 at $4.50. Ohio No. 4 or Middle District, f.o.b. mines as well as coal from West Virginia in Clarksville district are quoted at about the same figures. Prices on Michigan coal from the mines are: Youghiogheny, 11-in. lump, $3.75; 6-in. lump, $3.75; 2.495 and 6-in. lump, $4.25 at $4.50. Ohio No. 4 or Middle District, f.o.b. mines as well as coal from West Virginia in Clarksville district are quoted at about the same figures.
Soft Coal Continues

Plentiful and Lower

Volume on Hand Leads to Fast 

Hauls and There—Anthracite About 

Goes and Little More Expected—Rail 

Honnones Repeats Deeper and 

Deeper.

Further weakness in the price 

of coal continues to be evident 

throughout the Northwest during 

the past week, especially before a 

wave of cold blew down out of 

the North about the middle of the 

week. All shippers have so much on 

hand and are prepared to sell coal 

from the states at the south that they 

are unloading as swiftly as they can, 

with little thought for the future 

except that they are not making future 

contracts at anything less than 

currant.

Hard coal is practically exhausted 

and little more is expected, for 

the extended navigation season ends Dec. 

15. Everybody is propounding higher 

prices, but those have not yet made 

themselves deeply felt. It is to be 

observed that the battle for markets 

between docks and binumous rail 

shippers is growing steadily stiffer 

and that rail coal is reaching points 

a good deal farther north than is 

customary in normal seasons.

Milwaukee

Real windy weather throughout 

the Northwest has put life into the 

coalizing trade wholesale and retail. The 

general public has been strangely 

influenced by the abnormal fuel conditions, 

but the sharp downward turn in the 

commodity has awakened some 

curiosity in favor of local residents.

Everybody indicates higher prices 

for anthracite on the near future. A 

uniform grade has been maintained for 

80 cents per ton for anthracite, carried in 

while in car, but varies $1.25 to $1.50 

per ton for the same. Prices for 

hard coal are:

Milwaukee O. B. C. O. O.

60.00 64.00 68.00 72.00 75.00

50.00 58.00 62.00 66.00 68.00

40.00 44.00 48.00 52.00 54.00

30.00 32.00 36.00 40.00 42.00

20.00 22.00 24.00 26.00 28.00

10.00 12.00 14.00 16.00 18.00

2.00

5.00 7.00 9.00 10.00 12.00

Western operators are still 

influenced by Eastern operators 

for coal at all points, but not 

with the excessive local coal. Deck 

springs of 10,000 are used with 

good enough coal. Car 

arrived in the basin a day or two 

ago used in Belhaven Harbor. It 

subjected to usual treatment 

and prices are right. Anthracite is still 

coming in. Few in good. Future will 

be watched closely, but little in the 

way of change is expected.

New England

Market Shows Betterment;

Prices Stiffen at Roads

Buying Slightly Improved—Western 

Demand Attracts Larger Share 

of Cars—Only Small Tonnages Available 

for Coastwise Shipment.

Improvement in this territory is 

by no means conspicuous. A few of 

the textile mills have bought limited 

amounts for delivery through the 

winter, but the aggregate tonnage 

is not enough materially to affect 

the market.

Car supply on the Southern roads 

is still light, and while there is no 

pressing spot demand, prices have 

again stiffened somewhat at the 

pier. Western demand for prepared 

coal is strong enough to attract 

the larger share of cars, and in 

consequence there are only small tonnages 

available for coastwise shipment. At 

the same time contract requirements 

are being met with little or no delay.

For inland delivery $9.25 has been 

paid for granulated coal on cars Boston, 

a price that compares with $7.75 f.o.b. 

at Norfolk or Newport News,

but as an average quotation this has 

been shaded within a few days. On-car 

prices in excess of $9 open a little 

of the gate for all-rail shipments from 

central Pennsylvania. The Cambria and 

more favorably known Clearfield grades maintain a 

reasonably steady position with respect to all-rail operators and in some instances with good connections are able with re-

duced car supply to keep orders ahead for two to three week period, and while prices show no stringency for the present the mines are able to 

operate in most cases without reducing their asking price.

Receipts all-rail have diminished the past fortnight, but this is probably due 

to several reasons, one the shorter 

of the supply of anthracite. In the smaller 

cities and in some towns where there is 

shortage of anthracite has at last in-

duced householders to take small quan-

tities of such bituminous as can be had. 

Western operators the district have been able to do a flourishing 

business on screened egg and chest-

nut sizes at prices far more remunerative 

than if they were restricted to 

their normal steam coal trade.

Duluth

Official figures show that 294,221 tons 

of anthracite and 1,453,106 tons of 

bituminous were received at Duluth-

Superior harbor during November. 

This brings the grand total received 

this year to 1,310,845 tons of hard coal, 

23,975 tons of hard coal screenings and 

4,952,394 tons of soft coal. Last year 

there had been received to Nov. 30, 

1,813,196 tons of hard coal and 8,841 

tons of soft coal. Last year, however, the 

docks were empty when the season started and 

this year a considerable supply was 

on hand. By comparing figures it is 

readily seen that the Northwest is long on 

bituminous and short on anthracite.

Receipts are falling off. This week 

only 36 cargoes arrived, but of these, 

8 were anthracite. There are 16 cargoes 

reported on the way of which 6 are 

hard coal. The weather is bad, 

with heavy snow and blizzards and not 

unusual that much more coal will 

be shipped though the docks have 

supplies of hard coal to last but 20 days. 

Most docks here are holding their 

stocks for the local trade.

Prices on hard coal remain firm 

but bituminous shows some weakness, 

because of the lessening of the market 

and much ordinances in the order admin-

istrator. Lump sells for $9.50 but 

run of piles fluctuating between $8 and 

$8.75, with screenings between $6 and 

$7. Little worth of note that docks are 

not taking contracts for future delivery 

at less than list.
Cincinnati Gateway

Disarrangement of Traffic
Nears the Scandal Stage

Situation Upset on Three Roads from South—Collusion to Hold Back Output Inferred—Business Picks Up—Tone More Stable.

Traffic conditions on the three coal carriers using the Cincinnati gateway from the South are fast reaching a point that causes eyebrows to raise and scandal to pop. The Norfolk & Western seems to be in the worst plight, the Chesapeake & Ohio is a little better off, but on the Louisville & Nashville things have come to such a pass that various of the operators' associations have had meetings with those who direct its affairs and they have placed the burden at the door of the shopmen's strike. By inference also it would seem that there is collusion somewhere to hold back production through the channels of transportation so that in the event of trouble April 1 these great producing fields will not have their share of coal above ground.

Business picked up a bit last week. The tone of the market was more stable. Moderate buying by steel plants and byproduct users helped some and the colder weather also deserves a share of credit.

LOW-VOLATILE FIELDS
New River and the Gulf

As great many mines are not working more than a day a week, the field as a whole is not in a position to fill orders promptly, leaving little or no free coal to be disposed of in the open market. Not a large proportion of the output is being shipped to Western markets, since equipment is not to be had. Furthermore demand has improved at Tidewater, where prices are attracting larger shipments, the prevailing price being about $6.25 a ton. Prepared grades in the Eastern and Southern markets are bringing from $7 to $7.50.

There has been a slight improvement in transportation conditions affecting the Windy Gulf region. Virtually all the tonnage is going to Tidewater, since the western outlet is restricted. The price, too, is on a higher level, with mine-run bringing over $8 a ton.

POCATELLO AND TUG RIVER

Distribution of empties is not now equal to more than 40 per cent of allotment, so that few mines are operating more than two or three days a week. There is an increase in the movement to Tidewater, where prices are on a somewhat higher level, the ruling price at the piers on a spot basis being $8.50.

HIGH VOLATILE FIELDS
Kanawha

Car supply has improved of about 5 per cent as compared with previous weeks. Mines are able to work two days at best and many only one day a week. Therefore a waning demand has exerted less effect than might otherwise have been the case, for output barely covers the market. Tonnage needed to be had in the open market is not large nor is it bringing as high a price as it did. Steam mine-run ranges $3 @$3.25. But a couple of the larger cars of the C. & O. is tending to throw more Kanawha coal to Eastern markets.

LOGAN AND THACKER

Because of the failure of the C. & O. to furnish anything like an adequate car supply, this district is not loading more than 100,000 tons a week. The failing coal market has not had any adverse effect on the region as a whole for the simple reason that there is little or no surplus coal to be had in the Logan region. What little coal there is moving on a spot basis is of course bringing lower prices, especially in so far as steam mine-run is concerned.

Conditions in the Kenova-Thacker fields are much the same as in other fields served by the N. & W., with mines limited to two and three days a week because of poor car service. Western equipment is used almost entirely by the Thacker field since nearly all the coal originating in this territory is marketed in the West. Production is scarcely more than equal to the needs of regular customers, so that a declining market and softening prices has not affected production so far.

NORTHEAST KENTUCKY

With production not over 100,000 tons per week, or about 27 per cent of potential capacity, there is little coal to be had over and above that needed to take care of customers, so that prices obtaining in this territory are somewhat lower than those in the general market. Lump is bringing $5 a ton and mine-run $3.50 a ton.

CINCINNATI

The smokesome market has been pretty well riven to "sixes and sevens" through the traffic difficulties. With side prices $1.50 a ton below those of this and the previous week, commerce is being conducted on the N. & W. since the middle of November has been a maximum for Pocahontas coal. That from New River is 80 cents a ton lower, and what has been taken is that the hands of the jobbers have been held at busitive prices.

After a drop of considerable proportions the steam market took a brace under better buying and both slack and mine-run made a slight recovery. Domestic sizes are holding their own, though there is disposition to grant concessions in price. With 69,000 tons of river coal placed in the local harbor the retail trade served by companies handling it again became a potent factor in this angle of the business. One firm is selling its splint lump at $7.50, while all-rail brings it to $10. Buying from brokers has forced the price on Pocahontas lump to $11 with mine-run bringing $9.75@$10; bituminous slack is quoted at $7.50.

CONNELLsvILLE

The coke market has gone contrary to expectations, as prices have been more or less firm in prices and products are being quoted-10c at $7.25-$7.50. For the week of April 1 there were three sales of 7,250 tons, and 17,770 tons were sold by the merchant aves. at an increase of 20 tons, a total of 15,770 tons, a decrease of 1,000 tons. These are the first decreases since the strike started except early in July.

UNIONTOWN

With several thousand former smelters still on strike operators have been looking for customers as they see no market for their product. The closing of the Great Lakes trade left a big gap in the distribution outlet, and the coke producers have not been able to make arrangements for the delivery elsewhere. Consumers are buying mine-run, paying at the $7.50-$8.50 level with byproduct at $8.50-$9.00. The cost of salt is approaching too near the market. A decline in the price of coal has not been able to make the position more comfortable.

BUFFALO

Practically the same situation prevails as regards coke. A ton of $1 1/2 apparently has been paid for furnace coke by a number of operators, including those violating their price clauses. The market has steadily dropped to $6.25 and $6.75 and even at that high furnace coke will not carry.
News Items
From Field and Trade

ALABAMA

James R. String_

CALIFORNIA

A strike at the Fox mine near Leadville, Colorado, which caused a general strike in the mining camp, has been settled. The strikers were paid the full amount of their back wages and have agreed to return to work.

ALASKA

A new strike has been reported in the Taimika Coal field.

COLOMBIA

The Medcalf-McCormick Steam Coal Co. has leased the Corbin & Baldwin Coal Co. in New York, N.Y.

ILLINOIS

The claim of the city of St. Louis against the Illinois Power Co. for damages caused by the coal mining in the nearby areas has been settled. The city received $125,000 in damages.

KANSAS

The Oklahoma coal field near the Kansas line has been opened to mining, and the coal is expected to spread into Kansas and promote the development of the state. The Central Coal & Coke Co. has announced plans for a new mine.

INDIANA

The American Coal Mining Co., at Brazil, Ind., has filed a preliminary certificate of location with the secretary of state. The car situation in southern Indiana, especially with the mines in the region served by the Indiana Railway, is improving, according to Harry W. Little, manager of the Southern Indiana Coal Bureau. During a recent week the 16 mines along the road received 63,000 tons of coal. A total of 431 shipments were ordered. Forty-eight cars were unloaded at the Indiana Coal & Coke Co. by the Big Four railroad. The miners were able to open a mine that will result in the potential running time. It is believed it is only a question of time until the miners are able to meet the demands of the companies.

KENTUCKY

The Whitfield Coal Co. of Des Moines, Iowa, has been incorporated with a capital stock of $1,000,000. The officers are: George R. Whitney, president; C. W. Boll, vice-president; A. S. Barber, secretary, and James E. Dubois, treasurer. The company plans to mine the coal located in Linn County.

The Whiting Coal Co., a division of the minerals assessors, has been incorporated with a capital stock of $1,000,000. The officers are: George B. Whitman, president; C. W. Boll, vice-president; A. S. Barber, secretary, and James E. Dubois, treasurer. The company plans to mine the coal located in Linn County.

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COAL AGE
December 14, 1922

MISSOURI

Sam Rettf, 79 years old, who has been digging coal for over 50 years, was killed Wednesday, for several more years in the mines, believes that his record is the best. Missouri is a hard coal state, to be equal in any part of the United States. He declares that his stick never failed him as an man and his pay checks bear out his words. Mr. Rettf, who lived in Beaver 12 years, Rettf declares that he once dug coal for $6 per ton and on one occasion $6. If he had been a member of the United Mine Workers ever since they were organized, he joined the union 20 years ago. He also remembers when the first strike occurred. He recalls the miners buy all of their supplies and provisions from the company store. He never had to work more than one or two years, and he has been a miner for 50 years. His son, John Rettf, who is 48, is an advocate of putting the industry on a business basis. He has a logical career and is an advocate of plenty of horses and work, declaring it does not hurt anybody.

A company formed at Sedalia has leased the Minnie Mine, near the city. The mine is in Johnson county line, where mining for coal was first worked. The company is incorporated by a contract from the state. The construction of a new railroad has been completed. The Missouri-Kansas Coal Co. has been incorporated with $18,000 paid in to operate a coal mine at Woodall.

OHIO

A dozen towboats left Dun 36, near Gallopolis, at noon Wednesday, Dec. 6, for Columbus, Ohio, on a journey which will be a contribution to dealers. Nine other boats left Ironton Tuesday, with 35,000 tons more coal for Cincinnati, according to L. C. Reilly, manager of the Queen City Coal Co. When the current is favorable the boat will be supplied for about 10 days, Reilly said, and more coal is expected to reach the city soon. The river, he said, is in excellent condition for navigation.

The Coal Strike, which began Dec. 21 by R. W. Smith, clerk of the Board of County Commissioners, at P. C. H. Union, near the town of cir, as a strike for a bump or mine-run for the Court House, and which some of the same kinds of coal for the county, is still going on Reports from the Memorial Hall, Coal for the Court House and the man who was killed in the death that for the County Infirmary is to be presented to the court.

Steps are being taken by the newly incorporated Coudesville Coal Co., of Columbus, Ohio, to purchase the land at Coudesville. The company was chartered with a capital stock of $100,000, and is under the management of George Williamson, R. M. Blower, Charles Wallace and John Williamson. The property consists of 40 acres of land and a windmill.

It is unlikely that any coal will be purchased by R. W. Johnson, Superintendent of the Cumberland Coal Co., as bids received from a supply company are over the amount of coal that the company can afford to pay.

Ohio River coal, which is being delivered to the Ohio River coal company at the close of the present fiscal year, will be sold by the company at the rate of 125 dollars per ton. The Ohio River lock and dam project contained in the Cleveland & Pittsburgh division of the United States canal and harbor construction to construct the tracks across the country highways to be 100 feet wide and 110 miles long, have been completed by the company for the state. The project is for public works and needs the right of way.

The Ohio River lock and dam project, which will result in the development of the Ohio River coal lands lying west and north of Steubenville, in Jefferson county, will be built by the Cleveland & Pittsburgh, division of the United States canal and harbor construction to construct the tracks across the country highways to be 100 feet wide and 110 miles long, have been completed by the company for the state. The project is for public works and needs the right of way.

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Pennsylvania

Additional train runs have been placed in service recently in hauling water from the Susquehanna River at Sunbury, twenty miles up the river at Hollidaysburg. As a result of the strike at Hollidaysburg, the farmers will be able to continue their work, since the end of the strike to make an agreement with the union.

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WASHINGTON, D. C.

The Appropriations for the Bureau of Mines for the fiscal year 1919, which have been made by the House, are considered to be satisfactory. The budget includes the usual expenditures of the Bureau for research and development in the interests of industry and science. The budget includes the usual amounts for research and development in the interests of industry and science. The budget includes the usual amounts for research and development in the interests of industry and science.

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Association Activities

Northern West Virginia Coal Operators Association

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The Important Point
In the Anthracite Tax Decision

By ITS decision in the Pennsylvania anthracite tax case the United States Supreme Court has permanently settled the question of whether anthracite is coal or something else. It has long been a matter of concern to the coal people that the consuming public would not differentiate between the product of the mines in that tight little community known as the hard-coal region and the product from the multitude of mines scattered elsewhere over the United States. So different are the conditions surrounding the mining and marketing of anthracite from those for bituminous coal that what can be said with respect to the one cannot be said with respect to the other. To keep the public from mixing them up in its thinking has been a task as yet wholly unsolved. The low mine price (usually) for soft coal and the high delivered price for anthracite have troubled the uninformed and caused a world of doubting on the subject of mining profits.

The Supreme Court sets the matter forth in clear language. "The difference between them is a just basis for their different classification; the differences are great and important. They differ even as fuels, they differ fundamentally in other particulars." Thus are its conclusions set forth. Having satisfied itself that the imposition of a production tax on anthracite did not constitute discrimination as between that fuel and bituminous coal, the court turned to the question of whether the tax imposed at point of production was in fact a tax on interstate commerce.

It seems to us that here is reiterated and reviewed in unmistakable language a question of more import to the coal industry than the mere matter of whether anthracite is just coal or a special kind thereof. The sum and substance of the court's opinion is that the production of coal is intrastate and not interstate commerce. Representatives of other states were in attendance upon the court, arguing that the action of Pennsylvania in taxing the coal they required was illegal because it would prevent free commerce between the states, as covenanted by the Constitution. To this the court says: "Whether any state or action of a state impinges upon interstate commerce depends upon the statute or action, and not upon what is said about it or the motive that impelled it . . . we can estimate then the contention made. It is that the products of a state that have, or are destined to have, a market in other states are subjects of interstate commerce, though they have not moved from the place of their production or preparation."

This contention is dismissed with the statement that if the "certainty of exportation of a product" from a state should determine it to be in interstate commerce before the commencement of its movement, the result would be curious. It would nationalize all industries . . . coal yet unmined," because in varying percentages it is destined for consumption in states other than that in which it is to be produced.

The production of coal is intrastate commerce, not interstate, and coal ceases to be governed and protected by domestic law exclusively and begins to be protected and governed by the national law of commercial regulation at the moment it is on railroad cars and commences its final movement to another state.

Looking at the Hands of Accusers

West Virginia and non-unionism as practiced in that state were thrown into the ring in a letter from the United Mine Workers to the U. S. Coal Commission last week. Taking Logan County as an example, the letter sets forth that union men, union organizers and union sympathizers are not allowed in that coal field. They are "eliminated" by deputy sheriffs in the pay of the coal companies. The union is simply not tolerated. In fact, the mine workers there and elsewhere in that state are parties to a form of individual contract binding the employee on the one hand and the company on the other from any participation with the union. The statement alleges that union members are "thrown into jail," "brutally mistreated," "killed while held prisoners," "arrested and jailed for no reason except that they are union members," etc. It is added that the "Commission itself will realize that something must be done in Logan County and certain other counties in West Virginia if the coal industry is to be stabilized and placed on the level where it should be."

The union spokesmen also contend that this is a condition "provocative of indignation and strife. It should not be allowed to continue. We believe this commission should find out just how the Logan County and West Virginia situation affects the coal-mining industry, for if the commission can find a way to put a stop to the practices that prevail in that field, it will take a long step toward the establishment of industrial peace on a permanent basis."

Then follow quotations from Senator Karnes' report on that situation, and from President Harding, Woodrow Wilson, Theodore Roosevelt, William Howard Taft, Charles Evans Hughes, John D. Rockefeller, Jr., and others with respect to the inherent right of workers to organize, a right which it is contended is denied in Logan County and other parts of West Virginia. The purpose of this document is not concealed; it is plainly labeled as an invitation to the Coal Commission to investigate the non-union fields and to find ways and means to force the reestablishment of the practice of their policy of keeping the union out. On a previous date the commission was told by the unions that all mines should be unionized—the present of the United Mine Workers extended over the state country.

Now the existence of non-unionism is new part of
It is clear then that the ability to store a small quantity of coal is desirable, but the expense of storage of this kind is by no means inconsiderable. Height rarely is provided at the tipple for the storage of slack and lump or of three sizes unless a conveyor belt is provided. As soon, therefore, as storage is afforded to fill so small a need the question arises, why not seek to obtain other advantages that will make the storage more profitable still? Why not provide for those many occasions where few cars are supplied or where none of them is of the kind that it can be loaded with slack or in other cases with lump, whichever may be needed? Why not arrange to provide against tipples breakdowns, the delay of operations due to dirt, manure or stone in railroad cars, or due to cars needing repairs, the derailment of mine locomotives or mine cars, the delay in running that would result if railroad cars were placed late, left the track or ran out before the day was wholly done? Why not, in short, create storage facilities that would stabilize running and give the tipple crew and all the men on day wage about the plant an efficient day’s run?

The additional cost of the coal thus handled is not the real consideration. The loss of storage should not be distributed on the coal thus stored but on all the coal mined. If on the entire output the loss will average but little, it may be safely concluded that the gain from stabilization will far outweigh it.

Suppose, owing to a late arrival of railroad cars, a scheduled run proves abortive; the day force must be paid for two practically wasted hours. In fact after the two hours are concluded the coal standing in cars along the roadway of a drift mine may have to be hauled back to, and into, the mine to keep them free from frost. The distance they must be taken inside may be not inconsiderable if the roadway is the intake and if the ventilation must be kept as strong by night as by day.

For these reasons, or for others which anticipate longer periods of storage, operators are coming to favor the creation of coal storage at mines. In many regions the practice is growing. The intermittent demand for slack, the desire to keep the men from wandering when cars are scarce and rivals for the services of miners are persistent, the anxiety to fill orders when no place can be found for the sizes of coal that the fulfillment of those orders would create, the possibility that railroad cars will be more plentiful later and the assurance that storage will have some effect when the railroad coal quotas are made up, is making operators store coal at the mines. To leave cars unloaded, even single cars, is a sure way to earn a reduced quota from the railroad by which the mine is served.

It should not be overlooked that using a railroad car as a storage bin is a poor way to increase car supply. Producers who more or less regularly tie up one, two or even three cars overnight with part loads are penalizing themselves as well as the railroads. A railroad car costs about $2,500. How much pocket storage on the tipple will that cost? The railroads cannot be blamed if they penalize heavily those who use their cars for such a purpose, even though it be a time-honored custom.

Nominations of members of the United States Coal Commission, the fact-finding body authorized by Congress Sept. 22 and appointed by President Harding Oct. 10, were confirmed Dec. 11 by the Senate, giving the commission official status.
At Coverdale Mine Nut and Lump Are Picked on Circular Picking Tables

BY A. F. BROSKY
Pittsburgh, Pa.

Repicking Table Proposed for Boiler Coal—Bone and Slate
Go to Separate Hoppers—Two Sizes of Lump Picked on One Table—Provisions for the Coal and Rock Hoisted in Same Cage

DISTINCTIVE as is the two-car cage shaft of the Pittsburgh Terminal Railroad & Coal Co.'s Coverdale mine, described in Coal Age Nov. 30, the tipple is not less so. It does not make many sizes of coal but it is notable for its picking tables and for the flexibility provided in its loading arrangements. Thus on either of two tracks (Nos. 3 and 4) can be loaded lump, combined lump and nut, combined lump and slack and picked run-of-mine. On track No. 1 can be loaded slack and emergency run-of-mine and on track No. 2, nut and combined nut and slack.

The tipple as it is today will handle 350 tons of coal per hour on the assumption that the coal separates in the proportions of 65 per cent lump, 10 per cent nut and 25 per cent slack. In order to maintain this hourly tonnage the coal must be hoisted at the rate of three 24-ton mine cars per minute. As the cars are carried two at a time in self-dumping cages, it will be seen that the actual speed of hoisting is less than is customary for a single-car cage, the usual practice being to make about two hoists per minute as against 14 which is the speed customary at this mine. The ultimate capacity of the tipple will be 500 tons per hour, which will be attained by the addition of another picking table for lump coal. This will extend out beyond track No. 4. The present plan of the tipple together with the proposed addition is detailed in Fig. 2.

The tipple design is unusual also in that it provides for the future installation of a table to repick refuse from the present lump-coal picking tables, thus furnishing a boiler fuel if desired. In years to come, if it be found necessary to store slack coal a belt conveyor will be installed to carry it to a storage bin. The present screening rig is built to accommodate an egg screen with chutes to deliver the screened egg coal to the proposed lump table, which after picking may be diverted to the boom over No. 4 track.

Coal is discharged from the two side-by-side mine cars on each of the self-dumping cages into individual receiving pans that guide it to weigh buckets, each of which has its own scale and recording dial. Each of

*Ebulliuous Field Editor, Coal Age

Note—Headplate shows Coverdale tipple with its four railroad tracks. The fifth track is used by the refuse-stacking trolley which can be seen under the refuse bin.
The first weigh baskets lead to a 12-ton receiving hopper. A shaking pan feeder delivers coal from the receiving hopper to the screen. By rotating a plate in the bottom of the feeder, however, a short portion of coal is fed directly to the emergency loading chute and is discharged into railroad cars on track No. 1.

Lump coal, after passing over the spring area of the screen, is divided into two parts by a deflecting or transverse plate on the upper screen deck. Consequently half the lump coal goes to each of the two circular picking tables. The lump coal thus divided before discharging onto the picking tables passes over a grooved screen that separates it into two sizes, one and under 6 in. The small size is fed toward the inside edge of the circular table and the large size toward the outside edge. In this way a more uniform coal load is provided, with consequent increase in the efficiency with which the coal is picked.

The picked lump coal coming from the two tables is delivered to loading houses over No. 2 and No. 4 tracks. The nut coal passing over the lower deck screen is distributed to its picking table, from which it is loaded through a chute into cars on track No. 2. If desired, the nut coal may be delivered to either or both the lump tracks in combination with the lump coal. After being gathered in a steel pan the slack coal may be delivered through a chute to No. 1 or No. 2 track. Delivery to either track is controlled by the two-way chute and a flygate.

For the benefit of those not already familiar with circular-picking tables it might be well to give briefly the details of their construction, dealing first with the two lump tables. These are of duplicate construction, each having an inside diameter of 10 ft. and an outside diameter of 20 ft. The table is a circular structural-steel frame covered by removable sections of 1/2-in. steel plate. On the under side is a circular track of steel rail, which also fastens to the frame. The inside wall of the table is formed by an angle 6 in. high that revolves with the table frame; but on the outside stationary guard angles form the wall. The table is supported on eight cast-iron pedestals equipped with 12-in. cast-iron supporting wheels designed with but a single flange. The nut table is constructed in a similar manner but is larger, having 18-ft. and 28-ft. diameters.

All three tables are driven by one 50-hp. slip ring motor, the countershafts which drive the two lump tables being actuated by a single cut-steel spur gear. The countershaft of the nut table is driven through a chain transmission, one bevel-gear and a spur-gear reduction. The master wheel of the spur-gear reduction is a segmented rack bolted to the under side of the frame. A jaw clutch on the driving sprocket allows any one table to be operated independently of the others.

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**FIG. 2—ELEVATION OF COVERED TIPPLE OF PITTSBURGH TERMINAL RAILROAD & COAL CO.**

The equipment is covered by the roof shown, one of platform, and the picking table for lump coal will be provided as shown on the diagram. No. 1. The addition is shown in the drawing. There is also provision for an additional table that front it may be obtained if more possible.

All steel of construction material. 

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A stationary steel plow on each lump table delivers the picked coal through a chute to the loading boom over track No. 4, and a removable plow diverts the coal to a chute leading to the loading boom over track No. 2.

The problem of dumping hoisted rock and bypassing it to the rock bin, while simple enough for the single-car cage, is more difficult of solution where two cars are dumped side by side, perhaps one loaded with rock and the other with coal. For this purpose each receiving pan is provided with a flygate operated through a four-way valve. Either or both flygates on the dumping side may be thrown to let the rock down into a 50-ton bin, where it is removed to the slaté pile by means of a refuse-stacking car.

The cager on the shaft bottom signals the dumper or check taker and designates the car or cars containing rock by pressing one or two contact buttons, as the case may be. This operates a remote-control switch, ringing a warning bell and lighting the lamp or lamps by which the slate cars are indicated. The dumper then throws his air-operated flygates accordingly. The cage on dumping throws a trip switch, thus breaking the circuit. A klaxon signal, when sounded from the trimmers' platform, warns the dumper to hold the coal just dumped in the weigh baskets, and the picking-table crew to stop the table and screens. The picking-table crew may likewise warn the dumper to hold the coal.

Refuse picked from a lump table is thrown into one of five small boxings and into a dirt trough. It is then collected by five revolving dirt plows attached to the table frame, which carry the refuse to a conveyor, which in turn transports it to a refuse bin. This bin is wholly separate from the rock bin. The refuse from the nut table is deposited directly on the conveyor which leads to the refuse bin.

In addition to the two weighmen the tipple force consists of eleven men. The man who is stationed at the dumping point to make sure that the cages dump properly also lifts the checks. Each picking table is manned by two pickers, one on the inside and one on the outside of the table. Four car trimmers attend to the coal loading and drop the railroad cars. Rock and refuse from the tipple is conveyed to the dumper by a crew of two men.

The tipple was designed and built by the Heyl & Patterson Co., Inc., of Pittsburgh, Pa. The tipple structure is built of steel and concrete and covered with corrugated siding and roofing. Six skylights provide excellent natural lighting for the weigh office and the picking deck. All floors are of concrete.

The picking tables have now been in use for two years and consequently it may be well to set forth the advantages that the officials of the Pittsburgh Terminal Railroad & Coal Co. regard as points in their favor. Foremost among these, it is urged, are the large number of moving parts in their construction; less energy therefore is used in driving them. It is pointed out that the apron picking table has two strands, the upper and the lower. Both are in motion, but only the upper one is available for picking. Thus only half the apron conveyor is serving a directly useful purpose, yet the movement of both parts consumes energy. It is said that the circular table consumes one-third as much power as the straight table.

In every tipple there is much fine dust which has the ability to work its way between moving surfaces, such as the pins, bushings, rollers, links and pans of which the conveyor is built up, parts which when assembled cannot be efficiently lubricated. When such rubbing surfaces are lubricated the lubrication is not retained for any satisfactory length of time.

The circular picking table for lump coal in the Cokesdale tipple is 20 ft. in diameter and the inside diameter is 10 ft. This circular table has then a mean diameter of 15 ft. and if straightened out would have a length of \( \pi D \), or approximately 47 ft. But the segment between the throat of the shaker screen and the discharge point is not effective, so, instead of 47 ft. being the equivalent length of the table it should be figured as only 40 ft. The links, pins, pans, etc., of the straight table when assembled form an endless belt which, if cut at one point and straightened out will have a length more than twice that of the table. Allowing, let us say, 5 ft. as the length of those portions that pass over the sprocket wheels, the total length of the belt is about 90 ft.

Further, it is pointed out that in a conveyor 90 ft. long the length of roller chain is 180 ft. and for every 3 ft. of chain are four pins, five pins, four bushings, four rollers and eight links, or in all 1,440 moving parts all subject to friction and to wear. There are 240 pins and bushings that must be lubricated as against eight supporting wheel bearings on the circular table.

The straight table with its many moving and bearing parts must be lubricated frequently, but the circular table not only has fewer bearing parts but needs the application of a lubricant less frequently. The supporting pedestals and wheels of the circular table are lubricated through grease cups that are filled only at intervals. It may be added that the table is absolutely rigid. It is supported by cast-iron pedestals on which are mounted large supporting wheels. In these bearings and metal bushings are used. As they are passed under the picking table they are protected from particles and small lumps of coal which might work their way between the moving surfaces.
How the Coal Trade Is Organized in Germany

Trade Parliaments Eliminate Economic Tension Between Employee and Worker — Council of Economics Advises on Legislation Affecting Basic Industries — Distribution of Coal in Charge of Federal Coal Commission

By F. Z. Nebben, M. E.

THE real Germany, like China, rarely is visible to the foreigner. This has never been proved more than within the last few years. While the eye of the world and the rate of gold exchange were focused on the external signs of a gigantic struggle in Germany between democratic, pacific and socialist tendencies on one side and monarchist, militaristic and conservative on the other, while the disastrous effects of the Versailles Treaty daily became more painfully evident, and while the casual observer saw little but political unrest, economic decay and the glaring contrast between an idle luxury and utmost human misery, Germany has been busy in a silent and unobtrusive way of reorganizing her economic structure along lines extremely new and not in essence from those familiar to all the rest of the civilized world.

TRADE PARLIAMENT AN INTERESTING INNOVATION

Among the innovations which Germany called into life was her new ideal of a government of an industrial people, for an industrial people, and for an industrial people, her economic self-administrative body, or "Trade Parliaments," are of the most immediate interest. They represent a new way to alleviate or coordinate economic and social tension between employers and employed, producers and consumers, and furnish a platform upon which the problems arising in each trade can be settled amicably by men who know the trade, thus immediately simplifying the regulation of the whole industrial machinery of the country and preventing political incursions from meddling with the free thrust of its productive life.

It will be remembered that in 1926 Germany created a provisional federal parliament of industries and trades known as the "Federal Council of Economics" (Reichswirtschaftsrat). This body is to unroll the Reichstag and the government in all economic matters and especially in all questions of economic legislation.

Eventually this Federal Council of Economics is to be made up on the basis of trade or trade parliaments representing all the various trades separately: but so far only four of these self-governing trade councils have been formed to represent the most important basic industries, namely that of coal, iron, metals and glass.

Of these the Federal Coal Council (Rheinbahnkohlenkammer) is of most immediate interest to the readers of Coal Age.

This council, historically developed out of conditions which only 30 years ago were practically identical with those prevailing in the United States today. No trusts or syndicates existed among the operators. The mining association (Bergbauverband) which had formed in various districts did not in any way interfere with the absolute freedom of the individual colliery as regards production, prices and competition. Some 20,000 to 30,000 coal merchants, dealers and agents, mostly without any organization whatsoever, supplied the channels by which the coal had to make its way from the mine into the bin of the "last consumer."

OWNERS FORM RUHR SYNDICATE

Within the last decade of the nineteenth century ruinous competition both from without (England) and within drove the coal owners of the Ruhr to forming the well-known Ruhr Coal Syndicate. Its functions consisted in apportioning a certain percentage of the total Ruhr output—fixed at every new extension of the syndicate agreement—to each individual pit, and in lowering or raising the total output according to the needs of the moment. The Prussian state collieries joined the syndicate on equal terms with the private coal mines, the state collieries being allowed about 10 per cent of the total output of the Ruhr. The syndicate took over and sold through its central sales department all coal mined by its members, including the Prussian state collieries, with the exception of such fuel as certain collieries connected with other industrial enterprises, such as furnaces, iron works, etc., were allowed to put aside for their own consumption in these affiliated works, a maximum percentage of such privileged reservation being stipulated in the syndicate agreement. The Syndicate fixed the prices at general meetings of its members.

This arrangement proved effective and satisfactory, the Syndicate was extended from term to term and other groups of collieries, like those of Lower Silesia, followed the example of the Ruhr collieries. Furthermore, the central sales department of the Syndicate gradually simplified the selling organization by concentrating the most important coal merchants within the various states and provinces of Germany into eleven trading companies, one for each district.

This was the state of development in 1914. The exigencies of the war were at first well met by the organization as it stood, the syndicalized output of the Ruhr mines constituting about two-thirds of the total German coal production. Not until 1917 did the economic stress become so heavy that the then Imperial Government and the Reichstag found it necessary to regulate by imperial authority the distribution of the entire German coal output. For this purpose the office of Coal Commissioner was created, but his powers were and are by no means absolute. As his title "Federal Commissioner for the Distribution of Coal" indicates, his powers are limited to distribution only, production, transport, and the fixing of prices being beyond
his jurisdiction. His activities, however, served greatly to promote the crystallization of the German coal trade. For the purpose of distribution he established twelve district offices of distribution, one for each of the eleven main coal- and lignite-mining districts and one for the combined production of gas coke. He also formed, for the purposes of control, twenty-five coal-trade bureaus for the various states and provinces. These measures served to accustom the various groups of mines and traders to cooperation, but they also enhanced the desire of the federal and state authorities to retain permanently the control over this basis of all industrial activity which the temporary needs of warfare had thrust into their hands.

COMMITTEE OF SOCIALIZATION NAMED

When, therefore, the revolution of 1918 forced into the forefront the demand for "socialization" of the mines, even those governmental circles which, like the Prussian Mining Administration, were by no means in sympathy with the then socialistic majority, were not opposed to this measure in so far as it involved the complete submission of the coal industry to government control and the absorption by the federal exchequer of its profits. The coal trade itself, however, was strongly opposed to all such attempts and offered a united front against both the socialistic and bureaucratic tendencies. Under the stress of public opinion and the socialistic majority in the federal government the celebrated Committee of Socialization was formed. It consisted of miners' representatives, socialistic theoretical economists and a few practical business men, who, however, did not belong to the coal trade. This committee could neither arrive at a unanimous decision nor did any of its various suggestions appear practicable. Times were too precarious for extreme socialistic experiments. The opponents of "socialization," therefore, won some ground. Yet it was impossible altogether to return absolute power to the owners in the domain of the coal trade as it had existed before the war.

The resultant had to be found in the polygon of these six component forces: Public opinion (coal consumers), theoretical socialists, governmental bureaucracy, and the three diverging interests within the coal trade itself, coal owners, miners and merchants. The National Assembly, by passage of the Coal Trade Act of March 23, 1919, ordered the creation by a "council of experts" of a permanent Federal Coal Council which was to be the instrument through which the community controlled the coal trade of the country. The composition of the "council of experts" closely resembled that of the permanent Coal Council which formed the ultimate result of its deliberations. This result was laid down as an integral part of the Coal Trade Act, received the consent of the National Assembly on Aug. 29, 1919, and immediately went into force.

Considering the structure of the German Coal Trade Act and the organization for which it forms the basis, as well as the various historical influences which were at work at its inception, it must be owned that they were balanced very cleverly indeed. The intention of the Committee of Socialization—namely, to transfer the mining property into the hands of the community in one shape or another—was frustrated. It was acknowledged that individual liberty in enterprise is an asset which cannot be dispensed with in carrying the coal trade, and with it the whole nation, through the dark and bitter years which were to come. The property rights of the coal owners, therefore, remained untouched. However, in order to prevent liberty becoming license, the individual coal owner was firmly placed in an organization that left him enough space in which to move about and enjoy his life, yet kept him from running amuck.

Corresponding to the twelve district offices of distribution as instituted by the Federal Coal Commissioner twelve syndicates were organized. Each syndicate comprises all mines within its territory. The syndicates formed voluntarily. Seven syndicates (the Upper and the Lower Silesian, the Ruhr, the Aix-la-Chapelle, the Saxon, the Lower Saxon, and the suspended Saar Syndicate) are composed of collieries, while the Rhenish, the East Elbian and the Central German Syndicate consist of lignite mines, and one syndicate each is composed of the Bavarian lower-grade soft-coal mines, and the gas works as producers of coke.

These twelve corporations in turn compose the central representative organization of all producers, called the National Coal Association (Reichskohlenverband). This association, however, is not autonomous or supreme, but is subordinated to the parliament of the coal trade, the Federal Coal Council (Reichskohlenrat).

All syndicates and the "Associations" are limited companies. Under the act each syndicate and the association must elect one miners' representative into its management and two or three miners' representatives and one representative of the employees into its board of directors. The National Coal Association (the "syndicate of syndicates") must, in addition, elect one representative of the consumers into its board of directors. The voting power of each syndicate in the association corresponds to its salable output during the preceding year.

DISTRIBUTION OF FEDERAL COAL COUNCIL

The Federal Coal Council is not a company, but a parliament composed of 60 delegates from all parties immediately interested in the coal trade, distributed as follows: 15 representatives of the coal- and lignite-mine owners; 15 miners; 3 employees of the coal and lignite mines; 1 mining engineer; 12 workers employed in gas works; 5, wholesale and retail coal merchants; 1 coal merchants' employees; 3, governments of the German states, representing the bulk of the consumers not specially represented (they have by no means a privileged voting power); 2, industrial consumers; 2, workers employed in those industries; 2, artisans as consumers of coal; 2, cooperative societies; 1, town consumers; 1, country consumers; 1, railways; 1, miners' shipping; 1, river and lake shipping; 1 coal mines expert; 1 expert for the scientific exploitation of coal and 1 representative of the boiler-inspection societies. About one-half of the members of the Federal Coal Council (12 representatives of the coal owners, all of the miners, and the employer and workers of the coal-consuming industries and the gas works) are indirectly elected by the workers' owners and workers all over the country through the intervention of another parliamentary body called the "Working Community" (Arbitergemeinschaft). This institution was created in 1918 for the purpose of constituting a platform on which all social and economic questions and controversies between employer and workers are collected, settled by an equal number of workers' and employers' representatives. The "Working Communities" so
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The sixteen consumers' representatives "under one hat." Moreover, the coal owners' expert knowledge of all economic and technical questions connected with mining and the sale of coal secures for them a mental weight which often turns the scales of the deliberations of the council in their favor. As regards pure questions of wages, hours or other conditions of employment, these are threshed out within the mining group of the "working community," and the disadvantage in which the composition of the 60 members of the council might here leave the 21 representatives of the employers is, therefore, rarely, if ever, to be feared by them.

Headlight for Mine Service Made Bump-, Dust-, Moisture- and Jolt-Proof

In the darkness of the mine the best warning to others of the approach of a trip is a powerful headlight on the locomotive. It also enables the motorman to make speed with safety, as it permits him to see obstructions in time to stop and guard against emergencies.

The new headlight manufactured by the Jeffrey Manufacturing Co. is made with a body of great strength shaped so as to cause heavy blows such as may result from falling coal to glance off without doing any injury. The headlight is mounted on a sub-base with a three-point double spring suspension; no small hinges, knobs or thin gratings are used, such as would be readily broken by falling coal.

The parabolic reflector is made of brass, nickel plated and highly polished, to insure a long beam of brilliant light. The metal reflector is used because it is more suitable for mine work than one made of glass.

To have the headlight give satisfactory light continuously it was necessary to make it dust proof and moisture proof. The construction used is that ordinarily required when a headlight is approved by the government for use in gaseous mines.

The lens, which is a ½-in. thick plate glass, is held in place in a heavy cast-brass ring by a nut and heavy packing. The ring with its lens is screwed onto the main body of the lamp.

In the top of the lamp body is a hand hole which is closed by a large brass plug. Through this hand hole the focus of the lamps can be adjusted. The cable leading into the lamp is a three-conductor Duracord and passes through a stuffing box which is of the same construction as that used in making permissible motors approved by the United States Government. One of the novel features of this lamp is the use of two standard sockets, one to receive the concentrated filament lamp, which is a 94-watt 110-volt connected two in series with a balancing resistance for 250 or 500 volts. The second socket takes the ordinary lamp used about the mine. The lamps in this socket are used only in case the concentrated filament lamp is not available.
Mining a Two-Foot Coal Seam at Forest City

Two- and Three-Road Chambers Are Driven Sixty and One Hundred Feet Wide Respectively—Mining Machines Undercut Coal—Rock from Roadway Used to Pack the Chambers from Which Coal Is Removed

BY DEVER C. ASHMED
Kingston, Pa.

For many years the anthracite coal field has been known as one in which the beds are thick. From his early study of the geography of Pennsylvania everyone knows that in some places the Mammoth bed reaches a thickness of 100 ft. or more. Comparatively few realize, however, that probably the greater part of the coal comes not from the Mammoth bed but from the thinner beds of the region.

This is due to the fact that over a large portion of the territory all the first mining in the Mammoth bed has been completed. In many places the second mining also has been performed. In places the wasteful methods of mining pursued in the past have prevented large areas of this bed from being recovered.

It is particularly true of the northern anthracite region that the thicker beds have been completely mined out, both stages of the work having been completed. Here the operators have been compelled to turn to thinner and thinner beds as the first mining was completed in those that were thicker.

At many operations it is not advisable or possible to complete the second mining, as buildings have been eroded on the surface and coal has to be left for their support. In other places a thick bed of water-bearing glacial drift, such as the Buried Valley of the Wyoming field, makes second mining imprudent or impossible. Some workings also are under the Lackawanna or the Susquehanna River and other seams again cannot be entirely removed without disturbing the overlying thinner beds of coal. This has reduced the quantity of coal in the thinner beds that is available for immediate recovery.

For these and other reasons the attention of the operators has been drawn to the thinner beds, which only a few years ago were considered worthless. Only by accepting the inevitable could they keep their output up to a point consistent with economy. If production falls off only a little the overhead, which remains constant, greatly increases the cost of production. If, however, the production can be maintained by the mining of the thinner beds of coal, then the overhead, being spread over an equal tonnage, will remain constant.

This is a worthwhile consideration even though the actual cost of mining these thinner beds is greater than it would be for those that are thicker. If, however, it is necessary to increase the overhead, then no profit would accrue to the coal company from this extra production. In time, however, a point will be reached when the production from the thicker beds will have decreased and the production from the thinner beds increased so that the balanced profit from the two classes of beds will reach a point at which there will be no profit and the profit that the operation formerly showed will turn into a deficit.

Another factor to be taken into consideration is taxes. Speaking broadly, the coal companies are taxed for any coal that is more than 2 ft. thick, and as long as this coal remains in the ground this tax has to be paid. Consequently taxes on the property ought to decrease as the coal is removed. That, however, seems to be a pretty theory not realized in practice, for the general experience is that no matter how much the coal reserves are depleted, the assessed valuation of the property for taxation purposes nevertheless continually increases.

Throughout the anthracite region the chamber-and-pillar system, with its two mining operations, has been general. The first consists of the driving of gangways and chambers and the second of the reopening of these gangways and the removal of the coal left in the pillars. Often many years elapse between the two operations and the expense of reopening, therefore, is heavy and naturally reduces the margin of profit on coal from the second mining. But the thickness of the coal, the protection of the overlying measures and in certain cases the need for surface support has warranted such a dilatory procedure.

In thin-bed mining, however, such a method might be entirely too expensive and good judgment might require that all the coal be recovered in one operation or practically one. This is particularly true when there are no overlying beds to protect or when the surface does not need support. If the bed of coal to be mined is thin and sufficient filling can be obtained, however, it may be possible to remove all the coal and gradually drop the surface and overlying beds without disturbing them.

In the Ring Bed at the Forest City operation the Hillsside Coal & Iron Co. is mining this coal by several unusual methods, three of which will be described in this and later issues of Coal Age.

The Ring bed in the Forest City region is known also as the Upper, or First, Deposit and the Top Red Ash. The coal at this point has an average thickness of 2.35 ft. and in some places is over 4 ft. thick. In the particular place where the photograph was taken...
The coal is prepared by room-and-pillar methods, but the effect is really the same as if a short longwall face were used. Where the coal in the bed above the one being mined has been entirely removed, rooms and 10-ft. walls have been driven. These rooms have three roadways, one along each side and one in the center of the room. As the coal lands in this region it is practically flat; it is necessary to take the mine cars into the chambers or use some form of mechanical conveyor to transport the coal from the face to the gangway.

In like case the mine cars are taken into the rooms; therefore it is necessary to take down top to permit the mine cars to enter. Top is taken in preference to bottom as mining machines are used to undercut the coal, and it is much more convenient to handle the mining machines in and out of the working places when the ladmen is left intact. If bottom were taken the machines would have to be raised and lowered from the roadway up to the bottom of the coal bed.

The rock thus shot down is hand packed in the chambers between the roadways. Sufficient rock is thus obtained to pack solidly the entire space from which the coal has been removed. The roadways are about 10 ft. wide and enough rock is taken down to make a clear height of 5 ft. or more above the top of the rail.

As soon as the roadways have been driven in far enough to insure a fall 90-ft. neck they are connected, making a room of the required width. After the rooms are widened out to their maximum width, a Sullivan branched low-rein undercutting machine is used to undercut the coal. The height of this machine is 17 in., so it can readily be seen that at the point where the photograph was taken there was only 2 in. of clearance. The machine makes an undercut of 5 ft. 6 in.

It is interesting to note the way the miners themselves have planned their work so as to reduce to a minimum the handling of the coal. When they fire their first shot they loosen the coal nearest the roadway. This makes three tight shots to a chamber 100 ft. wide, one on each rib and one in the center. After loading the coal from these shots another set is set off so that the coal is blown in the direction of the nearest roadway; this reduces the distance that the miner has to move the coal. A third and fourth round of shots are needed, and these also are so placed that the coal, instead of being just broken and ready to fall, is thrown in the direction of the roadways.

The Clark bed is the next above the Ring seam and is separated from it by about 80 ft. or rock. Where the pillars have been left in the former the rooms in the Ring bed are driven only 60 ft. wide and a 40-ft. pillar is left between the rooms. This is done so as to afford a greater protection to the bed above.

When the rooms are only 60 ft. wide only two roadways are driven, one along each rib. The same method of mining is used in the 60-ft. chambers as in those that are 100 ft. wide. It is the intention to begin second mining as soon as all the rooms on one gangway have been driven up. It is thought that by that time the rock pack will have taken some of the weight and when the pillars are removed the upper measures will be supported by the rock packing. Of course there will be some settlement, but it will be gradual, and the measures and surface above will be dropped so easily that no appreciable disturbance will be felt in the other beds of coal or on the surface.

Probably one of the most important factors determin-
ing whether any new application of a method of mining will be successful is the character of the roof immediately over the coal and also of the overlying measures. It should be stated, therefore, that on the top of this coal is 2 ft. 9 in. of fireclay, then 6 in. of coal. Over this thin seam is 40 ft. of sandstone. The accompanying legend from a borehole shows the character of the measures from the surface down:

**CROSS-SECTION OF MEASURES IN BORE HOLE AT SHAFT**
- **Surface**: 10 ft.
- **Rock**: 42 ft.
- **Grassy Island coal bed**: 8 ft. 6 in.
- **Rock**: 3 ft. 9 in.
- **New County coal bed**: 2 ft., Not worked.
- **Rock**: 33 ft. 9 in.
- **Top Clark bed**: 5 ft. First mining completed.
- **Rock**: 30 ft.
- **Bottom Clark bed**: 2 ft. First mining being performed.
- **Rock**: 77 ft. 9 in.
- **First Dunmore bed**: 2 ft. 9 in. Mining described in article.
- **Rock**: 109 ft.
- **Second Dunmore bed**: 2 ft. 10 in. First mining being performed.
- **Rock**: 12 ft.
- **Third Dunmore bed**: 1 ft. 8 in. Mining.

The distance from the surface to the top of the first Dunmore bed is 275.5 ft. Two mining machines are used and they can each cut three 60-ft. chambers in an eight-hour day. It is thought that they will be able to cut three of the 100-ft. chambers as soon as enough of these are started. The cars are transported to the shaft by trolley locomotives.

At present fifty-seven contract miners are employed in mining the coal and from them seventy cars of coal are obtained daily. However, a large portion of the coal comes from development or narrow work. Twelve 60-ft. chambers are being worked and two 100-ft. chambers have been started. Besides this, twelve narrow places or headings and airways are being driven. These do not include the narrow work in driving the roadways for the above mentioned two 100-ft. chambers. So out of fifty-seven men, twenty-four are doing narrow work and these do not include the men driving chamber necks.

An interesting feature in connection with the work is that when the small stringer of coal which lies above the fireclay roof reaches a thickness of 6 in. the miners try to shoot down the rock in such a way as to leave the thin coal undisturbed. After the rock is packed in the chambers they take down this coal and then often gain a car of coal with a minimum of effort.

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**Sand Driers for Mine Locomotives**

For the rapid drying of sand a petticoated furnace drier has been devised which brings almost every part of the sand in close contact with heated metal, reducing the distance through which the heat has to be conducted through the sand itself or convected among its interstices. Sand is a poor conductor of heat, cast iron a good conductor, and the series of "cones" or petticoats around the body of the stove carries the heat into the sand and gives increased capacity to the drier.

It is said that this stove will prepare for service one-half ton of sand in an hour. Smaller quantities, of course, can be dried with lower aggregate consumption of fuel and with less attendance than is needed where maximum output is sought. It is impossible to heat sand satisfactorily when it lies in a body 12 to 18 in. thick as it does in ordinary sand driers. This drier is made by the Roberts & Schaefer Co., Chicago, Ill. As is also the drier now to be described.

The Reamer steam sand drier is intended for wet sand. It does not work satisfactorily when relatively dry sand is fed to it. It consists of pipes bent to form the walls of a hopper. Through these steam is passed.

The moisture evaporated from the sand is allowed to escape directly into the atmosphere. This is said to
What Can Be Done to Prevent Electrical Mine Fires

Charred Insulation Allows Current to Pass—Leakage vs. Short-Circuits as Sources of Ignition—How Motors May Cause Fires—Dangers from Exploding Oil-Immersed Switches—Need for Metallic Covering for Cable

By a British Correspondent

I T was recently stated in a paper by W. V. King, of the West Virginia Department of Mines, that electricity was credited in the United States with causing during 1916 (the last year for which statistics were compiled) 12,091 fires, entailing a loss of $20,780,507, and that destruction of property from this cause was increasing annually. Moreover, coal-mining plants were bearing their share of the burden, few standard electrical installations being found as safeguards.

In view of these facts it seems possible that the development of the use of electricity in mines may later be retarded if measures are not taken in effect a reduction in the number of such configurations. Of the two principal causes of electrical fires—leakage and overloading—the former undoubtedly is responsible for the greater number of these accidents. Of course, when one refers to leakage, the term may be taken to include short-circuits, although electricalists generally differentiate between one and the other.

A short-circuit admittedly is a leakage, but it is an exceptionally heavy one, more or less completely localized and of short duration. On high-voltage systems it usually is attended by a report which in some cases might be termed an explosion, for it scars red-hot metal and burning oil or insulation throughout its immediate vicinity. The redeeming feature of a short-circuit, however, is that it seldom occurs without attracting attention. Steps accordingly may be taken to cope with the fire that the short-circuit may occasion.

Leakage Is Real Danger

The greatest danger from fire is not from the short-circuits themselves but from the leakage that is likely to occur prior to its development into a short-circuit. Leakage cannot be entirely eliminated from any system, however efficient may be its insulation. Moreover, the larger the system, the greater the leakage, as additions to a network of cables increase the number of possible leakage paths and reduce the aggregate resistance offered to leakage. This form of current loss is objectionable not because of its importance economically, but because it is distributed over a large surface, radiation being insufficient to prevent a dangerous heating.

It is obvious that the more localized a leak becomes, the nearer it approaches to a short-circuit and to the point where sufficient energy passes to cause the insulation or other inflammable material to ignite, although an actual short-circuit may not develop for some time. It is under these conditions that unexpected fires occur which may attain appreciable proportions before being discovered.

Closely associated with leakage is a problem in the pressure or volume of the leaking equipment. In a mine, or indeed in any kind of installation, it is false economy to install low-pressure equipment; with the idea that thereby the dangers from fire will be largely eliminated. Of course, with a low-pressure system the insulation is more easily maintained in a condition that will prevent leakage than with a high-voltage system, but as a rule when low-pressure equipment is installed the insulation often is neglected, partly because the danger from shock is considered unimportant but chiefly because an idea prevails that any condition of insulation not actually permitting a short-circuit is all that is required.

Electrical apparatus employed in coal mines nearly always is exposed to dampness. Conditions vary widely in different parts of the same mine. In some places apparatus may be exposed to dripping water, and in others, such as return airways, it may be subject to the action of a moisture-laden atmosphere, which is peculiarly destructive to insulation and is responsible for much surface leakage. This latter usually leads to serious results. Insulation sometimes becomes charred and thus rendered more conductive, allowing a larger leakage current to pass.

Thus the ill effects are cumulative, and surface leakage caused by dampness is responsible for a large percentage of electrical fires. Furthermore, leakage may be caused by neglect to examine the equipment installed and to repair promptly any defects that may develop. In many mines also, electrical apparatus is subjected to serious overloading. This is especially true of haulage equipment. Damaged roads and derailed cars are the most fruitful causes of difficulties, but, in addition, the number of cars making up trips frequently is in excess of the normal capacity of the equipment. It is often difficult to prevent persons responsible from exceeding the stipulated number.

Adequate Supervision Necessary

The whole matter of eliminating fire risks, given suitably designed apparatus, hinges upon adequate supervision and the maintenance of all equipment in good repair. The purpose of this article, therefore, will be to give a few practical suggestions as to the manner in which electrical apparatus may be kept in such condition as to avoid fire risks. To enable the ground to be covered properly these remarks will be divided under four heads, namely: Electrical machinery, control apparatus, cables, and grounding.

Electrical windings of all kinds require systematic attention if they are to be kept in good condition and free from fire risk. Undoubtedly, the greatest danger occurs when a short-circuit takes place in the windings of a machine that has been neglected. The dirt that usually accumulates in such places will be found to contain a large percentage of fluff, which is highly inflammable. In that event a spark will be sufficient to cause it to ignite. With a high-speed machine, the draft created by the rotation of the armature will quickly start a fire. Moreover, smoldering fluff is so light that it is likely to be scattered onto inflammable material or the dust by which the machine is apt to be surrounded.
Of course, systematic cleaning is the remedy, and this should be effected by means of compressed air wherever it is available. It is questionable whether the usual form of blower sold for this purpose is as effective as it might be. The volume of air is ample, but the pressure is insufficient to dislodge dust and fluff that may be sticking to the windings. However, this may be partly overcome by keeping the surface of the windings as smooth as possible by applying insulating varnish liberally at regular intervals. This, of course, in addition to facilitating cleaning also renders the windings proof against dampness.

Brushes and brush-holders, slip-rings and commutators are fruitful sources of leakage. This is mainly on account of carbon and copper deposits from the brushes collecting current from various parts of the machine. If left without attention, a continuous path will soon be formed along brush spindles and arms, and surface leakage will be set up, often with disastrous effects upon insulation, brushes and sleeves. Motors of the slip-ring type working below ground should always have their slip-rings inclosed in flame-proof enclosures, but thereby heat-radiation from heavily loaded brushes and holders is often impeded. Thus it is not uncommon to find high temperatures existing under such conditions, especially where carbon brushes are employed.

Combination Brushes Give Best Results

Much better results may be obtained by substituting for pure-carbon brushes a combination of graphite and copper. This gives a contact of a high conductivity and at the same time limits the temperature rise in both slip-rings and brush holders to a few degrees above that of the surrounding atmosphere. This suggestion, for obvious reasons, does not apply to commutator brushes and holders, but a commutator usually can be kept at a low operating temperature by a judicious selection of brushes.

Many breakdowns both on alternating- and direct-current machines are caused by oil that has leaked from ill-designed bearings. The oily surfaces, whether on brush gear or windings, readily collect dust which eventually clogs air ducts and may form conducting paths over which electrical leakage may occur. In addition to this, dust may cause bad contact on slip-rings and commutators, and expose the latter to short-circuits between bars, with consequent damage to windings.

Oil leakages should be stopped at all costs, and no machine should be accepted from the makers if it suffers from this defect. Oil throwing may be traced to a number of causes. In the case of high-speed machines it is often brought about by excessive axial draft, especially in self-ventilated semi-closed or totally enclosed motors. Worn bearings and too much end play in many instances are the cause of oil throwing. Many remedies suggest themselves, but designs vary so widely that the steps to be taken must always depend on local conditions.

Under the heading of control apparatus falls the ordinary type of open knife switch, with the usual fuses as well as with enclosed, and oil-immersed switches fitted with overload release. It hardly need be pointed out that any form of open-type switch is objectionable in a mine whether gas is or is not likely to exist. There is always the possibility that sparks will be thrown off when a switch is opened under heavy current. Moreover, contact parts of open switches become oxidized and heating often results. This heating is not always confined to the switch but finds its way to terminals, causes oxidation of the various connections and sets up serious overheating, which may result in the ignition of the cable insulation if this consist of inflammable material.

Then there is the possibility that sparks from a blowing fuse will start a fire. This is a real danger when short-circuits occur. To insure safety all open-type switches should be amply protected in order to prevent sparks being thrown onto surrounding material and also to prevent their falling from the coverings which should always be installed to protect operators from shock. Such coverings should be lined with asbestos, and if they are of metal they should be efficiently grounded.

The switch contacts should be frequently cleaned and smeared with just a little vaseline to prevent oxidation. Fuses ought always to be of a type that does not lend itself to replacement by pieces of wire, which in many cases are inserted indiscriminately by unauthorized persons and which afford little or no protection to apparatus in circuit. Furthermore, fuses, where used, should be totally inclosed in a metal case, though ample ventilation should be allowed, for all fuses, if designed to give protection worthy of any consideration, normally work at a fairly high temperature. If fuse fuses the current will cause heating at terminals and contacts and often the melting of solder from cable lugs.

It is unnecessary to open fuse boxes for daily examination. Once the temperature of a box, when working under normal conditions, has been ascertained, any rise in temperature arising from hot contacts or connections immediately will be made apparent by merely placing the hand against the fuse-box cover. Inclosed oil-immersed circuit breakers as a rule are exceptionally safe pieces of apparatus, especially when fitted with proper inlet and outlet terminals. The temperature of switch tanks should be noted frequently by feeling them with the hand. If they are found warmer than is normal, the cause of the increase immediately should be ascertained.

Overheated Switches Are Dangerous

The oil of high-tension switches working in moisture-laden air may become overheated as a result of moisture penetrating the liquid and lowering its insulating properties. In spite of their reliability, overheated oil switches are dangerous because of the possibility that gases may accumulate in the air space above the oil and be ignited. An accident of this kind may cause a serious explosion, throwing hot and possibly burning oil in all directions. However, this may be prevented by the use of suitable safety valves in all switches. Among the precautions necessary to extinguish fire should be mentioned that of seeing that those valves are kept in proper condition, as wellwe providing each valve where the makers of the apparatus have suggested to do so.

In this connection an improvement has been made. Instead of providing a safety valve in the cover of a switch or transformer, spring bolts are substituted, allowing the covers, under an internal pressure of a few pounds per square inch, to enclose the spring tension on the bolts and in case of fire, blow off. This will relieve any internal pressure caused by the liberation of gas within the apparatus. It is necessary of course, that wide flanges be employed in order to provide a suffi-
Fires may be caused by inefficient grounding. Where a motor or transformer is left ungrounded and is surrounded by metal floor plates in contact with the frame of the apparatus, not only is there a possibility of the frame becoming live but also the floor. Instances have been known where metal floors, more or less insulated but in contact with motor frames, have been charged to an extent enabling large flashes to occur between them and any grounded metal work such as steam or water pipes.

Should such arcing take place in the vicinity of inflammable material a fire may easily result. Furthermore on systems operating with a grounded neutral one advantage of having all framework also grounded is that circuit breakers and other forms of protective apparatus operate with certainty in case of an insulation breakdown to earth.

In connection with the operation of coal cutters efficient grounding is more important than any other detail of installation because of the possibility of gas ignition by sparking in unexpected quarters. For instance, a coal cutter partly or entirely ungrounded may develop a leak to its frame and current be conveyed along its hauling rope to a compressed-air or water pipe with which it may come in contact. Flashing thus may take place, and an explosion may occur at an appreciable distance from the coal cutter which is really the direct cause of the difficulty. Similarly leakage may find a path to an isolated section of rails at the face, with results similar to those already referred to. It seems highly possible that many colliery explosions have been caused by leakage finding its way to ground at some distance from the actual source.

**CABLES SHOULD BE METAL SHEATHED**

Undoubtedly cables and wires are responsible for large numbers of fires that occur at collieries, whether above or below ground. It is questionable whether any form of cable other than those provided with a metallic covering should be allowed to be used underground where the circuit to be established is in any way permanent. Mining conditions are so severe that a common rubber and braid covering is totally insufficient to give adequate protection. As a consequence, wires become exposed, working sections break, fatal and otherwise, and occasionally short-circuits start fires, which may easily result in serious loss of life.

Rubber-covered cables may be readily abused. Difficulty may be experienced in keeping them properly fastened to the insulators and in preventing people from touching them with tools. Also, they cannot be easily cut through the insulation and become a source of positive danger. A rubber-insulated cable, of course, is convenient for supplying temporary connections for lights or portable machines. The covering is easily removed and temporary wires joined up. But after removal of such connections it often happens that the bare portions of the cable remain uninsulated and eventually make a bad ground or a short-circuit. Moreover, once insulated the insulation burns readily, and a fire quickly spreads.

However, for relatively permanent installations, rubber-insulated cable is still in use at collieries and it is desirable until this is worn out and discarded to maintain it as long as possible. The dangers of fire thereby resulting. When exposed to apparatus, cables should reach the high frame below and not be left downward from the roof. In this latter position their insulation becomes susceptible for a fire that may start as the result of a faulty junction or arcing at the switch.

In handing baggage in loading and machine rooms, cables should be installed neatly, care being taken to keep high and low-tension cables entirely separate. Ungrounded conductors to resistances and motors should have adequate coverings and be kept free from oil.
Coal Mining Institute of America's Biggest Session—I

One Brakeman Killed in Every Hundred and Twenty—New Constitution Adopted—Timber Preservation Makes Red Oak More Durable Than White—Staleness of Air Aids Breathing and Suggests Resuscitation Method

MUCH interest was occasioned at the meeting of the Coal Mining Institute of America held in the Chamber of Commerce Building, Pittsburgh, Pa., Dec. 13, 1922, in the powerful address of the President, Rush N. Hosler, and in his significant statements as to the dangers of mining. He prefaced these remarks with the maxim that "You must know the symptoms before you can diagnose and prescribe for the disease. In Pennsylvania we have gone further in analyzing coal-mining accidents than in any other State or country, as far as is known, with the result that we have been able to point out certain facts relative to accidents which, once known, should prove a stimulant to accident prevention in this state."

He then went on to say that "for every five employees in and around the mines in Pennsylvania one is injured every year severely enough to require medical attention, this injury being anything from a slight wound requiring a surgical dressing to the loss of a life.

"Another fact of special significance is that haulage operations by actual count made in inspecting nearly 1,500 bituminous mines in Pennsylvania, though constituting only 10 per cent in round numbers of all employees at these mines, had in the six-year period, 1916 to 1921, 26.6 per cent of the accidents."

The author presents tables I and II, in which these accidents are tabulated in much detail. In fact Mr. Hosler gives here many details not available as regard the accidents in any other state and long sought by persons anxious to reduce haulage hazards.

<p>| TABLE I—CAUSES OF ORDINARY OUTSIDE FATALITIES ON MINE HAULAGE IN ALL BITUMINOUS MINES IN PENNSYLVANIA, 1920-1921 |
|-------------|-------------|-------------|-------------|-------------|</p>
<table>
<thead>
<tr>
<th>Cause of Fatality</th>
<th>All</th>
<th>Lower Plant</th>
<th>Upper Plant</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>65</td>
<td>18</td>
<td>20</td>
<td>17</td>
<td>102</td>
</tr>
<tr>
<td>Weeks</td>
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<td>1</td>
<td>8</td>
<td>9</td>
<td>36</td>
</tr>
<tr>
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<td>3</td>
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<tr>
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<td>2</td>
</tr>
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<td>4</td>
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<td>12</td>
<td>0</td>
<td>25</td>
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<tr>
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<td>9</td>
<td>1</td>
<td>8</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Breaking or spearing</td>
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<td>1</td>
<td>1</td>
<td>0</td>
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<tr>
<td>Coupling</td>
<td>3</td>
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<td>2</td>
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<td>5</td>
</tr>
<tr>
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<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Pushing car</td>
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<td>1</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Working on track</td>
<td>9</td>
<td>1</td>
<td>8</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
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<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Squared, unset, broken</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Falling from, and so on</td>
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<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Killing cases</td>
<td>12</td>
<td>1</td>
<td>11</td>
<td>0</td>
<td>23</td>
</tr>
</tbody>
</table>

"These figures are the more striking," said Mr. Hosler, "when it is stated that they show that one employee in every 250 engaged in halelage is killed each year and that annually one hundred and ten people are killed by accidents in the mines.

"Would you believe it possible to have an accident of this kind? Today, in the presence of every member of the Institute, it is believed that if fifty mines in the state were shut down for three months, the accident figure would be the same as for the whole year. The distress felt by the families is so great that the permission of inspection by the company is sought by the ruined man. The coal companies are now shut down more than they were in the past 20 years."

<p>| TABLE II—CAUSES OF ORDINARY INSIDE FATALITIES ON MINE HAULAGE IN ALL BITUMINOUS MINES IN PENNSYLVANIA, 1920-1921 |
|-------------|-------------|-------------|-------------|-------------|</p>
<table>
<thead>
<tr>
<th>Cause of Fatality</th>
<th>All</th>
<th>Upper Plant</th>
<th>Lower Plant</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>44</td>
<td>63</td>
<td>16</td>
<td>0</td>
<td>69</td>
</tr>
<tr>
<td>Weeks</td>
<td>22</td>
<td>10</td>
<td>12</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td>Collisions</td>
<td>5</td>
<td>2</td>
<td>3</td>
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<td>5</td>
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<tr>
<td>Derailments</td>
<td>11</td>
<td>4</td>
<td>7</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Runaway trips</td>
<td>13</td>
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</tr>
<tr>
<td>Coal Way cars</td>
<td>8</td>
<td>6</td>
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<td>Falling down</td>
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<td>0</td>
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<tr>
<td>Getting on</td>
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<td>2</td>
<td>1</td>
<td>0</td>
<td>3</td>
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<tr>
<td>Breaking or spearing</td>
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<tr>
<td>Coupling</td>
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<td>Throwing switch</td>
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<td>Pushing car</td>
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<td>Working on track</td>
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</tr>
<tr>
<td>Walking on track</td>
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<tr>
<td>Falling, and so on</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Killing cases</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>
Mr. Hooser concluded with a strong appeal that the owners of mines adopt an increased sense of their obligation of affording safety to the men they employ.

Noting that the total balance was $2,107.82, the report $2,003. and the net balance $422.82, excluding $1,500 in Liberty Bonds, the secretary-treasurer, H. D. MacIver, declared that by reducing old members to previous dues a pledge of $1,233 at the beginning of the year had been wiped out and replaced by a substantial balance.

Sixty-five per cent of the membership of 1,323 members, were in full standing for 1922. There were 1,403 members present at the beginning of the year and 2,053 at the close, that is 450 new members were received during the year. The secretary reported the deaths of F. A. Dalley, J. S. Gillies, E. H. Doster, Charles L. Fay, Samuel T. Oldham, F. S. Peabody, E. C. Northover, G. J. Salmons and F. J. Smythe.

Richard Mark Main Institute President

Richard Main, mine inspector at Uniontown, was elected president. Nicholas Evans, mine inspector of Johnstown; R. N. Hooser, retiring president of the institute of Harriburg and W. E. Fohl, consulting engineer of Pittsburgh, were chosen vice-presidents.

The following additional executive committee members were elected: A. R. Faddle, Carleisville, Pa.; Frank Hall, Harrisburg, Pa.; M. D. Cooper, Pittsburgh, Pa., and John W. Pratt, Pittsburgh, Pa. H. D. Mason was re-elected secretary-treasurer. The new constitution was adopted by a vote of 125 votes in 6 weeks.

S. Biddle, ruled of the bureau of rehabilitation.

Department of Labor and Industry of Pennsylvania, read a paper on "The Rehabilitation of Injured Mine Employees," and urged that all coal companies try to find places for men who are injured. He pointed out that sometimes by shifting an injured man from one easy job to another it might be possible to find work for a man who could not sit 6 hours. But at one mine where the foreman believed that all the pits for disabled men had been filled, a man with a wooden leg who had been bell ringing at the shaft was made a motor runner, and the bell ringing was handed over to a man who was ever been fitted for active work.

He said that his bureau was not equipped to give assistance wherever needed. In fact it had a total appropriation for all industries of only $50,000 a year and in 1921 there were 140,000 injured annually in the industrial plants of the State of Pennsylvania. The bureau could not set aside any mechanical limits for the injured. Not before there were 140,000 injured a year but during were injuries of previous years, to say nothing of those that preceded the establishment of the bureau.

W. L. Afflalo said that the wish to employ injured men, especially those injured in other works, was haunted by the fear that another injury might not the man into the totally incapacitated class and cause the company by whom he had been employed to pay the large indemnity that went with total incapacitation instead of the smaller one that would be paid for the secondary injury if that were the only one sustained. For this reason many companies refuse to employ men who have been injured at the order of other companies.

Mr. Biddle replied that when a man who has lost one eye is employed by a company and then in their employ loses the other eye he is compensated as if he had been possessed of two eyes and had lost but one. This causes the man to lose full compensation for his disablement, but it is thought better to do this than to bar the man from employment by establishing a principle that would be unfair to the employing company. New York State and Minnesota have special funds to take care of such cases.

In reply to Nicholas Evans he said that the 400 men who were aided by the rehabilitation bureau had expended on them an average of $195. The act did not limit the age of recipients. The requirements of the act forbade the giving of this class of help to aged, helpless, feeble-minded or epileptic persons. Their recourse was to the recognized provisions for assistance. Any man injured at work who can profit by rehabilitation is entitled to help if the bureau is financially able to afford it. The bureau is not a relief organization. Furthermore, it should not undertake to prepare for clerical jobs men whose education has been neglected in youth.

After the noon recess, N. S. Greensfelder, of the Hercules Powder Co., showed pictures of strip-pit mining at the William Penn Colliery, of the Susquehanna Colliers Co. The cover at the point shown was about 15 ft. deep, but it was explained that it was deeper further in. It was stated that this was the reason why distant-removal stripping was used as against casting stripping, but one cannot help questioning why, where there is much stripping to be done, casting should not be adopted up to the point where the cover is 40 or 45 ft. deep and distant-removal stripping be used thereafter. Of course if the pit is short and the slightly covered material not wide the large shovel would prove uneconomical, as the cost of setting it up is considerable.

The illustrations showed the facing in of Corden Bickford, the method of attaching side fuse lines to the main lines by simple cutting and wrapping and the exploding of the charges. It was explained that the cordeau has a speed of flame propagation of 17,500 ft. per second and so will explode several holes almost instantaneously. The dynamite is dropped in the holes and tamped with coal dust by a wood dolly. It is said that the cordeau is more rapidly connected than electric wiring, can be safely shipped by express and is economical of explosive.

Not Deep Cut But High Pile Is Troublesome

At the close of Mr. Greensfelder's remarks, S. A. Taylor delivered an address on bituminous strippings, saying that the operation of a casting stripping was limited not so much by the depth of cut as by the height of the dumped ground. A 40-ft. cut will make a 65-ft. fill, and it takes a big shovel to deliver material at such a great height above the ground.

Mr. Taylor remarked that alfalfa was now being planted on stripped areas and showed a picture exhibiting how luxuriant was the growth where this was being done. It was necessary to prepare the surface by the planting of clover. The fact that strippings thus can be utilized will do much to meet objections which farmers have advanced against this method of mining.

The question box was opened by Nicholas Evans in place of W. E. Fohl, who was unable to be present. F. W. Cunningham responded to Question 1, as to the most important point to be considered when entering a mine after an explosion. As might be expected, the query did not submit to any satisfactory answer. Mr. Cunningham said that after the fan had been started.
the party should go in as far as the first crosscut and then, before admitting the air any further, should explore thoroughly the area that the air would have to traverse to see whether any fire could be found therein. Some mines were known to be peculiarly subject to second explosions, but by care to explore all places before ventilating them this fatal defect might be avoided.

Richard Maize, Jr., stated that it was safe to go as far as the air already was circulating at the time the mine was entered, but any further progress must be made with care and as Mr. Cunningham had indicated. To Joseph Knapper the most important matter was to see that all the reliable men were not taken into the mine. He urged that the man who is left with the fan also must be reliable. At the Cherry disaster the man in charge of the fan reversed it and turned the bad air onto the explorers and thus asphyxiated them.

Question 2, as to the methods of stream pollution, was not discussed and question 3 brought some discussion from those who had mined coal and visited coal mines in the anthracite and western bituminous regions but nothing of any detailed character. It was obvious that mining men from the bituminous fields of Pennsylvania were not the most well-equipped men to discuss the mining of coal 30 ft. or more in thickness and on a grade of 30 deg.

N. S. Greensfelder, of Wilmington, Del., was called on to discuss the methods of electric shotfiring and presented the paper he had prepared for the American Institute of Mining and Metallurgical Engineers. J. S. Burton, of Clarksburg, W. Va., said that electrical methods of shotfiring were safer than those with the use of fuse but somewhat more expensive. With electrical caps there was greater certainty that the shot would go off and, moreover, it goes off promptly, saving for shoveling the time spent in waiting for the fuse to ignite the charge.

AVOID DANGER OF SYNCHRONOUS SHOTS

M. D. Cooper related a case where two rooms were being driven up. Both were in about 50 ft. The men lighted shots with fuse at approximately the same time. Both men came out to the entry and awaited the result. A shot went off. Both of the men believed it was his shot and after a brief delay went in to see what had happened. One of the men whose shot had been delayed arrived just in time to receive the force of the blast and a death resulted.

Mr. Cooper stated that this would not have occurred with electric shotfiring if only one battery had been provided. Mr. Maize added that even if each man had a battery and both fired at the same time, there could be no risk, for the men would disconnect their batteries before examining their places, and an explosion could not occur. Mr. Cooper urged that owing to strikes inexperienced men entered the mines and the safest method of operation was to employ shotfiring. If the law of Pennsylvania relative to that matter were made up to there would be no accidents.

Mr. Maize said that electric shotfiring was the safest way of eliminating the short fuse and its dangers. The use of any fuse but electric is to be condemned. It was urged that the dry-cell battery be done away with. Mr. Greensfelder said that the battery approved by the U. S. Bureau of Mines cost $18, and Mr. Reynolds said that the price was too high if every miner had to be provided with one.

W. C. Hoyt responded to the question as to the best practical method of preserving timber and said that the best of all equipment, the pressure chamber, was too expensive for a single mine. Large timbers could be brushed, and smaller material should be immersed. He showed lantern slides of this class of work.

W. L. Affelder said that when putting in a coal-loading machine he had given half the ties a brush coat of Carbolineum. After seven years, twelve ties were taken out. Six that had not been coated went "rotted to the last possible degree" whereas six which had been treated were in splendid condition. What was more the untreated ties were white oak and the treated ties red oak and hence in themselves less durable.

TREAT TIMBER WHERE LONG LIFE IS SOUGHT

It was now the accepted practice of the Hoffman Coal & Coke Co. to give protective treatment to all railroad ties and to all ties used in the mines except where they are employed in the rooms. All structural material hereafter will be treated with a preservative. It is the intention to brush coat the large and dip the small material.

Dr. Tandell Henderson then described his experiments into the effect of oxygen and carbon dioxide in resuscitation made possible by a grant from the American Gas Association. As a result of this investigation he had designed an inhalator which was equipped to administer oxygen to which 5 per cent of carbon dioxide has been added. Carbon monoxide has three hundred times as much affinity for the hemoglobin of the blood as oxygen, and when breathed in even small quantity will displace the oxygen in the circulatory system. Apparently carbon monoxide has no effect on the nervous system. Its action is secondary through asphyxiation or, as it might be termed, lack of oxygen.

A person supplied with pure oxygen does not show an ability to breathe it if his respiration has been impaired yet a man asphyxiated by carbon monoxide needs to breathe more heavily than another, for he must rid his blood of the poison. It is carbon dioxide, not oxygen, which stimulates breathing. It is only when we are in stable air or have stale air in our lungs that we are disposed to breathe.

In Dr. Henderson's experiments the rats were asphyxiated with carbon monoxide. They were given pure oxygen. Two of these were revived and one died. The recovery was slow, however, and uncertain in the case of those that were revived. These were given oxygen mixed with 5 per cent of carbon dioxide in two minutes the animals began to breathe rapidly.

After that Drs. Henderson and Hargrett experimented on themselves and the two tests they made showed the excellent effects of the combined oxygen and carbon dioxide treatment. Carbon monoxide poisoning causes a severe headache, but with this treatment the pain is much reduced. The inhalator is arranged so that 6 or 7 liters of air is provided per minute at the start. As the patient becomes stimulated to deeper breathing the valve is turned till at least 30 liters of air is drawn in.

This is about the limit obtainable. It is not well to allow the patient’s breathing to be accelerated too much carbon dioxide as a valve is secured to cover and give him natural air, which reduces that stimulation and slackens the breathing. Dr. Henderson asked that he had gone on the experiments and submitted fifty or sixty cases of asphyxiation in artificial resuscitation. Among these were at least 4 cases that were badly guessed, yet all responded rapidly to the treatment.
Humidifying Mines Operated on the Exhaust Principle of Ventilation

Use of Steam Not Combined with Blowing System of Ventilation—Mine Must Be Suitably Planned When Exhaust System Is Employed—Changes Required

Referring to the suggestions of James A. Ackworth, mining engineer, contained in his letter, Coal Age, Sept. 29, p. 485, in which he requests further information and data regarding the humidification of a mine, as described in my previous letter, I recommend being unable to give the exact figures he desires. What figures I have are disconnected and seldom bear any relation to each other.

In my study of the subject, what has interested me more has been the practical rule of each particular case rather than the theoretical aspects of theory. The problem seldom required my retaining the notes taken, longer than to complete the taps in hand. To publish these rambling notes and figures would interest me not one.

Although it might have been brought out more clearly, it is quite evident that not necessarily articles had reference to the blowing system of ventilation. In one plant, I stated that in all cases where the fan in a blower, ventilating system, entered into the ventilating current with all that it advocates claims. As stated in the introduction, given above the first mentioned expression as a blower.

Humidifying in Exhaust System

Although the practice of humidifying a mine in the exhaust systems of ventilation possesses greater difficulty than in the blowing system, owing to the use of less intake for ventilation, in a practical case, it would not be recognized that the use of steam for the purpose is confined to mines ventilated by the blowing system.

Many operations parallel to the exhaust system, have assured their practicality on the ground that the air exhaust and its control in the mines does not come as another fact, the same as it does in blowing, but in the exhaust system, the circulation is reversed in the blowing system. A device to prevent the lost of steam to humidity the subject also.

Even in old mines, it will generally be found possible to humidify the steam and the make air in such a mine as not to interfere with the ventilations of the road or the use of underground ways by the men. It was the same case.

The following changes required to humidify exhaust mine.

A stopping was first built in the manway, 5 or 6 ft. in by of the point A. The air entering the manway was thus deflected through the crossover to the haulage road, at B. By this change, the total volume of air entering the mine was reduced from 119,800 cu.ft. per min., to 114,300 cu.ft. per min. Formerly, 47 per cent of the air traveled the manway, and 53 per cent, the haulage road. After building the stopping at A, only 44 per cent of the air entered the manway and 56 per cent traveled the haulage road. Practically, all of the loss thus occurred in the manway, and about the same volume of air entered the haulage road as before.
The change made it a little breezy on the haulage road, from B to C, where the total volume of air was passing. However, the men soon learned not to light their lamps until after they had passed this portion of the road. Both the haulage road and the manway were electrically lighted, so that no individual lights were needed there.

Temporary piping was now installed to conduct the exhaust steam of the engine into the manway. When that was done, the men traveled the haulage road as far as to C. It had been feared that the moist air coming from the manway would make the haulage road, from B to C, too wet, hot and foggy, for comfort. There was no fog, however, and one could stay at that point, for an hour, without being wet. Indeed, one could travel the crossover, from B to within 15 or 20 ft. of A, proceeding against the steam-laden air without feeling discomfort.

CONTINUING THE EXPERIMENT

The next step, by way of experiment, had for its object increasing the percentage of air traveling the manway, so as to secure a greater effect in the humidification of the workings. To that end, a wooden brattice was built at the entrance of the haulage road, so as to leave only sufficient room for the cars to pass. Two men and two feet of headroom above the locomotive.

The effect of this obstruction on the haulage road reduced the total air volume entering the mine to 96,700 c.f.m. per min., of which 78 per cent, or 75,400 c.f.m. traveled the manway. It was then found possible to walk to a point 39 or 25 ft. out from A and facing the steam-laden air current entering the manway.

Naturally, these changes increased the water gage at the fan, the increase being from 1.67 to 1.81 in. Contrary to expectation, the increased velocity of air in the manway did not lengthen the time required for the complete absorption of the steam by the air current. Instead, this distance was shortened by at least 50 feet.

Moreover, owing to the increased water gage, the work performed by the engine was increased and more steam was discharged into the manway and at a higher temperature. During a whole winter, the mine was operated on this plan with very satisfactory results in respect to the moistening of the dust. The total circulation, however, having been reduced from nearly 120,000 c.f.m. per min. in something less than 75,000 c.f.m. per min., caused a natural scarcity of air in the wet-ship workings.

RESTORING LOSS IN CIRCULATION

Finally, in order to restore this loss of volume and, at the same time, provide the men with the air they needed so that the men would not be compelled to travel the haulage road, an entry was driven in the pillar, between the haulage road and the old manway, as indicated by the dotted lines in the accompanying figures. Also, as indicated by dotted lines, the old manway, the crossover and a portion of the main haulage road to the first left headings beyond C were all widened. These changes had the desired effect of increasing the total air volume to 121,700 c.f.m. per minute.

During the very cold winter of 1917-18, the engine, running at its normal cutoff, failed to supply sufficient steam to warm and moisten the air entering the mine. This difficulty was overcome by lengthening the cutoff to 55 per cent of the stroke, which made it necessary to fire the spare boiler and employ an extra stoker in the daytime. Even then, it was estimated that the cost was far less than by sprinkling.

New York City.  F. C. CORNET.

Gas Menace in Mines

Seeking a reliable test for safety lamps—Disadvantages of the carbide test—Few coal mines equipped for testing lamps—Bumps and gas.

WHEN reading two recent letters in Coal Age, Nov. 9, p. 760, one by a fireman, relating to the testing of safety lamps in the manway; and the other by a mine foreman, treating on the subject of bumps in coal mines, I was particularly impressed with the menace of the presence of gas, in the mining of coal.

In all matters pertaining to safe mining, nothing is more troublesome than the personal experience of men who are in constant daily touch with dangers that must be guarded against if they are to be avoided.

EXPLOSIVE Mixture Must Surround Lamp as in the Mine

Probably the most important matter pertaining to safety in coal mining has to do with the presence of gas in mines. The seeking of a reliable test, to demonstrate that a safety lamp is in proper condition to be taken into a mine, is a matter that should interest all engaged in that industry.

The carbide test, described by the fireman just mentioned, is doubtless a severe one if properly applied. However, at a large mine where there are, say, a thousand lamps to be tested, it would be practically out of the question to attempt to follow such a plan with each lamp. Too much time would be required for making the test.

In my opinion, moreover, the explosion of the acetylene gas within the lamp would have to be very violent, in order to pass flame under a loose washer beneath the glass of a carbide lamp. The violence of the explosion would cause flame to pass through the wire gauge, before revealing the loose washer under the glass.

What is needed is not such a violent explosion within the lamp, but rather a condition that corresponds more closely to a test that is applied to the lamp within the manway, where the lamp is liable to be exposed to an atmosphere of gas completely surrounding the lamp.

Desirable as it is to have a reliable test that will demonstrate the danger of a safety lamp, before it is taken into the mine, I regret to say that few coal mines are equipped for making such a test in a practical manner. For that purpose, the lamp should be immersed in an explosive mixture contained in a box or small chamber, having a gauge window to observe the effect of the gas on the lamp.

At one large, up-to-date, underground, I found such a testing chamber that had been arranged but failed to serve the purpose intended, as the lower air ring of a Wolf lamp placed in the box was not exposed to the gas. The gas for testing lamps was taken from the entry gas mains.

GAS MAY FOLLOW BUMPS

Before closing allow me to refer to the second feature of the letter mentioned. Speaking of bumps occurring in mines, the mine foreman who wrote the letter makes no reference to the outbursts of gas that may accompany or follow the bumps.

While bumps in mines are dangerous, there are few bumps that are caused by sudden outbursts of gas that have been collected in some instance, the outburst has thrown down tons of coal and filled the passage ways with gas and suffocating dust.

In addition to the useful information contained in the letter, it would be interesting to know if the mine foreman has ever experienced these serious bumps, in operating a mine worked on the longwall system. It would also be interesting to know if there were any faults in the immediate neighborhood of the mines where the bumps occurred.

In the same connection, let us suggest the practicability of storing of waste in the worked-out portions of mines, by the hydraulic process, which may be something like "wicking." Such a stowing of waste might prove an effective means of eliminating underground bumps and such outbursts of gas as I have mentioned.

Alberta, Canada.

Investigation of Mine Explosion--Criticism as Incomplete

Unnecessary labor expended, mine explosion investigations by special committees. Result of test not in keeping with mine department.

A CAREFUL study of the report of the Total Explosion Investigation Board in No. 7 mines of the Cariboo Consolidated (D ozet) Ltd. at Cariboo, B.C., Oct. 21, 1921, will provide ample food for further comment. The report was made by former Chief Inspector of Mines George Woodrow, who was especially appointed by the Inspector General of Mines George Woodrow, who was especially appointed by the

December 21, 1922  1001
Difficult Ventilation Question Asked in Mining Examination

Increase of Volume Due to Addition of Airway—Dispute as to Correct Solution—Tandem Circulation Through Shafts and Airways by Splitting

KINDLY permit me to submit a question said to have been asked at an examination of candidates for mine foremen's certificates of competency in one of the states. My copy of the question reads as follows:

**QUESTION—** If an air volume of 10,000 cu. ft. per min. is passing through a mine in a single current, the resistance of the shafts at that time being equal to the resistance of the air, what extra quantity of air will get through the mine by adding two airways of the same length and over the power required by the present shafts such that each shaft is 8 x 6 ft., in area and 400 ft. deep, and that they are connected at the bottom by an entry 6 x 6 ft. in area and 1,000 ft. long. This question has started a dispute. It is quite generally supposed that the addition of a second airway means the doubling of the circulation in the mine, but there are other methods of solution, probably the simplest is by the potential. In that method, the first step is to calculate the relative mine potential, in each case, and the quantity of air passing, under a constant power, will then be proportional to the potential. In the first case, the total rubbing surface of the two shafts and one airway is \( a = 2 \times (6 + 6) \times 2,000 = 48,000 \) sq. ft.
and the area $a = 6 \times 6 = 36$ sq.ft. The relative power potential is therefore

$$X_r = \frac{a}{\rho \cdot s} = \frac{36}{\rho \cdot 48,000} = 0.9906$$

When a second airway is added of the same size as the first, we assume the air is split at the bottom of the downcast shaft and passes through the mine in two equal splits, before reaching the upcast shaft. This makes a total circulation in which the total air volume passes, in turn, through the two shafts, and the two airways. For the two shafts, in series, the area is $a = 36$ sq.ft., and the rubbing surface, $s = 24,000$ sq ft. For the two airways, in parallel, $a = 2 \times 36 = 72$ sq.ft; and $s = 48,000$. 

To find the general mine potential in tandem circulations, first find the reciprocal of the cube of each potential division; thus

$$X_r = \frac{1}{\rho \cdot 0.5144 + 0.1286} = 1.1586$$

Finally, since the quantity of air in circulation, for a constant power, is proportional to the mine potential, and an air volume of 10,600 cu.ft. per min is circulated against a potential of 0.9906, the volume $x$ circulated by the same power against the potential 1.1586 is

$$0.9906 : 1.1586 : 10,000 : x = 11,696 \text{ cu.ft. per min.}$$

Having thus examined the working places, roads and travellingways in his section, the fireboss returns to the shaft bottom or mine entrance, and turns out a full report stating what dangers, if any, he has found. The miners’ checks for all places where danger was found should then be handled by the fireboss, to prevent those men from proceeding into the mine, until their places are made safe and have been examined and found fit for work. The fireboss must then report verbally to the mine foreman, before leaving the mine.

(b) It is the duty of the fireboss to examine for all dangers present in each working place and, on all roads and travellingways in his section. He must look for any unsafe condition of the roof or coal in a miner's place, and observe the need of setting any timbers that may have been discharged by the firing of shots the night before, or extra timbers that may be required to support loose rock. He must also observe that the wooden crib is used on all sections. He may examine the for any unsafe condition of the roof or coal, in a miner’s place, and observe the need of setting any timbers that may have been discharged by the firing of shots the night before, or extra timbers that may be required to support loose rock. He must also observe that the wooden crib is used on all sections.

(Selected Questions)

**Question (a)**: Give a full description of a safety lamp. (b) What are its essential characteristics? (c) In what condition and under what circumstances may a safety lamp be unsafe?

**Answer** (a) A safety lamp, for general use in coal mining, consists of a brass or steel oil vessel surmounted by a chimney composed of a glass cylinder above which is a cylindrical wire gauze slightly tapered toward the top where it is reinforced by a gauze cap, that being the point most quickly heated and, therefore, more liable to pass flame than any other portion of the gauze. The entire chimney is held in position by upright standards firmly attached to the oil vessel below and connected above by a brass ring or shield to which the handle of the lamp is attached. The burner is designed to hold a round or a flat wick, as desired. In most lamps, a steel rod is made to pass through the oil vessel and serves as a pricker for raising or lowering the wick. It is also used to clean the wick of any crust that may be formed in burning. Some lamps, particularly those burning a light volatile oil giving a flame that is readily extinguished, are equipped with an igniter, or spark plug, for relighting the wick when extinguished.

(b) The essential characteristics of a safety lamp are, the isolation of the flame of the lamp from the atmosphere with which it is surrounded. The gauze forming the chimney and that protecting all openings for the admission of air to the lamp, while permitting the free passage of air and gas, prevents the passage of flame by the cooling effect of the wire gauze on the small streamlets of gas-charged air passing through the mesh.

(c) A safety lamp is never safe when handled by an incompetent or ignorant person, or when carelessly handled by another. The lamp is not safe when the gauze has been injured, or is otherwise defective by reason of grease or dirt, particularly dust; or when the gauze has become heated by too long exposure to gas; or when the lamp is improperly assembled or any part omitted.

**Question (a)**: Describe in full your whole procedure in the inspection of a gassy mine. (b) What unsafe conditions would you observe other than the presence of a gassy mine?

**Answer** (a) Before entering the mine, the fireboss must have properly examined, prepared, and lighted his lamp, which should then be tested by exposure to an explosive mixture of gas and air. This done, and having observed that the ventilating fan is working properly, the fireboss enters the mine by the intake opening, proceeds a short distance from the downcast shaft in order to observe whether the usual amount of air is passing into the mine. Then, proceeding to the intake end of his section, he examines each place in order and marks the date to show that he has been there. Where gas or other danger is found, it must be removed at once, or all entrances to the place barred by danger signals.

Examining Questions Answered

Indiana Firebosses' Examination, Indianapolis, 1922
Witnesses, Including Miners and Bondsmen, Identify Prisoners in Herrin Trial

By Saturday at the time of publication in the first week of the Herrin coal miners trial at Marion, Ill., it can be said to have been one of the defense attorneys. Lawyers for the United Mine Workers have not yet had a chance to put on their whole list of witnesses and a number of the defendant prisoners and, unless we are at fault, the state's attorney, they have identified and named the prisoners charged with the murder of Howard Hoffman, an employee of the United Mine Miners, who were shot down June 22 by a mob. The Hoffman case, the first of the cases to be tried, is being tried in the fourth floor room of the Social Security building in the district court in the county. It is being tried before Judge Clark, Vida Man, John Johnson, John, Hiley and Bert Gross.

The day before the trial opened, Frank Farrington, Ill., union president, held a news conference with State Attorney General Brumofjord in the courtroom at Marion the day before the trials opened. At Marion, Ill., we are going to defend these men and try it with them until they are definitely found guilty. We will not desert them ever. Unless we are completely convinced that they are guilty of an act of the support of the union. And I think that was never.

The trial started with Farrington on one side of the case with Attorney Argue Kerr heading the prosecution's defense and State Attorney General H. Brumofjord on the other side. It was from the opening statements of the attorney general that the bond of unionism was clearly shown to be kept by the miners. And it was from the opening statements of the attorney general that the defense was going to make their defense by claiming that these men were guilty of any act that could be brought against the prisoners, who are being tried for murder. The defense opened upon the claim that the Southern Illinois Coal Co. has not violated a contract with the mines but reported around rumors to do it and that the company deliberately invited and caused war in a peaceful community by withholding provisions for the miners.

CAPItal AND LABOR NOT INVENTED

The state called it plain robbery and State's Attorney Louis Davis differed. There is no such thing as capital and labor in this case between capital and labor. I want to try this case under the laws of our country, fairly and legally.

The state agreed with the defense that the Lerner mine had made an agreement never to uncover and not to market the coal and that the company then proceeded to import armed guards and try to market it anyway. But in writing the history of the case there were many differences in the statements made by the last hanged man and who the last hanged man had surrendered and was marched along the road to Herrin, with considerable suspicion of various brutal forms along the road. The defense sought to prove that the first man charged with the murder of Hoffman was not at the scene of the crime when at all but was found to be at a mile away.

The first hanged man, 22-year-old, was identified as William T. Heffner of Herrin, a hand in the hospital, was the last hanged man, identified by Hofmann's swirling. Charles R. McCarty, one of the outstanding lawyers in the argument of the case, was considered to be mixed up in the argument. He said that Hoffman had died of natural causes, but the last hanged man had died of murder. Charles F. Hofmann, who was identified by a photograph of the body, had been arrested in a photo session on the scene of the crime. William T. Heffner, in a photo session on the scene of the crime, he had been holding a gun. The state then on the scene of the crime, the state then on the scene of the crime, it was identified by a photograph of the body. William T. Heffner, in a photo session on the scene of the crime, the state then on the scene of the crime, it was identified by a photograph of the body. William T. Heffner, in a photo session on the scene of the crime, the state then on the scene of the crime, it was identified by a photograph of the body.

ILlINOIS OPERATORS JOIN ASSIGNED-CAR FIGHT

Illinois operators have joined with the National Coal Association in the support of its efforts to effect the abolition of assigned cars. The railroads presented their rebuttal last week, and an effort was made to establish that the claims of the operators that an adequate and regular supply of railroad fuel could be obtained without assigned cars was ungrounded. Testimony was presented by representatives of the Public Service Corporation of New Jersey and by the United Steel Co. to the effect that a preferential car supply would be necessary.

The Interstate Commerce Commission has decided to handle the assigned-car matter separately from the other matters of mine rating and car distribution. Separate dates will be assigned for the oral argument of these divisions of the case. Since it is believed that many of the differences of opinion with regard to rules can be threshed out at the separate meetings, a joint conference of representatives of the industry and of the carriers probably will be held in the near future.
Commerce Commission Decides Against Joint Mines, Limiting Car Supply to 100 Per Cent

In dismissing complaints of irregularity in car distribution in the case of the Bell & Zoller Coal Co. et al. vs. the Baltimore & Ohio R.R. Co. and various other defendants, the Interstate Commerce Commission on Dec. 11 delivered a decision of far-reaching importance. As similar issues were involved, the commission’s report also embraced the following cases: Fairmount & Cleveland Coal Co. vs. Baltimore & Ohio R.R. Co., 62 I.C.C. 269; No. 12399, Vigo Mining Co. et al. vs. Pittsburgh, Cincinnati & St. Louis R.R. Co. et al.; No. 12081, Fairmount & Cleveland Coal Co. vs. Baltimore & Ohio R.R. Co.; No. 12083, Fairmount & Cleveland Coal Co. vs. Monongahela R.R. Co.; No. 12085, New River Co. et al. vs. Virginian Ry. Co., and No. 12084, New River Co. et al. vs. Chesapeake & Ohio Ry. Co. upon reargument.

The Fairmount & Cleveland Coal Co. vs. B. & O. R.R. Co., 62 I.C.C. 269, termed the Fairmount Cases, related to rule 4 of Car Service Circular CS-31, Revised, which was found to be unreasonable and unduly prejudicial to joint mines and unduly preferential of local mines, to the extent that it limited the aggregate orders for cars to the joint mines to one car for every 100 per cent of its gross daily rating. It was also found that for the future, during periods of car shortage, defendants should distribute cars to the joint mines on their lines on the basis outlined in In Re Irregularities in Mine Ratings, 25 I.C.C. 286, called the Illinois Case. In effect, that rule provided that on days when the joint mine orders cars from only one carrier it shall be furnished cars based on its full rating from that carrier, and on days on which it orders cars from both carriers its rating on each of such carriers for the purpose of ordering cars should be 75 per cent of its full rating, subject to the limitation that on no day shall it be furnished with cars in excess of its maximum rating. No order was entered. Upon petition of intervening local mine operators, those cases were re-opened for further argument and consolidated with Nos. 12082 and 12099. These cases were submitted together.

The complainants operate joint mines in West Virginia, Illinois and Indiana as well as local mines in Illinois, served by two or more carriers. All the complaints substantially allege that defendants’ rules, regulations, and practices governing the distribution of coal cars to complainants’ mines served jointly by two or more railroads have resulted in the distribution, during car shortage periods since October, 1918, of a smaller share of empty coal cars to complainants’ mines than is furnished to and required to supply mines in the same territory which are served by one defendant carrier only; and have been and are unreasonable, unduly preferential of complainants’ competitors, and unduly prejudicial to complainants, in violation of sections 1 and 3 of the interstate commerce act. The commission is asked to prescribe just, reasonable, and non-discriminatory rules, regulations, and practices to govern the distribution of coal cars to mines served by more than one carrier.

Various operators and committees of opposers intervened in opposition to the complaints in Nos. 12082 and 12099. The Union Colliery Co. was the only intervenor in whose behalf evidence was offered. Various intervening petitions were filed in Nos. 12081, 12082, 12085, and 12084. The defendants assume a neutral position and are merely concerned with the establishment of a rule that will be fair and reasonable to all parties concerned, and which will be subject to later amendment, if necessary.

“Thus the argument is directed to the last sentence of rule 4 of Circular CS-31, Revised,” says the commission’s report, “which limits the joint mine orders for cars from all the carriers to the gross daily rating of the mine. The entire subject of the ratings of coal mines, other than anthracite, and the distribution of cars between them in times of short car supply, is pending before us in another proceeding. While there may be found in method of application, the general basis of ratings may be stated in substance.

“The rating of a local mine is determined by taking the total tonnage shipped by the mine during the preceding month over the carrier serving the mine, divided by the number of hours worked in producing it, and multiplying the quotient by the number of hours in the recognized work-day (not more than 10 hours) in that mine. A rating so determined is called the daily rating, as distinguished from the gross daily rating which applies to a joint mine, and which is determined in a similar manner, but by taking the total tonnage shipped over the lines of all the carriers serving the mine.

“Complainants urge that under rule 4, here attrited, the natural advantages of the joint mines are unduly recognized in the distribution of cars. They say that the rule does not give the joint mine any advantage in this respect, where due to the development of its market and the contracts which it has assumed, it must, of necessity, ship more from other than the one having the greater car supply. Under the present rules a joint mine can receive as great a number of cars as the local mine located on the line having the greater car supply for its mine, and serve exclusively to that line. Complainants contend that rule 4 has had the effect, therefore, of limiting their distribution to markets on one railroad only.

COMMISSION NOT IN AGREEMENT WITH COMPLAINANTS

“With this contention we are unable fully to agree. Whenever the joint mine orders cars from the different carriers serving it, it is doubtless due to other compensating advantages, which outweigh the disadvantage of a greater car supply.

“Interveners contend that unless an order for cars for the transportation of coal is accompanied by a bona fide tender or setting aside of the coal to be transported, it is not a reasonable request for transportation within the meaning of paragraph (4) of section 1 of the interstate commerce act.

“Interveners further contend that one of the essential elements of paragraph (12) of section 1 requires every carrier, during periods of car surplus, to make a just and reasonable distribution of cars among the railroads serving by it, and the statements now held upon is that the railroad may distribute, or the question of what is a just and reasonable distribution of cars to the discretion of the carrier to be as upon complaint and after full hearing, while the second element of paragraph (12) specifies the particular instances in which the cars are to be distributed during periods of car surplus, and leaves nothing regarding the distribution to the discretion of either the carrier or to us. This section does not use the term ‘distribution,’ but interveners argue that to maintain and apply just and reasonable and nondiscriminatory rules, the railroad must be furnished with any and every order for transportation of coal against the most stringent rule of law requiring an exact and precise demonstration of cars in accordance with the provisions of the law, as the mine be served by one or more carriers.

“In view of our conclusions herein, and because of the presentation of paragraph (12) of section 1, we are in the opinion of the commission unable to proceed upon the hearing now pending, as will soon shown from the record.”

The present facts considered, we do not believe the opinion of the commission.
Commerce Commission Rules Against Roads
On Coal Rates to Hagerstown District

The Interstate Commerce Commission has decided for the Hagerstown Chamber of Commerce in Case No. 12726. This involved rates charged by the Western Maryland Railroad Co., the B. & O., the Great Haven & Brunswick R. R., Co., and various other railways on lignite coal from the Cumberland district to Hagerstown, the Commission body charging them to be unreasonable and unjustly prejudicial to its members and unduly prejudicial to consumers at Martinsburg, W. Va., and Harrisburg, Pa.

The railways argued that a reduction in the rates to Hagerstown would seriously affect rates to destinations in West Virginia and Maryland, particularly with respect to the Pennsylvania if that carrier decides to meet the reduced rates at Hagerstown. The I. C. C. found the rates unreasonable in the extent that over the B. & O. and Western Maryland via Cherry Run, W. Va., and over the Western Maryland direct they exceed or may exceed the rates contemporaneously maintained over those lines from the points of origin to Martinsburg and Harrisburg. That rates charged on coal from Melfa, Va., on the Indian Creek Valley R. R. to Baltimore, Philadelphia and some Eastern destinations on the B. & O. are unduly prejudicial to the extent that they exceed the rates on coal to the same destinations from mines served by the B. & O. in the Maryland region, in the conclusion of a tentative decision rendered by the Interstate Commerce Commission examiner who investigated the case brought by the Melfa Coal Co.

Class 1 Railroads Consume 7,833,000 Tons
Of Coal in September

Class 1 railroads consumed 7,833,000 net tons of coal during September, 1922, as charged upon sessions 394, compared with 7,833,000 tons in September, 1921, according to a report of the Bureau of Statistics of the Interstate Commerce Commission covering 176 steam roads. For the first nine months of 1922 these roads consumed 66,750,000 tons, compared with 66,750,000 tons during the same period in 1921.

The total cost per ton in September was $1.43, or $0.06 above that for September, 1921. The per-ton cost for the year to September 30, however, was only $1.34, compared with $1.37 during the corresponding period of 1921. Final manufacturer's carload by cars. During Sep-tember 138,054,000 gallons was used, as compared with 118,950,000 gallons in September, 1921. The figures for the first nine months of 1922 and of 1921 were 1,097,282,000 and 1,042,233,000 gallons respectively.

Presents Amendment to Coal-Commission Act in Senate; Early Enactment Expected

Crowded committee and legislative calendars have delayed the expected early consideration by Congress of the bill to amend the act creating the U. S. Coal Commission, but as no signs of marked opposition have appeared it is expected that this measure will be enacted into law soon.

The bill introduced in the House by Representative Winslow previously was presented in the Senate last week by Senator Borah in identical terms, and was referred to the Committee on Education and Labor, of which its sponsor is chairman. There is no indication of material opposition in this committee or in the House Committee on Interstate Commerce, to which the Winslow bill was referred. The prospects are that any opposition which may appear on the floor will be outvoted easily.

The principal point in the bill is to authorize the fact-finding commission to gather information by sworn questionnaires, with penalties for failure to answer and for false statements.

Lehigh Valley and Glen Alden Companies
Will Settle for Mine-Cave Damages

Officials of the Lehigh Valley and Glen Alden coal companies, two of the largest in the anthracite field, have made known their willingness to recompense owners for property damaged by mine caves, the announcement coming after the U. S. Supreme Court declared unconstitutional the Kohler mine-cave law, which forbade mining in any district where surface property and human lives might be endangered.

Advocates of surface protection will offer a new measure to the next Pennsylvania Legislature demanding 100 per cent restitution for all damage brought by caves.

Indiana Operators Surrender; Avoid Strike

The operators of Indiana did not relish the idea of a strike in that state just now with the markets of the West at last calling for coal. Anyway they concluded that they were going to refuse at the mid-month pay to check off an additional union assessment for the national organization of the United Mine Workers. In session Dec. 13, four days before the deadline set by John Hesseler, president of District 11, they concluded the legal basis for their refusal on contract ground was hazy. So they surrendered.

The check-off of $4 per ton, the national union organization is new being made in Indiana.

Coal Consumption by Utilities Made
Big Gain in October

Electric public-utility plants consumed 3,247,020 net tons of coal during October, according to a recent report of the Geological Survey. This compares with 2,899,674 tons in September.

The average daily production of electricity by public-utility power plants in October, as was predicted last month, broke all records of output, making the fourth time that a new high has been established since May. The daily production of electricity in October was 129,100,000 kilowatt-hours, a little more than 3 per cent greater than the September record. The total output for the period January to October, inclusive, was 38,653,000,000 kw.-hr., an increase of more than 15 per cent over the same period for 1921.

The use of fuel oil and gas in the production of electricity by public-utility power plants evidently reached a maximum in September, as the daily consumption of these two fuels in October decreased from the September figures.
Charging Oppression, Miners' Union Asks Federal Coal Commission to Probe Conditions in Logan County

The United Mine Workers on Dec. 13, 1922, called the attention of the U. S. Coal Commission to conditions that exist in certain sections of the coal-mining fields of West Virginia and suggested "that the commission make a full investigation to ascertain the facts and to estimate the effect of these conditions upon the coal-mining industry in general. The commission will find in these conditions some of the very influential causes of the demoralization of the industry. While similar conditions exist in other parts of the State of West Virginia, we desire to call special attention to Logan County because it is typical of others and a glaring example of the manner in which brutality and oppression against union coal miners is practiced by coal operators and coal companies.

"Logan is the second largest coal-producing county in West Virginia. "Union miners, members of the United Mine Workers of America, are denied by these coal companies the rights that belong to every American citizen. If a miner joins the union he is at once made the victim of discrimination in employment. The right to organize does not exist in non-union Logan County. "Miners who join the union are driven from the county. "A miner loses his job if he talks in favor of the union. "Union organizers are not permitted to enter Logan County, if the fact becomes known to the coal operators. "Representatives of permitted trade meetings in Logan County for the purpose of inducing miners by peaceable and orderly methods to join the union. "Coal companies maintain an army of armed guards in the Logan County fields whose principal business it is to keep the union out by whatever means they may choose to employ. It is a common practice for these armed guards to assault, beat up, shoot and otherwise mistreat union members and men who wish to join the union. In other words, it is the business of these guards, armed with high-powered rifles, revolvers and blackjacks, to 'eliminate' union men. And for many years past this process of 'elimination' has left a bloody trail all over Logan County.

RIGHT OF FREE SPEECH, UNION SAYS, IS WITHHELD

"The constitutional right of free speech and free assembly does not exist in Logan County where these armed thugs hold sway. "None of these armed guards are ever punished under the law for the crimes they commit against coal miners and members of their families, because coal companies dominate the courts, elect and control public officers, run the elections and do as they please. "Deputy sheriffs in Logan County are not paid out of county funds but they are paid with money donated to the sheriff by coal companies and coal operators. In 1920 these coal operators furnished the sheriff of Logan County $45,630 for the payment of deputy sheriffs and in 1921 it was $61,517. "Coal companies do not hire armed guards for the protection of company property but for the 'elimination' of union miners and union organizers. "Armed guards and deputy sheriffs arrest union members with or without reason or cause and throw them in jail at Logan, where many of them have been brutally mistreated. Union men have even been killed while thus held prisoners in the jail. Men are arrested and jailed for no reason except that they are union members or are found giving encouragement to the union. "Coal operators fire miners to their employers has by judicial decision or interpretation been established as that of servant to master, and under such decisions miners and their families have been evicted from their homes without notice and without any consideration of mercy or decency. "The miners in a large part of the non-union section are coerced by the use of anti-union contracts known as 'yellow dog contracts.'

"These are but some of the outrages that are committed in Logan County as a means of keeping the miners' union from obtaining a foothold in that field. The list could be lengthened by the recital of all the above enumerated. Our representatives of Logan County to the recent special meeting of the Logan Coal Operators Association at Logan, Va., a meeting that was called by the Logan Coal Operators Association at Logan, Va., to take further steps toward the elimination of the union, made a full report of the proceedings at the meeting, as follows: "Obviously, conditions as exist in Logan County and certain other sections of the West Virginia coal-mining fields contribute to the general discontent and unrest that is evident today. It is equally apparent that the influence of these conditions cannot be hemmed in by the boundary lines of the State of West Virginia. The situation in West Virginia is notorious throughout the United States. It is well known to miners everywhere, and they naturally resent such treatment of their fellow workers of that state. It is a condition provocative of indignation, and we should not be allowed to continue. We believe this common sense should find out just how the Logan County and West Virginia situation affects the coal-mining industry for, if the commission can find a way to put a stop to the practices that prevail in that field, it will take a long step toward the establishment of industrial peace on a permanent basis.

SUGGESTS CALL OR INQUIRY WITHOUT"

"We suggest that the commission exercise those parts of the testimony hearing on this subject which was taken by the Senate Committee on Education and Labor in the fall of 1921 at hearings upon Senate Resolution No. 80, and read also the divided report of the committee. We suggest, further, that the commission call as witnesses some miners in West Virginia and elsewhere who are acquainted with the conditions mentioned. We shall be pleased to furnish the commission a list of names of such persons if the commission so desires. In the list will be the names of numerous persons who have been victims of the Logan County system who can give direct, first-hand evidence. We also offer to the commission any other assistance that may aid the commission in ascertaining the facts. "We do not believe the commission can gain a comprehensive vision of the evils of the coal industry without going to the bottom of the Logan County situation. Such procedure on the part of the committee will, we believe, greatly encourage a feeling among the coal miners of the country that at least there is a governmental agency that proposes actually to do something to establish permanent peace in the coal industry. "After having made an investigation and study of conditions in the West Virginia coal fields by means of hearings and a personal visit to those fields, Senator King, on Jan. 23, 1922, made a report as chairman of the Senate Committee on Education and Labor to the Senate on Senate Resolution No. 80," which the statement reads as follows: "The United Mine Workers of America held a meeting in the West Virginia coal fields and canvassed the conditions and dealt collectively with their employers. The right of workers to organize is fundamental. It has been repeatedly recognized and affirmed by the government, the Congress, the courts, by state legislatures, by the press, by trade unions everywhere and by the public. Yet in Logan County, \[
\text{The right of workers to organize was definitely established by President Harding in his inaugural address in 1921. }
\]

"When he was President, Woodrow Wilson, in his inaugural address, President Harding said, "I believe in organizations of men whom I organize."
Study of Waste in Mining by C. A. Allen

Elicits Widespread Interest

One of the phases of the fact-finding being done by the President's Coal Commission which is exciting wide interest is that pertaining to waste in the mining of coal. This study is under the immediate charge of Carl A. Allen.

Mr. Allen was born in Colorado Springs and was educated at the Colorado School of Mines. Following his graduation he worked for four years as a mining superintendent and as a mining engineer in gold and copper properties in Colorado, New Mexico, Arizona and in the states of Sinaloa and Chihuahua in Mexico. For a number of years thereafter he engaged in consulting work including problems of coal-mine engineering, with offices in Denver.

From 1911 to 1913 Mr. Allen was assistant professor of mining at the Colorado School of Mines, where he established a coal-mining course. In 1916 he joined the staff of the U. S. Bureau of Mines and spent a year and a half in charge of one of its mine-rescue cars, operating in the Montana and Wyoming district. In 1918 he was sent to Utah to direct the Bureau investigations in Utah, Wyoming and Idaho.

An arrangement was made whereby he was engaged on a part-time basis to serve as the chief mine inspector for the State of Utah. That arrangement still stands in effect. His work with the Coal Commission is being done under a leave of absence from his regular duties. Since the passage of the general leasing act Mr. Allen has directed leasing work in Utah, Wyoming and Idaho.
Coal Wholesalers Submit Detailed Reply to Nineteen Questions of U. S. Coal Commission

At a conference of the American Wholesale Coal Association with the United States Coal Commission Dec. 13 the association submitted a formal statement of its views in connection with the nineteen topics suggested by the commission. The report was prepared and presented by the executive committee and senior council of the American Wholesale Coal Association speaking for the association and for a number of coal wholesalers not members of the association, the conclusion of a large majority of the coal wholesalers of the United States. This committee estimated that there are 2,000 wholesalers in the United States with an investment of $200,000,000 employing 20,000 persons, and distributing 450,000,000 tons of bituminous coal and coke and 60,000,000 tons of anthracite coal annually. In answer to the question of profits of other persons or corporations having to do with production, distribution or sale of coal, they said "we regret that there are not extensive and accurate statistics available to show the cost of wholesale distribution of coal, nor the profits realized. This condition is due in large measure to lack of uniform accounting methods, to natural reluctance to disclose details of private business, and to fear of breach of laws prohibiting restraint of trade or competition. From such data as are available and from general knowledge we consider that the return on the capital involved and compensation for the risks and services performed are and have generally been reasonable. An interrogatory addressed to all in the coal trade asking, by months for the current year, and by years over the last ten years, for the gross volume and cost for the period, the gross realization and the cost of doing the mercantile end of the business, will give to the commission an absolute rational answer in such shape as can be readily analyzed."

IRREGULAR PRODUCTION LAID TO THREE CAUSES

The report assigned three principal causes for irregular production:

"(1) Labor losses due to local and national strikes. This will be eliminated when labor organizations are made subject to the same laws as govern business and perhaps some considerable improvement will obtain when immigration laws are more carefully enforced and intelligently applied.

"(2) Lack of demand for long-continued periods of industrial depression. Continued education through the publication of statistical reports on production, stocks and consumption will be of assistance. The wholesaler with his year-round sales and technical force is one of the most potent factors in reducing this irregularity of production.

"(3) Car shortage or transportation disability. It is a fact well known to your honorable commission that transportation disabilities in the past have been the greatest cause for lost tonnage in time of stress. To this cause also may be attributed almost entirely the instability of the market. This condition we believe is in no wise due to the faults of corporate management but is the natural result of government operation during the war period and after. We are sure the interested facts may be developed if the commission will inquire into:

"(a) The seasonal fluctuations of movement of all commodities and the causes therefor, including coal.

"(b) The evils incident to the assigned-car practice.

"(c) The differentiation between coal and other bulk commodities in the car-registration laws and transportation regulations.

"We deal exclusively with coal after it has been mined and becomes an article of commerce; the report states, "Waste prevention is one of our chief functions. We work at all times to educate the consumer to use the coal most adaptable to his peculiar requirements. We also endeavor to persuade the consumer to equip himself to use the coal most accessible. Among other sources of waste it is suggested that the commission inquire into loss by: (a) Improperly loaded cars, (b) Use of defective and unfit equip-

Coal Industry to Hold General Meeting in Washington Late in January

A general meeting of the coal industry will be held in Washington late in January. The decision to call such a conference was reached during the course of the meeting in Washington in which the special committee of bituminous operators, the local coal association secretaries and the government relations committee of the National Coal Association participated. The meeting will not be confined to operators maintaining memberships in the National Coal Association.

During the sessions which were held Dec. 14, 15, 16 and 17 it was emphasized that the organized cooperation should be given the Coal Commission. When complaints were made as to the indiscriminate character of the operations of the U. S. Coal Commission in sending out, they were discussed by the executive secretaries of the National Coal Association, and the members of the Coal Commission, at which time certain simplifications were made. But further simplification cannot be undertaken. It was also revealed that there is no distributor on the part of the operators to prevent anything that the commission is doing to collude with the prompt enactment of the amendments which the commission has asked for. It was decided that such local association would be in the same situation as an individual and may need to separate themselves from the commission.

Farrington Re-elected Illinois President

Frank Farrington, president of the Illinois Mine Workers, was re-elected for a third term in December. He was the only candidate for the office of president and was elected by acclamation.

Frank Farrington, president of the United Mine Workers, was re-elected at a meeting held in December. He was the only candidate for the office of president and was elected by acclamation.
Coal Commission Will Confine Efforts to Submitting
To Congress Facts and Conclusions

BY PULL WILSON
Washington Correspondent of Coal Age

There are so many developments in the President's Coal Commission affected the record of Delaware, it is believed that enough coal data can be analyzed to partake of a preliminary report that will not be based on the industry as well as with the industry that can be worked. The Commission has set up in

Machinery such as the commission made up its

numbers. If there is a long time before working order, the improbable, there is no question that coal can be accomplished in a short time. Chairman Hammond, of the commission, illustrates the situation by stating that the commission now is getting the "miners' eye," referring to the fact that some

move must be speeded underground before the human eye is not overtaxed to the darkness of a mine. Thus, too, the effort of the commission, he admitted, has been improved from the members, latterly, have proceeded themselves with

magnificent.

Chairman Hammond states most emphatically that the commission's report will not be a "wishy-washy affair." It will contain some rather drastic suggestions, as it is believed that bold surgery is necessary if the mines of the industry are to be reached.

It was emphasized by Mr. Hammond and by Dr. Smith, in executive statements to the Washington correspondents on Dec. 16, that the commission will not undertake anything that can be interpreted as mediation in wage scales. That is the responsibility of the operators and the mine workers, it was said, and while the commission will use its moral influence to induce them to get together and will emphasize to both operators and mine workers the far-reaching coal union of the leaving another strike, the commission will do nothing more than to submit to Congress facts and recommendations.

TOO MANY WHOLESALEERS AND RETAILERS

Overproduction in the coal industry, Mr. Hammond stated, is not confined to the producers. Both wholesalers and retailers, he declared, complains because there are too many persons engaged in the wholesaling and retailing of coal.

This condition adds very greatly to the burden which the consumer must bear. And since the great number of operators engaged in buying and retailing coal results in much duplication and the aggregate of needless overhead is so large, it is evident that produce, in addition to the selling price, but it is difficult to suggest ways whereby the eliminations can be made so that the wholesalers and retailers may be reduced in number.

John L. Lewis was before the commission for an entire day last week and conferences were had with a number of operators with regard to the wage-scale situation. And discussion of these conferences could accomplish no good purpose, if at the time, the commission has declined to give out any data with regard to wages, and while it was said. The operators who were called to Washington to discuss the wage-scale situation, were W. K. Field, Michael Gallagher, E. M. Proctor, C. G. Hall, H. C. Adams and H. N. Taylor.

While the representatives of Washington retailers in consultation with a local advance of 50 cents in their prices for anthracite resulted in columns of publicity in the newspapers of the capital & developed nothing of significance. Nothing which developed at the hearing indicated that there had been any pressure on the part of the Washington dealers, although it is apparent that there is a difference of opinion as to what constitutes a fair rate of profit.

The dealers were unrepresented in the consultation were the Allegheny Coal Co., Black Brothers, J. M. Bayless Co., W. W. Griffith, Long Brothers, J. K. White Coal Co., Peck & Co., L. E. White Coal Co., Peck & Co., Charles E. Miller Coal Co. and T. W. Perry Coal Co. The representatives of these companies were not at all reluctant to quote the replies presented by the commission, although it was apparent that they resented the fact that they were legally subpoenaed but it is said, they would have been willing to come voluntarily.

A large delegation representing the executive committee of the senior council of the American Wholesale Coal Association appeared before the commission on Dec. 15 to submit their reply to the 19 questions asked by the commission. There was some discussion of these replies but no matters of particular significance developed. The replies submitted by the wholesalers appear elsewhere in this issue.


WOULD HAVE RAILROADS OPERATE MINES

One of the most reactionary suggestions made to the commission has come from a prominent source generally regarded as being radical. The suggestion is that the coal mines be turned over to the railroads to operate. The opinion is expressed as that the railroads use 30 per cent of the coal, as it constitutes 40 per cent of the total tonnage they haul, and as transportation is the most important single element entering into the instability of the coal industry, the railroads could operate the mines more effectively than could the government or individual operators.

Returns from the cost questionnaires are coming in with gratifying promptness. While the great bulk of the returns received thus far are from operators conducting properties of small output, some of the larger producers have made their returns with surprising promptness. It is pointed out at the commission that it is not necessary to hold up the entire questionnaire until the information has been gathered for the whole series of twenty-one months. The statisticians welcome partial returns, as it enables them to get started on their work.

The working committee designated by the American Railroad Association to co-operate with the Coal Commission is composed of the following: G. Metzman, assistant to the president, New York Central; C. M. Shaeffer, chief of transportation, Pennsylvania; J. R. Kearney, assistant to the vice-president, Baltimore & Ohio; A. T. Owen, superintendent of transportation, Philadelphia & Reading; W. L. Booth, superintendent of transportation, Chesapeake & Ohio; D. E. Spangler, general superintendent of transportation, Norfolk & Western; W. S. Andrews, assistant to the vice-president, Southern Ry.; G. E. Evans, vice-president in charge of operation, Louisville & Nashville; G. H. Kummer, assistant freight agent, Chicago & Eastern Illinois; W. L. Barnes, general superintendent of transportation, Chicago, Burlington & Quincy; J. Q. Hoiliday, superintendent of transportation, New York, New Haven & Hartford; C. M. Booth, freight traffic manager, Pere Marquette; C. R. Moore, general superintendent of car service, Grand Trunk; J. E. Roberts, superintendent of transportation, Delaware & Hudson; L. W. Baldwin, vice-president in charge of operation, Illinois Central; B. J. Rowe, coal traffic manager, Illinois Central; W. A. Northcutt, general solicitor, Louisville & Nashville; W. W. Bronson, general attorney, Chesapeake & Ohio; R. V. Fleckel, general solicitor, Illinois Central; M. J. Gormley, chairman, Car Service Division, and J. H. Parmelee, director, Bureau of Railway Economics. Mr. Roberts has been designated as chairman of the committee.
Weekly Review

Weather conditions dominated the coal market last week. Opening with mild weather, domestic coal held firm, but the steam sizes slipped steadily downward. Near-zero temperatures came to the rescue before the week closed and caused the first definite stiffening in demand that has occurred in the last thirty days. "No-markets" quickly disappeared, car shortage became apparent at once and prices rallied from their recent slump. Coal Age Index of spot bituminous coal prices rose to 336 on Dec. 18, as compared with 325 on Dec. 11; the average price at the mine as represented by the index number was $4.07, an increase of 14c. over the week preceding.

INDUSTRIALS DELAY ORDERS FOR MARKET BOTTOM

Industrial consumers have been laying low, waiting for the bottom of the market to be reached before entering orders. At the first sign of stiffening the railroads increased their stocking movement and industries became insistent on quick deliveries of outstanding orders. There was no rush to cover by the general run of steam users—stocks are too ample for that—but there was enough increase in the call to take up the free coal that has been cluttering railroad yards, and selling conditions immediately reflected this. It is unlikely that coal will find a livelier market, however, until after Jan. 1, as inventory time presents a strong argument against heavy replenishment of reserves.

Snow and cold weather uncovered sufficient demand in the Middle West to discount the effect of the Indiana strike blow-up. Its subsidence is not now noticed in the general market awakening, although the fear of it had caused better takings of steam tonnage during the past two or three weeks. A pronounced buying of car numbers by industries, better takings by railroads and a growing call for domestic quickly placed mines in a comfortable position for the balance of the year.

The same conditions exist but in a lesser degree in the Eastern Inland and Cincinnati Gateway markets, where the absorption of former Lake tonnage had been accomplished with but little price softening. A growing demand for domestic was the best feature, of course, but the steam coals also strengthened with the better buying by railroads and general consumers.

The most active market, however, is in the North Atlantic section. Cars are no more plentiful and a foretaste of crippling weather for the railroads has caused a heavy demand. Best coals are practically unobtainable and pool classifications of the lower grades have been disregarded in the buying movement that has come in on the cold wave. As usual, the tight supply has released orders which have long been held in abeyance in the hope of lower prices. An important feature in this territory is the increasing use of sized bituminous as a substitute for anthracite. The domestic market is now an attractive one for those producers who are prepared to screen their coal, and shippers are alert to the possibilities of a permanent market in those centers.

Retail supplies of anthracite have touched bottoms. The trade is swamped with orders but receipts are discouragingly inadequate. In New York the price of
the Basic Fuel Administration report. In the week of approximately 1,800,000 tons of coking coal and about 7,000,000 tons of bituminous coal, shipments declined a marked degree. This was due to the holidays and the small tonnage shipped. The bituminous market is firming up in Canada and the region is expected to remain strong. Hermontia buyers are still pressuring for prompt deliveries. Hermontia has learned with the relatively small demand and reserves, unable to submit family bids, are taking this into consideration.

BITUMINOUS

Price trends of soft coal continue at a steady rate of approximately 2.50 per cent. Output during the week ended Dec. 22 is estimated at 11,000,000 tons, including anthracite, coal, and coked fuel and total sales, according to the report of the Geological Survey.

Provisional reports of cars loaded during the first four days of last week (Dec. 14-18) indicate a small decline of about 10 per cent in some urinal districts on Tuesday, from an election day. 1 It is expected that the total output probably will be between 10,500,000 and 11,000,000 tons.

The rail movement in New England declined to 2,928 tons during the week ended Dec. 22, compared with 3,055 tons in the week preceding. That market is in fairly com-

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

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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Franklin, Ill. run...</td>
<td>Chicago</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Franklin, Ill. run...</td>
<td>Chicago</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chicago, Ill. run...</td>
<td>Chicago</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central, Ill. run...</td>
<td>Chicago</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ind 4th Vein run...</td>
<td>Chicago</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ind 4th Vein run...</td>
<td>Chicago</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ind 5th Vein run...</td>
<td>Chicago</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>South and Southwest</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Idaho run...</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missouri run...</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kansas run...</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Independent Company</th>
<th>Dec. 11, 1922</th>
<th>Dec. 18, 1922</th>
</tr>
</thead>
<tbody>
<tr>
<td>$8.00</td>
<td>$7.75</td>
<td>$7.50</td>
</tr>
<tr>
<td>$8.00</td>
<td>$8.00</td>
<td>$8.00</td>
</tr>
<tr>
<td>$9.00</td>
<td>$8.75</td>
<td>$8.50</td>
</tr>
<tr>
<td>$9.00</td>
<td>$9.00</td>
<td>$9.00</td>
</tr>
<tr>
<td>$10.00</td>
<td>$9.75</td>
<td>$9.50</td>
</tr>
<tr>
<td>$10.00</td>
<td>$10.00</td>
<td>$10.00</td>
</tr>
<tr>
<td>$11.00</td>
<td>$10.75</td>
<td>$10.50</td>
</tr>
<tr>
<td>$11.00</td>
<td>$11.00</td>
<td>$11.00</td>
</tr>
<tr>
<td>$12.00</td>
<td>$11.75</td>
<td>$11.50</td>
</tr>
<tr>
<td>$12.00</td>
<td>$12.00</td>
<td>$12.00</td>
</tr>
<tr>
<td>$13.00</td>
<td>$12.75</td>
<td>$12.50</td>
</tr>
</tbody>
</table>

200,201 tons in the preceding week. Supplies at the ports are running down and shippers lack stocks to meet prompt orders. Final reports show that tidewater business improved.
slightly during November, and that a total of 2,318,000 net tons of bituminous coal was dumped over the piers at the five Atlantic coal ports. In comparison with October this was an increase of 88,000 tons. The improvement was due principally to increased dumpings for bunkers, points inside the capes, and other tonnage, which were 363,000, 357,000, and 708,000 tons respectively. Shipments consigned to New England and exports declined slightly. Cumulative dumpings in 1922 to the end of November stood at 25,700,000 tons against 34,878,000 tons in 1921.

**TIDEWATER SHIPMENTS FOR NOVEMBER 1922**

<table>
<thead>
<tr>
<th>Destination</th>
<th>New York</th>
<th>Philadelphia</th>
<th>Baltimore</th>
<th>Hampton Roads</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coaswise to New England</td>
<td>108,000</td>
<td>33,000</td>
<td>116,000</td>
<td>500,000</td>
<td>987,000</td>
</tr>
<tr>
<td>Exports ......</td>
<td>21,000</td>
<td>10,000</td>
<td>25,000</td>
<td>50,000</td>
<td>106,000</td>
</tr>
<tr>
<td>Inside capes</td>
<td>180,000</td>
<td>25,000</td>
<td>17,000</td>
<td>35,000</td>
<td>277,000</td>
</tr>
<tr>
<td>Other tonnage</td>
<td>516,000</td>
<td>183,000</td>
<td>135,000</td>
<td>39,000</td>
<td>479,000</td>
</tr>
<tr>
<td>Total........</td>
<td>874,000</td>
<td>262,000</td>
<td>299,000</td>
<td>917,000</td>
<td>3,097,000</td>
</tr>
</tbody>
</table>

**ANTHRACITE**

Production of anthracite during the week ended Dec. 9 was 2,038,000 net tons, as compared with 1,819,000 tons in the previous week. Preliminary reports for last week indicate an output of approximately 2,200,000 tons.

November production was 8,385,000 tons, exceeding the output for the corresponding month of 1920 and 1921 by 11 per cent and 18 per cent respectively. Cumulative production for the calendar year is 44,055,000 tons as compared with 84,270,000 tons in 1921 and 81,195,000 tons in 1920.

**COKE**

Production of beehive coke was 289,000 net tons during the week ended Dec. 9, as compared with 298,000 tons in the previous week. The decrease was principally in the Pennsylvania-Ohio region, although the Connellsville section recorded an increase.

The chief feature in the production of coke in November was an improvement of nearly 30 per cent in the output of beehive coke, which increased from 878,000 to 1,139,000 net tons. The production of byproduct coke continued to increase and reached a total of 2,908,000 tons. This was an increase of 3.5 per cent over the October record and was higher than the monthly average for any of the five years preceding.

**MONTHLY OUTPUT OF BYPRODUCT AND BEEHIVE COKE IN THE UNITED STATES**

<table>
<thead>
<tr>
<th>Month</th>
<th>Byproduct Coke</th>
<th>Beehive Coke</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1917 Monthly</td>
<td>1,870,000</td>
<td>2,764,000</td>
<td>4,634,000</td>
</tr>
<tr>
<td>1918 Monthly</td>
<td>2,166,000</td>
<td>2,540,000</td>
<td>4,706,000</td>
</tr>
<tr>
<td>1919 Monthly</td>
<td>2,095,000</td>
<td>2,618,000</td>
<td>4,713,000</td>
</tr>
<tr>
<td>1920 Monthly</td>
<td>2,565,000</td>
<td>1,748,000</td>
<td>4,313,000</td>
</tr>
<tr>
<td>1921 Monthly</td>
<td>1,464,000</td>
<td>462,000</td>
<td>1,926,000</td>
</tr>
<tr>
<td>Sept., 1922</td>
<td>2,244,000</td>
<td>606,000</td>
<td>2,850,000</td>
</tr>
<tr>
<td>Oct., 1922</td>
<td>2,068,000</td>
<td>828,000</td>
<td>2,896,000</td>
</tr>
<tr>
<td>Nov., 1922</td>
<td>2,969,000</td>
<td>1,195,000</td>
<td>4,164,000</td>
</tr>
</tbody>
</table>

**ESTIMATED MONTHLY CONSUMPTION OF COAL FOR MANUFACTURE OF COKE**

<table>
<thead>
<tr>
<th>Month</th>
<th>Byproduct Coke</th>
<th>Beehive Coke</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1917 Monthly</td>
<td>2,625,000</td>
<td>4,574,000</td>
<td>7,200,000</td>
</tr>
<tr>
<td>1918 Monthly</td>
<td>3,622,000</td>
<td>4,914,000</td>
<td>8,536,000</td>
</tr>
<tr>
<td>1919 Monthly</td>
<td>3,568,000</td>
<td>5,428,000</td>
<td>9,000,000</td>
</tr>
<tr>
<td>1920 Monthly</td>
<td>3,684,000</td>
<td>5,480,000</td>
<td>9,164,000</td>
</tr>
<tr>
<td>1921 Monthly</td>
<td>2,461,000</td>
<td>936,000</td>
<td>3,397,000</td>
</tr>
<tr>
<td>September, 1922</td>
<td>2,221,000</td>
<td>936,000</td>
<td>3,157,000</td>
</tr>
<tr>
<td>October, 1922</td>
<td>4,032,000</td>
<td>1,054,000</td>
<td>5,086,000</td>
</tr>
<tr>
<td>November, 1922</td>
<td>4,179,000</td>
<td>1,297,000</td>
<td>5,476,000</td>
</tr>
</tbody>
</table>

**Car Loadings, Surplusages and Shortages**

<table>
<thead>
<tr>
<th>Week ended Dec. 2, 1922</th>
<th>Coal Age</th>
<th>Peabody</th>
<th>Other Fueals</th>
<th>Coal Age Carloads</th>
<th>Peabody Carloads</th>
<th>Other Fueals Carloads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov. 30, 1922</td>
<td>5,981</td>
<td>133,764</td>
<td>42,546</td>
<td>95,820</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nov. 30, 1922</td>
<td>5,560</td>
<td>132,561</td>
<td>40,513</td>
<td>83,484</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Same date in 1921</td>
<td>283,600</td>
<td>132,561</td>
<td>40,513</td>
<td>83,484</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Foreign Market And Export News

#### British Market Retains Activity Despite Record-Breaking Production

Production of coal in Great Britain and a new high mark for the year during the week ended Dec. 2, when the output was 1,372,000 tons. Despite the heavy production Great Britain has to export, the market is steady.

The approach of Christmas and a sharp improvement in the European exchanges has led to better foreign buying in the Welsh market. The rather depressed state at Cardiff during previous weeks was largely due to foreign, holding off in anticipation of lower prices and better exchanges.

Some shippers are difficult to secure, namely, districts in and around coal are being heavily booked. While steam coals are well booked up, smurds are still plentiful and weak. Owing to adverse weather, there has been a marked delay in shipping arrivals, but as there is abundant tonnage waiting, the railways have, not suffered and shipments have been up to recent average.

Demand continues to follow satisfactory lines in the Scottish coal trade, the favours being good and prices well maintained at recent weeks' level. The foreign market is steady. There is a rather better demand in evidence for supplies to home consumers.

#### Export Clearances, Week Ended Dec. 9, 1922

<table>
<thead>
<tr>
<th>Country</th>
<th>Value (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>814,673</td>
</tr>
<tr>
<td>Canada</td>
<td>128,875</td>
</tr>
<tr>
<td>Australia</td>
<td>127,321</td>
</tr>
<tr>
<td>New Zealand</td>
<td>110,220</td>
</tr>
<tr>
<td>Others</td>
<td>183,280</td>
</tr>
</tbody>
</table>

#### British Market: Prices and Output

<table>
<thead>
<tr>
<th>Coal Type</th>
<th>Output (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bituminous</td>
<td>889,000</td>
</tr>
<tr>
<td>Anthracite</td>
<td>249,000</td>
</tr>
<tr>
<td>Coke</td>
<td>21,000</td>
</tr>
</tbody>
</table>

#### Coal Prices

<table>
<thead>
<tr>
<th>Coal Type</th>
<th>Price (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>7.25</td>
</tr>
<tr>
<td>Coal</td>
<td>5.75</td>
</tr>
<tr>
<td>Anthracite</td>
<td>4.50</td>
</tr>
</tbody>
</table>

#### Fuel Oil

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Price (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kerosene</td>
<td>6.50</td>
</tr>
<tr>
<td>Gasoline</td>
<td>7.50</td>
</tr>
<tr>
<td>Diesel</td>
<td>8.00</td>
</tr>
</tbody>
</table>

#### September Consumption in France

<table>
<thead>
<tr>
<th>Category</th>
<th>Metric Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>4,411,256</td>
</tr>
<tr>
<td>coke</td>
<td>1,964,473</td>
</tr>
<tr>
<td>Fuel oil</td>
<td>2,852,324</td>
</tr>
<tr>
<td>Petroleum</td>
<td>2,330,578</td>
</tr>
</tbody>
</table>

### Pier and Bunker Prices, Gross Tons

<table>
<thead>
<tr>
<th>Bunkers</th>
<th>Dec. 9</th>
<th>Dec. 16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pool 9</td>
<td>7.70</td>
<td>7.50</td>
</tr>
<tr>
<td>Pool 10</td>
<td>7.00</td>
<td>6.50</td>
</tr>
<tr>
<td>Pool 11</td>
<td>6.50</td>
<td>6.00</td>
</tr>
<tr>
<td>Pool 12</td>
<td>6.00</td>
<td>5.50</td>
</tr>
<tr>
<td>Pool 13</td>
<td>5.50</td>
<td>5.00</td>
</tr>
<tr>
<td>Pool 14</td>
<td>5.00</td>
<td>4.50</td>
</tr>
<tr>
<td>Pool 15</td>
<td>4.50</td>
<td>4.00</td>
</tr>
<tr>
<td>Pool 16</td>
<td>4.00</td>
<td>3.50</td>
</tr>
<tr>
<td>Pool 17</td>
<td>3.50</td>
<td>3.00</td>
</tr>
<tr>
<td>Pool 18</td>
<td>3.00</td>
<td>2.50</td>
</tr>
<tr>
<td>Pool 19</td>
<td>2.50</td>
<td>2.00</td>
</tr>
<tr>
<td>Pool 20</td>
<td>2.00</td>
<td>1.50</td>
</tr>
<tr>
<td>Pool 21</td>
<td>1.50</td>
<td>1.00</td>
</tr>
<tr>
<td>Pool 22</td>
<td>1.00</td>
<td>0.50</td>
</tr>
<tr>
<td>Pool 23</td>
<td>0.50</td>
<td>0.00</td>
</tr>
</tbody>
</table>

### Current Quotations British Coal f.o.b.

<table>
<thead>
<tr>
<th>Port, Gross Tons</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port</td>
<td>Description</td>
</tr>
<tr>
<td>Cardiff</td>
<td>25.6</td>
</tr>
<tr>
<td>Swansea</td>
<td>24.6</td>
</tr>
<tr>
<td>Poole</td>
<td>23.6</td>
</tr>
<tr>
<td>Weymouth</td>
<td>22.6</td>
</tr>
<tr>
<td>Southampton</td>
<td>21.6</td>
</tr>
<tr>
<td>Portsmouth</td>
<td>20.6</td>
</tr>
<tr>
<td>Lowestoft</td>
<td>19.6</td>
</tr>
<tr>
<td>Harwich</td>
<td>18.6</td>
</tr>
<tr>
<td>Dover</td>
<td>17.6</td>
</tr>
<tr>
<td>Ramsgate</td>
<td>16.6</td>
</tr>
<tr>
<td>Ramsgate</td>
<td>15.6</td>
</tr>
<tr>
<td>Ramsgate</td>
<td>14.6</td>
</tr>
<tr>
<td>Ramsgate</td>
<td>13.6</td>
</tr>
<tr>
<td>Ramsgate</td>
<td>12.6</td>
</tr>
<tr>
<td>Ramsgate</td>
<td>11.6</td>
</tr>
<tr>
<td>Ramsgate</td>
<td>10.6</td>
</tr>
<tr>
<td>Ramsgate</td>
<td>9.6</td>
</tr>
<tr>
<td>Ramsgate</td>
<td>8.6</td>
</tr>
<tr>
<td>Ramsgate</td>
<td>7.6</td>
</tr>
<tr>
<td>Ramsgate</td>
<td>6.6</td>
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<tr>
<td>Ramsgate</td>
<td>5.6</td>
</tr>
<tr>
<td>Ramsgate</td>
<td>4.6</td>
</tr>
<tr>
<td>Ramsgate</td>
<td>3.6</td>
</tr>
<tr>
<td>Ramsgate</td>
<td>2.6</td>
</tr>
<tr>
<td>Ramsgate</td>
<td>1.6</td>
</tr>
<tr>
<td>Ramsgate</td>
<td>0.6</td>
</tr>
<tr>
<td>Ramsgate</td>
<td>-0.6</td>
</tr>
</tbody>
</table>

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*Note: The information is based on historical data and may not reflect current market conditions.*
Demand Increases Daily; Urgent Buying Boosts Prices


Demand is growing day by day and urgent purchasing at increased prices is in evidence on every hand. As usual, tight market conditions have released orders held against the time when the bottom should have been reached. Better grades are almost out of the market. Another drain on the supply has been the call for domestic coal in the East to be used as a substitute for anthracite.

Poor car supply is playing havoc with consumers' hopes of lower prices. A foretaste of wintry weather has made it apparent that additional transportation difficulties are not unlikely and buyers are seeking to cover their requirements for the next few weeks.

Baltimore

The market has tightened more rapidly during the past ten days than in any similar period for several months past. The demand has been growing day by day and urgent purchasing at increasing costs is in evidence on every hand.

Car supply, or rather lack of it, is playing a decided part in the situation. From the mines come reports that particular sections have been running as low as 60 percent supply on many days, and some operations have fallen below this. At the same time both large and small consumers are on the market in increasing number and are taking up coal in many cases without regard to quality.

At this writing there are quotations from the fields for Pool 71 as high as $6. Pool 9 is bringing $6 readily and has run above that mark in several sales. The average quotation on Pool 10 is around $4.50 and on Pool 11, $4.45. Unclassified coals are selling generally up to $3.75@$4. Gas lump is in demand around $4.50 and run of mine, $3.75@$4.

New York

A gradual betterment has taken place in the local market. Quotations have advanced in many instances and although car supply is about as bad as it can possibly get, there is no shortage of coal, except in the better grades.

Bituminous is now being burned successfully by many persons thanks to the orders of the State Fuel Administration, who heretofore have shunned it, and it is believed will continue to be used by many, especially if it can be purchased at a lower cost than the hard coals. Quotations for the screened coals range $6@$6.75, and take the only available freight.

Potomac shortage has reached an acute stage. Price on high-grade coals has been $10.50, and has been cut back to $9.50, which is being maintained. Pool 13 coals are selling in the high-$6.25 range. Pool 71 is in operation.

Fairmont

Shortage of empties has affected Fairmont territory more than the Georges Creek district. Still, output is averaging more than in 1921. Georges Creek coals are being shipped to a little headway in speeding up production but dismantling is more or less prevalent in some sections owing to the passive attitude of authorities. Though there is a strong movement, it is not a particularly strong demand, transportation difficulties prevent prompt movement to customers.

Philadelphia

There is the strongest kind of a demand for good coal. There is a demand for steam coal. The purchaser is now quite insistent for prompt delivery and is inclined to go to the source. It is known that many of them had expected prices to take a drop, and now that they have risen they feel they should have paid more immediately. One of the important coal concerns continues to absorb much of the production. Another coal on the sales of bituminous coal has been the rail for domestic use in the Eastern market. Dealers in position to secure their supplies have a ready market with the anthracite retailers, getting $7.50 or a ton for the large sizes. Coke is also strong and several bituminous producers are going after domestic bituminous trade with the idea of making a permanent market for their coke, giving prompt service in the shipment of it in 100 car lots.

Prices for spot cars have materially stiffened, and under present conditions it does not seem as though the end of the upswing is in sight.

Central Pennsylvania

Car shortage is acute and operators declare their efforts to up the cars known from that standpoint. One hundred and twenty-five operators, attended a meeting of the Central Pennsylvania Coal Producers' Association on Dec. 18 to take action on terms of the situation. The preparation of the district's case to present to the fact-finding commission was left in the hands of the members of the association.

With the exception of a number operators that get the benefit of assigned cars, the mines in the district are getting a fair average of cars for their day's work. Operators generally, have all the orders they can fill to Jan. 1, in view of the difficulty in getting cars.

Prices range a little higher. Pool 9, $4.53@$5.25; Pool 11, $4.50@$5.25; Pool 10, $4.25@$4.50; Pool 11, $4.50@$4.75; Pool 71, $5.25@$5.50.

West

Kansas City

An advance of 50c on Kansas lump and nut and of 25c on mine runs was announced by several dealers in Kansas City, Dec. 14. The announcement followed a meeting of a number of operators on Dec. 11, at which it was decided that the present coal situation warranted a $1 increase in the prices of raw coal quoted.

Salt Lake City

Business is quiet. Light coal and a drug on the market and many cars may be found on the sidetracks. Light coal is plentiful and has been sold at $3.25. A report from the Northwest seems to be well. The figures are somewhat higher and of the same order of magnitude as those of last year. The situation in the Northwest, for the first eleven months of the year, was 4,483,470 tons. In 1913 the total for the year was 4,696,500.

Denver

A report from the Rock Mountain states the coal business is still good. Some dealers are holding a high percentage of stock. A report from the Rocky Mountain states the coal business is still good. Some dealers are holding a high percentage of stock. A report from the Rocky Mountain

COAL AGE

December 21, 1922

North Atlantic
Anthracite

Deluge of Retail Orders Comes with Wintry Weather

Despite struggles to meet demand, domestic exports continue to call upon the coal resources of the state of New York. As a result, the demand for domestic coal is being met by imports from the state of Pennsylvania. Despite this, the demand continues to exceed supply, leading to increased prices for coal. The coal market in the United States is currently facing a shortage of coal, with prices increasing as a result. This shortage is affecting the economy, with increased costs for consumers and increased prices for retailers. In addition, the increased demand for coal is leading to increased pollution, with increased emissions from coal burning.

PHILADELPHIA

An event in the market this week was the sudden demand for buckwheat as a domestic fuel, which about cleaned up all available tonnage. For several weeks past, after having been lagged since summer, the demand for buckwheat was strong, but the max was just reached this week. Independent coal quickly went to $3 and over, quotations as high as $4.75 being heard. Companies have no more room for new business. The sudden demand has been due to the winter weather, as when the dealers could no longer supply larger sizes the public simply took what was to be had.

There has also been a strong domestic movement of all kinds of fuels, in cluding mine run and sized bituminous, and various kinds of coke, all of which have been finding a ready market. Retail prices on bituminous coal run $9 @ $16 a ton, as some of the sized bituminous is just as costly as anthracite.

If anything there has been a slight improvement in anthracite shipments, which is noted to be the effect on the market. In the steam size bar and bar and most shippers are able to move heavier tonnages at company prices.

South

BIRMINGHAM

Demand was a little better within the last week, railroads buying some tonnage in the spot market for stocking. As a result, the market has been more active, and a little improvement also was reported in the general demand from industrial sources. Current orders together with contracts are sufficient to move all the coal being mined at this time. Activity in the domestic market is more marked with a recurrence of demand. There is no further delay in the shipment of coal for house.
Chicago and Midwest

Real Winter Wakens
Whole Coal Market

Brisk Demand for Steam and Domestic Is Held Down by Shortage of Cars—Prices Strengthen Some—BLOW-UP of Indiana Strike Is Noted Widely.

General market improvement was noticeable throughout the Midwest during the past week. The real winter which has clinched into the countryside is having its effect on almost all coals from big lump and anthracite down to slack. The ever-present affliction just now is a short car supply. In Illinois, Indiana and Kentucky, most railroads have given less than 35 per cent service during the last ten days and this limits output to a point where even the lowest grade coal is in some demand at slightly ascending prices.

A pronounced movement to stock by railroads and industrialists takes all the steam coal there is. This, plus comparatively light production, is the reason why the price of screenings is following domestic sizes on the upward trend. The flattening of the threatened strike in Indiana had not had time by the end of the week, to have its full effect. There is no doubt that a general rush to buy was started two weeks ago in the Indiana market territory. Its subsidence now probably is absorbed in the general awakening of trade.

CHICAGO

The market on all coals picked up noticeably during the past week here. Domestic trade was lively all through the week because of the wind and cold, thus giving the producers of second grades of domestic sizes a chance to stiffen up their prices and collect. Prices on best southern Illinois stayed at $8.50 for lump while central Illinois got strong at $14.50 and pushed hard for a rise to $15. Indiana domestic coals sold as fast as they could be produced. The threatened strike in that state did not develop but there was no sinking of the market as a result of the blow-up.

Steam demand freshened along with domestic. Southern Illinois screenings rose to an average close to $2.75 which showed signs of going higher. The steam sizes from other fields displayed the same tendency, though Standard district and Fifth Vein Indiana screenings remained under $2. A little stocking is going on now. There has been no marked car or railroad power improvement in any of the fields tributary to this market so that supply has hardly kept up to demand. The stocks of coal on hand in industrial storage yards as well as dealers' bins are small. Thus the countryside has nothing upon which to fall back if a heavy snowstorm were to hit this section tying up traffic.

WESTERN KENTUCKY

Car supply in Western Kentucky has slumped, and reports through Dec. 11 show an average for the month of 30 per cent on the Illinois Central, 19 per cent on the Henderson and 26 per cent above that of the L. & N.

Short car supply along with cold weather has resulted in prices quoted being a bit higher, as a result of increased demand of utilities, industrialists and retailers. Retailers are meeting with the best business of the year, and are ordering freely. Quotations reported from some operators are considerably higher than the general market, and are perhaps shaded a bit in acceptance of business, as open market quotations are not so much higher than those of high grades; screenings show some decided improvement, with lump 25c. a ton higher than the low of last week, while mine run is unchanged.

Present quotations show screenings $1.65@$2, an increase of $1.25@$1.75 last week; mine run $2@$2.50, unchanged; lump $3.75@4$, as against $3.50@4$ last week. Some 6-in. block is quoted at $4.50.

ST. LOUIS

Domestic showed a little activity the past week on account of colder weather, but this was only temporary and the coal was for cheaper grades of coal. Dealers still have their bins full, principally of high grade coal for which there is little or no demand. During the past week between 25 and 30 cars of anthracite and 50 cars of smokeless moved in fairly good demand and is in good demand. Smokeless retails at $1.50@1.55, and anthracite, all sizes, $1.05.

Locally coke is scarce, but a good tanage of Missouri, California and Illinois is moving through this gateway, principally chestnut for base burners for country dealers. Country demand for domestic is light on account of a feeling that prices will come down.

Some railroads are anticipating storage, principally the Frisco. It is understood the Missouri Pacific has about 8,000 days coal ahead. The Mobile & Ohio has acquired a good storage at various points. Shipment for Northern roads are noted passing through the gateway, and fairly good storage supplies going to other lines.

Retail prices are: Cartersville, $2.50; Mt. Olive, $7.50; Standard, $9.25. Coke is $4 for short tons and $4.85 net for the long tons.

LOUISVILLE

The cold weather of the past week certainly caused an improvement in the movement of domestic coal. The advance advanced 25c. per ton universally, and dealers expect to bring the market up in demand. The association operators cut prices 15c. on their price of 15c.5 for domestic coal from $8.50 to $8.25; cheap coal from $8.50 to $8.25; and coke from $8.50 to $8.25. No change was recorded for anthracite.

Railroad tenders in past week were generally good, but the dealers here are stocking very light. The cold weather this past week threw the country stores up and the demand was increased. The M. B. & C. and the L. & N. have been moved by the local trade, but not much by the country dealers.

SOUTHERN ILLINOIS

Cold weather the past week was a great help to the business in the movement of domestic coal. The advance of prices was 25c. per ton on the best grades and 2c. per ton on the second grades. Lumping and screenings were increased 25c. per ton. Anthracite was advanced $5 to $12.50 as a result of the cold weather and an even more decided improvement in the east. The cold weather has caused a lot of country dealers to rush..writeInted
Eastern Inland

Berea Stimulates Market:
Unfilled Orders Increase

Steam Market Steadily Has
Week and Spot Offerings, Trouble
Some a Few Days Ago, Have Been
Largely Absorbed. Railroads have
Increased their Purchases and Large
Industries Followed their Lead. Colder
Weather has Stimulated the Domestic
Market, and Unfilled Orders are
Increasing.

Colds Are Very Scarce and There is
Little Chance of Immediate Improvement.
Snowfall and Lower Temperatures have Further Affected
Transportation Conditions and Several of the Time Serving the Fields Supplying
This Territory have become badly
Chafed with Loads.

Cleveland

Domestic coal consumers are preparing
to substitute bituminous coal for
Anthracite this winter, but they are
holding back in buying in stocks now
in the hope that more Anthracite and
Pocahontas will be available later.

Industries are buying for immediate
requirements only and most of the
stocks on hand at the present time are fairly
Well supplied. The hand-to-mouth buying
of industrial steam coal is tending to
Limit market activities and to cause some price recession. More steam coal
is available on the market than in any other class of customers, with public
Utilities also taking a fair amount.

Colder weather is causing dealers to
want to stock up. The recent heavy
snowfall brought a flood of inquiries
from consumers who desired to
Build up stock in advance of the
Approach of cold weather.

Retailers are beginning to re-
vere Pocahontas from the region which
Was in stock only to eight weeks
ago. There is a dry goods store at
Youngstown and another at
Youngstown. Both have been
Shipped from Pocahontas.

Buffalo

Clouds are very scarce and the sun
shining on the coal mines of
Allegheny Valley country.

The early autumn mild weather
was not enough to carry the
Coal operators. The early fall
steadied them a bit, but they have
a district of Pittsburgh.

shoppers complain that the Allegheny
Valley mines have been underselling
their district, but the market has been
making excessive prices.

A number of sales in large blocks
have been reported lately. One shipper
sold 600 tons of coal at
$3.75 a ton, while another, at
Point 15, in the gross. This
ought to help the shipper materially, yet
experienced jobbers, working for
penury, prefer the coal that will
attract a regular customer.

Bituminous prices remain somewhat
steady at $4.75 to $5 for Tunkhannock
Lump, $8 to $12 for Pittsburgh
steam, $17 to $22 for No. 8 steam
lump, $8 for No. 9 steam
lump, and $24 to $30 for slack,
with slack not as strong as aces, adding
$2.00 to Allegheny Valley and $2.24
in other coals for freight.

Pittsburgh

Free steam coal, which had a tendency
in press on the market a week or
Two days ago, has been largely absorbed
by some good-sized railroad purchases
in central and northern Pennsylvania. The market is distinctly
steadier, though prices are not notably
changed.

Gas coal is easier in tone, on the
whole, being bought without difficulty,
mostly at $4.50 and $4.75 in Virginia and
Kentucky. Retail prices are
$4 than at $3.25 at
some operators, however, will not touch
these figures, having $3.75 in mind as
their minimum, preferring to confine their
purchases to contract shipments. Few if any monthly adjustment
contracts were fixed at less than $3.75 for
December.

There is scarcely any demand in the
open market for byproduct coal, con-
sumers being taken care of by contract
shipments. Contracts involving a
monthly adjustment have been adjusted
at $3.50 to $3.75 for December.

Demand for domestic lump continues
very heavy and scarcely a day passes
without considerable unplanned tonnage
being purchased at prices of $5.50
and $6.50. Some operators are not
being sustained sufficiently; but in general prices are lower, at $5 or
less. Producers with regular customers
are obtaining somewhat less, on an
average. The Pittsburgh Coal Co. has
reduced to $4.50 as its price right
along, despite higher prices obtainable,
and it is reported that the company
contemplates reducing its price to $4
shortly.

Eastern Ohio

The return of heavy snowfall and
lowering temperatures have stimulated
considerably the demand for coal. Like-
wise, rail supply and transportation
conditions have been adversely affected.
Several of the eastern Ohio mines
are pretty well clogged with
snow.

Columbus

Cold weather has stimulated
Domestic demand but the steam business is somewhat indifferent. Buyers are not
showing any particular uneasiness and
many people are waiting for lower prices before placing any
large orders. Retailers are
in an almost hand-to-mouth state and
are buying only for immediate
needs.

Ohio mines are supplying the greater
part of the bituminous coal sent to
Detroit, although some improvement is
apparent in the movement from West
Virginia. However, the demand
continues in short supply. Hocking lump
is offered at $5.50, with egg at $5; mine
run, $3.50, and nut, pea and slack, $2.75.

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Northern Panhandle

Car shortage is restricting output to
less than half of possible production. Though the demand is not so strong, yet
market conditions have not materially
Tended to retard production especially
where mines have railroad fuel con-
tracts, which business constitutes
the bulk of the business of many northern
Panhandle mines.
Coal Shipping Season

Limps to a Slow Close


The shipping season to Northwest docks is practically ended. Rough weather wound it up several days before the expiration of the extension granted in order to get in more of the reluctant anthracite. Only a dozen or so cargoes were still on the way to the end of the week and the allotment of hard coal remained far from filled. Premium rates had been offered to get more shipped. Only 550,000 of the 700,000 tons promised have been received at the Head-of-the-Lakes. Much hope is placed in the railroads to bring in more.

The bituminous situation is better. Cold weather has stimulated the demand for all domestic sizes and has affected the steam market favorably too. Coal is moving out as fast as it has been coming in because dock arrivals have been disappointing all through December.

DULUTH

The last cargoes of coal arrived here early this week, and navigation closed, nearly a week before the extension time allowance on insurance expired. The reason for the early close is three fold. The weather has been most inclement, and boats have taken as much as four days from the mills to the docks. Owners are unwilling to pay high insurance rates and it is reported that there has been a scarcity of coal at lower docks.

It is estimated that 5,800,000 tons of coal arrived here since shipments started after the coal strike terminated. About 5,250,000 tons were of soft coal and only 550,000 tons hard coal. To these figures must be added 416,000 tons of hard coal and 3,500,000 tons soft which were on the docks at the opening of navigation.

The truest picture of conditions may be obtained more from a statement of stocks on hand Dec. 1 than by shipment figures. On that date there were 2,765,024 tons of bituminous and 145,992 tons of anthracite on the docks. None of the anthracite was strictly “free coal.” All is spoken for but it is doubtful where the fuel administrator will order it shipped. Last year on Dec. 1 there were 6,904,477 tons of soft and 871,196 tons of hard coal on the docks. There is more bituminous coal on hand now than was used last winter but only about one-fourth as much anthracite.

Arrivals since Dec. 1 have been small—20 cargoes of bituminous and 10 of anthracite in the last week. Coal is leaving almost as fast as it arrives. It has been stated that docks could ship out all the stocks of hard coal in three days. A meeting in St. Paul with the fuel administrator will decide the fate of the hard coal on docks here.

MILWAUKEE

The last cargoes of the season, mainly anthracite, are on the way to Milwaukee, and the record of receipts by Lake will soon be closed. Dock companies have made every effort to increase their stocks of hard coal and paid as high as $1.10 per ton as a “wild” freight rate to induce steamers to make the late run. The supply of soft coal is sufficient to tide over the winter with reasonable receipts by rail.

Prepared or screened Pocahontas, which has been very scarce, is now coming by rail. It costs the jobber about $12 per ton on track at Milwaukee, which almost puts it in the class with hard coal. Illinois and Indiana screenings have also stiffened in price about 25c, but the added costs of these two grades of coal have not been passed along to the consumer as yet.

Milwaukee will undoubtedly receive an unusual amount of coal by rail during the coming winter. Dealers report a very active demand for all kinds of coal with the advent of low temperatures. The anthracite shortage in Wisconsin is greater than was anticipated, and the state coal commission cautions dealers to discourage the use of chestnut size by furnace consumers, as all of that grade of coal will be needed by people using these-burning stoves.

MINNEAPOLIS

Winter weather has stricken the Northwest at last hampering coal transportation. Concerning shipping materially. It has shown that last resort will be upon the wholesale market. Screenings, which have been in desperate shape, are expected to come on stream soon. A continuance of zero weather will certainly help the market for regular users. The better grades of soft coal have been doing nominally at $2.50, prices being lower.

The conclusion of the season of navigation has brought but little additional coal for the Northwest. It had been hoped that there would be a rush of hard coal for the last run since there was not much there. There is none. There is a total of around 575,000 tons of hard coal of all kinds received on the Duluth. Superior for the season. Against the allotment of over 700,000 tons, there is a shortage of something under 100,000 tons. The allotment was received to the absolute minimum for the Northwest.

It is proposed to get more hard coal by rail to place out. However, there is no fear of a surplus. Nor is a single promise, allotment, or plan for coal for the Northwest has been fully filled this year. Hence the all-rail tonnage of hard coal may be cut to a third and the period of shipments made not to exceed thirty days.

New England

Market Appreciably Firmer, Prices Up on All Grades

Operators Recently Seeking Orders Now Seek to Business in Hand—Upward Swing May Last Through January—Equipment Shortage Disturbs.

On all sides the situation is decidedly firmer. Operators who a fortnight ago were soliciting orders are now declining to make commitments until progress is made on business already in hand. The Southern smokeless grades also are in better position than a week ago, small accumulations having dwindled until several of the agencies are pressed to clear waiting bottoms. Apparently there is to be a pronounced upward swing that may or may not last through January.

Shortage of motive power is causing grave apprehension in trade circles. On the New England road the lack of engines is not as noticeable as on the originating lines, but it is all serious enough, and is a most disturbing factor.
Cincinnati Gateway

Cold Weather Helps Trade
With a Freer Car Movement

Domestic Sales and Smokeless Holding Up in Prices; Softness Developing to Some and Byproduct Sales — Car Movement Better by Southeastern Kentucky Fields.

Domestic business continued robust at the other trading to the sideline during the past week, due to the fact that the first signs of continued cold weather arrived opportunistically. The market was rapidly growing able under increasing movement of coal to the power that this gateway either serves or is in competition with. Even the Barry over in Indiana with strikes closing in the coal did not have much of an effect and what upward movement there was in prices was not material.

Early in the month buying by the steel plants had not been of the volume that many were led to expect, so that this force has been latent in so far as bolstering declines are concerned. Former prices East probably had the most beneficial effect. River business continues good with heavy tonnage arriving.

CINCINNATI

The production situation has scarcely helped toward weakness, while others have been affected. Mines run and prices have been correspondingly the $6.25 @ $6.75 range for months. This has been a natural condition, keeping them in over the N. W. and the Western markets east from New River. What was selling is for spot sales in contrast. From the latter fields and the brokers are getting it at something for it. This is made by the Traffic Staff of the Hazard Coal Operators' Association, who has done a better car supply by the Hazard and Harlan fields and believe this has increased property to some extent the market. The movement has been selling down the market. West Virginia tonnage has been selling down the market. If the West Virginia moves, and the market is to respond, Kentucky will continue.

HIGH-VOLATILE FIELDS

KANAWHA

Output is so curtailed by car shortage that there is hardly enough spot coal available to make any difference regardless of market quotations. Car shortage still eloquently the market situation in interest. It is difficult for many companies to keep pace with contract and is partly the reason that C. & O. is not permitting the use of its larger cars for western movement.

LOGAN AND THACKER

The C. & O. having failed to increase its supply in Logan district, mines are forced to operate at irregular intervals of their own shortness. This has difficult to make prompt shipment on contracts especially in the West, since only certain sizes of equipment can be used. Few if any cars are free at this time.

LOW-VOLATILE FIELDS

NEW LOGAN AND THE COWL

Furnaces in the New River district are in demand as many as 80-90 cars a week by the C. & O. are being taken, but the small output from the mines is inadequate. The movement has been selling down the market. In the West Virginia tonnage has been selling down the market. As the West Virginia moves and the market is to respond, Kentucky will continue.

C O A L A G E

Vol. 22, No. 25

NORTHEASTERN KENTUCKY

Prices are holding up, considering general market conditions. One factor is a shortage of empties, and another is irregular operation growing out of the scarcity of empties and railroad transportation disabilities. Quotations on mine run range $3.50-$3.75 and on lump $4.00-

Coke

UNIONTOWN

Cold weather has not materially strengthened the coal market. The number of sales, however, has been increased substantially. The size of some of the coal orders placed this week indicates rail transportation difficulties by laying in a surplus stock at the present market but sales for the past two months have run so greatly to the hand-to-mouth variety that the fact that one or two consumers have shifted to a preparedness fuel policy may be considered significant.

The coke market shows no change, with the exception of a strong demand from the East where heating coke is being used as a substitute for anthracite. Quotations prevailing practically all week are: Steam coal, $2.25-$2.75; blast furnace, $6.25-$6.75; foundry, $7@7.50.

CONNELSVILLE

The coke market has softened slightly. Furnace is easily available at not over $6.50, against a range of $6.50@7 a week ago, while foundry has declined 50c to a range of $6.75 to $7.50.

In the past two or three days a demand has suddenly arisen from the East for coke of medium description for domestic use. There have been relatively large inquiries in the market and off-cake has been taken freely at the various prices asked. Predictions are being made that high prices will be developed in a few days as a result of this Eastern buying. The blast furnaces are not in the market at this extent for spot or prompt coke. As to the first quarter, they have steadfastly refused to negotiate, expecting lower prices. The alloy furnaces have sold fairly iron at $30, furnace, for first quarter as a backlog and it is doubtful whether $7 coke would let them out whole on such sales.

Buffalo

The coke trade is a trifie firm, but sellers think the strength will not last. List prices are $6.75. Some byproducts have none to sell to jobbers, except now and then; furnaces take it all. Quotations: $7.00-$7.50 for Connellsville foundry, $6.25-$6.75 for furnace and $3.90-$4.50 for chestnut to families, adding $2.25 to cover freight.
News Items
From Field and Trade

CONNECTICUT
The F. A. & D. R. Alling Co., New Haven, wholesale and retail coal dealers, recently increased their capital stock from $60,000 to $150,000.

ILLINOIS
The Carterville Coal & Mining Co., with mines in southern Illinois, Kentucky and Alabama, has opened an office in Cairo.

The Coal Mine of the Illinois Coal Co. opened Nov. 20. This mine has beenHeaderText动生成的煤炭生产工作。

The Coal Mine of the Coffeen Coal Mining Co. at Coffeen, Ill., has been sold to Enfield Co. This company will operate it hereafter. It is understood that the purchaser will spend at least $250,000 in improvements and within a very short time the men will be employed. Ralph Mitchell, president of the Illinois Coal Co., states that the capacity of the mine will be increased to between 2,200 and 2,500 tons a day. The new management has taken over in the eastern part of the mine. The coal is used by the T. & P. Ry. for its own purposes and in the new carriage house at the St. Louis and Southern (Croye Line) railroad.

The Maplewood Coal Co., Farmington, has erected 15 houses in Colorado, 15 for sale and 15 for rent. These are to be erected in 4 months.

John S. Rogers, formerly in the department of the Old Ben Coal Co. at Christopher, has accepted a position in the mine office of the Union Coal Co. of St. Louis.

The coal mine of the Brownsville Coal Co. at Murphysboro, with a branch office at St. Louis, has just been formed by the men whose names the company bears. Mr. Blair has been identified with the coal business in Jackson County and he and his associates are well known.

The Black Servant Coal Co. of Harrisburg, a new company, has completed plans for a strip mine of 1,000 acres, on land near that city. The mine will be a 1,000-foot measure, 3,000 tons a month, and many other companies are interested in this project.

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COAL AGE
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OHIO

The United States Fuel Co., Salt Lake City, has opened a special exhibition at the state capitol, what is considered the largest lump of coal ever mined in the state. It is an 80 by 300 by 200 lbs., and was taken from the company's Black Rock coal. It is to be exhibited for three months to give a fitting gift to the exhibition. In its resting place at the Capitol will run a $1,000 bill, and is attested by experts that the coal will last indefinitely without deterioration.

Steel City is the name of a new town that is to be built between Provo and Springville, as a result of the coming of the coal industry.

Z. C. M. I. Utah's oldest department store will be opened for the first time this Christmas as a present. Credit is not an advertising scheme and there are no limiting conditions.

WEST VIRGINIA

The Indian Hill Coal Co., of Morgantown, W. Va., has sold the Coal Co., of West Virginia and is making a reserve of $50,000. The incorporators are Leland D. Jenkins, John Jr., C. H. Reeder, and H. E. Huffman.

W. W. Houston, representative of the Pennsylvania Coal Co., has been elected chairman of the Hampton Roads Maritime Exchange.

The Red Jacket Consolidated Coal & Coke Co., at Coal City, W. Va., has completed a new $30,000 brick school house, complete with school equipment. The company also is opening up a new mine, on its Mitchell Branch and expects to build a new houses of residence for its employees.

A loss of fully $50,000 was sustained by the New York Central Fuel Co., at Downsville, by the destruction of the company's coal yard fire. The mine was destroyed by the mine, the company store. The origin of the fire is not known, but the company will erect a temporary structure.

Organization of the Eiffel Junior Coal Co., of Huntington, with a capitalization of $100,000 promises further development of coal property in the Logan region, though Huntington is to be the general headquarters of the company for the time being.

Mr. F. L. Landers, Jr., Mr. E. B. Sisson, and Mr. J. W. Huffman, of the Board of Directors, are securing the secretary of state. John Lanning, former chief of the Department of Mining of West Virginia, is at the head of this concern which has been very successful.

The Bell Creek section of Fayette County is to be developed on an extensive scale by Montgomery people who have organized the Bell Creek Ill-Produced Coal Co. The land has been leased for fifteen years. There has been some prior development of this property but through the keen management and enterprise of the new owners it is to be developed in the near future the newly-organized company will be in a position to produce on a large scale. Active figures in the new enterprise are W. E. Thomas, E. E.秒, John, W. H. Keesler, G. C. Humphries and C. N. Smithson. Mr. Thomas was a general manager of the company.

The Dairy-Peanuts Coal Co., with mines at Redlick in Tug River District, owned by J. W. Baldwin and others who will be the property owner under the chart of the Baldwyn Peanuts Coal Co. Officers of the new company are J. W. Baldwin, president and general manager; Walter Perkins, vice president; R. E. Baldwin, secretary and treasurer. The owners all are of Graham, Taggert, and Baldwin. An announcement has been made of changes in the personnel of the management of the Fire Creek Smokole Fuel Co., Laurel Mines Coal Co., and the Laurel Coal Co., these companies having their mines at Logan, in Raleigh County. Day T. Ray, who has been general superintendent of the Laurel Coal Co., is now general superintendent, both of these offices to have their headquarters at Logan. Supervision of the engineering department will be under E. B. Wagner. Mr. Wagner also has charge of the engineering department of the Drill Co. and of the Pawnee Coal Co.
CANADA

A fire which broke out on the premises of the Consumer Coal Co., at Hamilton, Ont., destroyed the company's offices and other buildings belonging to the company. The owners place their loss at $15,000.

Exports of coal from Canadian mines during August, according to a statement issued by the Dominion Bureau of Statistics, amounted to 230,000 tons, a decrease of 7,715,000 tons from that of July. The output for the first eight months of the year was 7,715,000 tons, which is less by 1,771,000 tons than the average for the same period of the last three years. Imports in August were 12 per cent below the record for July, being 235,000 tons. The record for the calendar year was 25 per cent below the average for the eight months of the year. A large decrease of coal during August was available, and the amount of coal on hand in the United States was much smaller than usual.

A number of miners in the northern Alberta coal field went on strike. They were dissatisfied with the operators who refused to recognize the United Mine Workers. Operators expressed the belief that 50 to 75 per cent of the men are at work, and that the majority of the miners not being worked at the present time are on strike. A meeting of the members of the Strike Committee was held at Edmonton last week, at which the men voted to continue the strike. A strike in the southern Alberta coal region affecting the southeastern British Columbia fields in the same manner of this northern field was to be held, and there was no real coal shortage.

Coal strikes in the southern Alberta field will be made in the university laboratory at Edmonton. An experimental plant has been set up by the United Mine Workers and is practically completed. All the coal from the experimental plant in other parts of the province will be used for the purpose of training for mining work. The plant includes machinery and equipment, including hoisting and coal cleaning equipment.

Traffic News

The I. C. C. on Dec. 7 issued Investigation and Supplement Docket No. 14, relating to class D proportions rates on coal from West Bank-Mississippi River points to Cincinnati, Ohio, and St. Louis, Mo. The investigation had been pending for several months. The order stated that prices of coal and charges in schedules contained in the original investigation were amended by a Supplement No. 28 to I. C. C. No. A, 1914.

Outstanding coal from Canadian mines during August, according to a statement issued by the Dominion Bureau of Statistics, amounted to 230,000 tons, a decrease of 7,715,000 tons from that of July. The output for the first eight months of the year was 7,715,000 tons, which is less by 1,771,000 tons than the average for the same period of the last three years. Imports in August were 12 per cent below the record for July, being 235,000 tons. The record for the calendar year was 25 per cent below the average for the eight months of the year. A large decrease of coal during August was available, and the amount of coal on hand in the United States was much smaller than usual.

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Obituary

James H. Robinson, age 59 years, head of the coal brokerage firm of J. H. Robinson & Co., and also prominent coal operator of Kanawha, W. Va., received his death from injuries received in an automobile accident. Mr. Robinson was president of the Liberty Coal Co., former Big Coal Co., Riffe Coal Co., and Arista Coal Co., and had been a resident of the district for the past thirty years or more.

E. M. Rudway, 35 years of age, president of the Blackgold Coal Co., of Wheeling, died Dec. 7 from pneumonia. Mr. Rudway was born in Wheeling in 1893 and came to Cincinnati after his graduation from Williams College in 1915. When the war broke out he joined the naval aviation corps and became a first lieutenant. Later he organized the Blackgold company and has been a resident of the district for the past thirty years or more. Mr. Rudway married a daughter of William P. Black, president of the First National Bank, and leaves a wife and two children.

W. F. Everst, general traffic manager.

Westinghouse Electric & Manufacturing Co., died Dec. 5 at his home, 223 Emerson Ave., Pittsburg, Pennsylvania, where he had been confined for one week with pneumonia. Mr. Everst was born July 3, 1865, at Newark, New Jersey. After completing his high school education he entered the employ of the United States Electric Co. at N-kaxk, N. J., which was later merged with the Westinghouse company. While at the Newark Works of the Electric Co. he was chief clerk to the general superintendent of the works. In May, 1916, he was transferred to the anaconda as chief clerk in charge of the Anaconda company's works, where he was later appointed superintendent and later president of the Anaconda company's works. In 1914 he was made general traffic manager of the company. He was survived by his wife, three daughters and one son.

James Montgomery Harcum, aged 51, well known throughout the Canadian coal trade, is dead at his home, 2514 Somerfield Ave., at Newark, New Jersey. He had been connected with the coal firm of C. C. Bay, starting in as clerk and rising to be company's president.

John Irving, sales agent of the Nova Scotia Steel & Coal Co., Montreal, is dead Dec. 6, aged 50, from a prolonged illness. He had been in the service of the company since 1895 and was prominent in commercial circles.

Coming Meetings

American Engineering Congress will hold its annual meeting Jan. 11 and 12 at the headquarters of the Federated American Engineering Societies, 24 Jackson Place, Washington, D. C.

Northwest Kentucky Coal Association will hold its annual meeting Jan. 22, 1923, at the Venture Hotel, Ashland, Ky. Secretary, C. B. Magness, Ashland, Ky.

Northern West Virginia Coal Operators' Association will meet Dec. 17 at Wheeling. Secretary, G. S. Brackett, Fairmont, W. Va.

American Institute of Mining and Metallurgical Engineers will hold its annual meeting Jan. 23, 1923, at the Century Club Building, New York City. Secretary, P. S. Sharpless, New York City.
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McGRAW-HILL COMPANY, INC., Tenth Ave. at 36th St., NEW YORK
O-B AW-7 and AW-8 Rail Bonds
Make Good Bonding Easy

A rail bond doesn't do you any good until it is installed. And it is worth just what the bonding crew makes out of it.

That idea guided the design of O-B AW-7 and AW-8 Rail Bonds. Every detail was so developed as to make it easy for the man on the job to do good work — to give you a 100% bond from rail to rail.

Examining an O-B AW-7 and AW-8 and you'll see what we mean. You'll find the copper strands fanned out and thoroughly welded onto a heavy steel terminal. On the track the welder joins "steel to steel with steel" — the easiest electric welding. The steel of the terminal is heavy and protects the copper. Shape of the terminal contributes to good welding. It slopes, slightly away from the rail so that there's a wide angle — better than ninety degrees — in which to weld.

And once installed, O-B AW-7 and AW-8 Bonds are good for long service. The steel-reinforced terminal should last as long as the rail. The copper strands — shielded from welding heat by the big steel terminal, protected by a copper sleeve which absorbs and damps vibration — survive the shock of hundreds of thousands of wheel passings.

O-B Type AW-7 Bond | Patented | Installed
It is easy to weld on all sides of the rounded terminal.

O-B Type AW-8 Bond Installed
Notice the full area weld.

O-B Type AW-7 and AW-8 Bonds improve the return circuit enough to pay for themselves and then stay on the rails to earn you a profit. Order now while you can get prompt shipment and while you have time to install them.

The Ohio Brass Co.
Mansfield, Ohio, U.S.A.

New York, Philadelphia, Pittsburgh, Charleston, W.Va., Chicago, Los Angeles, San Francisco, Paris, France
Products: Trolley Material, Rail Bonds, Electric Railway Car Equipment, High Tension Porcelain Insulators, Third Rail Insulators

Get Preferred Attention — Mention Coal Age in Writing Advertisers
One Machine Cuts Over 11,000 Tons Per Month In Single Shifts

This testimonial, which was voluntarily sent in by Superintendent Clark of the Clinchfield Coal Corporation, is an indication of the remarkable performance and the results obtained by users of the Jeffrey 35-B Coal Cutter.

A light weight coal cutter, simple in design, but rugged in structure, which is easily operated and controlled under all Mining conditions.

Write for Catalog No. 365-D, fully illustrating and describing the 35-B Short Wall Coal Cutter.

The Jeffrey Mfg. Co.
912-99 North Fourth Street.
Columbus, Ohio
The Committee of Standardization of Mine Timbering of the American Mining Congress recently reported—

"It is recommended that:

(4) Information on the use of gunite as a substitute for timber and as a fire-proofing or decay-resisting agent be collected and disseminated."

Therefore the following statement should prove of value:

"Advise your friends to visit the mine of the .......... Coal Co. and see how the Gunite Coating has protected the roof on which they were formerly spending $5,000 per month in removing falls and renewing timbers."

Write us for the name of this mine and others where

GUNITE

is proving so efficient

AND here is the Compressor that is proving so efficient—the famous Traylor Portable Mine Type—with its electric motor drive—worm gearing—straight line, vibrationless operation. It never needs blocking—you just run it to place and start it going! For any and all types of pneumatic tool work. Look into THIS Compressor and you'll soon be reporting satisfaction and recommending it to all other compressor users. Send for Bulletin.


New York  Pittsburgh  Chicago  Sioux City  Los Angeles  Seattle

Agents in Australia, Canada, Central South and Western America.
"The Waugh Way Wins"

The Saddle Test

YOU can always tell a good horseman by the way he "sits his saddle" and the same may be said of a rock drill when it is mounted on a guide shell.

THE wet Waugh 93 rides with the ease and comfort of a master horseman and this is only one of its many happy features which add no less to the efficiency of the drill runner than to the life and economy of the drill itself. You'll want 93's in your property. Just ask the nearest Waugh branch office for a copy of the "Ninety Series" booklet today.

The Denver Rock Drill Manufacturing Co.

Denver, Colorado

Rock Drills, Drill Steel Sharpeners and Hole Punchers, Portable Hoists.

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The Denver Rock Drill & Machinery Company, Limited

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Southern Life Building, Johannesburg, Transvaal, South Africa.
PRODUCTION!

The Storage Battery Locomotive increases production and reduces the cost per ton.

It gets the loaded cars to the parting and the empties back in the shortest time. It places the empties right up to the room face. The loaders are not interrupted to push or place cars and coal is loaded continuously.

The Storage Battery Locomotive is independent of any external source of power. It does not get tired, balk, or cause delay. Its services are not delayed by the repairing or stringing of trolley wire or by track bonding. It will operate efficiently throughout a full 8-hour day. With a "boost" to its battery, it will be available for emergency work. With an extra set of batteries, it can return to work immediately for another complete shift.

Wherever a man can work, the locomotive can follow. It will operate successfully on wooden rails in the rooms if necessary. For low coal, Storage Battery Locomotives are built to go into rooms and entries where lack of head room bars mules.

Storage Battery Locomotives, equipped with Edison Batteries, operate more shifts a year and more years. They get out more coal at the lowest maintenance and operating cost which results in the lowest cost per ton.

Bulletin 608 refers especially to coal mining. Write for your copy.

Edison Storage Battery Co.
ORANGE, N. J.

See preceding Advertising—Mountain Coal Age in Writing Advertisers
500 tons per hour from a depth of 405 feet!

Here's an 850 horsepower Vulcan hoist "in balance" 500 tons per hour from a depth of 405 feet. The installation is at the Coverdale Colliery of the Pittsburgh Terminal R.R. and Coal Company.

The cage weighs 20,000 lbs.; carries 5,600 lbs.; and 10,000 lbs.; rope 2,000 lbs.

The Vulcan used here is single reduction geared with a cylindrical-clinical drum 9 to 12 feet in diameter. An air released, weighted engine operates two post type drum brakes. An auxiliary motor shaft brake, a Vulcan Travel and Speed Limit Device as well as other special Vulcan safety devices, complete the equipment.

The maximum rope speed is 1,560 feet per minute.

There's a Vulcan Hoist for every purpose

Vulcan Iron Works
Established 1889
1730 Main Street, Wilkes-Barre, Pa.
A Modern Question-Air

Number Two of a Series

WHERE are C-P Products used?

Little Giant Coal Drills are employed in over 249 mines, three of which use a total of 410 Little Giants.

Over 1200 Little Giant Track Drills are in daily use on street railways and in mines, with such records as "10 to 12 times faster and 85 to 90 per cent cheaper"—and "200 holes per day; 170 more than formerly drilled by hand."

Thousands of Giant Engine horse power and hundreds of thousands of cubic feet of C-P air power are in daily use in countless industries, including numerous mines.

Other C-P products have equally enviable records.

Therefore the question "Where are C-P products used?" directly and favorably reflects your true cost—an index of their value to your needs.

WHO makes your air compressors, gas and oil engines, hoists, rock drills, coal drills, track drills, pneumatic and electric drills and grinders—riveting and chipping hammers?"

The Chicago Pneumatic Tool Company is in an excellent position to serve you—not only because its products are dependable and economical, but because, by producing a wide variety of tools and power plant equipment for mine use, manufacturing responsibility is centralized!

Consequently, with products as dependable as the company back of them—continuous operation, increased production and decreased per ton costs are assured.

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Back of these branches are five huge, modern manufacturing plants which assure a steady, certain source of supply of all C-P products.

Mine superintendents are, therefore, assured prompt delivery of C-P products—as dependable as the service back of them.

Keep your mine in continuous operation by specifying C-P.

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Chicago Pneumatic Building, 6 East 44th Street, New York
Sales and Service Branches all over the World

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CHICAGO PNEUMATIC AIR COMPRESSORS... VACUUM PUMPS... GIANT FUEL OIL, GAS, GASOLINE AND STEAM ENGINES... 1-C-A ROCK DRILLS... COAL DRILLS

CHICAGO PNEUMATIC that Name

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Coxe Stokers

are smokeless and cleanly in their operation—

A credit to any neighborhood in which they are introduced.

A source of economical operation to their owners.

INTERNATIONAL COMBUSTION ENGINEERING CORPORATION

Combustion Engineering Corporation

Combustion Engineering Bldg. — 43 Broad Street New York City

Offices in Principal Cities Throughout the World
"Jeeter" talks on economical extravagance

"Jim" Robinson, the Superintendent of Coal Fork, and "Jeeter" Main, General Manager of the neighboring Coaldale plant, were in animated and highly colorful conversation. The casual observer might have been led to believe quite easily that the two were sworn enemies instead of the best of friends.

"I have been thinking for some time," says "Jim," "and—"

"Pardon the interruption," said "Jeeter," "but tell me, "Jim" wasn't this something a little out of the ordinary for you?"

"Your pardon is accepted," said "Jeeter," "only don't try to pawn off any none of those stale Vaudeville gags on me. As I was saying before you made such a mess of trying to be humorous. I have been thinking for some time that most of your "pros" on semi-automatic substations were "cons."

"Ha! Ha! That's good too," said "Jeeter," coming back at him.

"Well, continue," said "Jeeter," absently modello switching the card in his right hand over to the left.

"You pointed out that you have no need of automatic reclosing circuit breakers because the manually-operated devices are seldom opening.

"As soon as you've quit thinking on a flat wheel, that much sooner are the stockholders of your little organization going to realize they didn't place their hard-earned 'da-re-mi' in your plant for sentimental reasons alone. Why, Ma! Alive! Small wonder the breakers never come open. You have the overload that the breakers never come open. Have the overload that the breakers never come open. You have the overload that the breakers never come open. You have the overload unhappy. Small wonder the breakers never come open. You have the overload and the breakers never come open.


"Now if you're still a skeptic on this stuff, then make this simple test: Put an attendant in the 'sub' for a month and set the breakers so there is a chance of them coming out. If you don't have a machine in there the next month, then the Bolsheviks have no use for bath-tubs."

THE AUTOMATIC RECLosing CIRCUIT BREAKER CO.

COLUMBUS, OHIO, U. S. A.

DISTRICT SALES OFFICES:

Pittsburgh, 1613 Chestnut St.


For Preferred Attention— Mention Coal Age in Writing Advertisers
The Turbinair “Scraper” Hoist

For handling scraper loaders underground, or at stock piles, this

New Sullivan Double Drum Hoist

secures rapid work with power economy and convenience.

In scraper work one drum hauls in the load, the other returning the scraper by a tail rope.

CAPACITY. The motor runs continuously, and the clutch on each drum is thrown in or out with perfect control at all times as needed. Either drum is capable of hoisting 2,000 pounds vertically on 75 pounds air pressure, the same as the single drum hoist.

CONVENIENCE. The light weight, (555 pounds) and compactness of the Double Drum Turbinair make it convenient for use in development or other work in places that are hard to get it. The hoist is bolted to a skid or timber, or mounted on a turntable if desired.

ECONOMY. The Turbinair motor provides high starting torque and is exceedingly substantial. It is economical of air at all pressures, is practically impervious to wear, and comprises no valves, pistons, jaw clutches or complicated parts.

AIR SUPPLY. The air needed for the Turbinair double drum hoist is supplied by a 1 1/2 inch hose, the same as for the single drum machine. This is a great advantage not only in power economy, but in convenience, since the hoist can be operated from the same air line as any hammer drill.

Ask for our Bulletin No. 146-BC
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Cables For Every Service—Service From Every Cable

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Fine copper wire, stranded for flexibility, effectively insulated with close wound, tested cotton, rubber covered, over that a strong cotton braid, and over all a heavy layer of Super Service rubber, next a wound layer of tough cotton cord, finally another layer of Super Service rubber—then this built up Cord Tire construction is moulded in steel forms under tons of compression.

We have Super Service Cables and Cords for every Mine use and you get real, enduring Service from everyone. Get the Data Today

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WIRE = ROME
This Saving Would Pay
For Your VENTUBE

Every time they use compressed air to exhaust powder gases, you lose money. It's expensive—and it is only partially effective.

Install VENTUBE and save the compressed air for your drills. VENTUBE is a portable, flexible ventilation tubing—for both large and small mines. VENTUBE is made by the Du Pont Company, long familiar with mining conditions and the manufacture of impervious fabrics.

VENTUBE is made to last underground. VENTUBE stands up—it is waterproof and fungus-proof and highly resistant to all gases, acid and alkaline conditions met in mining.

VENTUBE means fresh circulating air in every working place. It comes in standard sections, ready-to-hang. VENTUBE gives every miner better working conditions and that means more tonnage.

Write for our descriptive booklet.

VENTUBE is supplied in standard lengths of 25, 50 and 100 feet and standard diameters of 8, 12 and 16 inches, with all necessary accessories. Sections equipped with E.I. patent ring couplings can be coupled or uncoupled in a few seconds.

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Wilmington, Del.

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Canadian Distributors
Canadian Explosives Limited
Montreal, Canada

Get Preferred Attention—Mention Coal Age in Writing Advertisers.
"I call for everything through the Mine Telephone—from logs to doctors"

Here's a Western Electric Mine Telephone at the foot of the main shaft at the Woodward Colliery of the Glen Alden Coal Company, the second largest anthracite coal company in the United States. This Company uses the Western Electric System in all their collieries.

"Hank" Carpenter, the mine foreman shown here, says:

"I've never known this Telephone to give any trouble, it works fine—shocks from shots don't bother it—nor does gas or moisture. I call for everything through it—from logs to doctors."

The efficiency of Western Electric Mine Telephones, Wall Sets, Switchboards and Connections is being demonstrated every minute of the day throughout the coal fields. Get in touch with us through our nearest branch.

We furnish equipment for every electrical need in the mine, line material, car parts, cables, portable tools, Square "D" Safety Switches, D & W Fuses, tape, bushings, as well as motors, generator sets and other large equipment.

No matter where you are located we can assure you of quick deliveries. There are Western Electric Distributing Houses in and near each coal field.

Western Electric Company

OFFICES IN ALL PRINCIPAL CITIES
Stop Before Reversing

There are those who would thus easily remedy the situation in the bituminous coal industry of too many mines and too many miners—proof! Close up the high-cost and the small mines; concentrate men, capital and transportation on the efficient large operations. How easy that is—to say.

In its recent decision on the Kohler mine-cave law of Pennsylvania, the United States Supreme Court says: "What makes the right to mine coal valuable is that it can be exercised at a profit. To make it commercially impracticable to mine certain coal has very nearly the same effect for constitutional purposes as appropriating or destroying it." The Court goes on to say that the general rule at least is that while property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking.

An overplus of bituminous-coal mines we certainly have for present and immediately future requirements. The periodically speculative profits attracted capital and the high-unit wage rates was the magnet for the labor. Now with the mines and the men started, and in some instances fixed, in this industry and occupation, what means is there for engineering the removal of the overplus, save by a reversal of the process that brought them in? It is quite certain they cannot be legislated out of business and out of jobs.

The tendency even now is to grow and expand. Even today there is an undercurrent of protest that the Coal Commission should have given the soft-coal industry a black eye recently by calling the attention of investors to its condition of overdevelopment.

The Market Turns

Two elements threatened the tranquility of the bituminous-coal market when, at the beginning of September, the mines resumed operation. One was the shortage of stocks of coal in the hands of railroads and industries, and the other the necessity of replacing the millions of tons of domestic fuel lost by the anthracite strike. By careful planning, by nationwide organization of big business and appeals to buyers of coal in quantity to hold off purchases for storage, the first of these as a danger to the market was minimized. The price of steam coal dropped week by week and the small buyer waited for the bottom.

The other factor has come into play within the last three weeks. Cold weather—a real touch of winter—developed a shortage in the household's cellar. Both East and West. Prices have taken a sharp turn upward, buyers are becoming urgent. Along the Atlantic seaboard the necessity for substitute fuel is calling in from Pittsburgh and other distant points, block, split and lump, unobtainable from soft-coal fields nearer by. Incidentally this is adding to the railroad haul, tying up open-top cars and slowing down the usual turnaround.

Production of soft coal began to decline early in the second week of December. Day by day it has been falling away. The cause has not been decrease in demand, for prices are headed the other way. The cause is primarily failure of motive power on the railroads. Engines in poor condition have been no match for zero weather and fatalities on the line are reported as high. Real winter is not starting out well for him who is short of fuel.

Is There a Will to Negotiate?

Better business in 1923 is the prospect as the new year dawns. True it is that there is no prospect of a repetition of the boom times of 1920, but undoubtedly industry is gaining ground as the months roll along—the country is on an upward swing. Progress is slow, as healthy growth should be, and is being helped by a marked feeling of confidence throughout the business structure. The building revival of 1922 promises to continue with the new year: the road building programs, halted in part by the railroad strike, will be taken up again next spring. Unemployment is no longer a national menace; the coal shortage that threatened at the end of the summer has been forestalled and the situation is well in hand; the railroads are getting back on their feet; the country is coming to its senses and will help in some manner to solve the multitudinous problems of Europe. Whatever be the length of the upward swing, no matter if it be followed by another slump, the present fact is that the country is backing up. Business is mending.

One cloud hangs over the country. It is the possibility of another strike of coal miners next April. The disruption to business caused by the five months' shutdown of last summer was serious. Some compartment of industry resulted, a railroad strike was precipitated, the wheels of industry were thrown out of gear and are now getting back to smooth running. The country is spared on such strikes. It has caused a coal commission to diagnose the workings of the industry that has those sinking spells. The steel man, the railroad manager, the banker, the farmer, all are earnest in their desire that there be no repetition of last summer's fracas.

What are the coal operators and the mining unions thinking about it? What are they going to do? That is the real question, for at this stage the public and the U. S. Coal Commission can do nothing about it. The matter is entirely out of their hands. The public, if it has any concrete idea about the threatened strike of next April, turns to the Harrison commission, knowing that these men have been brought together because of a cry from the country for an investigation of the coal industry. The commission has no power and has no decision from its creator, Congress, to intervene in such a contingency. This is not a wage-negotiating body, set up to settle industrial difficulties between the coal men and their employees. It is a fact-finding body, or
When Facts Are Most Useful

As the date for the preliminary report of the President's Coal Commission approaches, much interest is being manifested in what the commission may say at that time. The industry recognizes that the commission is composed of men of vision who are anxious to concentrate every ounce of their influence to do something constructive and helpful. It is recognized that a communication to Congress of the findings of facts with regard to the status of wage negotiations can be handled in a way to have a profound effect on that situation even though the commission itself take no part in those negotiations.

The commission be may expected to look on this problem as if it were the organized channel through which public opinion is to be expressed. Unquestionably it is its desire to encourage both the operators and the mine workers to get together. It is believed that each side to the controversy has great confidence in the commission. Each side would be inclined to accept its findings of fact.

An authoritative statement from the commission as to its finding of fact in regard to the cost of production, even if incomplete, would be of the greatest importance to those at the wage scale conference. If additional facts could be made available as to the relative costs of production in the union and the non-union fields, it would have great significance. Any facts which the commission may announce with regard to the relative rates of pay in coal mining, as compared with those in other industries, would be seized upon eagerly by the Chicago conferences.

The operators in the union fields contend that they cannot pay the present scale and compete with non-union operations. The commission may be in a position to make some authoritative statement by Jan. 15 as to the point where the non-union costs begin to be an important factor in competition. It would be helpful also to have an authoritative statement as to whether or not non-union miners have larger annual earnings than those who draw, at times, the higher pay in the unionized districts.

These examples give an idea of the very important influence the coal commission could exert on the wage-scale conferences and it is the general opinion that all facts in the possession of the commission which may be helpful in giving the mine workers and the operators, engaged these next few months in the wage-scale conferences, authoritative data, will be put forward as they become available.

The point must not be overlooked, however, that the very incompleteness of the data that can be collected, compiled and prepared by Jan. 15 argues against the fulfillment of this ideal of immediate helpfulness. We are not to be too hopeful, for we must appreciate the handicap of time, the initial unfamiliarity of the commissioners themselves with the details of their task and the grave responsibility that will attach to any and every statement they issue.
Cutting Hoisting Costs
At a Shaft
With Five Levels

BY DEVER C. ASHMEAD
Kingston, Pa.

Peach Orchard Shaft Had Two Hoists for Its Many Levels—One Hoist and One Level Station Recently Abandoned and All Coal Brought Up One Shaft—Locomotive Formerly Crossed Over Cage

WHEN engineers lay out a track system on paper they frequently fail to visualize just how it will accommodate itself to the needs of the mine. They see some of the essentials, of course, but many others, just as important, are entirely overlooked. This lack of vision is the cause of many poorly laid-out mining plants. It is to be noted not only in the general scheme of operation but also in operating details. For this reason the engineer should depend not only on his own inventiveness and imagination but on the experience of others. They also have had their difficulties and either have seen ways of correcting them or have found them sooner or later after construction was completed.

Just as soon as the plant is operating, these inadequacies in the original layout are seen. The loss of time and money becomes apparent and changes ultimately have to be made which redound but little to the credit of the designer, who naturally is made the butt of much criticism by the official in charge of actual operation.

Some criticisms of course are justified. Everything works well until distances become longer and traffic heavier or till changes of equipment make the particular layout unsuitable. A little prophetic foresight always is an advantageous quality in the engineer. Especially is it well to keep in mind that a larger volume may be desired, labor may become scarce or the price of labor so increase as to make operation by the methods provided uneconomical. When all is said, however, it must be conceded that it would have been hard to forecast the progress of modern development and in many cases it would not have been prudent to do so.

Ten or twelve years ago the cost of labor was lower

*Anthracite Field Editor, Coal Age.
in the days of today. It was not only cheaper but more
plentiful, and an extra man or an extra horse, The cost of coal was disadvantageable low because
the coal being mined was not only thinner but nearer the shaft. The thin beds were neglected. Late water
also had to be banded. For these many reasons a

practice, as a mistake might occur that would let a
coal or a locomotive fall down the shaft. Furthermore,
the cage had to be held to permit the backward and
forward passage of the trip, and that in itself was a cause of much delay.

To avoid excessive cost and unnecessary hazard the
layout had to be changed. It was found that one hoist-
ing engine was capable of raising all the coal pro-
duced in the mine. It was decided therefore to hoist
all the coal from one shaft and to use the other for
raising and lowering men and for the delivery of sup-
plies. This obviated much of the confusion due to
using each cage for two purposes. It enabled the men
at the coal-hoisting shaft to attend strictly to that
business, obviating many delays resulting from the
leading and unloading of the cage.

In laying out the new shaft stations great care was
taken to reduce operating costs to a minimum and to
avoid delays. Not only was the new shaft station
carefully planned but the old ones were entirely re-
modeled so that they could be more economically
operated.

All the coal from the Bennett and the Red Ash beds
was formerly hoisted up No. 3 shaft, No. 4 shaft rece-
iving the coal from the Abbott. Kidney, Hillman and

greater cost in handling and preparing the coal was
made to the coal-watered by lower cost at the working face.

Many of the plants or parts of plants designed in
these earlier days have recently been remodeled in order
to cut down operating costs. Among them is the Peach
Orchard Colliery, opened twelve years ago by the coal
department of the Delaware, Lackawanna & Western R.
. L. since succeeded by the Glen Allen Coal Co. Two
shafts were sunk for the hoisting of the coal from six
different levels, one shaft being intended to handle the
coal from four levels and the other four. To
handle this coal at the underground levels seven men
were required, and when two were men or even two had
to be employed. Because there were two shafts two
hoisting engineers had to be provided, two shaft work-
ing two shifts and the others three. Furthermore, two
men were needed for drawing, one at each shaft.

Here, there was an expenditure for the labor of fourteen
men in obtaining one. At the time no one considered the
coal was too high, but with the labor costs at the present
level the waste would be considered almost criminal.

Moreover, the method of operation had elements of
danger that could have been avoided. The empty cars
had to be pushed backward across the cage in order
to take them to the loading face. This was a danger.
HILLMAN STATION SUPPLIED BY LOCOMOTIVE

This station required a change similar to that made in the Kidney bed. The cars run back to the empty pit in the headings on the left from a kickback near No. 1 shaft.

The changes made it possible to dispense with four of the men originally employed underground, two foot tenders, one runner and one shaftman. In addition, it was possible to dispense with one substation man. On the surface one cager replaced the two formerly employed, and one of the five hoisting engineers was dispensed with. In all, the force was reduced by seven men. This saving totaled approximately $12,000 a year, which would pay interest on $200,000 when figured at 6 per cent.

LOCOMOTIVE CROSSED CAGE TO REACH EMPTIES

The changes at the various shaft stations will be detailed one by one starting from the surface downward, the first station being in the Abbott bed. Here, as the coal was being hoisted already from the No. 4 shaft and was to continue to use the same shaft as its means of exit, no new station had to be built but important changes were made nevertheless. At this station the locomotive had to cross the cage to reach the empty mine cars. After being coupled up it pulled the cars back across the cage. To avoid the necessity for this a new passage for men and materials was constructed around the end of the shaft.

Part of the old runaround on the other side of the shaft was abandoned and that part which was no longer needed was tightly filled with rock so as to give additional support to the shaft. A roadway was driven from a point on the side of the shaft nearest to No. 3 to connect with the empty-car track. In order to improve the grade, rock was lifted in this latter track. The empty cars are now kicked off the cage by the loaded cars. They run a short distance to a kick-back which causes them to travel to the empty track in the passageway described. Thus it is not necessary for the locomotive as in the past to cross the cage to gather its trip of empty cars.

The shaft station of the Kidney bed did not need relocation and only a rearrangement of tracks was necessary. The loaded cars are delivered to this shaft by means of a rope. The original grade at this shaft was not sufficient to make the cars drop by gravity from the end of the rope to the shaft, so a mule had to be kept at this point to move them. By taking down a ft. of roof the grade was increased sufficiently to enable the cars to run by gravity. With the old arrangement the empty track also had an insufficient fall, and the cars would not run by gravity to the rope. Consequently they had to be helped along the road by man power. A new road was cut, obviating this difficulty. It shortened the distance and so increased the gradient. By means of these changes a mule was dispensed with and much hand labor avoided.

The Hillman station was similar to the Kidney station except that the mine cars were delivered by a locomotive instead of a rope. Consequently, the grade of the loaded tracks needed no change, but the empty tracks had to be reconstructed so that the empty cars would run far enough from the shaft to give storage room. To get this grade a short cut was driven to the "slum" or empty pit. This shortening of the distance increased the grade considerably.
In some other parts of the field the Cooper and Bennett beds are one. They unite to form the Baltimore bed. But on this property they are separated by a parting of rock. As stated already, arrangements were made by which the coal from both beds should come in the Cooper bed and be hoisted up shaft No. 4. In the old Cooper station no runaround had been provided, so it was necessary to bring the empty mine cars back across the cage. This was dangerous and caused much delay. In the illustration showing the work in this bed concrete is shown in solid black, old gangways in ordinary black lines, abandoned headings stippled and narrowed headings with the part abandoned in stipple.

The station at shaft No. 3 was left in place so that it could be used in an emergency. All the changes that were made were at No. 4 shaft. When it was decided to make the improvements a gangway marked 1 in the plan was driven to accommodate the empty-car track, but this roadway did not have a suitable grade for that purpose, and as it was thought that it would too greatly weaken the shaft pillar if left open, it was filled with rock to the roof. A new headlog 2, just to the right of the shaft station, was then driven to accommodate the empty tracks. Sufficient tension was taken up to provide the proper grade for the empty mine cars. With the new arrangement the empty cars, after they are kicked off the cage, run toward No. 3 shaft for a short distance till they reach a high-block. Then they run downgrade on the empty track. All the unused portions of headings were filled in the rock with rock. The ends of the headings and of the cross-cut thus filled were chowed off with concrete walls.

Wherever the shaft station was too wide, concrete walls were placed, thus bringing them back to their proper width. These walls are shown in the map in heavy black. As it was thought that the hanging coal for the laded track leading to the old shaft station was too wide, it was narrowed by building stone walls up the side of the roadway. In consequence the roof around the shaft is now satisfactorily supported.

At the Red Ash bed an entirely new shaft station had to be provided because the coal was formerly hoisted through shaft No. 3 as originally constructed, No. 4 shaft, which came down to this level, being used solely for the hoisting and lowering of men and lowering of materials. This new station is provided with a double track and the method of handling cars is similar to that in the Hillman bed. The new work is shown in heavy black lines in the illustration. Formerly the empty cars had to be hauled across the cage as was done in other of the stations in this mine.

Electric Bell Trapper for Partings

By Cecil Rowe*

Today, N. M.

For several years at the B. H. Kinney Coal Mine a boy was employed as trapper and to notify the rope runner in the main slope if a trip was standing in the parting of one of the headings to the right into which he desired to place cars. From the point where the trip branched off the main slope to the end of the parting was somewhat more than 500 ft.

Being around a curve, the rope runner when in the slope was unable to tell whether the parting held a loaded trip or was empty. Consequently a trapper had to be provided to notify the rope runner when the cars should be run in. A simple and inexpensive change was made in the wiring already installed. This modification cut out the cost of a boy trapper and used only a few cents' worth of electricity each day.

Before the change was made two wires, both of No. 10 galvanized iron wire (1 and 2 in the illustration), were provided for a bell-ringing circuit. The power used was 20 volts alternating current. This voltage was obtained by connecting in the 220-volt circuit transformers such as are adapted for the ringing of small bells. In making the change one extra galvanized wire, 3, like those numbered 1 and 2, was strung along the heading parallel to the other two.

The only other change necessary was to cut out two small parts of the rail on track B and replace the portions removed with insulating material AA. Fiber or rubber could be used for that purpose, but a block of hardwood will serve the purpose admirably.

It also was found convenient to place wires 2 and 3 on longer insulators than wire 1 so that the rope runner would not mistake their identity when making contacts to ascertain whether a trip was standing on the parting.

Where there is a trip on the loaded track, B, wire 3 automatically is made part of an open circuit with wire 1, the connection being through the wheels and axles of the cars. When there is no trip in the parting on track R there is no connection between wires 1 and 3, as the rail between the insulated portions AA cannot complete its circuit.

When the rope runner has a loaded trip ready to drop into the parting he places his bell ringer across wires 3 and 2 and if the bell rings this notifies him that there is a trip in the parting and that he must wait. After trying at intervals he finds at last a time.

*Mining engineer, B. H. Kinney Coal Mine.
when the bell does not ring by connecting these two wires. Then he bells the engineer the regular signals by using the original bell wires, 1 and 2.

It may be asked what would be the result if the electricity failed or were turned off. In that event, of course, the bell would not ring, although a loaded trip might be in the parting. Provision has been made for this by placing an electric lamp in the power circuit near the switch that leads from the slope to the parting. The rope runner then can tell at a glance whether the current is on or off.

This lamp serves a two-fold purpose. It notifies the rope runner when the wires are charged and it furnishes him with ample light for the manipulation of the switch. Track C is used for handling empty cars. The plan just described has been in use for several years and has not given any trouble.

Lifting Bottom in Mine Openings Without Disturbing Timber Sets

BY ALPHONSE F. BROSKY

Pittsburgh, Pa.

HOW often in the driving of an opening for haulage from the outcrop does it become necessary to change the grade after the entry has penetrated some distance from the outside? It is a problem that crops up almost daily at some one mine or another. The coal may persistently follow a regular grade under the body of the hill, but near the crop it may rise or fall for a short distance without any regard to the regular lie of the measure.

In the event that the entry goes to the dip so as to fall from one to three feet in one hundred for a moderate distance and goes level from there on, it is customary to take bottom in the haulageway from the mine portal in so as to eliminate the adverse grade. This is done before a permanent track is laid. But when the entry was driven it may have been necessary to timber and lag it as it progressed inward. This support may be continued for a considerable distance if the cover is light or of a drummy nature. Should the bottom be hard, much explosive may have to be used in lifting the bottom and unless care is taken timbers may be shot out, bringing down the roof and causing much necessary mucking and retimbering.

J. L. Evans, the mine foreman in mine No. 304 of the Consolidation Coal Co., at Jenkins, Ky., has an interesting way of accomplishing this task with minimum expense and labor. He had a condition similar to that already described in the No. 302 mines of the Elkhorn Coal Corporation at Mauer, Ky. An opening was started, which later was to become the main haulage road. A prospect hole some 2,000 ft. from the portal indicated that the coal dipped 50 ft. When the opening had penetrated 180 ft., however, it was discovered that the elevation of the coal at that point was 3 ft. below its level at the outcrop, and then it became level for 1,000 ft., where it dipped again. At driving and timbering were carried on simultaneously and at the bottom was sandstone. The work of taking up bottom was precarious. A 1-lb. charge in favor of the loads was made by lifting 5 ft. of bottom at the pit mouth and a decreasing thickness inward to the end of the dip. The work was done without disturbing a single timber. When the job was completed the base of the batter legs of the timber sets rested on a ledge, the upper face of which had originally been part of the bottom.

The entry was 14 ft. wide. Timber sets of 12 ft. oak stood on 3-ft. centers. They were hitched and lagged as indicated in the sketch shown in the illustration. The arrangement of the switchboard for the blasting of the bottom also is indicated. The first round of holes was drilled in line with the timber set at an angle of 45 deg. These were the breakout holes.

*Illustrated Field Editor, Coal Age.
Sinking a Shaft in Illinois Through Quicksand

Expecting Only Four Feet of Running Sand and Finding Nearly Thirty Feet, Shaft Had to Be Enlarged and Sheet Piling Driven to Bedrock When Jacking Method Failed

BY D. F. BUSHANAN
Chicago, III.

HOW resemble the diamond core drill may be in prospecting in any formation except solid rock is evidenced by the experience in sinking the shaft of Mine No. 15 of the Old Ben Coal Corporation, at West Frankfort, Ill. The log of the hole, drilled to ascertain the conditions at this shaft, shows only 4 ft. of sand, whereas in reality 23 to 22 ft. was encountered before the rock was reached. No trouble had been experienced in sinking the near-by airshaft, and it was thought that this shaft also could be sunk without difficulty. It is the common practice to rely on a single boring, and with the experience in the airshaft as a guide it was not thought necessary to make an exception in this instance.

The log of the surface measured ran as follows:

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Having set this log, construction was commenced with the timbering at the exact size planned for the finished shaft, allowance being made, of course, for the concrete lining but not for any divergence of the shaft from the true line.

Until a shaft reaches bedrock the curbing or lining must be supported from the surface. After hard rock is reached the timbers are securely anchored, but during the excavation their weight is borne by a reinforced and are securely fastened to the first pair by drift pins.

To insure a strong support the ends of the logs must project 10 ft. to 15 ft. beyond the shaft opening. The inner surfaces of the timbers are adzed to align them with the shaft curbing, which is attached to them by cables. Plumb bobs are suspended from the corners of the template to insure a perpendicular excavation. The first 3 ft. of sandy loam and also the 17-ft. band of sand and clay underneath it were excavated by long-handled shovels without the use of explosives.

While this ground was being excavated the temporary headframe for the sinking of the shaft was under construction. This frame was of steel. It was equipped with only one sheave, which was set in such a way that it could be shifted to either of the two main compartments of the shaft. The wooden trestle and hopper into which the excavated material was dumped was about 16 ft. above ground level.

The headframe was so constructed that there was headroom enough below the sheaves only to clear the clamps above the bucket when the latter was hoisted to the elevation of the trestle. The buckets used were made of boiler steel and were approximately 2 ft. in diameter by 3 ft. deep with a capacity of about 17 cu.ft.

When the hard yellow clay was reached hand digging became more difficult, and an occasional “buster” shot of dynamite was fired to loosen the ground. The excavation was carried on in this manner to a depth of 63 ft. through soil so devoid of water that a pump was unnecessary. When the construction of No. 15 was commenced the excavation was made large enough to permit of a cross-section of 14 x 19 ft.
after the curbing was in place. The latter was of 6x10-in. yellow pine (Fig. 1). These are, of course, the full dimensions. Timbers do not as a rule measure as much as the dimensions indicate, however, for practically 1 in. is planed off in dressing them. Allowance must be made in shaft construction for this odd size, because the permanent hoisting cages usually are purchased before the guides are placed, and a deviation, however slight, therefore is serious.

At a depth of 63 ft. quicksand was encountered. Inasmuch as the log had shown only 4 ft. of sand no great difficulty was anticipated, but, as has been mentioned above, herein lay the fallacy of the log, for the sand lasted until the rock was reached, at 90 ft. A strongly reinforced wooden shoe with a 6x6x3-in. angle was constructed on the surface, knocked down, and reassembled at the shaft bottom.

Jacking Process Which Usually Succeeds

On top of the shoe the four sides were built up with 2x3-in. timbers laid flatwise, and ordinary house-raising jacks of various sizes from 10 to 18 in. in length and 3 in. in diameter were then set around the perimeter of the shaft on top of this timbering at about 4-ft. centers. This is a common method of sinking through shallow strata of sand, and although it is a slow process it is very effective in sand not thicker than 5 ft. The method consists of jacking down the shoe, the jacks operating against the shaft curbing, and as the space between is widened it is filled with more 2-in. plank nailed flatwise. As the jacking progresses the material is excavated by hand and hoisted.

It was necessary to pump continuously, as water was coming up through the sand and pouring in from the sides of the curbing. Two sinking pumps were kept in operation and even when no work was being done in the shaft large quantities of sand were brought up in the water. Naturally, the removal of this material from about the curbing caused the surface to cave in, bringing the weight of the material around the curbing against the timbers.

The timbers, which had not been designed for this unequal pressure, buckled and in many cases broke. It was necessary to install new timbers until the shaft was so obstructed that the work was continued only with great difficulty. This, together with the crookedness of the shaft caused by the buckling, necessitated a change in the method of sinking, as it was hopeless to go farther with the scheme then being used.

The decision to drive through the sand with United States steel sheet-piling was the result. Observed as it was with excess timbers the shaft did not present enough clearance for a pile driver or steam hammer. It was necessary, therefore, to begin again at the surface and widen the shaft down to the sand. The old timbering was removed as the work progressed, and the shaft was sufficiently enlarged to accommodate the hammer.

Even then there was scarcely enough clearance for it, and contrary to the usual procedure of setting all the piles in place before driving any one pile in the rock, each pile was driven before setting the one next to it. It was necessary to pull the cranks to keep out the quicksand. The pressure was so great that the water was forced beneath the piles and rows in the shaft, making it necessary to hold the pumps working. Elaborate timber sets were placed at 4-ft. vertical intervals to hold the piling in place, and excavation continued through the depth of the sand. The material inside the piling was removed and the shaft was piled from beneath it by hand, after which it was driven below the solid measures to a depth of 4 ft.

Shafts Must Be Concreted from Rock Up

The Illinois mining laws require that all shafts be concreted from the rock to the surface. This work was immediately commenced, therefore, as soon as the rock was reached. A 2-ft. kerf or undercut was made, and the anchor block was completed before the upper curbing was poured in. The curbing was then poured in 4-ft. sections, working from the bottom up. For obvious economical reasons old scrap steel, mostly 38- to 40-lb. rail, was used for reinforcement. This material was employed in exactly the same manner as in customary with regular twisted reinforcing rods. A rectangular system of bracing was used, the rails being laid horizontally and vertically on about 7-in. centers. The vertical rails were allowed to project from one ring of concrete about 4 ft. into the next above it.

When concreting was begun it was found that a longitudinal section of the shaft was irregular, and in order to insure a sufficient thickness to the concreting en...
Six Coal Articles Presented at Vancouver

OF THE three days during which the Canadian Institute of Mining and Metallurgy held its annual meeting in Vancouver, B. C. Nov. 15 to 17, only one day, Nov. 17, was devoted to coal mining. On the morning of that day four coal papers were presented: "The Complete Gasification of Coal and Its Bearing on the National Fuel Problem," by John Keillor, Vancouver, B. C.; "The Development of the Coal Industry in Canada," by F. W. Gray, Montreal; "The Coal Resources of Southern Vancouver Island," by J. D. MacKenzie, Vancouver, B. C., and "Progressive Coal Mining," by George A. McHattie, Vancouver, B. C.

Many of the delegates took advantage of the opportunity afforded them to visit the coal mines of Vancouver Island in the afternoon, an excursion having been arranged for the two-hour steamer run across the gulf. In Nanaimo the party was taken through No. 1 Mins of the Canadian Western Fuel Corporation, and in the evening a second business session took place. At this, a paper was presented by J. A. Richards, district inspector of mines, Edmonton, Alta., on the "Coal Mining Industry of Alberta." It was followed by a paper entitled "Some Interesting Features of Modern Coal Mines," by R. R. Wilson, of Victoria, B. C.

Thomas Graham, superintendent of the Canadian Collieries (Dunsmuir's), Ltd., referred in congratulatory terms to Mr. Richards' address. He had listened with great interest to his account of the progress the industry was making in the Province of Alberta. Within the next twenty-five years, he predicted, this province would be the largest coal producer in the British Empire.

Recognition of the certificates granted to mine officials in one province should be recognized, it was urged, in all the other provinces of Canada. It was argued that if such an agreement could be reached Canadian certificates would carry more weight outside the Dominion than they do at present. A committee was appointed to fully investigate and report on the matter.
Means Provided to Prevent Abuse of Power in
The Federal Coal Council of Germany

Three Barriers Serve to Promote “Interest” of Community as a Whole—
Conditions of Delivery and Commercial Credits Regulated—Mines Empowered
to Appeal from Syndicate and Association Decisions—Teaching Heat Economy

BY F. Z. NEDDEN, M. E.

THOUGH the operators are in a minority as compared with consumers in the Federal Coal Council of Germany, the interest of the miners’ representatives in questions affecting development of production is obvious. Furthermore, all coal and lignite mines are combined in the National Coal Association and their representatives usually constitute a unified vote. The consumers’ representatives, on the other hand, do not hang together so solidly. The weight thus given to the owners should not be overestimated.

Three main barriers have been erected against their overstepping the limits of control by the community. First, the federal Secretary of Economics and Production has the right to participate or be represented in all meetings of the council or its committees, and to veto “all decisions dangerous to the common welfare.” He has made use of this right on various occasions, especially by curbing as far as possible the upward trend of coal prices.

It has proved possible, by bringing to bear constitutional influences in the Reichstag, to prevent the abuse of this right by the Secretary of Economics and Production—yet, in order to keep his right of veto from becoming a weapon for bureaucracy, instead of a shield for the interests of the nation, the originators of the Coal Act, if redrawing it today, might perhaps prefer to accord the council the right of appeal to the Reichstag against this veto.

GIVE PUBLICITY TO PARLIAMENT SESSIONS

The second barrier consists in giving publicity to all full sessions of this coal parliament.

A third protection for the interests of the consumers and the community is provided by the institution of three standing “committees of experts,” one dealing with technical, another with social questions connected with mining coal and lignite, and the third with all questions relating to the rational consumption of fuel. Each of these three committees is composed of members of the council and their proxies, and the other half of co-opted specialists, such as experts regarding coke ovens, briquetting plants, shaft sinking, furnaces, gas generators, low-temperature tar, etc.

Thus, if the consumers’ or workmen’s representatives in the council require expert advice on any question relating to coal or lignite or their derivatives they can at any time recur to the clause in the Coal Act which provides that “the committees of experts have to prepare for final decision all matters which the council may assign to them.” Any statement made by any part of the council may under this clause be closely scrutinized by the best neutral experts, and no monopoly of superior economical or technical insight or experience can be claimed by the coal producers.

This self-administrative organization of the German coal trade has proved very effective in serving the purposes for which it was created, namely “to conduct under the general supervision of the federal government the coal trade, including importation and expectation of fuel, according to the interests of the community as a whole.”

It should be emphasized again that the Federal Coal Council is supreme in its decisions as far as the coal trade is concerned and that it has legislative powers over it. The only difference as compared with a political parliament consists in its relating to the federal government; while this is responsible in the Reichstag, the Secretary of Economics and Production is not responsible to the Federal Coal Council. Obviously such responsibility would not be possible under any circumstances as otherwise the sovereignty of the people as represented by the Reichstag would be limited by the sovereignty of one fraction of it: the Coal Trade.

NATIONAL ASSOCIATION IS EXECUTIVE MEDIUM

The National Coal Association acts as the supreme executive organ of the Federal Coal Council. It carries out in detail the laws of the council, just as a department of the central government acts on the general rules of the Cabinet. In this capacity the National Coal Association keeps the statistical records of the coal trade, analyzes the costs of production within the various branches of coal and lignite mining, fixes the relation between prices according to qualities and special conditions in the various districts, etc. Prices, however, are fixed and become effective only through the co-operation of both the association and the council or its executive committee and are subject to the veto of the federal Secretary of Economics and Production.

The syndicates are actually carried on by the business. Through their trade organization or business connections they sell the fuel produced by their members. They decide what percentage and what kind of fuel their members may put aside for their own consumption; they uniformly regulate conditions of delivery, of commercial credits, etc., in much the same way as the central office of a large concern takes care of the common interests of all its affiliated works. There is, however, one fundamental difference. In business, if the members were compelled under the Coal Trade Act to entrust their respective syndicates and as the syndicate did not hold any part of their shares, they must be treated equally or in an equitable manner. It is possible, therefore, for each individual share to appeal against the syndicate to the association, and from the decision of the association to that of the Federal Coal Council. The mode of proceeding for these cases has been a particularly well considered part of the Coal Trade Act. During the first three years of its enforcement, however, very few cases of appeal have actually arisen.

*Concluding installment of Horie Nedden’s article on German coal control. The first part appeared in Coal Age last week.
It is also to be noted that the working of this
whole machinery might be well to get uncheck-
ked with a few examples of its activity. About a
year before the government recognized the
Reichstag had to consider a considerable increase in the
coal tax in order to meet the annual pressing needs of the
national budget. It was planned to impost a tax of 40 per cent
of revenue uniformly on all kinds of coal and lignite,
regardless of their origin, quality, market value or
price. Without doubt this measure would have had a
detrimental effect on the coal trade as much as it would
have completely upset the normal relations of prices
and disturbed practically every business connection and
contract. It was fortunate that the Federal Coal Coun-
cil could have acted as one unit. Though it was impossible
to view the financial emergency of the federation
in any other way than 40 per cent, yet the efforts and
the technical and legal authority of the
Federal Coal Council succeeded in obtaining the right
for the National Coal Association to accommodate, un-
der the supervision of the council, the percentages of
taxation in the various classes of fuel, provided the
total revenue be not decreased by this procedure. The
scale of percentages having thus become an internal
business of the council and association, the matter was
quickly and amicably settled in the satisfaction of all
concerned and a grave danger to the trade was averted.
At the same time the business of the Reichstag was
greatly simplified.

Decision on Consumption by Collieries

Another example is offered by the occurrences in con-
nection with the last renewal of the Ruhr-Syndicate
agreement. The agreement, which was in effect when
the Federal Coal Council was formed, expired on April
1, 1922. A number of influential members of the
syndicate had restrained one of the most essential para-
graphs of the agreement on entirely new lines and
amended the measure. The paragraph in question dealt with colliery fees on consumption. Hitherto, the rate of 30 shillings per ton had been charged, but with the amendment the rate was reduced to 20 shillings per ton on consumption.

Under the Coal Trade Act the syndicate agreement is subject to the approval of the Federal Coal Council. When the matter came before its forum serious misgivings were entertained by the most diverse parties lest this reformation of the privilege of own consumption might gravely endanger all the rest of the non-privileged collieries and consumers. It was feared that not only would a great quantity of coal thus be reserved to a privileged small group of giant com-
panies but that these owing to their immediate influence on the collieries also would obtain the best qualities of
fuel. The reminder, it was feared, would suffice neither
in quantity nor in quality for all the other and smaller consumers, the market would be narrowed down, high-grade coal be practically unobtainable, and the base of competition shifted still more to the advantage of the
large concerns. The non-privileged collieries, too, en-
tertained apprehensions lest under the new contract any fluctuation of the market would react heaviest upon
them while the privileged collieries always would fall
back on the stabilizing base-load of the requirements of
their affiliated works or big contracts.

Regulation Redrawn in Orthodox Form

The Federal Coal Council, therefore, decided against
the approval of this paragraph, which had to be re-
shaped very much in the traditional form, so that again
danger to the industrial development of the country
and to the coal trade as a whole was averted by the
Federal Coal Council.

While these two examples serve to show the protec-
tive powers of the council, a great deal of excellent
productive work has been performed by it. For in-
stance, through one of its three standing committees of
experts a campaign has been begun for the improve-
ment of heat economy, both in industry and in domestic
use.

Further, by the co-operation of two of these standing
committees with the council in full session, considerable
has been accomplished in improving the quality of coal.
In May, 1921, the scarcity of high-grade screened coal
had become embarrassing. On probing, the experts
found that the relation between the prices of screened and
unscreened coal had, in the process of re-adapting them
to the shifting levels of market value, gradually become
so small as to make screening unprofitable for many
collieries. It was then ascertained, by careful analysis
of the data available, that the relative over-all efficiency produced by screened and unscreened coal under boilers, in furnaces, etc.,
that the industry might well pay a slightly higher price
for screened coal and yet buy the thermal unit as cheap
in the shape of screened coal as in unscreened. By
introducing this relation into the schedule of prices,
and slightly enlarging the margin between screened and
unscreened coal screening became profitable again, and
the output of screened coal increased 16 per cent within
the next three months.

One remark only should be offered in conclusion,
and this in connection with the most important busi-
ness of the Federal Coal Council, namely the fixing of prices.
Inasmuch as this is done in common session of pro-
ducers, consumers and workmen employed both in the
mines and in other industries, the economic insight of
all participants is extraordinarily developed and their
views enlarged from the individual field of each trade to
that of the common interest of all. Mutual under-
standing is promoted and oppositions are alleviated
which political strife is apt to enhance.
Coal Mining Institute of America's Biggest Session—II

Need for More Technical Training—Economical Way to Humidify Air—Will Overdevelopment Be Eventually Corrected and How?
—Sawn Versus Hewn Mine Ties—Pressed or Welded Bonds

SIGNIFICANT among the declarations at the meeting of the Coal Mining Institute of America was that of Dr. Yandell Henderson to the effect that with the aid of a mixture of carbon dioxide and oxygen it was possible to bring back to normal condition victims of carbon-monoxide poisoning in 15 to 30 minutes. The patients find themselves inhaling so energetically from the mask that they try to free themselves from it and can be restrained only with difficulty. From a condition of suspended breathing they are in a short time brought into a state in which they breathe so energetically that the exertion is dispelling to them.

The lecturer declared that by compelling the lungs to breathe in more air than is required the air expired becomes so extremely low in its percentage of carbon dioxide that all voluntary breathing ceases. When the will is no longer used to cause the lungs to operate they will cease entirely to function for a few seconds because the animal is stimulated to breathe solely by carbon dioxide irritating the centers of respiration. The condition of suspended breathing is known as apnoea. Some people, however, are not subject to any such total suspension of respiratory activity, being sensitive to such low percentages of dioxide that no depth of respiration or continuance of the effort will so reduce the percentage as to make its action on the respiration centers ineffective.

VICTIMS RECOVER WITHOUT HAVING PNEUMONIA

One of the great dangers of asphyxiation is the pneumonia that is likely to follow. One out of every three or five have that disease, sometimes as many as 50 per cent. With the administration of a mixture of oxygen with carbon dioxide, not a case of pneumonia resulted. The new inhalator invented by Dr. Henderson is being made by the Mine Safety Appliances Co., the royalties received going to a fund for the further investigation of resuscitative methods for asphyxiation.

Mr. Greensfelder asked whether the inhalator would be useful in reviving those overcome by nitrous fumes from explosives. Dr. Henderson said that he believed it would be of value in all kinds of asphyxiation, even from war gases. In reply to Mr. Affelder he said it might be available in all pneumonia cases regardless of the source. Answering Mr. Cooper he declared that it would be useful in cases of ammonia poisoning such as might occur in connection with ice plants at company stores but that it would be unnecessary where the patient was already breathing, as elimination was rapid.

Mr. Maize recalled a case in the Connellsville region where a stable boss complained of severe headache. Several days later a man was found laid out as in a fit in the return airway. He was found to be bleeding. Inspection showed carbon monoxide in his blood. Some time after the discovery of this man gob stink was smelled in the return airways and it was found that the mine was on fire. The fire must have been of long standing but the evidence was wholly in its physiological effects on the men exposed to its influence. There have been seven cases lately in the Connellsville region of such spontaneous gob fires.

Dr. Henderson said the hemorrhage such as this man developed was quite usual in asphyxiation and also that carbon monoxide usually escaped from the blood completely 6 or 8 hours after it has been inhaled. Dr. Henderson added that he had administered carbon monoxide till his blood was nearly 50 per cent saturated and Dr. Haggert till over 50 per cent of the blood capacity was absorbed. Dogs had received up to 80 per cent of carbon monoxide and been revived. In fact the degree of saturation might be further extended without death, provided oxygen and carbon dioxide in the proportion of 19 to 1 was provided and that the work was done before degeneration of the brain set in. Resuscitation must be done early, however.

COLLEGE EDUCATION WILL BE INDISPENSABLE

A well-attended banquet at McCrory's Store concluded the sessions of Wednesday. President Jack N. Hoster presided. Jack Armour, hornornet from Coal Age, made the opening speech, and was followed by Dr. E. A. Holbrook, dean of the School of Mines, Pennsylvania State University, on technical education for mining men. Dr. Holbrook was distinguished in his usual modesty. However, it is to be regretted that the college officials are so modest and such able business men of the educational idea, for that is one of the reasons why the advantages of education are being only meagerly sought.

How mining men without technical training and stationed where they are largely dependent on their own resources can hope to cope with the problems of the modern electrified mine is difficult to understand. It is safe to say that if men of technical training had been given the proper consideration in the operating depart-
mists of coal meant the coal industry would today be as subordinately and as economically administered as the metal mines.

Mr. Pollock stated that in Great Britain coal mining was taught in seventeen higher-class institutions and in forty-four schools of a secondary rating. He declared that in Pennsylvania there were only three institutions giving a full mining course, yet the output of Pennsylvania was roughly the same as that of Great Britain. He added that owing to the law in favor of the taxation of anthracite coal had been approved by the Supreme Court it would seem only natural that the state should tax the coal industry to complete the education of those who had to supervise the work of mining throughout the state.

Dr. Pollock was followed by Douglas Malloch, of Chicago, Ill., who spoke on "Sinners I Have Met," numbering among them the miner, the politician and the prophet. Mr. Malloch is a past master in epigram and kept his audience convulsed with laughter.

The Natural Heat of Abandoned Workings

At the Thursday morning session, over which Jesse K. Johnston presided, J. W. Paul replied to the question "What is the most effective method for humidifying mine air?" He stated that the humidification did not in any way reduce the force of an explosion. The air might be 100 per cent humid and yet the explosion would spread with unconstrained violence. Humidification of air was to be recommended only when the air that was humidified was at a higher temperature than the main and consequently could be relied upon to deposit moisture in the workings. Then, when it was of value only if it had been passed through the mines so continuously as to possess the natural moisture from being evaporated or be added to that moisture.

Consequently in cold weather the air must be heated. That could be done by passing steam into it or by placing it near radiators. A coal operator was able to raise it through abandoned workings, which would raise the temperature on the natural heat of the ground. If steam were added the humidification would be effected at a low cost. Mr. Paul said that 20 per cent of water would make coal dust safe against ignition but it would require 50 per cent to make propagation impossible.

It was generally felt that air must be heated for vapor and not merely by the entrained particles of moisture from a spray, however minutely divided. It had been found that only 10 ft. to the leeway of such a spray might be found dust that could be ignited, showing that the air was not really saturated.

In response to a question Mr. Paul said that to render coal dust safe against explosion varying quantities of rock dust were required. Some would be rendered safe by the use of 40 per cent of rock dust, others required 60 to 70 per cent, the quantity being readily determinable by experiment.

S. A. Taylor was asked to answer question No. 7—"What is the solution for the overdevelopment of the bituminous-coal industry?" Mr. Taylor said that he had estimated for the Garfield administration that the capacity of the bituminous-coal mines was a billion tons annually. Authorities in Washington placed the yearly capacity at 750,000,000 to 900,000,000 tons.

He declared that he did not believe that the production of coal would continue steadily in the future as in the past, for coal was being better utilized now that central power stations were superseding the isolated plant and water power was displacing steam in the West and in Canada. Coal mines hereafter will be larger. We may look for an end to come to the many small mines that have hitherto been opened along the lines of established railroads. Mr. Taylor said that more and more does it become necessary, if any new mine is to be constructed, to build big plants capable of drawing on the coal land well back under the hills.

He added that several cures for the overdevelopment of mines had been proposed. The miners' union wanted a shorter day and a shorter week. Great Britain had the seven-hour day, but the results were not favorable to the mine workers or the operators. The suggestion of the mine workers, moreover, was not economic. Government ownership of coal land had been advanced as a means of promoting conservation and a deterrent of overdevelopment.

Others had advocated putting the opening of new mines under the control of the Interstate Commerce Commission, the need for new mines being certified in each case by the U. S. Bureau of Mines, but it seemed unconstitutional to favor operating corporations as against those who so far were not working their lands. Mr. Taylor quoted Herbert Hoover as saying that supply and demand would rectify the overdevelopment, and therein seemed to lie the wisest solution.

Don't Make Railroad Pay for Mine Surplus

It would be unfair to the railroads to compel them to meet the peak demands of the mines by unduly large purchases of equipment which would be idle many months in the year. He favored basing freight rates on the engineer's estimate of haulage costs and terminal expense. This would eliminate those mines which were worked only by virtue of freight rates that had been made unduly low for the especial purpose of enabling these mines to enter the market.

G. H. Ashley wanted the date of the wage settlement changed from April to July 1. Now we have a cold weather peak at the same time as a peak caused by the desire to get coal for storage against a possible strike. Mr. Taylor responded that the busiest time in the Pittsburgh region was in the spring. The Pittsburgh operators would be willing to delay the question of settlement until July 1, but the Middle West, which mines coal mostly for domestic purposes, finds its mar-
ket briskens later when the public begins to stock up for the winter. Consequently the date of settlement has been much debated. The mine workers favor April 1 as the date, because they can find work in the spring which is not available in the winter.

In reply to question No. 4 it was stated that the mines should view the tie question in the same way as the railroads as far as the adzing or sawing of the timber is concerned. It is true that some mine ties are always wet but most of them are like railroad ties—wet occasionally and dry at other times. The railroads have concluded that the adze closes the pores and that the saw opens them up. With the adzed tie also only two sides are smoothed and the pores on the other two sides are in a state of nature. Unfortunately when a tie is not sawn it takes more room in a freight car and is heavy out of proportion to its effective size. Where a tie is sawn it will the more readily absorb preservative. Consequently it is best to use a sawed tie if, for the purpose of prolonging its life, it is to be given a bath or a brush coat.

The ayes had it unanimously in the question, "Are doors necessary in the ventilation of a gaseous mine?" C. P. Byrne, who made the main reply, stated that he had never seen a mine that could be ventilated without doors, and Mr. Ross said that this was particularly true of the anthracite mines.

PENNSYLVANIA DANGER SIGN IN MANY STATES

Question No. 10 had evidently aroused some feeling. It ran, "Would there be any advantages in having a national danger sign for use in American coal mines?" G. H. Dyke in reply said the National Safety Council's universal sign, though carefully selected by experts after due experimentation, did not seem to be coming into general use. He recommended that the Pennsylvania sign for danger be adopted throughout the mines of the United States and that a committee be formed to hasten its adoption. Mr. Maize said that the Pennsylvania sign, a red oval with a black background and "Danger," in white letters, despite all that might be said about the uselessness of a black background in a dark mine with black coal in the rear, was giving satisfactory service. W. G. Duncan said that the use of the danger sign had so far not been enforced in the anthracite region and that the law did not require its enforcement.

W. H. Howarth and S. Reynolds favored the universal use of the Pennsylvania sign. The general feeling was that someone had some other sign in view for universal adoption, and this caused somewhat general indignation, but Mr. Maize admitted the question was his and he favored the use of the Pennsylvania sign. G. H. Dyke said that the sign which the Pennsylvania Department of Mines had prescribed was selling all over the country including the anthracite region. Its adoption seemed to progress without any formal action.

D. J. Price, engineer in charge of grain-dust explosion investigations of the U. S. Department of Agriculture, in a paper on that subject, which he has made his especial study, said that the inquiries of the U. S. Bureau of Mines furnished the foundation for the researches of the Department of Agriculture into explosions of all kinds of industrial dusts.

In the afternoon G. A. Richardson showed his slides and moving pictures of the Rosedale mine and byproduct plant, and A. C. Callen, professor of mining, School of Mines, West Virginia University, Morgantown, W. Va., gave an address on "Methods of Educa-

tion in Coal Mining." He said that in Illinois, mining classes were being held in twenty-three towns, in Pennsylvania in twenty-four towns, and in West Virginia in thirty-one towns. In West Virginia 1,096 men were enrolled and about 890 attended the classes weekly. The average class contained twenty-five men.

He believed in itinerant instruction. Local instructors might do the work at least cost but they did not attain the same success. Fear of them gave the necessary time to the task. Being local men they did not have the respect shown them that was accorded to men from the outside. In fact he would not let any man instruct in the section from which he came for this very reason. The period of instruction lasted over two years.

In many places the superintendent and mine foreman attended and asked questions on the board with the rest. At one point a district mine inspector made it his practice to attend. The presence of these men was stimulating to the class and really to some degree helpful to themselves, for a little refreshment of facts and ideas is always well.

After Professor Callen's address, Edward Stiles, supervisor, co-operative mining department, Carnegie Institute of Technology, Pittsburg, took the chair and Question 11, proposed by D. L. Boyle, was discussed. He wanted to know why all Pennsylvania mines should not be inspected by the Pennsylvania Inspection and Rating Bureau and duly rated, whether they were insured by the state, the stock companies or the mutual companies or were self-insured.

COMPANY'S OWN SAFETY INSPECTORS PENNSYLVANIA

William Patterson declared that the safety inspectors of the coal company's own staff were more careful and more reliable than those of the bureau because they were always on the job and did not have to visit so many mines. As they learned to know intimately the few mines they had to inspect they could more readily detect hazardous conditions such as it was in the interest of the employees of insured companies to disguise. Besides, he alleged, the anxiety to get business sometimes made the insuring companies disposed to give a rating that the condition of the mine would not justify.

It was explained that as the law was framed the bureau was not allowed to inspect self-insuring mines. In no case could the rating inspectors order changes in the conditions. It is true that they could raise the insurance rates in accordance with a schedule, but even that they certainly could not do with a self-insuring company.

Question 12 asked, "At drift or slope mines where the coal is 3 or 4 ft. thick how are rotary dumping wagons used different from cross-over dumps?" The answer to the question appeared to indicate that at a mine where the number of cars dumped depended on the amount of the dump to discharge the coal the cross-over dumping had an advantage over the type of rotary cross-over which dumps only one car at a time but the mines expressed differed as to the relative merits of the two kinds of dump, in the case of the rotary dumping provision have been made for the dumping of two more cars concurrently and others of either the dumping capacity in the gusclARK or cross-over at times.

Question No. 13, "What is the best type of hand drags in use—pound or wheel—and why?" was answered by
Mr. Bickford. He said that the compressed-terrestrial band gave satisfactory results when the track was dry and the temperatures were even. Properly installed this band gave satisfactory service, but when once it began to fail it deteriorated rapidly. It might serve its purpose satisfactorily for ten, twelve or even fifteen years on the other bands, but after a year or two in by the same band might show rapid deterioration. The hole must be reilled each and therefore must be drilled without lubrication.

**Electric Weld Displacing Compression Terminal.**

Investigation showed that the electrically welded band was best taking the place of the older compressed-terrestrial band. Today 60 per cent of the new bands were welded and it was not expected that more and only 20 per cent were compressed-terrestrial bands. A few years ago the latter bands were more popular; the welded band being comparatively rare. Another member said that the welded band was either a good band or a 100 per cent failure.

It was stated that at the meeting of the West Virginia-Kentucky Association of Mines, Mechanical and Electrical Engineers in Huntington, W. Va., several rules with welded bands were tested and that it was found that the welding was the rail and weakened it the rail breaking in every case at the point of welding.

**Relative Value of Near and Far Coal Land.**

Thursday's meeting closed with a paper read on behalf of Bernard J. Biss on "Depreciation and other Factors Bearing on Coal." He argued that the real near a mine opening or near a railroad sold at a higher price than coal that was more distant and consequently the whole area of the area held by the operating company should not be divided by the whole anticipated landings of the territory to be operated when the depletion of the value of the property per ton mined was being calculated. The actual value of the coal depleted should be taken and not other. Otherwise too large a depreciation would be charged as a later period and profits would be declared at first which would be excessive and genuine net operating profit plus profit plus a partial part of the original capital.

The next session on the meetings was the in-terval for the last day of the annual session. That was every able to stay over next week for that reason. The substantive, the Springfield mine and terminal station of the West Penn Power Co. offering much of the construction route.

At each several-five men synthetized from Pipe-stocks to Springfield, Pa. The meeting was spent looking through the terminal station. Divided into man-agerable groups, the visitors were furnished with the power-generating operations and press distribution in the Springfield. A motion was made to learn pulverized coal, new being erected, attracted considerable attention.

The party then motored to New Kensington, Pa., where lunch was served. On their return to Spring-dale the men congregated in the main hoist house, where they were furnished with slickers, storm hats and safety lamps for their trip through the tunnels under the Allegheny River. Descending the stairway in the main shaft, an inspection was made of the big bottom with its rotary dump and skip-boat arrangements.

A trip of ten all steel 3½ ton mine cars such as are used in the Springdale mine carried the visitors through the river tunnels, during the course of which they were told of the difficulties encountered in solving the problems of the subaqueous construction. Arriving underground on the Logan's Ferry side of the mine the members were conducted to the airshaft, which elicited deep interest because of its huge proportions and its four-way split passages at the bottom. A well constructed first-aid room and a recently completed pump station with a 3,000,000-gallon sump offered suggestions aplenty. An ascent of the manway of the double-decked slope brought the men to the surface on the opposite shore of the river from the power station.

**Safety Provisions Not Neglected at Mine.**

Here the slope hoist room, the substation, and the fan house were visited. An inspection of the orderly and well-lighted supply room and machine shop occupied some time. Here also a demonstration was made in a smoke chamber of the use of the carbon-monoxide gas mask.

Filing down the slope again the visitors walked to the east section of the mine and inspected the coal faces and other conditions on the main coal entries. Few companies have adopted safety precautions on a large scale as this one and the visitors did not fail to note these. Among them were large clean airways, electric lamps on the mainways, crossover bridges over the haulage tracks, well-guarded trolley crossovers and a liberal application of whitewash on roadways.

A return to the Springdale side through the river tunnels in mine cars and a climb up the stairs brought the men to the surface and the convention to a close.

**The Effectiveness of the Strikers.**

The effectiveness of the strikers, looking to the prevention of a runaway market and an equitable distribution of coal supply may be judged best, Secretary Hoover points out, by the fact that no acute hardship has followed the long period during which many mines were closed and by comparing the average prices that have prevailed since the strike with those that prevailed during the corresponding period following the strike in 1920. He emphasized, however, that honest consumers will have themselves to blame if they do not provide substitutes for anthracite. There is enough anthracite to go around and this condition must be remedied instead of relying on someone else to do the remanding.

**Utilizing the Services of 134 Railroad Cars.**

The United States Coal & Coke Co.'s mine at Lynch, Ky., on Dec. 5 hauled 10,573 tons in nine hours, the greatest output in its history. All this coal passed over one tipples and is derived from two openings. E. V. Albert is the general superin-
Driving Wide Rooms a Factor in Maximum Unit Production of Coal

Conditions Affecting Maximum Unit Production—Necessity for Freedom of Movement in Driving Wide Places—Objections to the Same

In his letter, Coal Age, Oct. 26, p. 676, L. F. Klinghansmith requests a discussion of what influence, if any, the width of rooms has on the possible daily output, per man. In response to this request, I would like to offer the following remarks as being pertinent to that question.

The correspondent appears to be of the opinion that a wide room, or working place, will tend to produce a maximum tonnage, per man. In that connection, allow me to suggest that, aside from the process of the miner, the production of a maximum daily tonnage is largely dependent on certain physical conditions in the seam and the extent to which these are considered in the working out of the coal.

Miner Must Have Room to Work to Develop Full Capacity

In the first place, it is very essential that the miner should have freedom of movement. For instance, the place must be of sufficient width and arranged in a manner not to impede the loading of the coal. In this respect, it must be remembered that the width of the room is not necessarily the dominant factor.

For example, a 10-ft. entry if unobstructed may afford greater freedom of movement than a 20-ft. room where the roof conditions require the setting of posts so close together and near to the face of the coal as to provide little room for the miner to work.

On the other hand, where the conditions of roof and floor permit the driving of wide rooms, a single miner across the face of the room will produce a correspondingly larger tonnage and less time will be lost in the mining of the coal or in waiting for the machines to cut the face.

Wide Openings Assist Breaking, Action of Roof

Again, the cantilever action of the roof is more effective in breaking down the coal, where the width of the opening is such as to throw the pressure on the face of the coal. A greater width of coal face will also greatly facilitate the setting and loading of more coal at one time than is possible in a narrow place.

In respect to expediting the loading of coal in a working place, a most important matter is the arrangement of the track in the room. Where proper attention has not been given to this arrangement, the result will be to largely offset any advantage that might be gained in working a wide breast of coal.

Location of Track Important

The distance the miner must handle his coal along the face will largely determine his speed of loading. For this reason, conditions permitting, laying the track in the center of a wide room is a decided advantage over laying a track along the straight rib; but this must always involve the question of relative cost of the upkeep of the road in the two cases.

Conditions may enable the driving of double rooms in which a track is laid along each rib. This will prove a distinct advantage in driving back wide pillars. Briefly summarized, the driving of wide places, consistent with the prevailing conditions, favors a maximum production of coal, per man, by yielding a larger tonnage, per cut, and expediting the loading of the coal, where proper attention is paid to the arrangement of the tracks in the rooms.

Precautions to Be Taken When Driving Wide Rooms

Personally, I do not advocate the driving of rooms of a greater width than the local conditions and facilities of loading will permit. With wide rooms and proportionately large pillars, there is not the sustaining resistance to roof pressure as with a larger number of pillars of a size suitable to the conditions.

Under the conditions named by the correspondent, however, the driving of wide rooms will require the exercise of the greatest care in maintaining continuous pillars. Lack of uniformity, size of pillars and the manner in which they are driven back will result in an uneven distribution of roof pressure and create a disposition or tendency to creep.

The chief objection to wide rooms, driven under any coal conditions, will be found to be the danger of troubles in the later extraction of the pillars. In every instance, the driving of rooms from 60 to 80 ft. wide, with pillars of proportionate distance, is apt to develop a dangerous condition when drawing back the pillars.

Owing to the large area of extraction, not only is there greater danger to the miners closing the pillars, but there is every possibility of a large extending back into the rooms a considerable distance beyond the boundaries. If this does occur there is no escape from a total loss of large quantities of coal and material.

When the First Break Occurs

In the present instance, the roof being overlaid with a sandwich roof, it is probable that the initial break will only take place after a considerable area of pillar extraction is accomplished. The resulting heavy fall of roof may cause large and sudden movements, every prospect of a disastrous inrush taking place.

In any event, the consideration of the roof, increased by the extended area of extraction, cannot fail to have a destructive influence on the pillars and stalls set previously and to which it has previously yielded.

Taking these conditions into account, I consider it absolutely essential to maintain future production in a temporary maximum output. This should be made subordinate to sound production and development. To do otherwise means to maintain a constant threat of a break working place that will only leave the room to be crossed over a pillar that cannot work in its best advantage, and develop the highest productive capacity of the individual. Lastly, it is advisable to keep the machine room free of coal, and have a sufficient supply of cars in each place.

Practical Safety-Lamp Test

Lamps to be mounted and fired with pure spirit, oxygen, and 'electric' coming in from a storage tank. Large in size and made to last more than four weeks.

Reading the Short-Take Test

The method of testing safety-lamp is as follows: A test is made on the face of the coal. No precaution is taken as to the surroundings of the occupants. The method is performed in a very practical and of a simple nature, by means of a small test.
from asking the question. Will some mine operators fail to install safety devices, or will the mining trade ever be found safe, if ever safe at all?

MINE DISASTERS CONTINUE THOUGH KNOWLEDGE HAS INCREASED

Now, standing the rapid increases in the knowledge of mining conditions, brought about through our study and investigation, the past month or six weeks have resulted in many fatal mine disasters, both in this country and elsewhere. It is appalling when we stop to think of the number of lives that have been sacrificed in these dread happenings.

Many of the disasters can be traced to the careless act of some ignorant or irresponsible miner, while others must be charged to disregard and indifference on the part of mine officials to safety rules and regulations. Operators must more strictly enforce the killing acts of miners, and see that safety rules and regulations are strictly enforced, with suitable penalties.

INCOMPETENT OFFICIALS OFTEN TAKE UNWARRANTED RISKS

It is with deep regret that we acknowledge a goodly number of our coal operators, though well meaning men, know very little regarding their underground operations. The most of these operators employ careless and incompetent officials, with the result that an explosion or other mine disaster follows. Many are in the mining business for the purpose of making all the money possible.

This latter class of operators are often willing to assume unwarranted risks and require to be carefully watched if their mines are to be operated in a safe manner. If the safety regulations are not carried out, then the operators should be punished for the violation of mining laws and safety regulations, we would soon have better mines and fewer disasters. We often hear the question asked, "What are the chief dangers to be guarded against in coal mines and how can this be done?" The two chief elements of danger involved in the mining of coal are gas and dust. These must be guarded against in the operation of all mines. In respect to gas, adequate ventilation of the workings is the most effective means to employ. In the matter of dust removal and the humidifying of the mines are the remedies.

MINE DISASTERS CONTINUE THOUGH KNOWLEDGE HAS INCREASED

CEILING WITH OXYGEN GAS

Having secured the lamp for making the test, light the snuff and hang the lamp on the back within the box. Place a small match under the hanging lamp. Put as much carbon into this vessel as will fill the palm of the hand and add a small amount of water to generate oxygen gas.

Now, close the door of the box and breathe the gas generated by the lamp held in the box. This will produce a fire and the extension of the lamp, and the smoke in the box will cause the gas to become.

SALVING MONEY TAKES PLACE WITHIN THE LAMP AND DOES NOT INJURE THE LAMPS

In case the lamp takes place within the lamp and does not injure the lamps, it is safe to assume that the lamp has been taken into the mine without detection by reason of any deficiency in the lamp. This means of testing safety lamps is in common use in the richest mines of Northern Colorado. It is also employed by some mine owners to ascertain the amount of gas in order to show the amount of an approved safety lamp in an explosive mine.

EXPERIENCED MINE GERMAN.

Safety in Coal Mining

A safety device to be found by the most experienced fragrant. In case of mine disaster, the question is, how many lives have been saved? The answer is, not many. The number of men killed in the mines of the United States in 1898 was 1,207, while in the mines of the United Kingdom it was 54.

The number of miners killed in the United States in 1898 was 30,000, while in the United Kingdom it was 1,500.

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times, it was necessary to drive long entries or slopes to connect with the continuation of the seam when that had been found.

LACK OF GEOLOGICAL KNOWLEDGE

Owing to the lack of knowledge on the part of mine foremen and other officials, regarding the nature of faults and the means to be adopted to locate the seam beyond, there is often incurred much needless expense when an entry strikes a fault. In the majority of cases, there is much guessing as to the direction in which the strata has slipped.

Drillholes are often put up in the roof and down in the floor; or, perhaps, the heading is driven a considerable distance in the rock, in a fruitless endeavor to locate the continuance of the seam. It is needless to say that these efforts are largely without any intelligent direction and generally end in failure.

CAUSES PRODUCING REVERSE AND NORMAL FAULTS

In the figure presented by Mr. Parfit, there is shown what is termed a “reverse fault,” which is evidently the result of contraction in the formation. Two layers of the strata are apparently forced together, until rupture took place and one portion then slipped under the other.

Such faults are not common. While I have heard of them, none has ever occurred in my practice. What I would term a “normal” fault is one where the strata were pulled apart by a force of extension till rupture occurred with the result shown in the accompanying figure. In this type of fault, it is clear that no drillholes, whether put up in the roof or down in the floor, would avail to find the coal. What I have to say, here, has reference to this common type of normal fault.

PRACTICAL RULES FOR FINDING THE COAL BEYOND A FAULT

There are two general indications that intelligent miners seek when approaching a fault. One of these has been referred to by Mr. Parfit; namely, the bending upward or downward of the ends of the strata at the fault line. It is my experience that the coal rises when the fault is a downdraw; and dips when the fault is an upthrust. This characteristic of a normal fault is shown somewhat exaggerated in the figure.

A practical rule that I have found has never failed to get the coal, is to follow the greater angle between the floor of the seam and the line of fault. This rule, of course, would not apply to a reverse fault, where it would be necessary to follow the lessening angle to get the coal beyond the fault line.

In reference to the bending of the ends of the strata, in a faulted seam, it will sometimes happen that meta
dorphic action has destroyed these marks and rendered the changes practically indistinguishable. It will be interesting to learn the experience of others regarding these indications.

December 28, 1922

COAL AGE

1043

Inquiries Of General Interest

Method of Humidifying Mine with Steam When Ventilated by Exhaust Fan

Use of Steam in Exhaust System of Ventilation—Changes Required to Avoid Annoyance on Haulage Roads. Heating Intake Air Before It Enters the Haulway

At this season of the year, the subject of humidifying mines is one absorbing interest. Recently, this interest has been much increased by reason of the numerous reports of mine disasters that have occurred in different localities where coal is being mined.

Mine explosions reported within the past two months have occurred in widely distributed parts, the territory covered extending from Vancouver Island in the northwest, to Alabama and including a section of the wide distribution of mine catastrophes, in connection with repeated volcanic eruptions and destructive earthquakes during the same period, awakened renewed interest in the possible connection of seismic disturbances and gas in mines.\n
However, this may be and whatever may have been the causes of the ignition of gas and dust that created these recent disasters, it behoves all coal miners and operators to exercise every precaution and seek to avoid danger by reducing, as far as practicable, explosive conditions in the mines.\n
With this end in view, I am constrained to ask Coal Age and its readers for suggestions regarding the application of steam to humidify mines ventilated on the exhaust system.

In an excellent article that appeared some time since in Coal Age (Aug. 2, p. 169), the use of steam for this purpose was fully explained. Its application in that instance, however, closely related to mines ventilated by the drawing system, and extends itself readily to the introduction of steam in the intake airway.

In the exhaust system of ventilation, on the other hand, the conditions are different, regarding the main haulage road to be made the intake airway for the mine. In that case, whether the mine is operated by a drift, slope, or shaft, it is evident that the introduction of steam in the intake current would greatly aid the drainage operations and prove a decided assistance to workmen on that road.

The question I would like to ask is: Under these conditions, how is it practical to humidify a mine ventilated on the exhaust system? There are hundreds of mines ventilated on this manner, and a practical answer to this question will be greatly appreciated in many, at this time.

H. J. PICKERING.
Examination Questions Answered

Miscellaneous Examination Questions

(Question 1) Is a mine laboratory necessary to a mining engineer, where should it be situated, and what are its duties as a laboratory? From what sources is laboratory work obtained? Do you think this is necessary in addition to the laboratory of the mine? (Answered by Request)

(Question 2) If the velocity of an air current is 700 ft. per min. and the area of the airway is 11 x 6 ft., what is the volume of the air passing? (Answered by Request)

(Question 3) What determines the resistance and how is it measured? (Answered by Request)

(Question 4) What is a booster fan? Do you consider a booster fan practical? Give reason for your answer. (Answered by Request)

(Question 5) In a well ventilated mine, the volume of air entering the mine must be sufficient to comply with the requirements of the mining laws of the state where the mine is located. In addition to this, the quality of the air and the velocity of the current at the working faces must be sufficient to make the place safe and healthy for work. Simple compliance with the requirements of the mining law does not necessarily insure good ventilation, which depends primarily on the quality and velocity of the air at the working faces. In every case, the condition must be such as to render all places healthy and safe for work.

(Question 6) Air measurements should be taken at intervals throughout the mine, in order to determine any losses that may occur by reason of leaky doors and stoppings, so that these can be repaired and the entire volume of air made to sweep the working faces throughout the mine.

(Question 7) What determines the air resistance and how is it measured? (Answered by Request)

(Question 8) What is a booster fan? Do you consider a booster fan practical? Give reason for your answer. (Answered by Request)

(Question 9) In a well ventilated mine, the volume of air entering the mine must be sufficient to comply with the requirements of the mining laws of the state where the mine is located. In addition to this, the quality of the air and the velocity of the current at the working faces must be sufficient to make the place safe and healthy for work. Simple compliance with the requirements of the mining law does not necessarily insure good ventilation, which depends primarily on the quality and velocity of the air at the working faces. In every case, the condition must be such as to render all places healthy and safe for work.

(Question 10) Air measurements should be taken at intervals throughout the mine, in order to determine any losses that may occur by reason of leaky doors and stoppings, so that these can be repaired and the entire volume of air made to sweep the working faces throughout the mine.

(Question 11) What determines the air resistance and how is it measured? (Answered by Request)

(Question 12) What is a booster fan? Do you consider a booster fan practical? Give reason for your answer. (Answered by Request)

(Question 13) In a well ventilated mine, the volume of air entering the mine must be sufficient to comply with the requirements of the mining laws of the state where the mine is located. In addition to this, the quality of the air and the velocity of the current at the working faces must be sufficient to make the place safe and healthy for work. Simple compliance with the requirements of the mining law does not necessarily insure good ventilation, which depends primarily on the quality and velocity of the air at the working faces. In every case, the condition must be such as to render all places healthy and safe for work.

(Question 14) Air measurements should be taken at intervals throughout the mine, in order to determine any losses that may occur by reason of leaky doors and stoppings, so that these can be repaired and the entire volume of air made to sweep the working faces throughout the mine.

(Question 15) What determines the air resistance and how is it measured? (Answered by Request)

(Question 16) What is a booster fan? Do you consider a booster fan practical? Give reason for your answer. (Answered by Request)
"Better Settle for Year at Present Wages on Four-State Basis." Big Western Operators Now Say

Big coal operators of the Middle West are reaching a new decision about what ought to happen April 1. Opinion is fast crystallizing in favor of making a settlement with the union miners at the present scale to run one year. The fact that John A. Donaldson, of Pittsburgh, Pa., one of the chief opponents in the recent Chicago meetings of re-establishment of the old four-state plan of scale making, is reported to have changed his view favors the four-state plan is an important factor. It is important also that the central Pennsylvania operators are reported to be willing at last that this should be done. Thus, is spite of what the hefe of small operators and the outlying districts may think, the situation is shaping up for a quick decision by operators and miners at the Jan. 3 scale conference at Chicago in favor of negotiating a one-year, four-state contract at present high wages, serious though the consequences may be to smaller and weaker coal producers in face of the probable poor market next year.

The one-year plan is said to have been approved by the miners, who feel so secure in their strength to whip the operators under any conditions at any time that they would just as soon put off the finish fight—If there is to be one—until April, 1924. There has been no official declaration on this point from Indianapolis, but the word has passed around that John L. Lewis will agree to the one-year contract provided no reduction in wages is insisted upon.

Four of the principal operators whose headquarters are in Chicago agreed during the past week that they have concluded that a settlement with the union April 1 is essential. A strike, they say, will inevitably bring down some sort of government control through the agency of the Federal Coal Commission, and neither miners nor operators desire that. If settlement is made for one year, then time will have been allowed for the commission to do its utmost for the industry. At the end of the year, with the commission's work done, the undesirable labor situation in the industry may have been changed so fundamentally that the balance of power may not lie as completely in the hands of the union. Possibly other parts of the industry's life will have been made. In any case the spring of 1924, with no Federal Coal Commission in existence, is now looked upon by the large Western operators as a better time for a final settlement than April, 1923.

It is hoped that the conference at Chicago this year another year of the present wage scale would simply again ruin for hundreds of operating companies the mortality now. But the defense of those who would avoid a strike is that the public is in no mood to stand for another conflict between operators and union. Further, they say, it seems evident that official Washington favors a settlement even at the present scale. If it is made, those who say they will feel that they have shown their entire willingness to do their bit for the national good of the country. That is, they think they will have moved in what they consider to be the will of the people, probably convinced though that will may be.

The indications now are that at Jan. 3, when the subcommittee of the miners and two operators have completed the fifteen union districts get together for a last chance effort to frame up a negotiations plan before the main scale conference convenes that same day, a basis recommendation will be written favoring four-state negotiations. This is the subcommittee which spent more than a week in two Chicago sessions, Nov. 14 and Dec. 6, without reaching any conclusion. But whatever this subcommittee may find, it now appears likely that the main conference will act on the Central Competitive Fund once more and that a settlement with the union will be made

Case In Against First Herrin Defendants; Defence Begins Three Weeks' Grind

The state's full case against the first five prisoners in the Herrin massacre trial at Marion, Ill., is now on, and the defense put a few witnesses on the stand just before adjournment until Jan. 2. No important new angles have been introduced. The state's witnesses presented more evidence supporting the direct charges of murder against all five prisoners, the witnesses reciting further details of brutality toward Howard Hoffman and C. K. McDowell previous to the killing of those two non-union members of the Lester strip mine's force on the day last June when the mine was besieged and 21 of the defenders killed and wounded after the whole force had surrendered. It was plainly shown by the testimony of first defense witnesses and by public statements by attorneys for the miners' union in charge of the case that "justifiable homicide" is to be the grounds of defense.

The defense put on its first witnesses on Friday, Dec. 22, John D. Conroy, farmer, union miner and contributor to the defense fund, whose farm is near the mine, told of being warned one evening about June 15 by an armed man on the road near his house not to "be around there after sunset or before sunrise." On the 21st he said he was fired upon from the mine as he went along the road, whereas he ran into the farmhouse cellar with the rest of the family for protection. The next morning more shots were fired at him as he went out to the pasture after the steers. Conroy said his father shot at them at the time of the firing on the farm and of the killing of a cot. The elder Conroy, under cross examination, could not be sure that the bullets were not overshot by mine attackers on the opposite side of the pit.

Ed Crenshaw, farmer and justice-writer, whose farm is near the strip pit, told of seeing George Henderson, union miner, shot as Henderson lay on the ground 100 ft. from Crenshaw. He wasn't sure whether Henderson was aimed or had been firing at the mine at the time. "Just killer" Donaldson, aged "character," whose farm is near the mine, testified that the guards showed a road he had used as a public highway for all years. Walter Farny, highway commissioner of West Marion, said the road had been maintained with public funds. Oscar DuBois and his aged father, George, miners and farmers near the mine, told of bullets flying around the Crenshaw homestead.

Over the Christmas holiday period and miners were guarded in the county jail. Judge Hartwell warned witnesses to be ready promptly when court convenes Jan. 2. It is probable it will take the defense four more weeks to get its entire case in.

Howat Ticket May Have Won in Kansas

Results of the election, Dec. 14, of offices in District 14, United Mine Workers of America, are now known, and the townsmen are still in doubt regarding the result. Early reports were that the Howat slate, headed by William Howat, candidate for president, was in the lead. The day after the election, however, One Commissioner and the operative International Union revealed that the official state returns in counties of the election in District 14, declared there were 5,500 votes for Howat.

I. C. C. Issues Service Order 31

To ensure adequate supplies coal for the fleet of New York State. The Interstate Commerce Commission has issued Service Order No. 31, signed by the Pennsylvania R.R. to ensure there will be no delay or interruption in the transportation of coal mining cars of the Pennsylvania Coal Mining Co. at Dual. Moutain, Pa.
Senator Walsh Urges Seizure of Coal: Michigan Seeks Canadian Embargo

Walsh of Massachusetts, advocate state control of coal, last week warned that absence of a decision to meet coal shortage in New England, Senator Walsh, who will be the last received many letters from the public today. The universal desire of making a popular basis on no discretionary calling has been widespread and fuel factors.

"I feel for the interest of our government," he declared, "and the time to have complete government, or else, an individual's property is an absolute exercise in coal shortage in New England. I believe, I would have been received many letters from the public today. The universal desire of making a popular basis on no discretionary calling has been widespread and fuel factors.

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Mines Bureau Faces Well in Appropriations

The Bureau of Mines faces particularly well at the hands of the appropriations committee of the House of Representatives. The money not made in its budget was the top per cent of the appropriations requested for the investigation of mineral fuels. In that case the bill reported to the House contained $130,000 instead of $140,000. On the other hand, however, an increase of $90,000 was allowed for the supervision of petroleum leases on the public domain and $44,000 for enforcing the provisions of the leasing act with regard to coal, phosphate, sodium, and potassium.

In the case of the Geological Survey the total carried in the budget was reduced for $15,500. The appropriations committee requested $255,000 for land classification work, a reduction of $31,000. An additional $11,500 was lifted off the ceiling amount requested for mineral mapping, and $13,000 was added from the amount required for geology surveys.

Only Four Companies Bid on Coal Supply: For Navy Yards and Naval Stations

Order for Coal was held Dec. 12 in the Bureau of Yards and Docks. Staging for examinations by Navy yards and naval stations was ordered. The only bids that were opened on the day were made by the Allen Coal Co., the Consolidated Coal Co., the Coal Export Co., and the Consolidated Coal Co., the Consolidated Coal Co., and Consolidated Coal Co., the Consolidated Coal Co., and Consolidated Coal Co., the Consolidated Coal Co.

The bids received were as follows:

- **Empire Coal Mining Co., Philadelphia, 300 tons, for delivery at Hingham, Mass., $9.55 per ton; 300 tons, for delivery at Iowa Island, N. Y., $7.98 per ton; 5,500 tons, for delivery at Lakehurst, N. J., $8.23 per ton.
- **Iron Trade Products Co., Pittsburgh, 300 tons, for delivery at Hingham, Mass., $9.55 per ton; 25,000 tons, for delivery at Brooklyn, $7.98 per ton, delivered at cooling plant, or $6.76, delivered into navy barges: 5,400 tons, for delivery at South Brooklyn, N. Y., $7.39 per ton; 9,000 tons, for delivery at Iowa Island, N. Y., $7.15 per ton; 1,200 tons, for delivery at Lake Denmark, N. J., $8.04 per ton; 8,500 tons, for delivery at Lakehurst, N. J., $7.39 per ton; 2,000 tons, for delivery on the District of Columbia, $6.76 per ton; 400 tons, for delivery at Alexandria, Va., $6.76 per ton; 10,500 tons, for delivery at White Plains, Md., $7.34 per ton; 13,800 tons, for delivery at Annapolis, Md., $9.42 per ton, for large delivery, or $9.07 per ton, delivered by rail, 400 tons, for delivery at Norfolk, $8.25 per ton; 2,000 tons, for delivery at Charleston, S. C., $8.64 per ton.

**Beehive Coke Output in 1921, 5,538,042 Tons, Lowest Since 1885**

Beehive coke production in 1921 was 5,538,042 net tons, the smallest record since 1867 and 79 per cent less than in 1920, according to the U. S. Geological Survey.

Beehive coke continued to surpass the beehive-oven variety, for of the 25,287,22 tons of coke produced in 1921—both beehive and byproduct—but 22 per cent of the total came from beehive ovens against 40 per cent in 1920. The principal facts concerning the beehive coke industry are revealed in the following tables:

<table>
<thead>
<tr>
<th>TABLE I.—BEEHIVE COKE INDUSTRY IN THE UNITED STATES IN 1921*</th>
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<tbody>
<tr>
<td><strong>Beehive coke</strong> in</td>
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<tr>
<td><strong>Coke oven coke</strong> in</td>
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<tr>
<td><strong>Coke produced, net tons</strong></td>
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<tr>
<td><strong>Coke used for coke oven coke, net tons</strong></td>
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<tr>
<td><strong>Coke used by byproduct, net tons</strong></td>
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<td><strong>Quantity, net tons</strong></td>
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<td><strong>Quantity, net tons</strong></td>
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<td><strong>Average price, net tons</strong></td>
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<td><strong>Average price, net ton</strong></td>
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<td><strong>Total sales of Beehive Coke and byproduct</strong></td>
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<td><strong>Total sales of Beehive Coke and byproduct</strong></td>
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**TABLE II.—THE BEEHIVE COKE INDUSTRY, BY STATES, IN 1921**

<table>
<thead>
<tr>
<th>State</th>
<th>Net Tons</th>
<th>Beehive Coke</th>
<th>Beehive Coke</th>
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<tbody>
<tr>
<td><strong>Total</strong></td>
<td>6,456,444</td>
<td>5,538,042</td>
<td>466,481</td>
</tr>
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</table>

**TABLE III.—ESTIMATED MONTHLY PRODUCTION OF BEEHIVE COKE IN 1921**

<table>
<thead>
<tr>
<th>Month</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
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<tr>
<td><strong>Tons</strong></td>
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* Compiled from the U. S. Geological Survey, Dec. 9, 1922.
Incomplete Data Will Hamper Commission in Making Report Jan. 15; Important Deductions Likely

BY PAUL WOOTON
Washington Correspondent of Coal Age

In making its Jan. 15 report the U. S. Coal Commission will be greatly handicapped by lack of complete figures, but it is believed many pertinent deductions can be made from the returns that will have been received by the time that report must be submitted Jan. 1. In the meantime it is charged that returns have been delayed because an adequate supply of cost forms has not been made available. It is stated that the number of forms needed was underestimated. While it is probable that the number of companies which will require the C-1 form does not exceed 2,000, the average number which each company will require is large. This is due to the fact that many of the companies will make separate returns for each mine. Many of the companies operate in more than one district. Forms must be had for local associations and for the National Coal Association. Allowance must be made for work sheets and wastage.

Commissioner Neil has signed an agreement proposed by J. C. Bryden, chairman of the special committee of bituminous operators which is co-operating with the commission, whereby the name of the company, the location of its offices and the names of its mines may be omitted from the labor form provided that information is furnished on a separate sheet. A confidential identification mark can be placed on the sheet in lieu of the name of the company, which will be kept by the commission in a confidential file. The feeling is that the commission very properly may safeguard the business secrets of the reporting company, especially in such a matter as wages. On the other hand, it is equally appreciated that the commission cannot accept anonymous information, but it is a comparatively easy matter to identify reports in a manner which need reveal none of the information which would injure the individual making the returns.

The week of Dec. 18 was taken up largely in discussions between the commission and its staff and with Washington retailers. The amount of time which the commission has taken with the Washington retailers has led some to wonder how a body charged with responsibilities of such a pressing character can take up such details as have been under discussion. The thought is that such work should be left to field agents of the commission, although it is admitted that more profit than is apparent may come from these conferences. One outcome has been the tracing of high paid from which has revealed some very significant information, it is believed.

George J. Anderson made a statement before the commission on Dec. 22 in regard to industrial relations in the coal industry. Mr. Anderson appeared at the request of the commission.

Supplemental instructions regarding the filling out of details of Form L-1, covering earnings of mine labor have recently been issued as follows:

Referring to the letter of instructions for filling out the details in Form L-1, it was stated in the paragraph referring to columns 48 that a formula would be sent later for deriving the net annual earnings. The method for deriving the net earnings is as follows:

First, deduct from the gross earnings subtract charges for houses such as rent, gas, oil, wood, laundry, carriages, smelting, etc. These are not given as a complete list but are typical of the kinds which are commonly deducted from labor bills. In most districts and if there are any items which are deducted at the particular mine, the amount so deducted for each type of occupational expense, they are to be included for that time in the items to be deducted.

The deduction for wages to be made only from the earnings of employees against whom these charges are made. For example, the earnings of the individual who works for wages as a miner who is paid by the day or by the week and who is paid for housekeeping, for gas, oil, wood, laundry, carriages, smelting, etc. Those who are paid on a percentage basis and who have no expense other than the commission on our earnings are to be deducted and no deduction is to be made for the employee. Any amount deducted for checkweighers or shopmen should also be deducted from the earnings. Other deductions made on account of the mine are not to be subtracted from gross earnings.

It is understood that in some cases only one central deduction is made for the union account and that this includes items such as wages paid to the employer. In such cases the payment of these items is not to be subtracted from gross earnings.
Preliminary Statistics of Production of Coal in 1921

(Percentage of total of wagon miles)

<table>
<thead>
<tr>
<th>State</th>
<th>Total Wagon Miles</th>
<th>Number of Employees</th>
<th>Average Number of Wagon Miles</th>
<th>Average Weight of Coal per Wagon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texas</td>
<td>72,812,480</td>
<td>286,253</td>
<td>200.54</td>
<td>4,273</td>
</tr>
<tr>
<td>Utah</td>
<td>7,509,732</td>
<td>9,263</td>
<td>799.59</td>
<td>4,044</td>
</tr>
<tr>
<td>Virginia</td>
<td>3,541,385</td>
<td>34,370</td>
<td>267.80</td>
<td>2,774</td>
</tr>
<tr>
<td>Wyoming</td>
<td>5,270,000</td>
<td>28,000</td>
<td>188.50</td>
<td>2,100</td>
</tr>
<tr>
<td>Washington</td>
<td>22,358,500</td>
<td>22,000</td>
<td>1,017.00</td>
<td>2,241</td>
</tr>
<tr>
<td>West Virginia</td>
<td>4,180,500</td>
<td>2,428,722</td>
<td>9,767.00</td>
<td>2,301</td>
</tr>
</tbody>
</table>

Collective Analytical Study of Costs Is Legal.

Says Nelson B. Gaskill

Trade associations have been described in most accounting and audit reports for the purpose of study, which is the improvement of their methods and production, even in the economic conditions of the times. A study of these organizations, especially those in coal, was made by Mr. Nelson B. Gaskill of the Bureau of Internal Revenue, and is published in the report. This study was completed in 1919, and it has been found that the cost of coal production has increased over 100 per cent since 1910. The average cost of production in 1910 was $2.55 per ton, while in 1919 it was $4.50 per ton. This increase in cost has been due to the increase in wages, the cost of materials, and the cost of taxes. The cost of coal production is now two and one-half times the cost of 1910.
Revision of Western Coal Rates Recommended in Tentative Report of I. C. C. Inquiry

Many revisions in the rates on anthracite and bituminous coal from mines in New Mexico, Colorado, Wyoming, Montana and other Western states are recommended in a lengthy tentative report submitted by Attorney-examiner M. A. Pattison, for the Interstate Commerce Commission, in Docket No. 13588, entitled "Western Coal Rates." The report summarizes "an investigation instituted by the commission on its own motion into the reasonableness and lawfulness of interstate rates on coal" in Western territory. "Complaints against excessive rates on coal in this territory," the report says, "have been numerous, and those more recently considered have disclosed a lack of uniformity in the rate structure, both with respect to the measure of the rates and the relationships between the various competing mines and groups of mines, that appeared to call for a comprehensive inquiry." Cameron Coal Co. et al. vs. A. T. S. F. Ry. Co. et al., No. 9613, is also embraced in the report. Hearings, extending over seven months, were held at Denver, Salt Lake City, Butte, Seattle, San Francisco, Phoenix and El Paso.

Colorado and New Mexico shippers presented evidence on interstate rates from Colorado into New Mexico, Wyoming and other Western states as well as in regard to the intrastate adjustment in Colorado. After reviewing the evidence adduced the report states: "There appears to be no just reason why the Union Pacific should maintain rates from its northern Colorado mines to Cheyenne and exceed those from Hanna. For the future the rates from the two districts should be the same. . . . The Colorado & Southern and Burlington have met the rate of the Union Pacific from the Rock Springs-Kemmerer district, disregarding the additional haul from Kirby, but the former has failed to accord a similar adjustment to the Walsenburg operators, although their advantage is 23 miles as compared with Rock Springs-Kemmerer and 61 miles as compared with Kirby."

Discriminate Against the Walsenburg District

The report says further: "If the Colorado & Southern and Burlington, affiliated lines, consider it a good policy to maintain the same rate from Kirby to Cheyenne as the Union Pacific maintains from the Rock Springs district, thus permitting the Kirby operators to compete on an equal basis with the Rock Springs operators, they should accord similar treatment to the operators in the Walsenburg district, whose mines are not only less distant from the common market but are served under no greater operating disadvantages than prevail generally in this territory. The rates from Walsenburg to Cheyenne should not be higher than $3.25, and in no event should exceed the rate from Kirby."

In regard to Montana rates the report states: "The rates from Sheridan to points in Montana on the Northern Pacific east of Billings should not exceed the rates from Red Lodge to the same points by more than 30c, and to points on the line of that carrier west and on the Great Northern when routed via Billings by more than 45c. For the added haul of 123 miles from Kirby, rates therefrom should not exceed those from Red Lodge by more than 60c. Unless the authority of the Montana Commission is obtained for increasing the basic Red Lodge rates, observance of the differentials from Sheridan and Kirby must necessarily be accomplished by reduction. A maximum differential of 25c against the Sheridan mines at points west of Clark's Fork to including Spokan would meet the desire of the Sheridan operators and would conform to the general rule of diminishing differentials with increasing distances. The present differential is less than the maximum here suggested as proper, and need not be changed. The materially shorter distances from Sidney would seem to require the establishment of rates via that junction. Joint rates should therefore be published by way of Sidney from Sheridan to points on the Great Northern in north-eastern Montana, to which the short-line distances over this route are shorter than through Havre, and such rates should not exceed the rates for corresponding distances from Sheridan to points on the Great Northern east of Billings. The rates via Billings and via Sidney should be restricted in their application so as to avoid cross-cut departures."

The rates on coal from mines in Utah to destinations in Idaho, Montana, Oregon and Washington, treated collectively as the Northwest, the report says, are higher than the rates from mines in the Kemmerer-Rock Springs district by from 22 to 45c, and over, and one of the principal points of controversy developed in this investigation was the propriety of this adjustment. The Utah operators claim the right to a rate equality in this territory with their competitors in Wyoming. On the other hand, the Wyoming operators claim the differential should be substantially greater.

"The operators in the Utah district protest against the inclusion of the mines in the Kemmerer and Rock Springs groups in one rate district and contend that it has the effect of moving Rock Springs, the principal shipping group, 47 miles farther to the west than the disadvantage of the Utah mines from a comparative distance standpoint. The Wyoming operators, who would naturally be permitted to have a greater interest in the grouping of their mines, are content with the present arrangement."

Adjustment Based on Consolidated Fuel Use

"The adjustment prevailing rates between the Utah and southern Wyoming mines are those 50 mills reached through the McCallum or Pocatello gateway in the result of the decision in Consolidated Fuel Co. vs. A. T. S. F. Ry. Co., 24, I.C.C. 212, decided June 8, 1911. The decision of that decision the rates to Pocatello were 60c from the Kemmerer-Rock Springs district and 47c from the Castle Gate district as then constituted, a difference of 13c."

"Consideration of the circumstances which brought about the establishment of the 25c, differential from the Castle Gate district as now constituted and the difference at the distances and operating conditions as they exist today, leads to the conclusion that the Consolidated Fuel Co. claim is not deemed controlling. A differential of less than 13c may be set at McCallum will be for the future orders presented to the operators in the Kemmerer-Rock Springs districts and unduly preferential of the operators on the Castle Gate district."

"The rate from the Kemmerer-Red Roodles division to Butte compares favorably with the rates from neighboring districts. The length of haul and the rates from Bakery to Butte or Butte to Butte justifies a slightly lower differential against the Utah mines than at McCallum. A differential of 40c will be for the future on the coal produced in the district in the Castle Gate district."

"The report notes that, in the Pacific and Northern districts, the rates are highly competitive, but states that the Western Pacific proposes to adjust the reasonable cost of the rates on the basis of a minimum of 40c, in consideration of the unfavorable coal districts. The operators oppose reduction in the rate of 40c, to be allowed to the eastern, southern Wyoming districts."

In considering rates to the East, the report says, "the change would reflect the rates then the Kemmerer-Rock Springs district; the rates from the coal district should not be increased, and the rates from the Castle Gate district should continue at a lower differentials than those prevailing. The need of competition of the rates from the Sheridan, Red Lodge, and Choteau districts should be, therefore, allow a differential of not less than 40c."

"In regard to rates to the West, the report states, "the present differential of 13c, against the Wyoming mines at points west of Clark's Fork to the Union Pacific line, is too low as compared with the full freight rates to Cheyenne, and should be increased. A differential of 45c against the Wyoming mines at points west of the Union Pacific line, is deemed sufficient. The present rates should be allowed to increase 10c on the haul east of the Union Pacific line, and 5c on the haul west of the Union Pacific line, for the Wyoming mines at points west of the Union Pacific line."
COAL AGE
Vol. 22, No. 26

COAL-
points' 1919-1920.
indication of
the Kansas-Rock Springs-Castle Gate district has been stronger than that found
reduced westbound generally buckwheat. The
ranged from $9.74 to $10.95, for bituminous, run-of-mine, from $9.74 to $10.55; anthracite, stove and egg, and coke (stove coal size), $14.25 each.

Eleven Firms Submit Bids on 178,895 Tons Of Coal for N. Y. City Departments

Eleven bids were received by the Board of Purchase of the City of New York on Dec. 21 for furnishing and delivering to several of the city departments during the three months ending March 31, 1922, 178,895 net tons of coal, of which 89,841 tons is to be buckwheat; 10,680 tons, No. 2 buckwheat; 16,000 tons, No. 3 buckwheat; 36,253 tons, Minnesota, run-of-slate; 2,500 tons mined (No. 3 buckwheat and run-of-slate); 2,078 tons, raw; 247 tons, chestnut; 1,253 tons, stove; 12,954 tons, egg; 300 tons, coke, and 29,200 tons mixed.

The prices submitted showed a wide range. The lowest price for furnishing and delivering No. 1 buckwheat to the various departments ranged from $9.50 to $10.38; No. 2 buckwheat, from $9.60 to $10.69; No. 3 buckwheat, $5.60; Minnesota, run-of-slate, $10.90 to $11.84; raw coal, $12.25 to $11.84.

For barge deliveries of No. 1 buckwheat bids ranged from $6.82 to 7.98; No. 2 buckwheat, $9.19 to $9.98; No. 3 buckwheat, $3.97 to $5.60, and for bituminous, run-of-mine, from $9.74 to $10.55; anthracite, stove and egg, and coke (stove coal size), $14.25 each.

For carload deliveries of buckwheat No. 1 on Long Island there were two bids, $8.45 and $12.24, and for bituminous, run-of-mine, there were two bids, $10.95 and $11.14.

To Discuss Car-Distribution Rules

A conference between representatives of the National Coal Association and of the American Railroad Association will be held in Washington the week of Jan. 5 to discuss car-distribution rules other than those applied to assigned cars. An effort will be made to reach an agreement on as many as possible of the amendments which have been put forward. Others interested will be invited to this conference.

Monthly Production and Average Daily Production of Byproduct Coke in the United States, Jan., 1917, to Oct., 1922 (a)

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Weekly Average Production</th>
<th>Weekly Average Production</th>
<th>Monthly Average Production</th>
<th>Monthly Average Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>1917</td>
<td>Jan.</td>
<td>25,900</td>
<td>25,900</td>
<td>178,850</td>
<td>178,850</td>
</tr>
<tr>
<td></td>
<td>Feb.</td>
<td>26,000</td>
<td>26,000</td>
<td>182,000</td>
<td>182,000</td>
</tr>
<tr>
<td></td>
<td>Mar.</td>
<td>26,000</td>
<td>26,000</td>
<td>182,000</td>
<td>182,000</td>
</tr>
<tr>
<td></td>
<td>Apr.</td>
<td>26,000</td>
<td>26,000</td>
<td>182,000</td>
<td>182,000</td>
</tr>
<tr>
<td></td>
<td>May</td>
<td>26,000</td>
<td>26,000</td>
<td>182,000</td>
<td>182,000</td>
</tr>
<tr>
<td></td>
<td>Jun.</td>
<td>26,000</td>
<td>26,000</td>
<td>182,000</td>
<td>182,000</td>
</tr>
<tr>
<td></td>
<td>Jul.</td>
<td>26,000</td>
<td>26,000</td>
<td>182,000</td>
<td>182,000</td>
</tr>
<tr>
<td></td>
<td>Aug.</td>
<td>26,000</td>
<td>26,000</td>
<td>182,000</td>
<td>182,000</td>
</tr>
<tr>
<td></td>
<td>Sep.</td>
<td>26,000</td>
<td>26,000</td>
<td>182,000</td>
<td>182,000</td>
</tr>
<tr>
<td></td>
<td>Oct.</td>
<td>26,000</td>
<td>26,000</td>
<td>182,000</td>
<td>182,000</td>
</tr>
</tbody>
</table>

(a) The data are compiled and distributed by the United States Bureau of Mines.
Transportation troubles and cold weather have bolstered a falling market and demand has grown by leaps and bounds during the past week. Crippling weather has proved too severe for the railroads and motive power has failed to carry the load. Engine trouble has slowed down the movement of loads and the return of empties, curtailing production, and the cold weather has swept a multitude of orders to the retailers. The indifferent attitude of industrial buyers has been upset and many of the smaller consumers have rushed into the market for immediate deliveries. Higher prices are inevitable under such conditions and Coal Age Index of spot bituminous coal prices rose 13 points during the week to 349 on Dec. 26, representing an average price at the mine of $4.23, compared with $4.07 in the week preceding. This is the highest mine price since late in October.

**Pinch Tightest in North Atlantic Section**

All markets are stronger, but the larger North Atlantic centers seem to be feeling the pinch more than any other section. Demand is tremendous as receipts continue to lighten and “coal is coal” with the market sensitive to every demand made upon it. Quality coals are off the market and intermediate pools show but little price range. The domestic situation in the East adds considerably to the shortage. Screened coals are in strong demand and attractive prices are being offered for quick shipment. The available supply is not large, however, and thus a considerable tonnage of inferior or poorly prepared coal is being loosed upon a brand new market. It is to be hoped that this practice can be checked or domestic soft coal will have its reputation ruined in this new territory almost before it has had time to be given a fair trial. There are a number of concerns shipping excellent domestic coals to New York who have built up a trade with much care, but the trend of market conditions is causing them anxiety lest their high-grade screened product be classified with the nondescript tonnage that a lower market always attracts.

New England consumers have ample reserves and while they must pay higher prices than a fortnight ago the condition of their stockpiles is such that losses delivered prices from sourcing. Offerings of Southern coal from Hampton Roads are light and high priced and this has improved the position on all-rail coal.

**Sellers’ Market Appears Almost Overnight**

Screenings are very scarce in Chicago and the Middle West. The cold weather has increased the domestic demand and all prices are up. What was a surplus industrial market has been turned almost overnight into a sellers’ market with buyers endeavoring to overcome their individual shortages. Ilinois coals are in good demand in the Northwest, where brisk weather has strengthened the market, both fatal and out the docks. The Eastern Inland section is also experiencing a shortage, with slow deliveries aggravating buyers. Pittsburgh district coal is stronger, as coal demand is good and the East is hot after prepared stocks.

The retail trade is barely existing on the meager receipts of anthracite. Substitute bituminous coal, worked a few weeks ago, in to active demand and is fast being slowed up. Retailers did best stock heavily,
the national distributors met a very cool reception earlier in the season, and the sudden demand found most of the Eastern dealers unable to meet the situation. Backward in its seasonal position because of the scarcity of domestic anthracite and the smaller steam coal of the independents are now selling at satisfactory levels.

Canadian railways who had been holding up the independent market have been checked by an announcement from Washington that shipments must be discontinued, at least, because of the acute shortage in the United States.

BITUMINOUS

Production of soft coal has been falling since the second week in December. Estimates for the week ending Dec. 16 show an output of 10,485,000 tons, according to the Geological Survey and the best week (Dec. 18-25) averaged 10,000,000 to 10,500,000 tons. The decline began on Dec. 12, due to the observation of miners' strikes in some union districts, and has continued since that date, which marked the first and wettest weather this year. It is generally attributed to the effects of the Midwinter's motive power to stand the strain of heavy traffic under unfavorable weather conditions.

November saw a production of 45,300,000 net tons—23 per cent more than during November, 1921, and only exceeded twice in the last ten years. Cumulative produc-
Lake dumpings during the season were 19,330,860 net tons—18,501,055 tons cargo and 829,805 tons vessel fuel—as compared with 23,171,449 tons in 1921.

The all-rail movement to New England increased to 3,491 cars during the week ended Dec. 16, as compared with 2,972 cars during the preceding week. Central Pennsylvania is finding a better market in that section because of the rising of coastwise coal from Hampton Roads.

Dumpings at Hampton Roads were 300,532 net tons during the week ended Dec. 21, as compared with 257,256 tons in the preceding week. Supplies are divided among many houses, making cargo sales difficult. Shippers find that Western consumers are willing to pay high for Southern coals and this necessitates increases at the Roads to obtain tonnage from the mines.

**ANTHRACITE**

Production of anthracite during the week ended Dec. 16 was 2,157,600 net tons, the highest week's output in 1922. Early returns for last week indicate a diminished rate, with a probable total of 2,000,000 tons.

Buffalo dumped 1,070,680 tons of Lake coal during the season, as compared with 3,810,315 tons in 1921. December dumpings of 123,600 tons were heavier than expected. The Northwestern States must look to all-rail sources for a considerable tonnage to eke out this winter's needs and already some of them have requested Washington to authorize a priority movement of 250 cars per day of all-rail anthracite.

**COKE**

Receive coke production was 298,000 net tons during the week ended Dec. 16, 7,000 tons more than in the preceding week. Connellsville production established a new high record for the year.

Eastern demand for Connellsville coke for domestic use has taken the situation out of the hands of the blast furnaces and foundries because of the higher prices being paid. The sudden shift of the market has suspended many contract negotiations for the first quarter, as operators are willing that they want their tonnage free to apply against the more attractive open market.

### Car Loadings, Surplusages and Shortages

| Week Ended | Cars Loaded | Surplus Cars | Deficit
|------------|-------------|--------------|--------
| Dec. 9, 1922 | 4,247 | 24,730 | 202,642 |
| Previous Week | 4,695 | 25,730 | 202,642 |
| Dec. 16, 1922 | 4,247 | 24,730 | 202,642 |
| Same as Dec. 16, 1921 | 4,247 | 24,730 | 202,642 |

$1,000,000 Damage Suit Against U. M. W.

Continued in Next Term of Court

The case of the Willis Branch Coal Co. against the international organization of the United Mine Workers, for $1,000,000 damages, set for trial in the U. S. District Court for the southern district of West Virginia, at this term, has been continued until the next term of court. The company claims the above damages in connection with the destruction of its mining plant at Willis Branch, for which it alleges members of the United Mine Workers' organization were responsible. The company bases its claim on the Coronado decision of the U. S. Supreme Court and contends that under the terms of that decision the miners' union is responsible for the acts of its members. The whole town was destroyed by members of the organization, it is alleged by the plaintiff in this case. Corrigan, followed an agreement between the parties to the suit.

John Hays Hammond was convicted by the South African judge who sentenced him to death after the Jarrow raid. That magistrate, who had acquired the title of "the hanging judge" died last week, according to press dispatches.
Heavy British Output Finds Ready Market; New U. S. Orders Placed

The British Walker coal producers are in a position today to ship larger quantities than in the past. Demand is exceptionally heavy and the price is substantially higher than in the United States markets. The British American mine operations are being reduced in volume, but the market is unusually active and ready. Imports from the British market are said to be 250,000 tons, with a claim that the British Walker coal is being shipped to the United States in greater quantity than in the past.

Hampton Roads Prices Situation

<table>
<thead>
<tr>
<th>Week Ended Dec. 14, 1921</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, Dec. 14</td>
</tr>
<tr>
<td>Sunday, Dec. 15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coal Type</th>
<th>Price (in $ per ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steam coal</td>
<td>60.00</td>
</tr>
<tr>
<td>Bituminous</td>
<td>55.00</td>
</tr>
<tr>
<td>Lignite</td>
<td>40.00</td>
</tr>
</tbody>
</table>

Scattered Supplies Boost Roads Price

Increasing car shortage, with consequent diminishing supplies, has caused a rise in prices. The condition continues to improve in prices, with supplies received on a scale which has not been obtained for several months. Supplies were scattered, however, and the condition of business was being done.

Total coal dumped at Hampton Roads during 1922 was 14,900,530 tons, with the last two days in December estimated. The tonnage for 1921 amounted to 17,240,848 tons.

Pier and Bunker Prices, Gross Tons PIESRS

<table>
<thead>
<tr>
<th>Pier</th>
<th>Price (in $ per ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newport</td>
<td>125</td>
</tr>
<tr>
<td>Providence</td>
<td>150</td>
</tr>
<tr>
<td>Boston</td>
<td>175</td>
</tr>
</tbody>
</table>

Current Quotations British Coal f.o.b.

Port, Gross Tons

<table>
<thead>
<tr>
<th>Port</th>
<th>Price (in $ per ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>London</td>
<td>90</td>
</tr>
<tr>
<td>Liverpool</td>
<td>85</td>
</tr>
<tr>
<td>Manchester</td>
<td>80</td>
</tr>
</tbody>
</table>

Foreign Market And Export News

British declared. These were 918,595 tons in October, or 142,203 tons less than in the preceding month, but still 92,000 tons more than in the corresponding month of 1913. Approximately 1,600,000 tons were delivered to the Reparation Commission during October. Also, 203,921 tons of German coal were exported.

The output of the Ruhr Valley for November is estimated at 8,600,000 tons for twenty-four working days, as compared with 2,200,000 tons for the same number of days in November of last year. The daily production in the Ruhr was the highest shown in available statistics, at least since April, 1912, the average last month being 355,000 tons, as compared with 339,505 in October.

The increase is attributed to the amount of overtime labor and the use of large working shifts. The daily production in October, 1913, was 366,483 tons.

Export Clearances, Week Ended Dec. 21, 1922

<table>
<thead>
<tr>
<th>Port</th>
<th>Price (in $ per ton)</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>Liverpool</td>
<td>85</td>
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<td>Manchester</td>
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Export Clearances, Week Ended Dec. 21, 1922

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Pier and Bunker Prices, Gross Tons PIESRS

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Current Quotations British Coal f.o.b.

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<td>85</td>
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<tr>
<td>Manchester</td>
<td>80</td>
</tr>
</tbody>
</table>

Foreign Market And Export News
Market Rises Rapidly: Better Grades Scarcer

Many Firms Withdraw Quotations—Intermediates Advance Steadily—“Anything Black” Sells Readily—Future Trading Light—Strong Call for Domestic Soft Coal.

The market moved upward very rapidly last week. Better grades are well sold and many houses have withdrawn their quotations. This has caused a growing scarcity and the intermediates are steadily advancing. “Coal is coal” in Baltimore, New York and other large centers and “anything black” is fast finding a quick market. Buyers are seeking price indications for January delivery, but future trading is rather light and uncertain.

Domestic soft coal is in strong call as a substitute for anthracite. There is already a scarcity of the screened sizes, shippers being unable to meet the sudden demand. Some orders for British coal for January delivery have been closed.

BALTIMORE

Very little coal is coming in, the railroads having fallen down miserably in the matter of supplying empties to the mines, and the demand has advanced by leaps and bounds. The larger consumers of this section were particularly active in trying to get coal the past week and few secured as much as they sought. Some of the smaller industries are still short coal.

The best grades of steam coal are practically off the market. The scarcity of intermediate coals is such that when offered they are gobbled up at $5. The market is one in which anything black can be sold. Gas coal is equally as tight as to scarcity.

While there are no importsations of English coal here at present, the sharply advancing market of the past week or two gave a ready demand at high prices for some of the Welsh product that was stored near Baltimore. This is in a pocket, in view of the scarcity of anthracite, has sold to retail dealers up to $14.

NEW YORK

The market moved rapidly last week. Business picked up and the recent low in prices has held. The demand is strong and there is a constant demand for the better grades and when they cannot be obtained buyers fall back on the lower grades, which with increasing scarcity have steadily advanced in prices.

Many operators are refusing further orders and in some instances quotations have been withdrawn. With such a season at hand during which most of the mines will be idle for a couple of days at least, it is expected that the railroads will be able to clear their roads and that coal on mines do resume operations there will be plenty of empties for at least a few days.

The price of bituminous coal as a substitute for anthracite has added considerably to the present demand. It is being used heavily in apartment and other dwellings in New York. Screened coals are in active demand, shippers not being able to supply the call.

There is a report here that agents are busy placing orders for British coal to help out on the anthracite shortage. Arrivals of foreign coal during the past week were negligible. It is understood, however, that several orders have been closed for January shipments, some of which have been placed by public utility corporations.

Coal is in heavy demand, some dealers having difficulty in supplying coal for a run. Run of oven coke was quoted around $7.50, and prepared, $10 at $10.25.

CENTRAL PENNSYLVANIA

Operators and miners are having a hard time making both ends meet in the midst of the great demand for coal. Operators, generally, are working but one or two days a week and miners are not making a living. As a result of the acute car shortage, producers are not accepting orders as they know they cannot make prompt delivery. Prices are gradually going up.

The situation is said to be aggravated through the storing of large quantities of coal on wheels, as is usually the custom of the railroads at this time of the year in anticipation of severe winter. The Central Pennsylvania Coal Producers' Association is authority for the statement that no relief is expected before March 1. To make matters still worse, considerable coal is being thrown on the market by the Bethlehem, Campine, and other large steel companies with operations in the district.

PHILADELPHIA

Consumers are now considerably stirred by the slow deliveries and have come into the market very strongly for additional supplies. No doubt much of this anxiety is caused by the usual slowing down of production due to the holiday season. Many of those who have been buying from hand-to-mouth are now more binding for coal and stiffening prices to just that extent.

The demand for soft coal in the Eastern domestic market grows, with the great difficulty in obtaining supplies. Shipments of the better class coal feel confident that their producers already made good will be able to retain some of this trade over the coming winter. This is particularly likely among the larger consumers of domestic coal such as apartment houses and hotels. There has also been a good sales market on coke. Practically all high-pressed coke is sold in advance and at a result much Connellsville coke is in hand.

Prices on soft coal of all grades have materially strengthened and at times the quotations are $7.50 and $8.

FAIRMONT

Heavier demands have been made upon the mines as a result of the active buying in Eastern markets, to be attributed in part at least to the scarcity of English coal as anthracite in the Western markets is still greatly handicapped by a scarcity through producers being tied up in the northern part of the state.

Many railroads have released coals to be sold at the market. The Baltimore and Ohio Railway has released more coal to the market.

UPPER POTOMAC

The strike was settled in the George Colliery case with a settlement of $6 an hour and no picketing was involved.

KANSAS CITY

Kansas City coal dealers are reporting that demand for coal was heavy last week, the first of the month, and in the western part of the country was more brisk than for some time.

SALT LAKE CITY

Retail business is good locally as a result of the colder weather. There is a big run on fuel, but business is fairly slow. Coal is cheap, and coal supply is satisfactory. Mines are working about four men each and are safe in all the market coal mines.

Canada

TOMATO

Ontario is purveying the demand for soft coal in the market. Only small quantities are on the market and orders where have been taken for delivery in the spring. The coal is selling at $8.50 to $9 an 1000 pounds and all grades are in demand.

Sault Ste. Marie

Coal is in strong demand, with $10 per ton being quoted. Prices are steady and there is a demand for coals.

These prices are approximate and subject to change.
Anthracite

Scramble for Domestic

Raisos Independent Prices

Arthur of Yerkes States Falling Up by Canadian Buyers—Retail Stakes High

In accordance with the demand at Meatballing Prime—Smaller Supply in Great

The domestic shortage is increased further by the news that the new year supply cannot be separated from tonnage already raised by independent quotations. Canadian buyers, who have been holding the market for fear of the weakness in the coming season, are at least, because of the shortage in the United States. Close sales are very rare. Many rails are also out of circulation. Boston coal, salt, and anthracite coal are in strong demand and prices have mounted. The smaller "close" sales are in good position and bids are now being held below capacity. River coals may not escape because of the strengthening domestic prices.

NEW YORK

In the New York Journal of Commerce, the following comment was made regarding the market: "The New York coal market is more of the same as that of the past three months. It has been quiet, because of the weak coal market and the holiday. The demand has been stronger, but the supply is plentiful. The coal available for export is ample and the supply is sufficient to meet the demand. The prices are firm and stable.

PHILADELPHIA

The market continues to be short and there is nothing in the way of a scramble on the part of the consumer to get coal. The shippers claim that their shipments are fully up to the allotments made as a production of seven weeks. Normal winter weather still prevails and there is a plentiful supply of fuel in all parts. Unfortunately, the demand is not as strong as last year, but the movement of coke seems to be in for some reason and almost all coke sales are now carrying both fuel and coke prices. Coke prices are running about 1.75/ton and not much.

On the shipment of anthracite coal, the trade is experiencing a very active movement. Many of the shipments have already been received and when completed a considerable delay in the receipt of the coal appears to be expected until the railroad can handle them. The anthracite coal market has been stronger than it has been for some time and a firm advance in prices is anticipated. The supply of anthracite coal is ample and the demand is strong. The prices are firm and stable.

BOSTON

The market is fairly steady and the demand is fairly good. The supply is ample and the prices are firm. The demand is fairly strong and the prices are firm and steady. The supply is ample and the demand is fairly good. The prices are firm and steady.

Baltimore

Many yards were left without supplies. Household burning of soft coal and even wood is on the increase. The Maryland Fuel Distribution Company now manages that Baltimore's share under the allotment promised through the Pennsylvania committee is not being delivered.

The following figures are given by the local commission on the shipments to Baltimore since the arrangement began in mid-September. The receipts being for the week ending on the date, Sept. 28, 15,800 tons; Sept. 30, 12,125 tons; Oct. 7, 10,170 tons; Oct. 14, 13,722 tons; Oct. 21, 11,340 tons; Oct. 28, 11,882 tons; Nov. 4, 6,706 tons; Nov. 11, 13,545 tons; Nov. 18, 14,292 tons; Nov. 25, 13,425 tons. The entire allotment for the period from Sept. 1, 1922 to March 25, 1923 was 560,691 tons.

A situation which faced the trade here during the past week was that a number of smaller yards who supply coal to the poorer sections had neither hard nor soft coal to dispose of. In this case it was necessary to supply coal at three of its storage yards and disposed of this fuel at 65c. a bushel.

South

BIRMINGHAM

Demand in the spot market is easy, consumers in general continuing to buy scantily and only to meet current needs. The railroads are the only interests which have bought any extra coal for stockpiling and use during the balance of the year, supplementing contract deliveries, which have been somewhat in arrears due to car shortage.

The last few days of cool weather has strengthened the domestic market to some extent, though inquiry is not very persistent, considering the season and the fact that little coal is being carried on yard track in the territory. Consumers buy a ton or two at a time as weather conditions necessitate, a vast number of households having stocked no winter supply. Spot and contract requirements are not the same as shown in our last report.

Car supply has shown no improvement with the exception of the Southern users, which is now giving some special service and mines served by it have been operating more regularly. The situation on the Frisco and L. & N. is reported unimproved.

VIRGINIA

Transportation conditions are somewhat more conducive to a larger production than the increase has been small. In view of general market conditions and a stiffer demand in the East for a larger production would be possible. Some mines, in order to avoid a suspension when empties are not available, are utilizing their product in the making of coke so that coke production continues at about 14,000 tons a week.
Market Freshens Over Entire Midwest Region

Run of Cold Quickly Exhausts Dealers' Supplies — Even Steam Consumers Buy Now — Prices Stiffen Noticeably and Transportation Weakens.

The whole Midwest experienced a real stimulation of the coal market during the past week. All signs of sagging disappeared after the run of zero weather began to make itself felt. Dealers who thought they were stockpiled against a month's trade, sold their yards empty so swiftly that a near-rush for all sorts of domestic coal started. It could not be satisfied because the cold had the simultaneous effect of hampering railroads. This got big steam and gas coal consumers worked up and they, too, leaped nimbly into the trading. Naturally prices started upward.

In some cases domestic lump hiked as much as 75¢ a ton though the big companies in the southern Illinois field maintained their circular of $5.50 with a good deal of conscientiousness. Steam coals executed various upward leaps. Screenings got so scarce from one or two of the best-known fields that the producers were unable to fill more than half their contract requirements and boosted their screenings prices ridiculously in order to discourage spot buyers. Even this did not stop orders from men who were solemnly assured they could not expect deliveries quicker than the middle of January.

CHICAGO

The general stir in this market caused by cold weather had exactly the effect that wise operators prophesied some weeks ago. First the winter throttled down railroad motive power, thus reducing car supply to mines. Simultaneously it brought dealers and a large number of medium-size consumers dashing into the market for coal, demanding shipments instantly and generally upsetting things. Naturally, with a smaller flow of coal than previously was available, prices suffered. Practically all of the Illinois fields started the new week by driving up the top at $5.50; central Illinois hopped from an average of $4 to $4.50 and other coals followed suit. Screenings bounded upward 50¢ and even $1 in some instances, for the "considerable stocks" theoretically on hand at big steam plants seemed exhausted. Even gas concerns were caught short.

Domestic sites were in such demand that every shipper sold everything with ease and producers of the highest grade coals refused orders. Very little Pea hontas coal of any size is reaching here, and, although one shipper with excellent rail connections has been moving a good deal of anthracite here, yet many a householder has turned to soft coal for the first time in his life, thus expanding, as never before, the demand for Illinois and Indiana lump and egg. This, on top of the supply averages only 60 per cent in central Illinois, 40 in Indiana and 25 to 30 in southern Illinois, is enough to push domestic prices upward distinctly.

ST. LOUIS

Colder weather has kept up the domestic demand in small quantities for the cheaper grades in the city proper and has stimulated business to some extent in the surrounding territory. Steam coal in wagonloads is in good demand in St. Louis. Carload shipments are just about even with the supply. A Big Anthracite is coming in but no smaller coals, it seems like the market is finding a ready market. Steam business outside the city is slow. With continued cold weather business ought to be in pretty good shape within a week.

WESTERN KENTUCKY

Transportation has let down badly the past few days, especially in the field, where supplies have been fair for some weeks past. Up to Dec. 16 supply had been 20 per cent on the L. & N. lines, and 30 per cent on the Illinois Central. It is claimed that the week of Dec. 19 has shown the poorest car supply in weeks, there having been very few cars on Monday, Tuesday or Wednesday. This has cut down along with demand on account of cold weather, and in view of the usual reduction of production over the holidays. In recent 90 day's upward movement on the Illinois Central, the movement of the first 13 cars is strong. At the Illinois Central, coal has been sold $4.90 for the first delivery, $4.15 for the second and $5.50 for the third, this being the largest movement in the territory in years. This shows the demand for the Illinois Central is strong.

LOUISVILLE

Car supply in Kentucky was quite poor during the week ended Dec. 19, while demand due to colder weather and a desire to stock over the holidays, has caused a heavy demand on the Central Illinois, which has been unable to develop much movement. This coal has been quoted at $5.00 and $5.50 for the first and second deliveries. Screenings have been quoted at $4.50 and $5.00, with some non-fitters selling 50¢ lower. There has been no change in the demand for lump. Indications are for a stiffer market until the middle of January, with prices after that time largely a question of transportation and weather conditions.

SOUTHERN ILLINOIS

Cold weather brought normal activity in all lines. When was a week that last week in which traffic was not at its height? There is a good demand for every kind. Even steam coal moved up considerably. Railroads appear able to meet the enormous demands and, moved up to 40 per cent for the month.

INDIANA

Cold weather continues to stimulate demand, and there are no signs of any slackening of the rate of movement. There is a good demand for all kinds.

Jeepers and producers are of the opinion that there may be better production during the holidays than normal due to the fact that many miners have been working on work short time that they have been laying off the holidays as is usually the case. With cold weather and reduced production, indications point to fairly firm prices for the balance of the year or three weeks or until Jan. 1. It is claimed that the local market is not as strong in parts as Nashville and Indianapolis, points on the same roads. Screenings are doing up as well as any time.
Eastern Inland

All Grades Show Strength.

Storms Cripple Railroads.

Retail Yards Limiting Barge and Orders

Grain—Favorable Grades Scorched

—Industrials Based on Quick Delivery

—Steamers Prudent Obtained for

Prompt Coal.

As a result of coal shortage in the order weather. The

cutting is great and a short power, but there is a hard

machine the near-by storms of the last four weeks.

The short supply has decreased the retail yards and re-

quirements are gaining in volume daily. Fossil fuels are

very scarce, industrial buyers, liberalized by greater offerings and

lower prices, have entered the market seeking quick delivery.

This buying of car numbers has located the market to such a point

that a considerable price differential exists between prompt coal and long

that users are willing to buy

before it is loaded.

Cleveland

An acute shortage of domestic coal is at present a cause for concern among

users of coal. The price for coal is relatively small, and in the market car shortage.

The coal minimally has been the subject of much comment in Cleveland.

This subject has been, therefore, the subject of much comment.

The coal market has been the subject of much comment.

DETROIT

There is little cargo in connection with the normal moving season, and a slightly

lower record is in the present market.

In this market, there is a slight decrease in the number of consignments.

These industrial plants are of

This market has a slight decrease in the number of consignments.

These industrial plants are of

Steam buying is now more general. Railroads are taking a good tonnage and

the same is true of utilities and other large consumers. Manufacturers are

now looking around to increase their fuel reserves in view of a still further

shortage.

An embargo on shipments out of Toledo and Detroit was declared on all

roads except the New York Central Lines and other embargoes are holding up

shipments. A good deal of interruption in railroad service will be accelerated

the holiday week.

PITTSBURGH

Prices which had become firm a week ago, have advanced sharply, partly from

operators finding they were getting in arrears with their orders, and offering

low coal in the market for the first time.

The demand from the development of a considerable

relaxation of the distribution regulations in the rail-

roads has facilitated the development of the Eastern demand.

Pittsburgh steam coal, which stood at $2.50@2.75 a week ago, is now city

strong at $3@3.25. Gas mine run, which has been

nearer $3 than $3.25, is rather strong at $3.25@3.50. Domestic

14-in. lump remains at $.50@$.85 as the general market.

There has been a special call from the Pittsburg coal dealers for a cutout coal, but this is offered, on account of car conditions.

Coal shortage has made that the average mine does not wish to screen at all, as there must be three or four cars in hand at the moment. There has been, in fact, what amounts to an extra price for screening, in that slack, nut and lump, sold individually, bring considerably more than the same coal sold

when sold simply as mine run. Domestic coal is necessarily sold over a

14-in. screen, and what is left has been going largely as slack, while to

produce nut would subdivide the screening operation farther.

BUFFALO

A few of the shippers claim to see a stir in the bituminous trade, but others say that it is at the best only temporary and some do not see any improvement. The weather for the cars are scarce and the demand is a little better.

The slow movement of cars hampers the jobber, who does not dare to promise anything and does not often venture to buy coal until it is already sold. A price that has not changed much lately is about the only fortunate condition.

The consumer still looks for lower prices.

Prices have not changed materially for several weeks. The rule has been a gradual weakening without much decline, except for the lowest coal, which has fallen $1@$1.50 for Voughighen gas lump; $4@$.50 for Pittsburgh and No. 8 steam lump; $3.10@$.35 for Allegheny Valley and other mine run and $2.75@$.75 for slack.

A little Pennsylvania smokeless is selling at about $.50 over the other.

NORTHERN PANHANDLE

Miners are finding a better market in the North than in the West, owing to a shifting of market conditions, and at the same time are experiencing less difficulty in making Northern shipments, owing to embargoes against the movement of anything but railroad fuel to some Western points.
Brisk Weather Runs Up Market on All Grades

Screenings in Such Good Demand Again That Southern Illinois Brings $3—Lake Season Closes with Only Third Enough Anthracite In.

Winter for 10 days has proven that the strange coal market in the Northwest this fall has been largely a weather proposition. The strong rush on docks and rail shippers about the second day of the cold spell formed up every price quoted on all coals, raised southern Illinois screenings to $3 in spots and re-stored lump from that field to $5.50.

The close of the Lake shipping season shows that only one-third of the normal volume of anthracite has arrived and that little over half the ordinary amount of total shipments were made. The grand totals were not all in at the end of the week. Anthracite on hand will be exhausted soon after Jan. 1 without much assurance of hard coal by rail. An advance in freight rates by boat to Duluth added 75c, a ton to Lake anthracite there.

MINNEAPOLIS

After a long mild fall and early winter, some real Minnesota winter descended upon this section. As a result, the local market which has been completely demoralized on screenings, has picked up notably. Prices have advanced sharply and various grades of Illinois screenings are now selling up as high as $3 at the mine, with orders 30 days behind. Central Illinois screenings are $1.65@$1.85. Prepared sizes range from $5.50 for the southern Illinois down to $3.50@$3.75 for central Illinois. All available coal finds a ready market. The docks are storing in the strengthened situation. Dock coal is worth $9.50 firm for Younghagen and $9.25 for Hocking.

The hard coal situation is distressing. The season’s receipts were about 560,000 tons—against about 1,800,000 tons for the season of 1921. Deducting the 400,000-ton carry-over, leaves a consumption for 1921-22 season of 1,400,000 tons. Counting the carry-over into this year’s total there are only 960,000 tons for the 1922-23 season.

Already dock stocks are down to about 100,000 tons, and the heaviest of the winter consumption is still to come. A number of points have reported being entirely out of hard coal and the dire need of it. The stock on hand will be exhausted soon after the New Year. The fuel commissioner has been working for some time to get all-rail shipments to supplement the Lake receipts but without definite hope of suc-

DULUTH

Hard coal, or what there is of it on the docks here has been advanced in price 75c. a ton. This is not because of the shortness of supply but rather because of the advances in Lake freight rates during the last week of navigation when the majority of the coal now on sale arrived. Egg is now selling at $13.25, stove at $13.65, not at $13.50, pea at $11.75, buckwheat at $5.60, and anthracite dust at $4.

In view of the fact that substitutes are not proving satisfactory for use by burners, coal men have decided to reserve what stocks are available here for use in those houses which are not supplied with furnaces. Dealers here claim that consumers of hard coal are better off than in any other part of the country, because of the stocks which were on docks at the opening of navigation. It is claimed that many of the orders which were listed are being withdrawn, and that consumers had listed their orders with several different companies in the hope of getting coal from one.

Official figures showing coal receipts at this port for December and for the entire year have been made public. During this month 107,843 tons of hard coal arrived here and 108,379 tons of bituminous. A comparison of this year’s receipts with last year’s follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Hard Coal</th>
<th>Bituminous</th>
</tr>
</thead>
<tbody>
<tr>
<td>1922</td>
<td>128,739</td>
<td>105,739</td>
</tr>
<tr>
<td>1921</td>
<td>148,975</td>
<td>123,579</td>
</tr>
</tbody>
</table>

MILWAUKEE

Weather conditions assimilating maximum fuel consumption are responsible for a lively coal market. Local delivery situations are taxed to the limit and shipments to the country are as liberal as the railroad conditions will admit. Prices have not been advanced, however.

Following investigation of a charge made at Oakwell, Wis., that Milwaukee coal dealers were producing, Paul Presseyt, state fuel administrator, advised the complainants to do business only with brokers subject to regulations by the coal administration. He reports that responsible Milwaukee dealers are not charging excessive prices, nor are they distorting restrictions imposed by the state coal authorities. Less than 20 per cent of the coal held at Milwaukee is from independent producers.

Thirteen cargoes of anthracite and seven cargoes of soft coal expressed December’s coal quota by Lake. The hard coal approximates 87,000 tons and the soft coal 80,000 tons. Caradore’-on-tax coal for December is not available yet.

New England

Buying in Small Tonnages; Prices Continue to Harden

Inquiry Far from Brisk—Scarce in High-Grade Low Volatile for Spot Shipments—Railroad and Industrial Reserves Tend to Prevent Price Ascent.

The current market shows a further hardening of prices. Inquiry is by no means brisk, and purchases have been for small tonnages, and the volume of high grade low volatile available for spot shipment is undeniably meager. Ample reserves for the present on the part of both railroads and the larger industries are the chief factor in keeping prices from soaring, for it would need but a few comprehensive orders to give the market a decided push upward.

Medium grades of low volatile originating in central Pennsylvania have sold as high as $5.25 per net ton at the mines, the same coal having sold but a few weeks ago at not over $3.75.

As at present advised, buyers are extremely reluctant to buy in advance of actual need. Most contractors have no immediate coal available that can be delivered and that has a bearing on the spot market. Offerings of Southern grades are extremely light both at the lakes and piers and at all railroad points like Providence, Boston. Few number quotes of Pennsylvania and New River have been reported and few of the smaller grades are on exchange at all.

There has been considerable border country for eastern coal transportation. Short supply coupled with a tight hand over the western market for reserves. Certain of the offerings are meeting delivery dates and contracts have been made.

Roads situation is not entirely restricted as previously thought. For example, very few shipments of fuel are being arrived at the latter stations than at the earlier ones. The, however, a large tonnage of water at $1.75 points, $1.85 points, $3.50 per net ton and $4.50 per net ton, due partly in a coal at $7.50 per ton and partly in a material of the order.

Certain of the operators of the Western mines have been moving coal in large quantities to points not available, and shipments from eastern points are also increasing.
Cincinnati Gateway

Contract Talk Is Heard
Arousing Little Interest

TRANSPORTATION DIFFICULTIES and colder weather bolstered up a falling market at a time when it was shipping badly.

Somewhat earlier than usual, but not to be denied is the talk of contracts that can be heard in this area. It would appear that the buyers of coal believe that there are sufficient reasons why it would be advantageous for them to get under cover for three, six, or nine months, and some of these are even willing to make it for a year. Prices, however, are not much in accordance with the ideas of the producers.

Generally speaking the prices hinted at are $3.25-$4 for smokeless and $3.75 for bituminous.

Transportation affairs were put in their first real test during the past week and were found wanting. The N. & W. and the L. & N. placed embargoes against everything but coal and had the blame upon the inability of the connecting lines to clear the congestion at this gateway. The C. & O. was in a bad fix though it was able to keep most of its loads moving. Prices which had been weakening suffered under this condition.

CINCINNATI

The coal market holds to the former basis of 70c per ton. Fewer cars of low price and New River material have been pushed in the last few days, on account of the coal's being sold at a profit. This is making some difficulty in connection with the longer runs. The f. o. b.快乐事情s have risen to $1.25 per ton, the C. & O. surveys from the S. & W. having remained at 8c. Per car revenue is down to about $30,100 per day, although there are about the same number of cars as it was two years ago.

HIGHER VOLATILE FIELDS

Eastward

There is some increase in demand from the railroads nearest their present lines. They are ordering their requirements at the high price levels. 

COAL AGE

Vol. 22, No. 26

Coke

CONNELLSVILLE

The coke market has been lifted entirely out of its regular channel by the sudden demand that has arisen for coke for domestic use in the East. The furnace coke market had gotten down to a point where it was easy to buy 100,000 tons at a price of $50.50 per ton, but day by day there were heavy buying orders from the east, and all floating supplies were absorbed, until $75 was paid for a large lot.

The general market is now quotable at $85-$90, and this seems to apply equally to heating, blast furnace and foundry coke. The blast furnaces have been indisposed to pay prices asked, while foundries when quoted the advanced prices have postponed purchases.

Some operators seem indisposed to allow a transient demand to interfere with the regular movement to metalurgical consumers, but these are in the minority. Meanwhile, furnaces on the Gulf have been paid for first quarter and are in no position, on account of prices at which they have sold pig iron, including their sales of foundry iron at 25c, valley, for first quarter, to pay more than they have. There are practically no negotiations for first quarter contracts and matters will probably drift until the situation clears up. There is a possibility of some furnaces banking.

Estimated production of coke during the week ended Dec. 16, was 208,610 tons, an increase of 5,800 tons as compared with 202,800 tons during the week preceding.

UNIONTOWN

Orders have come into the coke region from Philadelphia, New York and New England for all available tonnage for domestic use and price does not seem to be a factor. As a result the price has advanced sharply.

A sudden shift of the coke market has practically suspended contract negotiations for 1923 delivery but a few inquiries are out for January business. Ten days ago furnaces would have been able to close for business at 30c per ton. There were fewer cars placed this week than at any time since the strike ended. Quotations now are $2.75 @ $3 for steam and $3.50 @ $3.50 for by-product.

BUFFALO

The market is getting to be much influenced by the need of something as a substitute for anthracite. Prices are strong but the open seams are not able to provide any for domestic use. For the present the supply is very short. The local furnaces are increasing their activity. The local illuminating gas company now requires no gas and so has no coke to sell. It buys its gas of the byproduct ovens and mixes it with natural gas.
News Items
From Field and Trade

CONNECTICUT

The Devon Coal & Ice Co., Bridgeport, is a recent incorporation under the laws of Connecticut, for the manufacture and ice business with a capital stock of $10,000. The men signing the incorporation papers were James F. Grout and Lawrence J. Eckstrom, all of Bridgeport.

ILLINOIS

K. F. Kuhlman, vice-president of the Keystone Coal & Mining Co., Chicago, recently married Miss Margaret Bates, of LaGrange. Mr. Kuhlman left immediately for a week's honeymoon in the East, expecting to start again for Chicago at any moment.

J. H. Vickers, of the Bitumacite Coal Co., of Chicago, announces that Mt. Vernon has been selected as the location for its plant for the manufacture of bitumacite, a substitute for coal. The first plant will consist of a unit with a capacity of 500 tons of bitumacite, of which the company plans to make. Mt. Vernon, the headquarters for the manufacture of its process as well as its machinery and equipment.

The Sangamon County Mining Co., specializing in the Lawrence mine, Latham, and the Citizens mine, Lincoln, as well as several others in the vicinity, have changed the name of their company from the Sangamon Mining Co. to the Sangamon County Mining Co., and the capital stock has been increased from $200,000 to $500,000. The change in the name of the company was the fact that there has been considerable change in officers (Co. and considerable confusion throughout the state resulted.

The Central Illinois Public Service Co. announces that it will soon furnish power for the 12 mines of the old Ben Coal Corporation in Franklin and Williamson counties. The license of the power company will be connected with the mining concern at West Frankfort and will furnish power for the mines, approximately 6,000,000 tons of coal and the power bill of the mining company will average nearly half a million dollars each year.

The Glen Ridge Coal Mining Co., Champaign, incorporated, with a capital of $100,000; incorporators: Charles W. Bidwell, Caleb S. Fudge, Elmer W. Heber- street, A. H. Mees and Arthur W. Kettles.

The Quaker Coal Co., Chicago, has been chartered to mine and deal in coal, slag, and other materials from the Illinois coal fields. The incorporators are Edward D. Pomroy, Edward P. Kears and Henry T. Martin.

The Wolverine Coal & Mining Co. has increased its capital stock from $20,000 to $50,000.

The Trojan Coal Co. has increased its capital stock from $20,000 to $50,000.

H. J. Stump, of Macomb, 111., has announced that the R. & W. C. C. Co., in charge of the Macomb & Stump Coal Co., has been returned to its home in a thorough manner, after burning coal properties in Williamson County.

The Union Mine Co., No. 8, Christopher, has been bought by the Stump Coal Co., St. Louis, Mo. The mine will be able to resume operations soon under the management of the new company.

The West Frankfort office of the old Ben Coal Corporation is now in a new and more commodious building. The company has been in business for several months and has made a profit.

INDIANA

The Midwest Fuel Co., Indianapolis, has been chartered to deal in coal, capital stock $100,000; directors: James E. Corbin, Whitfield, C. Coon and Burrell Wright.

Three men were seriously injured recently in the Wabash mine at West Terre Haute, when they were trapped in the northeastern. One of the men was coming out of the mine when the cascade occurred and the other two were brought away by a large wave of water. The men are recovering.

The Consumers Cooperating Coal Co. has been organized at Terre Haute, Ind., with a capital stock of $50,000 to operate the coal mines of the company and deal in retail selling of the coal and other building materials. The organizers of the company are W. T. Semon, W. H. Best Jr., and B. H. Smith.

A shot firer was killed in a dust explosion recently which wrecked the Wabash mine, fourteen miles northeast of Terre Haute. The damage to the mine is estimated at $25,000. The shaft will be out of commission for at least two weeks.

A new tipple is being erected at the Sates coal mines, the company, located in White County, a few miles east of Jasperville, Ind. The new mine and the shaft are at Lafayette, Crawfordsville, Mound and Veedersburg. The coal is known as the best bituminous coal in the state, and promises to be a successful one and by lowering the cost of coal for the companies, W. M. Yarn, of Newport and William Copas, of Strongtown.

KANSAS

The Carson coal Co., of Lawrence, was closed down Dec. 8, with the result that the Kansas Coal Co. of Kansas City, Kansas, acquired the property of the old company.

The proposed new mine of the Potter coal Co. is located in the town of West Farm. The work will extend from the Tariffs branch right of way.

The Big Black Coal Co., of Blacklick, has been chartered with a capital of $500,000; directors: W. C. Good, W. E. Johnson and W. H. Peterson.

The Mound Branch Coal Co. has been incorporated, with a capital of $500,000; directors: George H. Burke, Virginia Co., W. E. Beardsley and W. H. Peterson.

Missouri

The Mound Branch Coal Co. has been incorporated, with a capital of $500,000; directors: George H. Burke, Virginia Co., W. E. Beardsley and W. H. Peterson.

The Wabash Coal Co. has been chartered, with a capital of $500,000; directors: George H. Burke, Virginia Co., W. E. Beardsley and W. H. Peterson.

The Spring Dale Coal Co. has been chartered, with a capital of $500,000; directors: George H. Burke, Virginia Co., W. E. Beardsley and W. H. Peterson.

The Missouri Coal Co. has been chartered, with a capital of $500,000; directors: George H. Burke, Virginia Co., W. E. Beardsley and W. H. Peterson.

The Green River Co. has been chartered, with a capital of $500,000; directors: George H. Burke, Virginia Co., W. E. Beardsley and W. H. Peterson.

The Easter Coal Co. of Missouri has been chartered, with a capital of $500,000; directors: George H. Burke, Virginia Co., W. E. Beardsley and W. H. Peterson.
The Coal Age Co., Limited, has been organized by a number of interested men on the coal fields of Pennsylvania. New York is issued on the Letchwanna Coal Co., Coal Gas Co., and the Michgan Coal & Iron Co., Inc.

Pennsylvania

A mine pit 1,200 feet at the Lehigh Coal Co., near Shamokin, was called off Dec. 28 when the operators were unable to get the necessary funds to operate it. The management has decided that when the necessary funds are available, the mine will be reopened. A number of employes have been taken on the mine for the purpose of selling the coal.

Ohio

The Cremer Coal Co., Zanesville, has been issued on the Medora Coal Co., and the Zanesville Coal Co., Inc.

The Buckeye Coal Co., Columbus, has been organized by the Medora Coal Co., and the Zanesville Coal Co., Inc.

The Letchwanna Coal Co., Scranton, has been organized by the Medora Coal Co., and the Zanesville Coal Co., Inc.

The Buckeye Coal Co., Columbus, has been organized by the Medora Coal Co., and the Zanesville Coal Co., Inc.

The Coal Age Co., Limited, has been organized by a number of interested men on the coal fields of Pennsylvania. New York is issued on the Letchwanna Coal Co., Coal Gas Co., and the Michigan Coal & Iron Co., Inc.

New York

H. H. Massey, president of the Massey Coal & Iron Co., Inc., has been elected to the board of directors of the American Institute of Mining and Metallurgical Engineers.

Virginia

The first shipment of navy coal contracted for with the Falmouth Fuel Co., for delivery in Norfolk in January, February, and March, was shipped from the Pennsylvania Coal Co., and weighed 52,500 tons at the pier. Approximately 200,000 tons is held in reserves at the Norfolk terminal.

The offices of J. B. Bigelow & Brooks, maintained at Norfolk for a number of years, have been closed. The company, which was organized by the W. H. Brown Coal Co., and the Virginia Coal Co., has been reorganized under the same name and in the same offices. The company is now controlled by the owners of the American-Canadian Coal & Coke Co., Inc., which was organized last May and has extensive coal and coke interests.

Washington

Major William J. A. Muldoon, who recently visited Seattle from Boston, has accepted the position of vice-president and manager of the American-Canadian Coal & Coke Co., Inc., which was organized last May and has extensive coal and coke interests.

West Virginia

Governors of eleven states, accompanied by their wives, drove up to the Union Contract during the last week of December, and descended 250 feet into the earth to inspect a coal mine. All were in the coal fields of West Virginia and in the coal fields of West Virginia, in the coal fields of West Virginia, in the coal fields of West Virginia.
^

December

COAL AGE

28, 1922

By an agreement between attorneys f-.
the state and defendants, the trial of t.
Frank Keeiiey. president of District 17,
United Mine Work>rs of America, will take
place at Berkeley SpriiiKs, Morgan Counts',
19, it has been announced by Attorney
IJclcher, rei>res<iuinK the ijrosccLilion.
Tliis date for the trial, it is understood will

Feb.

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be formally fixed by Judge John Mitch. 11
Woods, of the Morgan Circuit Court, wht-ii
the regular term opens at Berkeley Springs,
Jan. 2.
The 44 new coal companies organized in
West Virginia during the months of October and November had an aggregate capiTh<re continu.s
talization of $4,2:i5,0U0.
to be expansion of the industry notwithstanding advice from Washington to refrain from investing capital in the development or coal lands and n(»twiihstanding the fact that the jjrice of coal
In the months
has been on the decline.
mentioned the following companies were
organized:
$.50,000; Winifrede-llatliehl ( <»al Co.. Williamson. $50,000; Kadio Kiiel <'o.. Morgantown. $50,000
.Miami Co-operative .Miniiii;
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Superior Block C'l.al
Charleston. $50,000
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< oal
KiiKle <oal Co., Huntington. $25,000; Corii
Miniiit; <'o., Huntington, $200,000; Indian
Hill <oHl Co., .Morgantown. $50,000; ColKIde.ifate Coal Co.. Charleston, $25,000;
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Traffic News

COAL AGE

()}!{+t 14 75, a man behind his wealthy
and powerful friends through the mountains
of the state gave an added and a
new meaning to the word "priority" in
several coal mines, a man who has been
for many years known as "Mr. Marsh-Ana-
irhe of the copper and iron mines in Idaho and
Pennsylvania."

Fred A. Marsh, general purchasing agent
for the Idaho-Tahoe Coal Co. since 1893, passed
away on March 15th, 1925. Mr. Marsh
was one of the original founders of the
company and has been its purchasing agent
for many years.

William Stevan, Jr., who had been in the coal
business in St. Louis since 1875, was killed in an
automobile accident in the Western District.

The coal industry lost another of its
prominent figures when Jesse M. Overton,
president of the Coal Operators Protective
Association, died suddenly of heart failure in
Nashville, Tenn., on March 15th. Mr. Overton
was a well-known figure in the mining
industry and was widely known among his friends.

Federal Fuel Control Notes

OBITUARY

Edward W. Vick, president of the M.
Vick & Company, died in his room in
Baltimore on March 15th.

Volume 22 Number 26

Winding Gulf Operators' Association

E. E. White, of E. E. White Coal Co.,
Huntington, in the United States, Coal
District, West Virginia, was re-elected president
of the Winding Gulf Operators' Association at
the annual meeting of the association held in
Washington, D.C.

This is the fourteenth consecutive time
that Mr. White has been chosen to lead the
association, which has grown from a small
organization to a large and influential body.

C. H. Macal, Beckley, vice-president; A. W.
Wheelock, secretary-secretary of the
Beckley Chamber of Commerce; and A. W.
Hale, coal car distributor of the
Virginias, were re-elected to their offices.

The meeting was well attended, with the
coal operators and transportation men in
attendance.

Trade Literature

Westinghouse Electric & Mfg. Co., of East
Pittsburgh, Pa., has issued a 23-page booklet,
titled "Simplex Electric and Simplex Air
Gears," describing the advantages of the
use of electric motors and engines. The
booklet is well illustrated and contains a
series of tables which enable the user to
judge whether they are applicable to his
machinery.

Small reinforced concrete cooling plants.

Roberts & Schneider Co., Chicago, Ill.,
Burlington, have issued a four-pagefolder,
titled "Burlington's new design of one-track cooling plant, Simplex skip bucket and loader.

Coming Meetings

American Institute of Mining and Metallurgical Engineers will hold its Spring Convention on April 19-21, 1925, at the Engineer's Building, New York City.

American Institute of Mining and Metallurgical Engineers will hold its Spring Convention on April 19-21, 1925, at the Engineer's Building, New York City.

American Institute of Mining and Metallurgical Engineers will hold its Spring Convention on April 19-21, 1925, at the Engineer's Building, New York City.
The Stonega Coal Pile—
your never-failing source of supply

Not only are our mines non-union and thus able to continue operations during strike disturbances, but we are equipped far better than the majority of coal companies to meet the demands of our customers.

One of the plans we put into effect to meet the excess demand during the war still continues to function. Our central storage yard, capacity approximately 125,000 tons, is an inexhaustible source of supply to our customers.

The low-sulphur contents of Stonega Coal is demonstrated in its adaptability to storage purposes. At different times this pile of coal, thirty feet high, remained untouched during the most extreme weather conditions. Surprising as it may seem, the change of temperature throughout the pile, during this time, was barely perceptible. This fact was definitely established by means of a system of piping extending into the pile at stated intervals and temperature readings taken frequently.

Some vitally interesting facts are to be found in the Stonega Booklet. Mail the coupon today for your copy.

Stonega Coke and Coal Company
Land Title Building, Philadelphia, Pa.
Important Notice to Advertisers

To secure first-class typographical set up and enable us to submit proof in sufficient time to make any necessary corrections before going to press, it is essential, that we get copy in our hands together with all necessary cuts at least three weeks prior to date of publication.
Responsibility

How do you conduct your business? Do you attempt to do everything yourself, look after a thousand and one details, be at the same time both executive and detail man, be personally responsible for everything which happens around the plant? Or do you seek out able assistants and place the responsibility for the different departments of the work upon them, leaving the manner in which they are to execute their assignments strictly up to them? No one need tell you which method is the better.

Why not, then, do the same with your fuel problem, choosing instead of a single individual an organization trained to handle the specialized details of this business in a highly efficient manner? International service is supplying the needs of hundreds of the large coal and coke users throughout the country, assuming the responsibility of giving them the grade of fuel they need, in whatever quantity they specify, and maintaining the service uninterrupted so far as humanly possible.

Put the responsibility of meeting your fuel problem up to us.

International Fuel & Iron Corporation
Philadelphia    Pittsburgh    Cincinnati

Get Preferred Attention—Mention Coal Age in Writing Advertisement.
### Directory of Consulting Engineers

<table>
<thead>
<tr>
<th>Name</th>
<th>Services</th>
<th>Location</th>
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<tr>
<td>Allen &amp; Garcia Co.</td>
<td>Examination and reports on coal properties, design, construction and supervision of plant works for constant and automatic control of operating conditions - evaluation of operating properties.</td>
<td>Dunmore, Pa.</td>
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<tr>
<td>Crickton, Andrew B.</td>
<td>Mining Engineer</td>
<td>Philadelphia, Pa.</td>
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<td>Crickton, Walter G.</td>
<td>Mining Engineer</td>
<td>Pittsburgh, Pa.</td>
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<td>Cunningham, W. H.</td>
<td>Consulting Mine Managers and Engineers</td>
<td>St. Louis, Mo.</td>
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<td>Howard N. Eavenson &amp; Associates</td>
<td>Examination and reports on coal properties, design, construction and supervision of plant works for constant and automatic control of operating conditions - evaluation of operating properties.</td>
<td>Swanzick Bldg., Johnstown, Pa.</td>
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<td>Hutton, Meritt</td>
<td>Mining Engineer</td>
<td>Pittsburgh, Pa.</td>
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<td>Randolph, H. F.</td>
<td>Consulting Electrical Engineer</td>
<td>Pittsburgh, Pa.</td>
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<td>Weaver, Wilson &amp; Burtnett</td>
<td>Consulting &amp; Mining Engineers</td>
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### CHAS.T. PUBLIC ACCOUNTANTS

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**Your people need ice all the time!**

**THE AUTOMATIC REFRIGERATING CO.**

**See our half page advertisement next week**

1. **AC-ZOL**, gives longer life to wood than any other preservative.
2. Increases mechanical strength of wood.
3. Costs less per gallon than other preservatives.
4. 8 gallons of **AC-ZOL**, will treat as much lumber as 188 gallons of any coal tar preservative.
5. Easier to apply (requires no heat).
6. Does not injure the hands.
7. No offensive fumes to injure the eyes.
8. No unpleasant odor.

**Send for sample and Bulletin 100**

**ZINSSER & CO.**
Hastings-on-Hudson, N. Y.
It takes all kinds of people to make a world

YES, and many kinds of conditions to make up the mining industry — mines with a forest of props, behind and among which miners play hide and seek as they shovel coal into a car, and mines with the roof like a bell that stands up without propping, seams thick and thin, workings gasless and gassy and so forth. For each condition there is an appropriate solution. The one the working to suit which is made the subject of Mr. Cornet’s paper in next week’s Coal Age is not one of either extreme. His plan is suited to roof such as is likely to be found in many American mines and is based on the practice he has found established in Belgium.

ANOTHER article describes the Nineveh Mine, at Seward, Pa., where solid cars are hoisted in self-dumping cages. As a result of the stiffness that the use of steel and the absence of a gate confers it has been possible to provide a capacity of 1 1/2 tons in a car that affords 12 in. of headroom in a seam 3 ft 8 in. thick. More and more is emphasis being placed on a big car as a tonnage producer. Electric gathering locomotives, better bearings and wheels, car bodies that hold their shape and straight steel room tracks are making the big car popular with the miner and operator. It is no longer a questionable expedient.

SOME PEOPLE have wanted to know if we could not use German brown-coal methods for the manufacture of briquets. O. P. Hood, chief mechanical engineer of the U. S. Bureau of Mines, will tell in next week’s issue, why it cannot be done. German brown coal has its own binder and, by the way, for most of it little else commendatory can be said, for it is a badly watered stock. Only one-third of it is consumable. Mr. Hood’s article is quite readable and summarizes facts, some of which, at least, were known back in the first decade of the century to the Technological Branch of the Geological Survey.

IT USED TO BE thought well to ventilate stockpiled coal and keep it cool. Now we tend to do the reverse, pack it tight, knowing that where air is excluded coal will not burn. In the tight seam under tons of rock the coal has kept from sun to sun and generation to generation free from spontaneous combustion, even though the internal fires of the earth, intrusions of molten masses and the heat of mountain forming movement warmed it. It could not burn as long as it had an air. A Philadelphia electric company has found a way to compress the coal in a stockpile so that it is nearly air-free and therefore largely fire-free.

Read what it has to say next week.

Coal Age—Next Week
FOR SALE

Machinery For Sale

Power utility engines, boilers, generators, oil burners, equipments, used lose, rolls, tanks and all kinds of machinery, equipment and supplies for coal mining. "New England Arms" Power Supply Co., 943 Main St., Terre Haute, Ind.

SALESMA\n
INDUSTRIAL GREASES

COAL MINING TRADE

Oil marketing organization anxious to acquire substantial business for the coal industry. Must have a good knowledge of oil refining and experience on an industrial scale and growing mine coal mining trade, give me, nationally educated sales desk.

AMID Coal Ave.
10th Ave at 36th St., New York City

H.R.T. BOILERS

2 1/2 x 10 ft. steam-driven type, 125 bhp. 150 lb. made by the New Iron Works. Boilers have 30-ft. heads, by a triplicate butt strapped shells. 120 and 150 ft. 5-mower tires two years ago. Boilers are equipped with feeds, safety valves, gauges, Jonas Bridgefield boilers, two engine driven direct drive fans. Two blowers, feed pumps, two injectors. feed water regulators and all trimmings. These boilers are being removed to make room for larger size.

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II. But who has brought about this change, this revision in the conception of man's advancement, of man's inevitable responsibility? And who has given this word so vast a power over human destinies and has caused so gigantic a revolution for the benefit of all humanity?

II. The engineer. His is the responsibility. He it is who has introduced economics into all the affairs of men. He it is who has provided the world with a new basis for judgment and appreciation.

II. The engineer, who has made life assume a scientific instead of a chaotic aspect; who has developed an exactness of procedure; who has worked out cause and effect on a calculable basis; who is even now reducing the fever of misapplication of life's priceless energies and putting them to the service of constructive happiness.

II. It will be many generations before the mass of humanity knows and acknowledges its debt to the engineer, who so quietly brings about such stupendous revolutions and revelations, and who takes the past and links it to the present for the benefit of the future.

II. Yet while the acknowledgment may be long in coming, the engineer has his reward in the knowledge of work well done, in the joy of accomplishment, in the feeling of power which gives him the opportunity to direct the courses of men even before they are aware of the source of authority.
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