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Cincinnati's Convention

DURING THE past year not much that is really new has been introduced, but that does not mean that there has been no progress. In fact the technique of mining appears to have advanced as much as in any previous year. The large number of new devices of a few years back are now getting into regular operation One hears less of what can be done in a record run and more of everyday experience.

The schemes of past years are gradually being digested. Machines are beginning to cut their repair bills. Mines are being adapted to the new systems of operation. Superintendents are gradually assimilating the new technique. If, as Eugene McAuliffe says, the success of the new equipment hes 90 per cent in management, and if we are to interpret that as meaning an attitude of mind, then we are making real progress. Where before it was said, "will it work?" we have now advanced to the question, "how will it work best?" We have ceased to question whether the new methods of mining are going to replace the old.

Conveyors have made the most progress, especially shaking conveyors. The United States is getting in line with England and Germany, which countries by the way got their first ideas on this subject from this country. The American mines initiated slushing for backfilling and conveying for coal and then turned the cold shoulder to both. Conveying is coming back, partly with American devices and partly taking advantage of German and English machines.

Rock-dusting was probably advocated here by G. S. Rice before the British devised it for their own needs and on their own initiative. But now with their example and that of France it is being introduced here. In no long period of time every mine not naturally rockdusted will adopt it and perhaps all will find it well to introduce the manufactured article because of the uncertainty of natural rock-dusting. Here again the convention proved helpful in suggesting methods of distributing the dust as much as in advocating the practice.

No one can doubt that Mr. McAuliffe is right in emphasizing the importance of ventilation and coal-dust suppression. The U. S. Bureau of Mines is doubtless in full accord, but to advocate too many improvements is usually an effective way to dull the edge of one's advice. One strand at a time is an easier way to sever a rope than to try cutting the whole cable at a single stroke. This year it is rock dust that receives the emphasis. When that advance is assured, then perhaps we shall find due stress accorded to the other two. If a thousand lives yearly can be saved by rock dust, a big gain in safety will be achieved.

After all rock-dusting is a protective device that can be seen and evaluated. It lasts for months. Ventilation on the other hand is not so readily assured. It may be sufficient today and inadequate the day following, and an explosion will wipe away all evidence of the adequacy or inadequacy of temporary stoppings and doors. Rock dust on the other hand will remain after the explosion to show that it was present to guard the haulway.

The convention has done a good work. It has brought up many new ideas and dramatized and revised many not so new. A year from now we shall see what it has done without realizing to the full perhaps how much of the progress should be attributed to its influence.

Pending Coal Legislation

THE COAL industry, in considering the bills now before Congress which are designed to ameliorate the difficulties under which the industry is suffering, will do well to view the problem in a judicial and unexcitable mood. These bills, it must be realized, are put forward by Congress, not on account of a pressure from the President and the Executive branch of the government so to do, but from a pressure of public opinion, voiced through the press and communicated from their constituents through the different senators and congressmen, that "something must be done." When this pressure is coupled with reproaches from the Democratic representatives and senators that the Republicans have done nothing, it is clear that a gesture in the way of legislation is inevitable.

The attitude of the Executive branch of the administration toward the subject—that the industry, if it were humanly possible, should be left to work out its own problems, provided it did address itself to that task—was clearly shown by the President's attitude during the anthracite strike, when his wise "hands off" policy, in the face of public clamor and complaint on Capitol Hill, produced the most satisfactory results.

Concerning the present legislation a certain attitude, such as is exhibited by certain spokesmen for the industry, indicates a belief that the administration is seeking to exert some control over the coal industry, for the sake of aggrandizing its power over business. There is nothing in the record to support this view. Not only the President's attitude during the strike, but the testimony of the Secretary of Commerce at the coal hearing of the House of Representatives show this; reading of Mr. Hoover's testimony shows that he abhors compulsion of any sort, and moreover, that he did not favor present legislation. The imputations that the bills were drafted by or with the help of the Department of Commerce are quite unfounded.

It is indeed unlikely that the present legislation, though introduced, will be passed this session: the political exigencies of the situation are for the moment satisfied by their introduction. But that does not mean that the economic and political problems of the coal industry are settled: only a fair, progressive and tolerant attitude on the part of coal operators and coal miners alike can avert future troubles, and a further loss of public sympathy toward both sides of the quarrel.

It is not sufficient for the coal industry simply to repel all these pressures, as was explained in the editorial on "The Dangers of Negation" in our issue of April 22. The coal industry should be allowed to solve its problems by itself, always providing that it takes advantage of that privilege and permission. It must not, however, deny or minimize the power of public opinion, the greatest ruling influence in the modern world.

Coal Age is opposed to the passing of the pending legislation at the present time and is opposed to all legislation if it can be avoided. It does, however, see clearly the folly of a *laissez-faire* policy on the part of the industry. Constructive, not destructive leadership is necessary on the part of operators and miners alike; and, moreover, tolerance and co-operation between these two groups of leaders.

Will Mine-Water Pollution Increase?

E XTREMELY GLUM were the reflections of Andrew Crichton in his address on the pollution of streams by mine water at the American Mining Congress convention last week. His was a sort of unrhymed threnody, or dirge. Only 400 square miles of the coal on the Monongahela River drainage area have been mined. Some 6,600 square miles remain. Already the water is acid part of the year. Soon it will be acid all the time. Soon it would be so acid it could not be treated.

What can be done? To treat the mine water would be excessively expensive. There is apparently no way out except by state purchase of idle coal lands. These were the saddening reflections presented by Mr. Crichton, and no one can aver that he overstated the problem.

There are, however, some signs of improvement. Without planning for less pollution, probably much is being done all unwittingly to decrease it. Much of the acid water in old abandoned mines is doubtless derived from the slack coal that in early years was left in the mines. Pyrite in slack is particularly susceptible to oxidation by waters carrying oxygen.

In early days less slack was made than today. In a 3-ft. bed perhaps a third was fine coal and in a 6-ft. about one-fifth. When we realize that the sulphur in the bed will run from 1 to 6 per cent, assuming all the sulphur to be pyritic which is, of course, not correct, the acid that could be formed would run from 3 to 18 per cent. If a third was pyrite, there would be 1 to 6 lb. of acid for every 100 lb. or from 20 to 120 lb. for every ton of slack, that is from 4 to 40 lb. for every ton of coal mined.

Furthermore, in early days the coal was not extracted with any degree of completeness. About a third of the mineral was left. This coal became crushed and in time all of it will be leached of its sulphur, thus increasing the figures given materially. Today not only is all the slack loaded out, but the pillars are more completely removed. The extent of that removal is constantly increased, thus again reducing the quantity of acid formed.

Coal, however, is left in the roof and floor. That in the roof is badly crushed and will doubtless give trouble for years. That in the floor is probably almost intact, though floor movements break it up a little. The floor

coal is the most sulphury of any. Where it is not, it is mined and shipped, now as in past times. We are not clear to what extent it was left in the mines in earlier years, but probably it was removed as the market was not as finical as today, for coal was less used for metallurgical purposes.

Other sources of pollution are the rooster coals and perhaps some of the measures that are void of coal but contain sulphur. The shale and sandrock measures are thicker than the coal beds, but their sulphur content is lower. Nevertheless the stalactites in the mine bear evidence of the presence of iron and therefore possibly of pyrite.

One would not be so ready, however, to make that assumption, were it not that droppers are noted to be acid in some mines, as has been proved by their action on mine piping. These droppers may, however, be acid only because they have passed through superincumbent coal seams or through rooster, or "wild" coal beds.

The effect of sealing a mine is to prevent oxidation by free air. Such sealing might be fairly effective, though that is a matter for proof. Unfortunately oxidized waters from the surface would undoubtedly reach the coal, especially when the cover is light. Then if the water escaped through the outcrops it would be extremely acid, all the more so that the water would remain in the workings long enough to oxidize the pyrite and to reach levels well above the floor of the mine.

The coal operator who pumps water is interested in keeping his water free frm acid. What should he do to this end? That is another story and well worth the telling.

Wasting Human Lives

USING EIGHT or more men when one or two would serve to do the work and could do it more efficaciously and easily is wasting human lives and depriving the public of its right to buy coal at the price for which coal should sell and incidentally is not profitable to the operator who does it. These wastes of human effort which need correction are found not only in dumping practice, though there they are not infrequent and are larger, perhaps, than elsewhere, but they occur in many departments of work in mining and in other industries. They are not peculiar to mining. One can find such wastes everywhere if one looks.

Those who believe the function of the superintendent is just to keep men working greatly misapprehend the real purpose of that functionary. Many a mine does good work for its owner when scarcely a man is actually laboring. At such mines machines are at work and the men merely direct their operation. "Hustle" was a big word in the nineties when human effort almost alone achieved results, but smooth, well-adjusted mechanical operation is the desideratum of today. We have no words yet to express this notion as emphatically as we express activity of the body, effort, grind and labor by the word "hustle," but that is a sign that the present decade does not know itself yet, has not recognized its own conditions, has not visualized its aims. When it does it will have words and synonyms aplenty for the job that runs itself-that is automatic, propelled by the nind and not by the body. Who will invent the word of power that will set our thinking straight on modern ways of operation? Words are the tools of thought, but here we are with a new condition in our lives, and a new thought for which we have no word.

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Can Coal Companies Improve Their Acid Water Effluents?

Air as Well as Water Needed to Turn Pyrite into Acid-Sealed up Mines Eventually Leak Again-Abandoned Mines Worse Than Those Working

By Staff Correspondent

THAT THE complete neutralization of all mine waters, to say nothing as to their softening, is a task almost beyond immediate contemplation was the view taken by most of the engineers present at the morning session of Tuesday, May 25, on "Mine-Water Pollution." Yet it was realized by nearly all that it would be wrong to take an irreconcilable attitude in regard to the matter. The industry cannot afford to assume an air of indifference towards the rights of others.

The consuming public needs the use of the waters, and the coal operator would do well to endeavor, if it be possible, not to pollute them excessively, for that action would be tantamount to attempting to deny to the public its use of those waters.

LEGISLATION IMMINENT

S. A. Taylor, president of the American Institute of Mining and Metallurgical Engineers and consulting engineer of Pittsburgh, who took the chair, said that the coal industry though unfortunate in the low prices it received for its product and in its excessive production did not stand alone when it faced these troubles. Farming and the metal industries were equally inflated as to production and equally deflated as to prices. The coal industry, however, found the legislators disposed to interfere to the disadvantage of the industry, whereas Congress was always active in attempting to alleviate the plight of the farmer. Governmental interference was prone to make more difficult the pathway of the coal operator, whereas the farmer was likely to

find the action of Government and legislatures friendly and helpful.

Comparing the coal industry with those producing metal, Mr. Taylor said that the coal fields were operated by such a large number of companies that it was impossible for the coal operator to look for any great amelioration of his troubles. Mergers in metal mining were likely to

ACCORDING to Mr. Crichton, mine water contains 80 to 100 grains of acid per U. S. gallon. If water from a stream or lake contains four grains of acid per gallon it will be necessary to treat it, and twelve grains will make it so impure that it cannot be made a suitable boiler feed. In part of the year the streams are already acid.

help the metal industries, but the coal industry had far to go to gain much assistance by that means.

Andrew Crichton, consulting engineer, Johnstown, Pa., delivered the first address which was on "Mine-Drainage Stream Pollution." This will appear in another place in this issue. Mr. Crichton emphasized the problems that confronted the coal industry and the great expense that might be incurred if even a neutralized water were demanded. To soften the water would cost even more.

S. A. Taylor said that the difficulty with mine-water pollution was that it did not come to an end with the closing of the mine. A tannery or cannery might have an extremely objectionable effluent, but as soon as Crichton said that if sealing would the factory ceased to tan or can respectively, the objection was re- no harm. It could not dissolve the moved. At coal mines the pollution pyrite appreciably. It was only after

would continue for years after the mines were abandoned, that pollution often becoming worse as time went on.

H. N. Eavenson in his discussion of the paper said that Mr. Crichton had rather underestimated the effects of the decision in the Indian Creek pollution case. The court had defended the riparian rights of those whose lands bordered on the stream as well as the rights of those who distributed the water in pipes. The decision, unfortunately, would apply to almost any stream.

He wondered who would neutralize the water from abandoned mines. True, the mines might be sealed. That, for a while, would solve the difficulty, but after a time the water would escape through the outcrop, and the last condition might be worse than the first.

Mr. Eavenson said that the railroads could hardly expect to be given soft water. They were already treating stream water even where no mine drainage water had been allowed to enter it. He questioned whether the public had any right to ask that the water in the streams be made as pure as rain water.

COURTS HIT LEAD MINES

J. F. Callbreath remarked that the lead mines in Idaho had been required by the courts to return the water to the stream as pure as it was when it was removed. As Idaho is largely dependent on its lead mines, it is easy to imagine what a blow this decision will be to the state, seeing that the prosperity of most of its citizens is dependent on the operation of the mines.

Replying to Mr. Eavenson, Mr. shut off the air, the water could do



The headpiece shows a refuse dump sur-rounded by blooming dogwood trees outside the mines of the Harvey Coal Co. at Har-veyton, in the Hazard region of Kentucky. The way in which vegetation continues to thrive close by rock dumps from which run acid water shows that acid is not so injuri-ous to plant life as is often stated.

the pyrite had been oxidized that sulphuric acid would be formed.

C. E. Lesher, assistant to the president, Pittsburgh Coal Co., said that the smelter problem had been at one time as acute as the water problem is today. A solution was ultimately found in that case. One would probably be found in the water-pollution difficulty also. The smelters had to be allowed to continue in operation, and surely the mines cannot be shut down without injury to everyone.

Dr. J. J. Rutledge remarked that all beds were not equally productive of acid water. The Bakerstown and Kittanning seams did not pollute water as much as the beds in the Upper Productive coal measures. H. I. Young, of Mascot, Tenn., said that the wastes from his copper mines were not in any manner harmful but were alleged to discolor the water in the stream. Proceedings had been brought to prevent the continuance of operations causing such discoloration.

WOULD TREAT FREE ACID

James O. Handy, director, Pittsburgh Testing Laboratory, Pittsburgh, Pa., then read a paper on "Mine-Water Purification," which he prefaced by saying that what Mr. Crichton had said was impossible, he proposed to attempt. He believed that mine water could be treated to remove free acid. Mr. Handy said that all sulphates were not harmful, the sulphates of lime and magnesia for instance.

Mr. Handy declared that the addition of lime to water was not considered harmful, but with that statement Mr. Crichton later took issue, saying that magnesium and calcium sulphates had been found to cause pitting in boilers. Mr. Handy said that the Bureau of Mines had found that in most cases the water entering the mine through the roof or at the working face is not acid but that it received its acid content in traveling through the mine, especially when the water was allowed to pass over slack. Some of the acid comes also from the exposed coal faces. He thought that a study should be made of the exact causes of water pollution.

Mr. Withrow declared that acidity did not kill the fish in the streams directly. They died because the acid removed the oxygen and made it impossible for the fish to get air from that source. He believed that Mr. Crichton had overstated the case in saying that 12 grains of sulphates

per gallon would render the water incapable of successful treatment. In the Allegheny regions the waters were in general relatively free of lime, but in the West there was far more, yet industry had been quite able to cope with that difficulty.

COST of treatment to neutralize acid with present area of developed and abandoned mines will be from 80 to 110 million dollars yearly, said Mr. Crichton. The treatment plants would cost 145 million dollars, and the water would still be hard.

As regards the iron-ore sludge resulting from mine water it would not discolor the banks of a stream if after deposition in a reservoir it was later flushed down the valley. In such cases it was washed down like clay and had no power to grip to the rocks as when first deposited. He advocated that some streams be kept free of pollution and that others be recognized as sewers into which industrial wastes be allowed to enter.

S. A. Taylor, in commenting on Mr. Handy's paper said the sulphur would leach from the floor coal for years. That coal was left because it had such a high percentage of sulphur. The impurity appeared to have been concentrated from the rest of the bed and found lodgment in the lower part of the coal measure.

William L. Stevenson, chief engineer, Sanitary Water Board of Pennsylvania, addressed the convention on the "Restriction of Stream Pollution." Mr. Stevenson said that the coal industry should be willing to enter into a co-operative investigation to ascertain what can be done to keep the streams reasonably free from pollution. The tannery interests and those of the paper and pulp industry have arranged for such cooperation.

It would not be well for the coal men to show indifference to the demands of the public and thus invite crippling legislation, nor should the public or the state work against its own interest by passing unreasonable laws that would destroy an industry upon which its own prosperity depends. Already about one hundred public water supplies in the state are being more or less affected by coalmine drainage.

Mr. Stevenson would divide the

streams into three classes namely those (1) in a pristine condition which should be preserved from pollution, those (2) which are more or less polluted, where pollution should be controlled and those (3) so greatly polluted that they should be regarded as natural sewers.

R. S. Ture said that it was to the interest of everyone that treatment should be effected before the dilution of the impure water as that was the more economical method. The manufacturer and the producer of coal should purify the effluents consequent on their operations. In conclusion a committee was formed to consider the mine-water pollution problem, a resolution to that effect having been passed by those present. The committee will consist of H. N. Eavenson, H. I. Young, and J. J. Rutledge.

The tanneries have appointed three chief engineers and three chief chemists of the tanning companies on a committee with Mr. Stevenson as chairman. The committee will make laboratory researches, will actually operate a full-scale experimental tannery-waste treatment works and will make observations of the streams below the works to determine the assimilating power of the stream to receive untreated waste and also to take care of the effluent of the treatment works with various degrees of purification.



Down Toward Big Coal River

View from the dumphouse of No. 4 mine of the Coal River Collieries Co., near Seth, W. Va. This mine is one of three operated in the state by the Brotherhood of Locomotive Engineers.



Shearing Machine

Courtesy, Sullivan Machinery Co.

How Should Coal Be Cut for Machine Loading?

Two Shears in Face Increase Tonnage per Machine 45 per Cent And Lump Coal 5 per Cent-Cushion-Blasting Not Suited to All Mines—Face Snubbed by Pop Shots—Cutting in Clay Bottom

/ITH A TONNAGE of 3,500 $1\frac{1}{2}$ ft. from the bottom of this seam the Union Colliery Co., of St. Louis, Mo., and Dr. L. E. Young, its general manager, are already taking an important part in the mechanization of the coal industry. Dr. Young contributed the opening paper at the Tuesday afternoon session, his talk being entitled "The Cutting and Shearing of Coal for Mechanical Loading."

At last year's meeting Dr. Young outlined the experiments he had made in snubbing, the purpose of which was to see if it was not possible to prepare the coal for shooting so that it could be brought down and loaded by mechanical means with minimum degradation. Since then Dr. Young has advanced a long way toward his goal which is to mine coal entirely by mechanical means.

Frank B. Dunbar, general superintendent, Hillman Coal & Coke Co., of Pittsburgh, presided in place of W. L. Affelder, assistant to the president of the same company.

The coal being mined by his company is the No. 6 seam which varies in thickness from 8 to 11 ft. About

By Staff Correspondent

tons daily, dating from May 1, occurs a blue band or shale parting. From 1 to 1¹/₂ ft. of top coal is left in mining chiefly to hold the roof. Rooms are driven 26 to 28 ft. wide on 45-ft. centers. The coal is shot at the end of the day shift, the shooting of more than three shots at any one time not being permitted.

SNUBBING COSTS EXCESSIVE

The company has found by experience that the labor cost of snubbing coal by hand is greater than that of manual loading. It has also discovered that at its mines the coal cannot be snubbed with powder to advantage, as this practice in mines where shooting is not permitted in the day shift, requires the working This would of too many places. purpose of defeat the primary mechanical mining, which is, to concentrate the operations of men and machinery.

In the first experiment in shearing tried by the Union Colliery Co. an improvised cutting machine on a mine-car truck was used. As the bar of this machine could not be adjusted laterally, the shearing cut had to be made in line with it. The general practice being to lay the room track along the left-hand rib the coal was necessarily sheared at some distance from the room center.

The test revealed the fact that in this seam with a single shearing cut the snubbing of the coal is still necessary. As the coal is laminated hand snubbing is hazardous.

As a second experiment a machine which would cut vertically was mounted on a sled which could be slewed so as to touch either rib or be located at some intermediate position. But here again the results were not satisfactory as the shearing cut would not reach to the rib unless it was pointed diagonally. Nevertheless the experiment indicated that two shearing cuts contributed greater capacity to the loading machines. A shearing machine, mounted on a caterpillar tractor was also tried.

LESS POWDER REQUIRED

The coal was loosened by two pop shots which were placed 8 ft. from the ribs and by two shots which served to break down the bulk of the coal and to square the corners. Without shearing, 1 lb. of powder produced 5 tons of coal; with one shearing cut 10 tons of coal were obtained for each pound of powder used and with two shearing cuts 15 to 20 tons of coal were dislodged per pound of powder.

S. Farnum, of the Goodman Manufacturing Co., related his ex-

The headpiece shows a shearing machine with the sumping cut partly made. The machine has been run off the regular track and is resting on slide rails which are ordinary rails turned on their sides.

periences in shearing the thin seams of Kansas twenty-five years ago. Though they produced bigger lumps than could be obtained otherwise, those early experiments were not successful, because they increased the percentage of screenings. Inasmuch as shearing by modern machines increases the capacity of the loading machine and produces better lump coal, shearing, he thought should be justified, despite the additional expense which it involves.

W. R. Jarvis, of the Sullivan Machinery Co., said that his experience with shearing was confined to the Uniontown field of Pennsylvania, In this instance shearing resulted in the production of better coal. It also made it easier to load coal by hand. The adoption of the vertical cut decreased the consumption of powder by one-third and also caused the coal near the roof to arch in a manner which could not be attained by any other means. At the same time it made props unnecessary in places 10 to 11 ft. wide.

In a mine in northern West Virginia, according to Walter M. Drake, of the Joy Machine Co., center shearing was employed to cut through heavy "bearing-in" bands in a 14-ft. room. The practice increased the tonnage per machine per.shift.

SHEARING AIDS PRODUCTION

Dr. Young said that shearing has been adopted in the mines of his company solely to increase the capacity of the loading machine. A year ago his machines were each producing 185 tons per shift. One shearing cut increased this output 35 per cent, and two have boosted the average to 275 tons as determined over a period of one month. He closed with the remark that the vertical cut has not only increased the output of the loading machines but has also raised the yield of lump coal 5 per cent.

In a paper on "Blasting Coal for Mechanical Loading" B. L. Lubelsky, explosives engineer of the Pittsburgh Coal Co., declared that with the introduction of mechanical loading will come a need to use small charges and a greater number of boreholes. His paper will appear in a later issue of this magazine.

David Ingle, president of the Ayrshire Coal Co., of Oakland City, Ind., in a discussion of Mr. Lubelsky's paper said he had been loading coal mechanically for about four years. He found that too much time



Pillar Shot Ready for Loader to Lift into Mine Cars Shows the effect of a shot in the Pocahontas No. 3 seam in one of the Pocahontas Fuel Co's mines. As the coal is quite soft and friable a comparatively large percentage of fines is formed. A snub cut has caused the coal to roll out as shown. The man is trimming the pile so that the loading machine will not have to waste time, running around to get coal.

loading for reasons which cannot be attributed to the machine itself.

In his mines the rooms are driven 21 to 24 ft. wide. Under what he chose to term "the old system of hand-loading," the officials of his company paid little attention to methods of shooting. The advent of mechanical loading rudely awakened them to the necessity for skilled shooting. The number of holes was increased from two to three. Investigation uncovered several bad practices. Undercuts were generally inclined outwardly so as to grip the triangular ribs, thus forming pockets, and the boreholes were drilled so as to be parallel to these offsets.

TRAFFIC PROBLEMS TO SOLVE

The management now finds that where holes are drilled by hand they are frequently not extended to a sufficient depth. Though the common practice is to drill the shotholes electrically, hand drilling is sometimes necessary because of difficulty in keeping the electrical drills in order. He said that the drills cause more trouble than any other machine in his mines. His force has not yet reached a final decision as to the methods of shooting that will best meet local conditions.

A shearing machine has been tried in the mines of the Ayrshire Coal Co. Though the machine accomplished the purposes for which it was introduced, it caused much confusion when an attempt was made to keep

and effort are lost in mechanical it at work. This was only partially avoided by operating the shearing machine between visits of the cutting and the loading machines.

In justice to this machine, Mr. Ingle said that a cycle involving the operation of three different machines for as many purposes could not be co-ordinated because the cutting and the loading machines operate 24 hours a day keeping the roadways cluttered with traffic. He said that, in all probability, he would again try shearing. All sorts of experiments are being tried by his company in an attempt to arrive at more efficient practices in mechanical loading. His observations in brief are that "If the machine loader is to be successful it must not be compelled to fight tight coal."

A paper on "Results from Cushion Blasting" was read by C. W. Nelson, explosives engineer of the Hillman Coal & Coke Co. He thinks mining men should not condemn cushion blasting on no better ground than that it has proved unsuccessful under the conditions prevailing at their mines. They should be willing to concede that, under different conditions, the method might produce more favorable results.

TEST FOR PROPER AIR SPACE

Before one decides whether the method is adaptable to one's mine, one must know the purpose for which cushion blasting is intended. In most machine-cut coal the resistances from the back of the drillhole to the kerf and from the same point to the front of the cut are not the same. If the resistance offered in these two directions were the same, the proper location for the explosives charge would be as near the back of the hole as possible. Except in very thick coal, the resistance is usually greater in the horizontal direction. The charge must be so located or distributed as to balance the burden upon it.

Mr. Nelson recommends that the proper length of the air cushion for given conditions be determined by careful tests. He suggests that the air space be increased in 3-in. steps until the point is reached where the breaking shots begin to hang at the back of the cut and then gradually decreased until the correct length for a balanced shot is attained. The length will vary with the seam and to a small degree as between various places in the same mine.

CONDITIONS DETERMINE METHODS

In thick seams, cushion blasting has not been successful where the coal is being worked on the butt, chiefly because planes of greatest weakness run parallel to the direction of the drillholes, in which case the line of least resistance is toward the front of the cut. Under this condition the charge should be concentrated as much as possible at the back of the hole.

He believes that at best rock-dust stemming is merely a makeshift for

depends upon the compressibility of the dust, upon the density of the dummy and upon the care with which the hole is charged and tamped. These factors are so variable as to make exact control of the shooting impossible. The necessity for storing and keeping the rock dust dry despite the dampness of the mine is a difficult problem in itself.

AIR SPACING WORKS HERE

A method of cushion blasting for mechanical loading in the thick Freeport bed and another for use in the Pittsburgh seam were described in a discussion by John G. Bart, general manager, Union Collieries Co., Renton, Pa. The former seam in the No. 3 mine is about 86 in. thick and consists of two benches equally divided by a 10-in. bone parting. The coal is undercut to a depth of 6 ft.

The cut is blasted in three stages. First, the bottom bench is shot down by three shots which are placed immediately under the bone parting and perpendicular to the face. The center shot is detonated first, this merely serving to spring the bench; then two rib shots are fired which break down the coal so well as to make loading by hand or mechanically quite easy.

These holes and all the others drilled higher in the seam are extended to the same depth, 7 ft. or



Machine That Snubs the Coal so as to Give a Wedge Kerf

This machine has been improvised from a breast machine. Set on a frame it cuts a sloping kerf that breaks down the coal and at the back intersects with the horizontal kerf. Thus a cut is made that looks like a saw cut in a tree after it has been trimmed by an axe. The cutter bar is fed forward mechanically and swung around as desired.

a true blasting cushion. Its value 1 ft. beyond the back of the cut. All are given an equal charge. This consists of one stick of permissible set midway of the depth of the cut. Behind this single cartridge is an air cushion nearly 4 ft. long. In front of it is inserted the usual stemming which is loosely placed and not tamped at all except for the last 10 in. which is tamped solid. Having been thus shot down, the bottom bench is loaded out.

> The next stage is to break down the bone parting, which is accomplished by three holes placed immediately over this bony layer. Having gobbed this material the final stage is completed by three similar boreholes which are drilled horizontal and near the top.

SNUBBING DECREASES SLACK

In shooting the coal in the Pittsburgh seam, the practice of his company is to place two pop shots of 1 stick each with air-spacing in a 3-ft. hole which is started slightly above the mid-height of the seam and extended downward on about a 45-deg. angle. The bottom of this hole is within 5 to 6 in. of the kerf. These two shots snub the coal across the entire width of the place.

Two horizontal holes near the roof and along the ribs, which are extended about 1 ft. beyond the back of the cut, are air-space loaded by placing one to one and one-half sticks of permissible in each in the same manner as has been described for shooting the Freeport seam.

These methods of shooting have been in practice for about six months and have decreased the violence and shattering effect of the explosive greatly. They have lowered the proportion of $\frac{3}{4}$ -in. slack in the mine product by 8 per cent.

WHY NOT CUT IN FIRECLAY?

A talk on "Cutting in Fireclay Bottoms" was given by W. J. Freeman of the Fayette Realty & Development Co., of Indiana. He said loading machines have emphasized the possibilities from an economic and mining standpoint of cutting in clay bottoms rather than in the coal. Mr. Freeman wanted to know why the operator who had a thick bed had not found it advisable to follow the thin-coal operator in putting his kerf in the clay floor.

Not only does cutting of the clay bottoms decrease screenings, but it also makes it unnecessary to place the cut in the pyritic coal which

usually lies along the bottom. In many mines all over the country water is being sprayed over cutter bars to keep down the dust. The expense of this safety precaution would be eliminated by the practice which he advocates.

REQUIRES SPECIAL CHAIN

To be successful in this project the manufacturer must provide a special chain. That used for cutting coal will not work in clay. At the mine of his company in Nashville, Ill., a bone-clay band which occurs about 24 in. from the bottom is being cut. The machine used for this job is in all respects similar to a shortwall cutter except that the bar is mounted on the top of the machine instead of at the bottom. As the refuse band is fairly regular little trouble is experienced in keeping the cutter bar in it.

At first much difficulty was found in obtaining a chain for the job, that would stay in the band, for the latter is harder than the coal. The solution to the problem was finally found in an 11-position Sullivan chain, each lug of which holds two bits. This chain cuts the refuse so successfully that the machine runners now cut as many places in the band as they formerly did in the coal.

The screenings have been decreased thereby 10 to 12 per cent, and the coal can be better prepared at the face than was possible when cutting in the coal.

Mr. Freeman said that time and money are well spent in seeking a method to cut bands or clay bottoms in that the cost of hauling dirt to the surface is eliminated and waste material is left in the mine where it properly belongs. Though it took his company more than a year to solve the problem, it now feels that the money was indeed well spent. The adoption of the loading machine has brought the industry face to face with the need for new methods of cleaning and of keeping the coal clean.

KEEPS DIRT IN THE MINE

In his mine the practice of refuse cutting has decreased the proportion of $\frac{3}{4}$ -in. screenings from 22 to $12\frac{1}{2}$ per cent and lowered the quantity of refuse which is taken out of the coal at the washer by 50 per cent. It has increased the percentage of 2-in.

sible to obtain 120 tons of coal with no tests which had demonstrated 25 lb. of powder. Before the change was made only 90 tons of coal was obtained with the consumption of that quantity of powder.

A discussion by John L. Clarkson, of the Clarkson Coal Mining Co., Illinois, dealt with his experience in cutting in the clay bottom. The mine where this practice prevails is working the Indiana No. 5 seam. When his company started to develop this bed it was questioned whether undercutting machines could be used.

Up to that time they had not been successfully applied to this seam in the region in which the mine is located because of a large quantity of sulphur in the coal near the bottom. To the best of his knowledge no one had made any extensive attempt at cutting in the clay which underlies this seam.

WANTS SMALLER CARTRIDGES

His company has continued this practice ever since and has fully demonstrated that the venture was well worth while. The cutting conditions vary from place to place, and bits, therefore, are changed with no regularity. The worst drawbacks are that of throwing back and handling the cuttings and the dense clouds of dust stirred up in cutting. The shoveling of the clay is expensive but the dust can be overcome by providing the machine runners with respirators. This dust, of course, adds to the safety of the mine, for it is pulverized rock and not fine coal.

Theodore Marvin, managing editor of Explosives Engineer, took exception to some of the remarks made by Mr. Nelson in his talk on cushion blasting. He objected chiefly to his advocacy of a cartridge of smaller diameter than is being generally The cartridge of smaller used. diameter costs more per pound, and its rate of detonation and its sensitiveness decreases with time more undercutter. Mr. Bart suggested rapidly than with the larger cartridge. The smaller stick is more liable to produce a burnt hole. Be- month test of a machine equipped cause of these factors he would with an elevated cutter bar which recommend that, if the cartridge is swings so as to cut an arc at the back to lie loosely in the hole, the of the cut, his company found that diameter of the hole should be in- it obtained 10 per cent less 4-in. creased rather than that the diameter block coal than it did before the of the cartridge be decreased.

lump to 75 per cent and made it pos- cushion-blasting effect. He knew of of making a comparison.

that such a practice increases the efficiency of blasting. Replying to the charge that cartridges under $1\frac{1}{4}$ in. deteriorate rapidly with age, he cited an experience in which he used successfully 13-in. cartridges which had been in storage in a magazine at one of the mines of his company for eight months.

NELSON DOUBTS THE MINER

Mr. Lubelsky said that the manufacturer put forth a similar cry at each demand of the operator for a smaller cartridge beginning with the change from the 1³/₄-in. size. He makes the claim that in some instances the explosive in a cartridge of 1-in. diameter may be more sensitive than that in one of $1\frac{1}{2}$ -in. He is not at all in sympathy with the $1\frac{1}{4}$ -in. limit and claims that when the U.S. Bureau of Mines tests are correctly interpreted the limitation is not well grounded.

Someone asked Mr. Nelson whether he has had any experience with miners blasting by the cushion method. He said that his company employs shotfirers because miners cannot be relied upon to cushion their blasts correctly and because in general, it was not safe to leave the blasting in the hands of the miners. Where it is left to them the results are as varied as the methods they employ and these as varied as the miners themselves.

AIR SPACING IS SUGGESTED

Josiah Keely, of the Cabin Creek Consolidated Coal Co., asked why a center cutter in one of his mines in 7-ft. coal failed to decrease the quantity of explosive needed and shattered the coal more than when the face was not thus cut. Frank Dunbar and John Bart volunteered to answer this question. The former said that where the seam is burned to the top a topcutter should be used and where burned to the bottom an cushion blasting as the cure.

Mr. Fenning said that, in a threechange was made. Mr. Clarkson Mr. Nelson replied that the use of suggested that a square cut at the a larger hole does not give the true same elevation be tried for the sake

Mechanical Loading Saves Money for Many

Cost of Coal Lowered 40c. per Ton at Rock Springs-Drives 42 Ft. of Entry in Nine Hours-Duck-Bill Attachment Loads Coal on Shaking Conveyor

By Staff Correspondent



Courtesy, Coloder Co

loading we will have to discard traditions; the problem is 90 per cent management," said Eugene McAuliffe, president of the Union Pacific Coal Co., Rock Springs, Wyo., at the meeting held in the forenoon of Wednesday, at which he presided.

Geo. B. Pryde, vice-president and general manager of the Union Pacific Coal Co., talked in the place of A. W. Dickinson on "Mechanical Loaders That Have Operated Successfully at the Face and Their Operating Costs." He confined his remarks to a description of the experience of his company, which operates seventeen mines in the State of Wyoming.

The first loaders were installed in 1916 and now the company has at one operation thirty-eight Thew and twelve Joy machines, at another six Goodman scrapers and two Eickhoff conveyors and at a third three Eickhoffs. It is planning further installations of scraper loaders. Mr. Pryde stated that the company has had a marvelous success with the Eickhoff conveyors in driving narrow work.

The scraper loaders have a capacity of $3\frac{1}{2}$ tons per trip. Consequently each scraper will load two cars on each return run. These scrapers operate in a section working the block system. At the first

the second trial of the system was quite successful, about 90 per cent of the timbers being recovered. This is important, for the posts cost \$1 apiece.

Joy loaders are used to drive the lower bench of a 32-ft. seam, the top portion of which is later shot down and loaded by a Thew shovel. The average advance with Joy loading is 7 ft. per day, as compared with 1 ft. per day with hand loading. The type 4-BU Joy machines are loading an average of 90 tons each per day at a maintenance cost of 8 cents per ton.

LOADS 342 TONS PER SHIFT

The Thew shovels load an average of 175 tons each per day; and the scraper loaders on thirty-two consecutive working days averaged 342 tons per shift with a crew of fifteen men. Mr. Pryde also said that the scraper and Eickhoff loaders were producing coal for about 40c. per ton less than it could be produced by hand loading.

A time study of mechanical loading showed that of the total delays 60 per cent were administrative and 40 per cent due to repairs. The administrative delays include moving and other like items all of which, with experience, the mine officials should be able to shorten or eliminate.

H. C. McCullough, engineer, H. C. Frick Coke Co., Scottdale, Pa., read a paper on the "Shaking-Conveyor Loader and Its Use in Mining Coal." He described the system of loading progressively from one end of a long mines heavy metal jacks are used.

attempt a fall closed up the face, but face toward the other, using a duckbill loading attachment with an automatic feeder at the end of a shaker conveyor. Rather than one long face, he proposed a number of faces of medium length operated in steps.

> The paper was discussed by Mr. Pryde. He stated that in the Union Pacific mines, 42 ft. of entry, 12 ft. wide by 6 ft. high, has been driven in 9 hours by use of a loading attachment on an Eickhoff conveyor. The company has developed an automatic feeding attachment to the Eickhoff by which it has loaded 15 tons in six minutes.

This method was used on two faces, one on each side of the main entry; one face 165 ft. long and the other 135 ft., but the roof could not be held, so the company has now gone to 100-ft. faces in steps. When loading a long face with the automatic feeder attachment, about 13 ft. of the face must be loaded by hand in order to obtain room for starting the loader.

It has been found that the duckbill can more easily undermine the loose coal if the machine cuttings are spread over the floor before the coal is shot down. The original duck-bills used were 7 ft. high, but this has been reduced to 4 ft.

SNEAKS UP ALONG FACE

R. Y. Williams, of the Weston Dodson interests, in commenting on Mr. McCullough's paper, said that he liked the plan of loading a long face with the automatic attachment to the shaker conveyor because it reduces the roof overhang. At his company's

The headpiece shows front view of load-ing machine at one of the Pocahontas Fuel Co.'s mines. As far as possible a clear path is maintained in front of the machine. Props are placed 3 ft. apart, but located so as to interfere as little as possible with the movement of the loader. The seam is about 10 ft. thick. Drawslate which varies from nothing to several feet is removed before the coal is loaded out in the pillar sections. sections.



Scraper Loader Cleaning a Long Face in a Thin Seam At last, the industry has boldly adventured with large scrapers that fill two cars in a single run. At one time the scraper was a thin coal proposition, going where men could scarcely crawl, but it did difficult rather than much work. Today, it will beat hand loading in any kind of seam.

the face.

First the company worked two blocks, one 300 ft. and another 350 ft. long, then it had to wait nine months for the development of other long faces. Now there are three 300-ft. faces and one of these has been going since April 21.

The first break came after an advance of 85 ft. and now the roof falls behind the jacks each day. This face is being worked with a Jeffrey conveyor, 300 ft. long. On the second of the three faces they expect to try an Eickhoff conveyor.

HAS 125 SCRAPER UNITS

Cadwallader Evans, Jr., general manager, of the Hudson Coal Co., said that his firm has 125 scraper loading units in operation every day, and that last year they loaded over 1,000,000 tons with their assistance. The company first tried longwall but could not control the roof, so went to chambers 125 ft. wide by 225 ft. long and abandoned pillar work.

Answering a question of Charles Enzian, chief engineer, Berwind-White Coal Mining Co., Windber, Pa., Mr. McAuliffe said that his company drives up the pitch with the Eickhoff loading attachment, but narrow work is advanced along the strike. He also stated that his firm is in some cases conveying coal up a 7 per cent grade with this equipment. This grade, however, is at the end where the trough is elevated to discharge into the mine car, the main part of the conveyor usually working in favor of the load.

thus moving the fulcrum back from read a paper on "Best Methods of Adapting Present Standard Mining Systems to Mechanical Loading.' This emphasized the many factors which must be combated when mechanical loading is introduced in a mine. He asserts that it is impractical to draw pillars mechanically, for the reason that the noise of the machinery does not give the miner a chance to hear the warning noises of a working roof.

> In discussing the paper, Sterling S. Lanier, Jr., Norton Coal Mining Co., Nortonville, Ky., said that his company has used Goodman scrapers, Joy loaders, and Jeffrey conveyors and Shortwaloders and was successful with all and made some savings. His firm has been particularly successful in driving narrow work with Shortwaloders and conveyors. In a recent test in driving 600 ft. of entry a saving of $33\frac{1}{3}$ per cent over hand loading was effected. The average was five or six cuts per shift with five men in the crew.

> Edwin H. Johnston, of the Coloder Co., Columbus, called attention to the fact that the fields having high wage scales are not necessarily the most active in the development of mechanical loading, and as proof, he cited the many successful installations in West Virginia and Kentucky.

The last paper of the morning meeting "Getting Mine Cars to and from Mechanical Loaders" was read by Charles Gottschalk, consulting engineer, of Evansville, Ind. He predicts that 290 tons per shift will be the average production of loading machines. Car-changing efficiency is W. L. McCoy, mine inspector, a measure of the effectiveness of a Bertha Consumers Co., Pittsburgh, loader and this efficiency can be

greatly increased by proper track facilities and close attention to administrative details. Promotion of friendly rivalry between gangs is one of the best ways of increasing car-changing efficiency.

F. F. Jorgensen, consulting engineer, Superior Coal Co., Gillespie, Ill., said that he has had to change his ideas of mechanical-loading possibilities about once a month, and sometimes every day. For instance, he at one time had made up his mind that if the mine cars were not of $2\frac{1}{2}$ tons or more capacity, they could not be loaded economically by mechanical means. This idea was shattered by his learning of certain mines having much smaller cars which were nevertheless effecting a saving by mechanical loading.

The large attendance at the morning session was duplicated at the meeting held in the afternoon, which would seem to indicate that the interest in mechanical loading is on the increase rather than on the wane as some operating men believe. The first speaker of the afternoon was Robert Wallace, superintendent of the Pocahontas Fuel Co., who read a paper on "Mechanical Loading in Pillar Work" as practiced in the mines of his company.

REPAIR COSTS 3C. A TON

During 1925 the Pocahontas Fuel Co. produced with twenty-five Coloders 1,709,132 net tons from seven mines. The cost of parts and labor for repairs last year was 3c. per ton and the power consumption 0.2 kw. per hr. The average daily loss of loading time per machine was 9.18 min.

This company finds that it can load pillar coal mechanically at a lower cost than room coal and therefore has increased the width of its room pillars. It has mined thus far more than four million tons mechanically without a single machine runner being fatally injured. The difference in cost between coal loaded by machine and that shoveled by hand is between 20 to 25c. in favor of the former. Mr. Wallace characterized the mechanical loader by saying that "you can send him back to work a double shift without danger of backtalk."

W. J. German led the discussion of Mr. Wallace's paper. He said that on several occasions individual machines have loaded 300 tons in 9 hours from pillars. Pillar coal can be loaded four to eight times as fast by machine as by hand. N. G. Alford, consulting engineer, Pittsburgh, Pa., said that the roof in the mines where the Coloders are in operation is worse than any other he has seen in that part of the state.

Mr. Wallace explained that the roof immediately over the coal consists of drawslate which has a thickness varying from nothing to 3 ft. This must be taken down before the loader begins to load out a cut. He said that much timbering is eliminated by machine loading. Handloaders under similar conditions are sometimes compelled to reset timbers three to five times.

"Mechanical Loading in Rooms and Entries" was discussed by I. N. Bayless, superintendent of the Union Colliery Co., Dowell, Ill. A paper containing his remarks and additional information will appear in an early issue of this magazine.

He pointed out that a prerequisite of successful mechanical loading is education of the management as well as the workers in the new problems which will accompany mechanicalization. His company is satisfied with the results being attained mechanically. The machines are working successfully from an economic viewpoint in spite of the many disadvantages under which they have to operate in the Kathleen mine.

L. D. Smith, of the Chicago, Wilmington & Franklin Coal Co., opened the discussion of the subject introduced by Mr. Bayless. He indicated a few of the difficulties that must be considered by those who contemplate the installation of loading equipment. At shaft mines where the hoisting equipment is working at capacity, the loading machine will lower the output because less coal can be loaded into any given mine car by machine than by hand. With machine loaders more refuse will be loaded with the larger sizes of coal than the hand loader will put on the car, at least in mines where discipline prevails.

SAVED 204 MEN

J. G. Bart wanted to know how many men were employed in the Kathleen mine before and after mechanical loaders were introduced. Mr. Bayless stated that these machines have eliminated 204 men with no change in the daily output of the mine. In answer to another question Mr. Bayless said that all except the machine cutters are paid a flat day wage.

The machines installed in his mine work every day except when they break down, which is not often, and when they do it is generally from small defects which can be easily repaired. He has never anticipated that he could operate machines without some trouble, and he is of the opinion that several spare machines should be kept on hand. These loaders have increased the daily output per man on the payroll from 5.5 to 8.5 tons. The record output per man employed at his mine for one day is 11 tons.

In a paper on "Mechanical Loading of Top and Bottom Rock in Entries," A. C. Hohnke, superintendent, Russell Coal Mining Co., Clymer, Pa., said that the substantial savings which Myers-Whaley machines have effected in the taking of top and bottom rock, as indicated in his paper, are second in importance to the speed with which development can be advanced in thin seams where such brushing and bottom lifting are necessary. His paper will be published in a later issue.

MUCH WORK OR NONE

W. L. Householder, electrical engineer, Buffalo, Rochester & Pittsburgh Coal & Iron Co., related the experience of his company in the same kind of work. For five years that company has been using Myers-Whaley machines for taking rock and in some instances has realized savings in excess of those given by Mr. Hohnke.

In this work the cars must be low enough to enable the roadways to be extended in the coal at least 50 ft. before shooting the rock. The machine will not work to advantage where the rock is taken with each advance of one or two cuts. In such instances the cost of loading the rock may be twice that where the rock is loaded by hand. A machine should work at least one or two full shifts in a single place.

This machine showed up to great advantage in the driving of a rock tunnel, 1,200 ft. long, 7 ft. wide and 6 ft. high. A comparison of handloading methods with those in which machines were used showed a saving of \$25 per yd. The upkeep cost of the machines in the mines of his company compares favorably with that given by Mr. Hohnke, which is 2.67c. per ton.

The experiences of the Berwind-White Coal Mining Co., Windber, Pa., with new methods of mining by

long face advancing, and by long face retreating with conveyors in the former case, were described by Charles Enzian, chief engineer of that company. It has done much mining on long faces and finds that such methods give genuine promise of being practicable at its mines, so much so indeed that the organization is constantly thinking along these lines.

LONG FACE AND HEAVY COVER

In the places where long face retreating was tried roof conditions are difficult. The immediate strata over the Miller seam which was thus being mined are soft and friable. In places the roof will fall up to a rider 20 ft. above the coal. The coal is 39 in. thick and the cover varies in thickness from 600 to 700 ft.

The faces in the layout of long face retreating were 150 to 200 ft. in length. Pack walls, 15 ft. wide, were separated by spaces of equal width. The coal was shoveled by miners who were paid a task rate. This method has been abandoned, temporarily at least. The seam being worked has many rolls and clay veins.

Recently a system of long face retreating, upgrade, was started in the same seam with no saving as yet over the room-and-pillar system. In this work a 290-ft. face has been moved back a distance of 710 ft. The roof is supported principally by 10-ft. pack walls separated by 10-ft. spaces.

The cover over this place is heavier than that which was over the faces which were mined advancing. Though the cost of timbering and building pack walls in this work is not favorable, the company is getting a return in the form of experience.

SCRAPER LOADERS FAVORED

Conveyors are also being operated in 28-ft. rooms with 36-ft. pillars with a material increase in output per man. The average output per man per day by this method is 11 tons.

Mr. Enzian has great faith in the scraper loader and intimated that his company will shortly try a machine of this type in an attempt to find out how the roof will act in a suitable system.

His company has concluded that mechanical mining, at least in the mines of his district, must be accompanied by mechanical cleaning.

Face and Main Conveyors Are Receiving More **Attention Than Ever Before**

Can Be Used Even in Thin Coal and in Rooms-Dunbar Would Have Conveyor Work Full Shift-McAuliffe Believes Mines Should Produce Coal Night and Day to Outstrip Action of Roof

nois, acted as chairman. The view- ing a remark regarding the present point of the material-handling engi- mine laws. He called attention to neer was given by Nixon W. Elmer, the fact that the forces of nature consulting engineer, Quincy, Mass., are working in a mine 24 hr. a day in his talk "Inside Mine Conveyors."

He condemned the practice of selling conveyors on approval, saying that no manufacturer of a competitive non-patentable article can afford to spend much money in development work. The conveyor should be made to fit the mine rather than the mine to fit the conveyor.

BELT CONVEYORS ON MAIN ENTRY

Mr. Elmer pictured the coal mine of the future as one with little track, few locomotives and cars, and with belt conveyors on the main entry. The production per entry will be 600 to 800 tons per day. He is not so sure as to what will be the method at the face, but mentioned an instance where a caterpillar loader was operating along the face and loading the coal into a conveyor. Glen Southward, consulting engineer, of New York, in discussing the paper, agreed in general with Mr. Elmer's conclusions.

Frank Dunbar, general superintendent, Hillman Coal & Coke Co., Pittsburgh, said his company was using some conveyors, but would like to know how to reduce the time taken by the first two operations in the cycle, that is, (1) cutting and (2) drilling, shooting, timbering and cleaning-up slate. He would like to keep the conveyor working 80 per cent of the time instead of about 20 per cent as is now customary. The third part of the cycle, loading the coal on the conveyors, he considers the easiest part of the operation.

SHOULD WORK NIGHT AND DAY

on the future of loading and conveying said that he believed that a loading machine should be a rela- three minutes, at specified intervals,

C. Callen of the University of Illi- coal mine," were his words in prefacand outwitting those who worked only 8 hr. He predicted the time when in well-ventilated and facesprinkled mines, even in those that are gaseous, shooting will be allowed at any hour, and yet the risk will be lessened by concentrated and continuous operation.

> R. J. Smith, of Terre Haute, Ind., president of the Princeton Mining Co., said that efforts should be made to eliminate hand labor wherever possible; for instance, by shooting down the undercut coal onto a convevor. He remarked that a small easily handled shearing machine was needed that would cut in any position at the face, possibly with a cutter bar resembling that of the old breast machine.

CONVEYORS IN LOW COAL

In the second paper of the morning session, "Room-and-Pillar Mining with Conveyors," R. A. Suppes, general superintendent, Knickerbocker Smokeless Coal Co., Johnstown, Pa., described in considerable detail his experience during fifteen months of operation in seams from 23 in. to 44 in. thick. Because of the rolls, faults, and other uncertainties of mining, he believes that in most instances the room-and-pillar method must be retained and that mechanicalization must be suited to fit this condition. The system at his mines is to drive rooms 35 ft. wide and about 250 ft. long, with 18-ft. pillars between them.

A sectional chain conveyor is used on the main roadway and a belt conveyor passes along the face. Venti-Eugene McAuliffe, in commenting lation is by a distributing fan with 12-in. flexible tubing. It is the practice to stop all machines for tively small mobile unit. "If there so that the men at work can listen veyors in use in the Paris field.

THURSDAY morning was devoted is an industry on earth that should for signs of roof action. Up to the to "Underground Conveyors." A. be operated 24 hr. per day, it is a present the conveyors have not been used for the removal of heading stumps or barrier pillars.

> In the mining of somewhat over 55,000 tons the average output has been over 14 tons per man, including cutting, timbering, drilling, shooting, conveyor moving and like items.

EQUIPMENT COST PER ROOM

The total equipment investment per room, including the mining machine is \$8,000. The mining cost, including 25 per cent depreciation on the equipment has been materially less than at neighboring mines in that district.

S. W. Blakeslee, superintendent, Pennsylvania Coal & Coke Corp., Ehrenfeld, Pa., in discussing the paper, stated that the tonnage per man reported by Mr. Suppes, is greater than is obtained by any method in that part of Pennsylvania so far as he knows.

WAY OF EARNING A LIVING

"Mining Plans for Different Types of Conveyors," by Heber Denman, president, Paris Purity Coal Co. Clarksville, Ark., was the last paper of the morning session. Mr. Denman described the face-conveyor panel-longwall method by which he has been operating for three years. It has ceased to be an experiment, but instead is now the company's "way of earning a living." The coal thickness runs from 18 to 24 in. and the product goes only to the domestic market. The roof is handled by the caving method, the breaks being produced by a single row of sandpack, cast-iron jacks.

The loaders move the conveyor forward as a unit at the end of each shift. Mr. Denman doubts if face conveyors could be used successfully in thin coal where the roof is so bad that face timbering would necessitate moving a conveyor in short sections. He stated that there are now fifteen to twenty long-face con-



Coal-Dust Explosion at Bruceton Mine Staged for Inspectors' Institute, May 13, 1926. Below --Initial Flame Emission. To Left-Flame and Smoke on Second Explosion.

Many Attest to Value Of Rock Dust

Jones, Jenkins and Osler Testify How It Saved Lives at Their Mines - Wet Coal Dust Explosive — Saturated Rock Dust Effective — Gas Still a Menace

By Staff Correspondent

"To quibble and argue in the face of scientific evidence which has been unqualifiedly supported by actual experience is to show such an utter disregard for mine safety as to entitle one to contempt," said A. C. Callen, professor of mining engineering of the University of Illinois, in a paper on "Proven Advantages of Rock Dusting," in opening the Thursday afternoon session.

He said that those who assigned him the topic evidently desired him to prove that rock dust will stop an explosion. In accord with this interpretation, he presented pertinent facts showing the effectiveness of rock dust and reviewed recent ex-

periences which demonstrate that point.

"When an insurance company refuses to insure you because of high blood pressure, a bad heart or for other reasons, you begin at once to consider your case seriously. When an insurance company refuses you compensation insurance because your mine is considered too great a risk you should likewise consider your case seriously." In addition to recommending unqualifiedly the practice of rock dusting, Mr. Callen urged the use of every other practicable safety device. The session was conducted by Dr. J. J. Rutledge, chief inspector of Maryland, as chairman.

J. E. Jones, safety inspector of the Old Ben Coal Corporation, was scheduled to comment on the subject covered by Mr. Callen's paper, but being unable to attend, he sent a short paper which was read by N. G. Alford.

damp rock dust is by no means ineffective. The section in which the recent explosion in the Orient mine originated was throughout extremely wet. An inspection after the explosion showed that coking action began 100 ft. from the origin and continued for a distance of about 175 ft., extending, however, only 25 ft. beyond the inby extremity of the rock-dusted section of that entry.

The rock dust, like the section in which it was spread, was extremely wet; yet it extinguished the flame. On the other hand the coal dust at the dead end of this entry which had not been covered with inert material burned and deposited coke despite the fact that it also was wet water, therefore, neither prevented the rock dust from extinguishing the flame, nor rendered the raw coal dust at the face incombustible. Who shall doubt, therefore, that rock dust is more effective than water, either dry or wet?

Charles Enzian, chief engineer of the Berwind-White Coal Mining Co., read a paper in which he described In his paper Mr. Jones stated that the methods, and detailed the costs.

The explosion shown in the headpiece is that described in the last four paragraphs of page 734 of the May 20 issue of *Coal Age*. The shot from the cannon first ignited the dust between the cannon and the drift mouth and then later the dust behind the cannon. It was this last explosion that filled the valley with flame and smoke, making it an inferno. The dry material on the hillside caught fire and added evidence, if any were needed, of the scorching effect of the blast.

of rock dusting in the mines of his company. This paper will appear in a later issue of *Coal Age*.

Rock dusting saved the lives of all but seventeen of the 125 men in the mine during an explosion which occurred on June 8, 1925, in the No. 9 mine of the West Kentucky Coal Co., said T. E. Jenkins, the vice-president of that company. In 1917 he had noted that an explosion had been halted on a haulway by the finely ground sand which was lying in the roadway and that this same explosion had traveled some distance along a companion aircourse until it came to a shaft. This carried conviction to his mind, and in 1924 he took advantage of what he had learned and began rock dusting mines of his company.

TROUGH AT LINE BRATTICE

The general practice at the West Kentucky Coal Co's mines is to build barriers on aircourses at 300 ft. intervals and also to erect them at the outby end of each line brattice. His company pulverizes the rock dust that it uses in its workings at a cost of \$4.60 per ton including the cost of sacking it and delivering it to the mines.

He said that he was in hearty accord with the recent decision of the Associated Companies, as recently promulgated. The companies announced that thereafter they would refuse to assume the explosion risk of any mine which is not rock dusted. He believed that this would do much to increase safety, for since the declaration was made several of the companies in his field had commenced the rock dusting of their mines.

SAVED MEN AT HORNING

That rock dust undoubtedly checked the propagation to wider limits of the explosion in the Horning mine was the opinion of George Osler, general manager of the Pittsburgh Terminal Coal Corporation. The information collected after this explosion, which led him to this belief and which he detailed at this session, has already appeared in *Coal Age*.

He believes that strict attention to rock dusting on haulways and in rooms to the face may make it unnecessary to apply inert matter on aircourses. He was convinced that of the two, the rock dusting of the haulways was the more important provision.

Mr. McAuliffe does not believe that the 9 mills per ton of coal mined

which his company expends on rock dusting is in any way sufficient to afford adequate safety. To prove the sincerity of his belief he outlined the safety program which his company has adopted. He attacked the attitude of not a few operators who, having rock dusted, place almost entire reliance on that practice for freedom from explosions.

In his opinion, rock dusting is only a third line of defense. Ventilation and methods of keeping down coal dust must be given priority. Means should be taken or sought to stop the initiation rather than the propagation of an explosion.

Last year his company applied 1.200 tons of rock dust which cost \$9 per ton at the mill. It spent altogether in the practice \$27,000, excluding in that estimate the capital investment. In the last six months it installed 36 miles of water line. This is being used to wet down the coal dust at the face. Last year the company sunk five new air shafts to reduce the travel and decrease the friction of the mine air and to increase the volume of air delivered to the mines. His company is using gunite machines to make stoppings as leakproof as possible.

MANY DIVERSE OPINIONS

John T. Ryan, general manager of the Mine Safety Appliances Co., presented to the meeting a complete and comprehensive compilation of the opinions of a wide group of men, in a paper on "Sealing Fires in Gaseous Mines," which he strengthened with his own conclusions. He gathered much of the information contained in this paper by sending far and wide a questionnaire of twenty-one questions to ninety men, of whom seventy-five responded.

It represents, therefore, the best opinion current as to what practices should be adopted in the fighting of mine fires. Though conditions from mine to mine vary somewhat, he pointed out that certain fundamentals are known which can be applied at all times. His paper will be published in a later issue.

Old-timers used to say, "when a fire breaks out, fight and fight till you can't fight no longer; then bottle her up and 'git' out, for the cork may blow off." This was the expression given by Charles H. Nesbitt, chief inspector of mines of Alabama, in a written discussion which was read by C. W. Nelson in the absence of the writer.

Mr. Nesbitt believes that every

known means consistent with safety should be exhausted to extinguish the flame before sealing is considered. When a fire breaks out all employees with the exception of those whose services are needed should be immediately ordered to the surface.

When it has not already been done, that part of the mine in the vicinity of the fire should be thoroughly rockdusted, washed down and made wet. Immediately after completing the temporary seals all men should leave the mine and stay out for twentyfour to forty-eight hours. This is necessary to avoid fatalities in an explosion which might occur within these limits of time.

SIMULTANEOUS CLOSING

E. J. Newbaker, general manager of the Berwind-White Coal Mining Co. would build doors as temporary fire seals, which when ready would be closed simultaneously. Mr. Ryan likewise is of the opinion that the intake and return should be sealed at about the same time. When this cannot be done the intake should be sealed first.

Installed in the Nemacolin mine of the Buckeye Coal Co. is perhaps more equipment for preventing and fighting fires than at any other plant in the world. Water lines, water cars under pressure, sand buckets and extinguishers of several types in adequate numbers are installed to extinguish the fire before it can gain headway. The story of this installation as given by W. Z. Price, assistant superintendent of the Buckeye Coal Co., in a paper on "Fire Protection Underground."

IGNORE SMALL SHORTS

In his paper Mr. Price stated that many automatic circuit breakers are installed in the Nemacolin mine. Mr. McAuliffe said that great care should be taken to see that all permanent track is well bonded as a means of eliminating that source of mine fires. He gave as his reason the occurrence of a fire in one of his mines. This was caused by the fall of a trolley wire on a new unbonded rail. Unfortunately the automatic circuit breaker in this instance failed to open.

Mr. Price declared that even where the rails are thoroughly bonded a similar condition might prevail, as the circuit breaker to carry the load must be set for such high amperages that the short might not draw sufficient current to operate the device.

Rigid Supports Near Face Help Bring Down Roof

Step-Face Longwall Next of Kin to Pillar Work on a Long Break Line-Woodson Describes Breaks in Roof Starting Back of Cut-Face Falls Said to Be Light

By Staff Correspondent

That rigid supports close to the off immediately at the face. The bed was less than 62 ft. thick the face are necessary for the breaking of the mine roof, was an opinion frequently expressed and generally approved at the Friday morning session on "Roof Control and Mining Methods." At this meeting L. E. Young, general manager of the Union Colliery Co., of St. Louis, presided.

H. F. McCullough's paper on "Roof Control" pointed to the stepface system as the best solution of any departure from standard roomand-pillar methods. He stated that almost any attempt at working longwall without a gob pack is only an effort to work a long face without adequate means of controlling the roof.

FALLS AS A FORM OF CONTROL

If the roof cannot be controlled, then it must be allowed to come down, and this is best accomplished by means of rigid supports at the break line which will prevent bending and produce a fracture at the coal face. The projecting corners of a step face furnish rigid supports, which move the general break line outward, allowing a reasonably free space behind the greater portion of each face.

Mr. McCullough called attention to the fact that the step-face system is in principle the same as drawing pillars on a pillar line. He showed how natural conditions can be met by varying the length of face, distance between steps, and the relative direction of the general break line. He described his company's first attempt in 7-ft. coal on a 300-ft. face. Cribs were used, but still there was enough deflection of the overhanging strata to allow the roof, at times, to fracture close to the face.

R. Y. Williams, consulting engineer, of Shenandoah, Pa., in discussing the paper said, that 90 per cent of mining today is in reality done by the step-face method, because this system corresponds to the robbing line in room-and-pillar workings.

He called attention to the fact that seldom, if ever, does the roof shear

falls at that point are light and usually extend but a short distance in an upward direction. An example of a conveyor digging itself out of the fall and of a mining machine and other equipment being reclaimed from under a mass of rock at the face were cited as proof that such falls are light.

The paper by E. F. Woodson, general superintendent of the Crowe Coal Co., Henrietta, Okla., was read by Mr. Burgess of the Republic Iron & Steel Co. The author described a recent attempt at working a face about 200 ft. long by conveyor mining in a bed 32 to 38 in. thick under a cover of 200 to 300 ft., with a good roof of blue shale. The plan was to set a row of break timbers close to the conveyor face so as to cave the area mined and relieve the weight.

After advancing the 200-ft. face about 150 ft. heavy roof breaks occurred after which a fall was obtained with every cut of coal. A fracture was formed at the back of the undercut, taking an angle of 60 to 70 deg. with the horizontal, and extending over the caved area.

RESULTS VARY WITH HEIGHT

The break would always appear at the back of the cut as the mining machine crossed the face. Later the work had to be abandoned because of the heavy pressure which resulted from encountering a normal fault. He described in detail his observations and theory as to the bending and shearing action in the overburden.

Following this, Mr. Pryde read a discussion written by W. D. Brennan, general manager of the Phelps-Dodge Corporation, of Dawson, This detailed experience N. M. during the past year and a half, with long-face mining in coal from 4 ft. to 9 ft. thick, under overburden which in places attained a thickness of 1,500 to 2,000 ft. These faces were 150 to 400 ft. long. The breaks extended entirely to the surface.

In coal over 61 ft. thick the results were disastrous, but where the a suitable angle, the two portions

roof was successfully broken at a row of props $6\frac{1}{2}$ ft. from the face. The practice followed was to remove all supports back of the break row in which four rows of props were always used so as to assure protection to the men and equipment. The opinion was expressed that longer faces resulting in a slower advance so as to give the roof more time to settle, might afford better results.

SEAMS ABOVE LIMIT METHODS

Dr. J. J. Rutledge commended the paper by Mr. Woodson, saying that the author had put into concrete form a likely theory of roof action. He called attention to the fact that in panel longwall the roof action is the reverse of that with true longwall advancing, and that the breaks should be obtained at rigid supports so as to relieve the face of weight.

Josiah Keeley, president of the Cabin Creek Consolidated Coal Co., Kayford, W. Va., was the third speaker. His subject was: "Control of Roof in the Eagle Seam." He opened by humorously describing the idosyncrasies of the No. 1 Gas or Big Eagle Seam. Pillar drawing in this measure results in cracks which extend to the top of the mountain. perhaps through 1,000 ft. of cover.

He said that little over 50 per cent of the coal is removed, principally because of the fear of disturbing the valuable beds above. The thick draw slate overlying the coal presents a real problem. This can be controlled only by complete lagging, which is, of course, out of the question.

The last paper of the morning, "Recent Developments in Roof Control," was read by W. C. Stratton, chief engineer of the United States Coal & Coke Co., Gary, W. Va. He described his company's endeavors to improve and cheapen the method of controlling the roof. One of these was by the use of a two-part crib with height adjustment accomplished by sliding one part upon the other at being held in position by a chain. The other device is a power-propelled metal jack.

One of the most interesting talks of the session was by Glen Knox, superintendent of the Gunn-Quealey Coal Co., Quealey, Wyo., who at the request of Eugene McAuliffe, reviewed his experience in longwall mining. The coal worked is 6 ft. to 6 ft. 3 in. thick, the roof a strong sandy shale and the cover about 500 ft. thick. The coal is free of partings and is shot down onto a heavy-duty conveyor, which is moved up tight against the face.

His company has already worked two continuous faces each 250 ft. long for a distance of 2,000 ft. Selected posts 8 to 10 in. in diameter are set 12 in. apart in one direction by 15 ft. in the other to form rigid break rows. Between these rows of selected posts ordinary props are set on 4 ft. centers.

If the roof does not break at

every second cut or each 15 ft. of advance, work is stopped until the roof can be brought down. Cribs are sometimes used, but are employed only for the safety of the men and equipment. A new break row is set about 4 ft. from the face, or about 11 ft. from the back of the cut.

After the conveyor has been put in operation shooting is started at one end of the face and is continued along its entire length at one-minute intervals. About 10 per cent of the coal is loaded automatically by the conveyor and the remainder is shoveled by hand. Each loader handles $18\frac{1}{2}$ to 19 tons per shift and the output per underground employee is 9 to 10 tons daily, which compares favorably with 5 tons which was the production before the adoption of the new system.

Without a single accident at the face, 175,000 tons have been mined. During the last year, the men have never failed to clean up a face each

shift. Less lump coal is obtained than with the old system of mining.

At the start a face was lost by advancing a distance of 30 to 35 ft. before getting a break. Mr. Knox stated that the saving realized has been small. Timber cost is somewhat increased. The net saving in getting the coal into the cars is less than 15c. per ton. He said that they are now reclaiming more rail than is required for development and eventually they will have some to sell.

Erskine Ramsay described two successsfull longwall mines in Alabama. He also hinted at a new system of mechanical mining that he is working out and which he predicts will prove of great advantage under favorable conditions.

Carl Scholz, of Charleston, W. Va., said that so far, his company has failed to control the roof in wide places. However, it has one mine in which all production is from faces that are 60 to 80 ft. in length.

Better Track and Bigger Cars Are Advocated

Heavier Rails, Fixed Standards of Construction, Smaller Car Wheels and Greater Length of Cars All Urged—Paint Should Reduce Corrosion—Young Wants Double Trucks on Mine Cars

RIDAY afternoon's session was F devoted to a discussion of underground transportation. So busy had the exhibitors been during the week demonstrating and exhibiting their equipment to coal company officials to the number of at least 1,200, who milled around the exhibit spaces, that they were willing to close the show at noon. This they did. That was not the case, however, with about 150 operating men who desired expert information on the design, construction and maintenance of track and rolling stock. R. L. Kingsland, electrical engineer of the Consolidation Coal Co., presided.

"Track materials and layouts must be standardized to keep maintenance cost low and efficiency high," said A. A. Culp, consulting engineer of Birmingham, Ala. Track men will become more proficient in their work when track is standardized. Often so little is spent on the haulage system that other phases of mine operation suffer thereby to the extent that the unit cost of mining is higher than it should be.

Mr. Culp made a statement which newals also is less.

By Staff Correspondent

should be at all times borne in mind: "No matter how good the condition of the track, if the layouts are not planned so as to minimize delays to other phases of the operation, the haulage system is not efficient."

He drew attention to the fact that as a short ruling grade will limit the tonnage of a train over a long haul, such abnormalities in grade should be in most cases corrected. When details are properly planned and executed the maintenance forces are lowered to a minimum without jeopardizing the efficiency of the track. Poorly laid rails and complementary equipment are torn up by passing trips as fast as they can be repaired.

Some years ago, the Lehigh Valley R.R. turned to the use of 136-lb. rail as an experiment, though it thought at the time that this section was much heavier than necessary. The rail has been in long enough use now to prove that not only are the track maintenance costs less, but that the yearly tonnage of rail renewals also is less.

In some mines the cost of track maintenance is as much as that on the best railroads, according to Fred C. Hohn, consulting engineer, Scranton, Pa. This unfortunate situation is due to the fact that makeshift and unsuitable materials are improperly installed, and then maintained in a haphazard manner with the result that their life is short, derailments are common and labor is wasted in patching. He read a paper on "Track Work, Details and Maintenance."

Clarence E. Watts, mechanical engineer of the Berwind-White Coal Mining Co., Windber, Pa., delivered a paper on the subject of, "Selecting a Mine Car Design." His attitude is that though great strides have been made in the design and construction of mine cars, not much progress can be noticed with respect to certain of its mechanical features. He feels that the last word has not nearly been reached in achieving the highest ratio between the dead weight of the car and its gross weight.

In his paper, Mr. Hohn objected to the practice of having bond holes

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Mr. Hohn also had said in his paper that he could not see the merit of steel ties for general use. George Hay, general manager of the Consolidation Coal Co., said that his company was experimenting in the use on main haulages of heavy steel ties under 60-lb. rails. The tie being used has a bearing surface of 7 in. and a top surface of 5 in.; it is ballasted with rock, and is held in line with braces which extend from the rib to the rail. He thinks that the steel tie is of particular value in the repair of rails, which have spread. Where they are used under switches, a floor of concrete is poured.

STEEL TIES CONCRETED

Mr. Johnson of the Bethlehem Steel Co., described a steel tie installation in a Michigan copper mine where concrete was utilized to hold and support the track along the entire length of the main haulway. Mr. Hohn said that in his experience steel ties in general use, and under heavy rails in particular will bend and tend to draw the rails together because the center of the tie is in contact with ballast material at a higher level.

W. D. Hockensmith, of Penn, Pa., pointed to current practices and tendencies in design which car manufacturers are now following. A change from the 16-in. wheel to the 14-in. wheel has been made to increase the capacity of the car by 5 to 8 cu.ft. with only a slight increase of tractive effort. He intimated that no brake should be designed so as to Where protrude beneath the axle. the brake gear extends beneath this point, it is generally out of order.

He stated that the steel-band brake is satisfactory for spotting mine cars, but is of no value for steadying trips on long hauls.

He urges wider use of the composite type mine car because it has proven to be best both from a practical and an economical standpoint. The cost is 15 to 20 per cent higher than the wood car of the same carrying capacity, and the weight in each which will give the same strength case is about the same. In his opinion the width of a composite mine lighten its dead weight. He sees no car can be increased to such an ex- reason why the 3 to 1 ratio between



Two Fifteen-Ton Locomotives Operating in Tandem, Keystone, W. Va. This heavy haulage equipment is being used on the main haul of the Keystone mine, erated by the Keystone Coal & Coke Co. The motors in each unit are adapted for a comotive weighing 20 tons. locomotive

greater capacity without sacrificing strength.

Steel sides of mine cars will last at least twelve years. The Steel Corporation has found by experience that the average life of wood cars is five years. After that time they have to be rebuilt. Contrary to common belief, the bodies of steel cars are not much weakened by rust which attacks the outside and not the inside of the plates. Mr. Hockensmith would recommend therefore that oil or paint be applied to the outside surface, perhaps by the use of a spray gun.

The mechanical loaders now in use require a clearance of 14 to 18 in. between the top of the mine car and the mine roof. Many operators are considering the possibilities of mechanical loading as applied to their properties. Mr. Hockensmith urged them to consider the requirements of the mechanical loader when having cars built for hand-loading purposes.

LONGER MINE CARS

According to him, the mine car will be increased in length. Inasmuch as 16-ft. mine locomotives are being used successfully, he sees no reason why the mine car should not be longer where conditions require higher capacity than that can be obtained with current proportions. He feels that a bottom could be built strong enough to take care of the additional overhang of a longer mine car. He has no doubt but that a 16-ft. car on a 6-ft. wheel base would work with entire satisfaction, providing the track curves were made longer.

Much is yet to be learned about features of design and construction to the mine car and at the same time

tent as to give 30 to 40 per cent the capacity and dead weight which is being obtained in railroad cars could not at least be approximated in mine cars to the extent that the latter would carry as much as two and one-half times their dead weight.

> He is building for outside tram purposes at a certain mine a 40-ton car, one end of which will be equipped with a hand brake and the other end with an air brake.

> Dr. L. E. Young, of St. Louis, is confident that the idea of double trucks on mine cars is practicable and in the future may have to be adopted where the hauls are long. Little encouragement from others was forthcoming to strengthen him in this belief. Nevertheless he remained as ever "from Missouri."

DISPATCHING METHODS

The Consolidation Coal Co. employs two distinct methods of controlling underground haulage. In closed-light, gaseous mines traffic is regulated through a motor boss. In such of its mines as are equipped exclusively with permissible equipment no telephones are installed. In its open-light mines, transportation is governed by telephones and a dispatcher. A detailed account of these two methods was described by J. B. Hicks, electrical engineer of the Consolidation Coal Co., in a paper on "Dispatching for Long Haulage."

The subject of this paper was discussed by T. G. Fear, general superintendent of the Inland Collieries Co., Indianola, Pa. He said that if he should ever decide that the use of a telephone in a gaseous mine was dangerous practice, he would at the same time make a decision to take out all electrical equipment. The mine which he is operating produces normally about 3,100 tons of coal per day. This tonage is hauled over a distance of one and one-half miles by two 15-ton locomotives.

COAL AGE



Bureau of Mines Exhibit

Many Exhibitors Show New Equipment At Cincinnati

Ninety-Two Separate Booths Exhibit New Suggestions for Cutting Cost and Increasing Safety-Trend Strong for Greater Use of Power-More Mechanical Loading Devices Shown Than Ever

ACH SUCCEEDING year seems to show a growth and improvement in the exhibition of mining equipment held in conjunction with the meeting of the American Mining Congress. One needs only to study these exhibits carefully to see the present and future trends of the industry. This year face conveying, power drilling and shoveling were much in evidence. It is not, however, the intention here to enumerate the various exhibits, interesting though they were, but rather to recount some of the new devices, each capable of doing its bit toward easing the labor or cheapening the cost of coal production. These ran a wide gamut of trated on two panels.

By Frank H. Kneeland Associate Editor, Coal Age

usefulness, ranging all the way from pump controls to shotfiring devices. Just as the visitor to the show came upon these various pieces of new equipment in no particular order or arrangement, so no attempt will here be made to place the descriptions in any premeditated sequence.

Simplicity and compactness, two highly desirable features, were embodied in the new automatic substation exhibited by the Ridgway Dynamo & Engine Co. The control apparatus, with the exception of the direct-current breaker and its supervisory relays, was made by the Cutler-Hammer Mfg. Co. and was concen-Only one



Motor-Generator Set This consti-tutes part of the automatic sub-station described in the right column of this page. The switchboard is not visible in the picture. The bearing relays and some auto-matic equipment matic equipment are plainly shown.

voltage was employed for operating the magnetic switches and relays.

The direct-current breaker is that manufactured by the Automatic Reclosing Circuit Breaker Co. This substation was unique in that it was the product of three companies, each a specialist in its particular field. The Ridgway synchronous motorgenerator set of the exhibit is characterized by abundant copper, by the "Ridgway" compensating winding of the generator, and by provision for easy alignment of the motor and generator frames. Adjusting bolts are provided which make it convenient to raise or lower the frames or shift them laterally on the base. Although the motor-generator on exhibit ran at 1,200 r.p.m. the same automatic switchboard is used with the 900r.p.m. machines.

The automatic reclosing circuit breaker, which is the new type KSA, has a number of new features. The most important of these are: Solid contacts instead of laminated, a magnetic blowout and a laminated frame. The blowout is designed for maximum effectiveness even at low current values. The contact pressure has been greatly increased which results in an operating temperature

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Engine That Gives Differential Shaking Motion to Conveyor

This side-drive engine, which is intended for actuating the Mavor & Coulson conveyor, is one of three types available. It operates at 65 strokes per minute. The motor and controller are of the explosion-proof type and the design is rugged and simple throughout.

sible on a solid-contact device.

The laminated frame of the breaker speeds up its operation and reduces the actuating current required. Another feature is the use of a rolling-ball contactor which delays the insertion of resistance in the holding coil circuit, until the breaker has had plenty of time to seat itself.

The C. H. McCullough Engineering Co., of Pittsburgh, Pa., had on exhibit a driving engine and two sections of the Mavor & Coulson shaker-trough conveyor, which is made in Glasgow, Scotland. The engine is compact, and appears to have that ample ruggedness and simplicity which is necessary for duty in a mine

The motor and controller are of the inclosed type approved in Europe for use in gassy mines. The armature is fitted with grease-packed The bronze sleeve ball bearings. bearings are oiled by the wick system from an oil cellar, the covers for which instead of being held in place by ordinary nuts, are each secured by a single lever nut requiring no wrench. Gears and the wearing portions of the shafts are case-hardened.

The 9-ft. trough sections exhibited were $20\frac{1}{2}$ in. wide. The standard sections, which are made of lighter gage steel than the drive section, weigh only slightly over 100 lb. each. Two men can easily handle one of these.

The conveyor is designed to operate at 65 strokes per minute, and on a level course, 360 ft. of $20\frac{1}{2}$ -in. trough is the maximum to be driven from one engine. The tonnage rating on the level, when using a 9 to 10-in. to take several sizes of wire. The stroke is 30 to 70 tons, and when smaller size will take cable up to using a $6\frac{3}{4}$ -in. stroke 28 to 40 tons per hour. Ratings are naturally one of the most important advan-

considerably below the limits permis- somewhat higher for grades in favor of the load.

> Another exhibit of the McCullough company showed an EMB drawn alloy-steel continuous locomotive resistance built in one section with a

tages of the clamp is that in case of a slate fall, the loosened feeder can be tightened without disturbing the trolley wire.

The Curtis valve now has two distinct features; automatic suction control and automatic pump control. Both are combined in one unit. The suction control does the work of a pump man by automatically opening and closing the several suction lines from a pump as the various sumps served by it fill up and are emptied.

This valve with the new electrical contact arrangement in the top makes mine gathering pumps completely automatic. It operates as follows: By means of the electrical contact in the top of the valve, which is a built-in feature, and may be connected in multiple where more than one valve is installed in connection with a given pump the time of operation of the pump will coincide exactly with the water conditions encountered. When all of the



Rogers Feed Wire Clamp Holds and Connects Trolley and Feeder Cable This is another of the several devices of a similar nature and for a like purpose that have been put upon the market recently. This clamp holds both trolley and feeder cable from one support and forms a connection between them.

able space in a certain type of loco- automatically stops and remains inmotive. This design makes the com- active until sufficient water has acplete resistor nearly jointless so far as the elements are concerned and leaves only external connections to be made on the job.

"Insta" control for centrifugal pumps, the "Rogers" feeder-wire clamp, and a new "Curtis" valve were among the new features of the exhibit of the Dravo-Doyle Co., of Pittsburgh, Pa. The purpose of the "Insta" control is to shut down a centrifugal pump if for any reason the water is lost. It consists of an anti-acid bronze body containing a differential plunger which operates an electrical contact. The only pipe connections necessary are two 1/2-in. lines to the sides of the dischargeline check valve.

The Rogers feeder-wire clamp is interposed between the hanger and the trolley clamp. It is adjustable 500,000 circ. mil capacity. Perhaps

side frame shaped to suit the avail- places have been drained the pump



Insta Pump Control

This device is intended to control the operation of centrifugal pumps. It is of simple design and built of acid-resisting bronze. Its only connections are two $\frac{1}{2}$ -in. pipes that come from either side of the discharge-line check valve.

A steel-mold copper electrode bond was being applied by the Una Welding & Bonding Co. This is the type CBM, "Metmold." The terminal is held securely in proper welding position by driving the mold-fitted bond head onto the base of the rail. A reduction of accessories, quick installation and contact to both base and web of the rail are secured by the

The General Electric Co.'s automatic substation embodied several new features. The 200-kw. synchronous converter was equipped

with the TB-8 bearing temperature

relay which uses mercury contacts operated from a rod extending into the bearing where the temperature

element is concentrated. The start-

ing and running contactors now have

demountable arc chutes in place of

the hinged type. This facilitates in-

On the main control board, several



Curtis Valves Controlling Gathering Pump

These values are now fitted with an electrical connection which adds much to their utility. The pump station may now be made alrost as truly automatic as the substa-tion, as the pump will operate only when and as long as there is water to be pumped.

cumulated to make it necessary to pump out one or more of the branch suction lines. The electrical contact then starts the pump, which remains in operation until this water has been removed, when the machine is again shut down. It has been found that many of the pumps used in mines operate at only 10 to 20 per cent efficiency. During much of the time they merely waste power. By means of this contactor, which is built into the valve, this excess power loss has been eliminated. At the same time this device insures reliability of operation.

This firm also exhibited in combination with the Bureau of Mines, the first government-approved mine pump for use in gaseous workings. This unit has been tested by the Bureau and permits have been issued to the manufacturer for both 550 and 250 volt machines.

Six new developments were noted at the booth of the Electric Railway Equipment Co. First, there was a trolley-wire splicer with staggered set screws, this arrangement providing space so that an ordinary wrench can be used. Thus the usual special socket wrench is not needed.

The next was the "No-Loss" expansion bolt for hanging trolley and feeder wire. This has a double, $\frac{1}{2}$ -in. pitch thread and the end is slotted so that the bolt can be screwed out of the hole with a spanner socket wrench.

Another development is the tripleduty sure-grip clamp. Cast integral with the compression ring of this device is a set-screw lug for holding a feeder wire. The feeder is simply hooked into place and fastened by a set screw. The three functions of the clamp are to support the trolley wire, support the feeder wire, and to connect the feeder and trolley at each hanger.

A mining-machine cable nip is another new item of this company s line. This has a solderless connection in the handle, with a plug connector on the side as well as on the nip end.

Another item is an improved sec-

Triple Duty Clamp Trolley and feeder c a b l e h a n g e r com-bined. It is simple in construction, holds both cond u c t o r s, either of which may be tight-e n e d without disturbing the other. It also other. It also joins them electrically.



new design.

spection.

tionalizing insulator switch. has a double blade, and a double hanger support. There was also on exhibit a double feeder clamp which provides for carrying two feeders of any size, or a trolley and a feeder, at the same level, but 6 in. apart.

This dash-pot relays have been replaced by the more positive induction type, and the starting protective timing relay is motor-driven. Phase-failure protection is now accomplished by a current phase-balance relay of the induction type instead of by two tem-



A Permissible Pump Unit Approved by Bureau of Mines It consists of the gathering pump, the motor that drives it and the control device. All electrical equipment is inclosed and explosion-proof.

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perature relays. Also the old plunger-bellows type of alternatingcurrent relay has been replaced by the type IA induction relay.

Among the electrical instruments shown were the new type CP-4 and CP-5 graphic portable meters and a type D-7 polyphase watthour meter equipped with potential indicating lamps. Each of the graphic meters has self-contained resistance units, a non-spillable and quick-removable ink well, potential change switch, quick-opening back giving ready access to the meter element and inking mechanism, a knurled nut for locking the apparatus for transportation,



General Utility Motor

This motor and its control equipment is entirely inclosed and forms a unit within itself with no flexible connections between the two elements. It is intended primarily for driving pumps in gassy places.



Line Shaft Bearing

This bearing is split so that the shaft to be supported may be laid into it. It is so proportioned that it will fit any standard shaft hanger.



Roller Bearing Pillow Block

Ordinary cold-rolled shafting can be used with this pillow block. It is so constructed as to prevent longitudinal movement and the shaft does not require turning down.



Steel-Mold Bond Terminal Said to Be Rapid in Application

The terminals of this stranded copper bond are so made that they may be driven over the flange of the rail where they form molds for the deposition of molten copper. Bonds of this kind can be applied, so it is claimed, with greater rapidity than those that have to be clamped in position before they can be welded.

also a hinged clock and chart element, all of which add to the ruggedness or convenience of the instrument.

As its name implies, the potential indicating feature of the D-7 watthour meter provides a visible means of knowing that potential circuits of the meters are not open. Flashlight lamps rated at 3½ volts are operated at one volt from a few turns of transformer winding, which is added to the meter elements.

Another exhibit of this company was its new general utility motor for use in the mines and designed primarily for driving pumps. This is a direct-current machine of 5 hp. and 1,200 r.p.m. The controller is attached directly to the motor, making a unit with no flexible connection between these two elements. This machine is protected from overload by a thermal relay, which, if tripped out, can be reset by a push rod without dismantling the machine. The motor may be thrown directly across the line, and although designed primarily for driving gathering pumps it will doubtless find favor for actuating other machinery, such as face conveyors and the like.

This company also showed a 6-ton permissible storage-battery locomotive that has been approved by the Bureau of Mines. The particular unit exhibited has been operated for nearly a year in the Warden mine of the Pittsburgh Coal Co.

FOR ANY STANDARD HANGER

The Hyatt Roller Bearing Co., of Newark, N. J., exhibited a line-shaft bearing built to fit any standard shaft hanger. The construction of this bearing is extremely simple, consisting of two parts held together by four bolts. The roller cages also are split so that the entire bearing may be put in place without disturbing the shaft assembly.

This firm also showed a roller-bearing pillow block built along the same general lines. In this block the inner race is slipped over the shaft and held in place longitudinally between two collars that are clamped to it upon either side of the block. It is thus unnecessary to turn the shaft down in any way, and the block is made to fit commercial cold-rolled shafting of diameters ranging from 1 to 5 to 5 to in. A thrust collar within



Parallel-Throw Switch Stand

Malleable iron and steel parts only are used in the construction of this switch throw. It is a notable fact that there has been a measurable decrease in the acci-dent rate at mines that have made parallel-throw stands their standard.

the block resists any tendency of the shaft toward longitudinal movement.

The Weir Kilby Corporation showed a new parallel ground switch throw stand. The base of this stand is a single casting of malleable iron. all other parts being forgings. The reverse crank of the throw lever is provided with a ball-and-socket joint which actuates the throw arm. The connecting rod may either be solid or fitted with a spring. This stand is self-locking in either position of the points; but with the spring rod cars may be passed through the switch. The chief advantages as claimed by the makers are that the switch stand is low and may be set at a point remote from the track, the throw is parallel, a rest is provided at each side, all the parts are accessible, repairs may be readily made and the device has great durability.



British Strike Enters Second Month With Both Sides Outwardly Unmoved; Informal Efforts for Accord Continue

The British coal strike enters its second month with the tie-up in production complete and with neither mine owners nor mine workers offering any new formulas for peace.

Officially neither side has receded from the positions taken when they rejected Premier Baldwin's settlement program. Unofficially, however, efforts are being made to find a platform upon which both sides can stand.

The leadership in this movement has been taken by F. B. Varley, M.P., a member of the executive committee of the Miners' Federation. Mr. Varley's plan calls for mutual concessions. Mr. Varley suggests:

(1) A reduction of 8th per cent in wages to the end of the year, instead of the 10 per cent included in the Baldwin proposals.

(2) No profits to the owners until wages have been restored to pre-strike levels.

(3) A government subsidy of £6,000,-000, instead of the £3,000,000 offered by the Premier.

(4) Immedate wage adjustments by the National Wages Board to be set up, instead of postponing action until December.

Frank Hodges, secretary of the Miners' International Federation, is another one who has come forward with a plan. Mr. Hodges calls for a general reorganization of the industry. He favors increasing the working day from seven to seven and one-half hours and a five-year extension of the wage agreement of 1924.

New coal regulations issued by the government last Thursday cut the allowance to domestic consumers from 100 lb. weekly to 50 lb. Lights for display and advertising signs have been prohibited to save coal. Industries in general are beginning to feel the pinch of the fuel shortage. Only a few furnaces are in blast. Several large Sheffield cutlery plants are down. Most of the pottery plants have been closed again. Railway service is being further curtailed.

Stamp Urges Restrictions

Sweeping restriction of the coalmining area and a reduction in the number of mines in Great Britain were urged as the only solution of the British coal problem by Sir Josiah Stamp, chairman of the executive committee of the London, Midland & Scottish R.R., and a member of the Dawes

commission, in an address before the British Empire Chamber of Commerce at New York on May 27.

at New York on May 27. "Before the war," he said, the [British] coal production in peak years was about 280,000,000 tons going into export trade, enough to make all the difference between that kind of prosperity that existed before war and the depression in unemployment today. A large number of mines of very great age are operating on, what we should say in economic language, the margin of profitability. They cannot hope to succeed in competition with mines



Frank Hodges

under a modern equipment. The geolocial formation and the half dozen other conditions preclude that, and, if you could cut out of the producing area many of those mines and some 200,000 men, then it is quite clear that the remaining mines would produce enough coal to satisfy the market today under such conditions as would enable the present wages to be paid on an economic basis without loss.

"It is obvious that you cannot negotiate for a wage agreement for a state of affairs in the industry as the industry will be when it is reconstructed, because it will take three or four years at least for the things to be done that are required, and at least three or four years for them to have their full effect in profitability to the industry. You

No Change in Situation On Coal Legislation

The legislative situation at Washington as it affects the bills introduced in Congress to regulate the coal industry is unchanged.

The House committee on interstate and foreign commerce, considering the bill introduced May 17 by its chairman, James S. Parker, has made no report.

In the Senate, the Copeland bill is listed with the major legislative proposals pending before the upper house. The Republican steering committee, which is expected to map out the program for the remainder of the session, has taken no action.

With the continued delay, opinion grows that no bill will pass either branch of Congress before adjournment. The most uncertain factor, however, is the date of adjournment. The longer Congress is in session the greater will be the opportunity to press for consideration of coal regulation.

have, therefore, an interim period during which that state of affairs is being brought about by common agreement. That is the period for which you have to negotiate, and with the dissensions that exist within the mining association I cannot conceive that it is possible to negotiate for that interim period without a lapse of time—say four or five months."

Studdard Heads New District In West Virginia

James L. Studdard has been named as acting president of District 31, comprising counties in northern West Virginia, which was recently established by the international executive board of the union. C. F. Davis has been appointed acting secretary-treasurer of the new district.

In making the announcement, Van A. Bittner, international representative in West Virginia, said: "There is only one task confronting us and that is the complete establishment of our union in this field. It is a great task, but with the splendid spirit of unionism displayed in the future that you have displayed in the past, we will demonstrate our ability to thoroughly unionize every mine in District 31. This condition will be made a living fact by that co-operation and assistance which knows no defeat."

British Coal Situation Intensifies Complexity of World Markets; Fuel Economy, Oil and Water Power Spread

By Paul Wooton Washington Correspondent of Coal Age

That the serious depression which underlies the British coal situation is reflected in the United States and in other coal-producing countries is apparent from studies being made in Wash-ington of the situation. There is enough competition between coal produced in the several countries of the world to influence the price level in each country.

To find the key to this world situation it has been necessary to examine the broad features of supply and demand of coal in the world market. In comparing present conditions with those existing in 1913—the last year before the war-two great tendencies are clear. One is the worldwide in-terest in fuel economy, which has tended to reduce the demand. The other is the competition of other sources of heat and power. It has been found difficult to reduce to forures the effects of fuel economy

to figures the effects of fuel economy. It is known, however, that the high prices and the shortages caused by the war turned the attention of engineers to fuel economy in a much more determined way than ever before. This was particularly true among the electric utilities. It became the great test of operating efficiency. The route to rapid promotion for the aspiring engineer was through the boiler room.

Railroads Reduce Consumption

Out of this movement there are certain places where savings in fuel can be reduced to figures. In the United States the consumption of locomotive fuel in the freight service has decreased 18 per cent per unit of work done. In the passenger service the decrease has been 13 per cent. All of this saving has taken place since the war.

Improvement in blast-furnace operation and in coking practice have cut b7 9 per cent the consumption of coke and coal per ton of pig iron. The savings of gas and tar and other byproducts of present coking methods have reduced the consumption of heat by metallurgical industries by an additional 10 per cent. The electrical utilities have shown even a greater decrease. The pounds of coal per kilowatt hour have been reduced 34 per cent since the war. Figures from Great Britain are hard to get, but those available show the same trend.

At the same time that fuel economy has been reducing the demand, other competitors of coal have been taking away a part of the market. Before the war the world demand for coal increased with surprising regularity at the rate of about 40,000,000 tons per year. Since the war there have been only three years in which the 1913 output was reached. Production in 1925 was 1,368,000,000 tons, which shows an apparent increase over 1913, when 1,342,000,000 tons was produced. Most of the 1925 increase, however, came from German lignite. The world production of bituminous coal alone, since the war, never has reached the 1913 level. On a B.t.u. basis the world output for 1925 was not quite equal to that of 1913.

While the demand for coal has stopped growing the production of its competitors has increased at a faster rate than before 1913. Water power has doubled since 1913 and the production of petroleum has much more than doubled. The increase in water power since 1913 is equivalent to 66,000,000 tons of coal per year. The increase in oil and gas is equivalent to 172,000,000 tons per year.

Coal Recedes in Position

Putting it in another way, the contribution of coal and of its competitors to the world's supply of energy may be expressed as follows:

	Per Cent	Per Cent
	1913	1925
Coal	89	76
Dil and gas	7	16
water power	4	8
Total	100	100

Before the war coal absolutely dominated the world's energy supply. It now supplies 76 per cent of that demand. This arrested growth has been all the more difficult for the industry because it had accustomed itself to a steadily expanding market. Even the British industry was growing. Coal production in Germany and in the United States was expanding very rapidly, while in

some of the outlying new countries, which South of Africa is an example, the rate of growth surpassed that of the United States. The industry not only was accustomed to an increase in demand but capacity has continued to increase even though the demand has not. In the United States this increase in capacity has been enormous. The same is true in the outlying countries, when expressed in percentage and not in tons.

The plight of coal is worldwide. For that reason the solution being worked out in Great Britain is being followed very carefully by the government's coal specialists in Washington.

Deplores Perennial Strife In Coal Industry

Much of the unrest in the United States may be attributed to the lack of co-operation between people whose interests certainly lie in harmonious understanding, yet appear to be in eternal strife, ac-cording to a statement made May 12 at the annual convention of the Maryland Bankers' Association in Atlantic City by George Decamp, of the Federal Reserve Bank of Cleveland.

"The coal industry," Mr. Decamp said, "is a specific example in this regard. It would seem that we may look forward annually to disputes concerning wage adjust-ments, ending in strife which apparently benefits neither miner nor operator and in which the public is generally greatly inconvenienced.

"It is a sad commentary on American business that some workable plan had not been developed to bring about better cooperation between these warring elements."

Burns Bros. Earnings Jump

Official figures of earnings for the fiscal year ended March 31, 1926, of Burns Brothers, New York City, show net sales of \$29,049,655, against \$27,-287,472 in the previous fiscal year. Net profit totaled \$2,420,779, against \$1,271,-902 the year before. The net profit for the last fiscal year was equal to \$15.17 a share on the 97,365 shares of Class A stock and \$7.17 a share on the 97,367 shares of Class B common stock. This compares with \$10.22 a share on Class A and \$2.22 a share on Class B in 1925.

Are British Coal Mines Efficient?



Boiler Room in a New British Colliery

This boiler room is at the Snowdown Colliery, Nonington, near Dover, Kent, England. It is one of two plants owned by Pearson & Dorman Long, Ltd. It will be noticed that coal is still being stoked by hand at this brand new plant. We are told that the British mines are hindered by the besetting conditions of earlier operation, but here, in Kent, are new mines. Will the old tradi-tions ever be overcome?

COAL AGE

Promising Program Arranged For N. C. A. Convention

"Big doings" are promised coal men who visit Chicago to attend the annual convention of the National Coal Association to be held at the Drake Hotel, June 9, 10 and 11. Operators from all parts of the country are expected to be present and, according to Harry L. Gandy, executive secretary of the asso-ciation, and D. H. Pape, assistant to Mr. Gandy, the program will be one of the most interesting ever prepared for the bituminous coal industry.

the bituminous coal industry. The following addresses are scheduled: "Research and Its Value to the Coal Industry," by Walter Barnum, presi-dent, Pacific Coast Co. "Hunting for the Elements Produced

by Low-Temperature Distillation," by Russell B. Cooper, National Coal Asso-ciation graduate research fellow, Car-negie Institute of Technology.

"Questions Arising From the Disposal of Mine Waters," by Richard D. Leitch,

of Mine Waters," by Richard D. Leitch, associate chemical engineer, U. S. Bu-reau of Mines, Pittsburgh, Pa.-"The Human E.ement in Safety Work," by P. H. Penna, secretary-treas-urer, Indiana Bituminous Coal Oper-ators' Association.

"Reducing Hazards in the Mining of Coal," by J. William Wetter, general manager, Madeira, Hill & Co., Phillips-

manager, Madeira, Hill & Co., Phillips-burg, Pa. "One Way of Teaching a Miner to Protect Himself," by R. E. Howe, vice-president, Climax Caol Co., and secre-tary of Southern Appalachian Coal Operators' Association, Knoxville, Tenn. "Keeping the Cost of Compensation Insurance to the Minimum" (with a rootion picture film, "The Story of Rock-Dusting"), by J. T. Rupli, superintend-ent, compensation department, Chicago, Wilmington & Franklin Coal Co., Chicago.

Chicago. "Centralized Accident Reports-Their Advantages and Benefits," by W. A. Ellison, general manager, Southern Harlan Coal Co., and president of the Harlan County Coal Operators' Associ-ation, Harlan, Ky.

"Have Statistics Any Value to the Coal Industry?" by C. E. Bockus, president, Clinchfield Coal Corporation, Dante, Va.

Railroads to Spend Heavily For Betterments

Capital expenditures for new rolling stock and other improvements authorized by Class 1 railroads this year up to April 1 total \$822,-000,000, according to a report by the Bureau of Railway Economics of the American Railway Association. The Bureau estimates that the total capital expenditures for the year 1926 will run between \$750,000,000 and \$800,000,000.

Capital expenditures made during the first three months this year for equipment amounted to \$74,900,-000, a decrease of \$22,800,000 compared with similar expenditures for the first three months last year. Capital expenditures, for locomotives, however, amounted to \$18,-300,000, an increase of \$5,600,000 over the same period in 1925, al-though decreases, compared with the first quarter last year, were reported in capital expenditures for freight and passenger cars.

For roadway and structures, capital expenditures for the first three months this year were \$90,800,000, an increase of \$19,200,000 com-pared with the first three months last year.

"Coal - Salesmanship," by Ralph Knode, vice-president, General Coal Co.,

"Will Oil Compete With Coal or Will Coal Compete With Oil?" by J. G. Puterbaugh, president, McAlester Fuel Co., McAlester, Okla. "Efforts on Behalf of Bituminous

Coal Industry in Federal Tax Matters,'

by R. C. Tway, president, R. C. Tway Coal Co., Louisville, Ky. "Legislative Proposals Now Before Congress Affecting Coal," by W. H. Cunningham, secretary, West Virginia Coal Association.

The annual dinner will be held at 7 p.m., June 10, in the ballroom of the Drake Hotel. Judge H. B. Lindsay, of Knoxville, Tenn., will preside as toastmaster.

Midwest Dealers Reorganize And Hold Annual Meeting

When members of the Mid-West Retail Coal Association gathered in Kansas City, Mo., May 26, for a two days convention, they were met by a "cease and desist" order from the Federal Trade Commission, effective that day (see Coal Age, May 27, page 772). The association immediately disbanded, but, as individuals, the members reorgan-ized as the Missouri Valley Retail Coal Merchants' Association, and continued the program interrupted by the order.

The new association elected James P. Andriano, of the Todd-Sunshine Coal Co., St. Joseph, Mo., president, and W. R. Feuquay, also of St. Joseph, executive secretary. Ray D. Kelly, of Springfield, Mo., was president of the disbanded Mid-West Association.

disbanded Mid-West Association. The program May 26 included these talks: "Credit, Cash or Cash Discount —Which?" by W. A. Storrs of the W. A. Storrs Ice & Coal Co., Hannibal, Mo.; "The Association, Its Policies and

Opportunities," by W. R. Feuquay, of St. Joseph; "Clinkers—Their Effect on the Furnace," by L. W. Millis, of the Security Stove Co., Kansas City; "Newspaper Advertising," by K. C. Richmond, advertising manager of the Albert Silk Co., Topeka; "How to Fire That Furnace," by A. Bement, of the Saline County Coal Corporation, Chicago.

At a dinner dance that night, James At a dinner dance that hight, sames T. Bradley, of the Commerce Trust Co., Kansas City, Mo., discussed "The Value of Organization," and C. W. Morris, of the Western Railways com-mittee on public relations, Chicago, discussed "Transportation."

Albert Silk of Topeka, talked on "Know Your Costs"; J. C. Dennis of the Howe Scale Co., Kansas City, Mo., had as his subject "Scales and Their Care"; V. McDaniel of the V. McDaniel Fuel Co. Kansas City, discussed "How to Hold That Customer," and L. B. Clough, managing director of the Chamber of Commerce, St. Joseph, answered the question of "Why an Organization?"

The convention was attended by two hundred retail coal dealers of the Southwest.

Anthracite Produced in 1925, by Regions

(Compiled by U. S. Bureau of Mines)

	Ship	ments	Local	Sales		Power	Total Pro	duction
Region	Gross Tons	Value (a)	Gross Tons	Value	Gross Tons	Value	Gross Tons	Value (a)
Lehigh Breaker product Washery product Dredge product	6,455,632 88,941	\$41,321,141 507,480 86,983	428,810 0 0	\$1,926,225 0 0	573,897 0 0	\$899,320 0 0	7,458,339 174,487 88,941	\$44,146,686 507,480 96,983
	6,719,060	\$41,915,604	428,810	\$1,926,225	573,897	\$899,320	7,721,767	\$44,741,149
Schuylkill Breaker product. Washery product. Dredge product.	13,207,506 380,747 366,242	81,977,570 1,041,965 382,269	555,808 2 371,817	3,380,797 13 384,990	1,958,905 7,788 1,870	816,971 3,743 3,275	15,722,219 388,537 739,929	86,175,338 1,045,721 770,534
	13,954,495	\$83,401,804	927,627	\$3,765,800	1,968,563	\$823,989	16,850,685	\$87,991,593
Wyoming Breaker product. Washery product. Dredge product.	26,847,626 317,042 64,593	183,357,027 1,263,233 67,823	1,200,184 320 13,419	7,289,523 1,600 3,952	2,009,183 41,890 0	2,257,227 49,011 	30,056,993 359,252 78,012	192,903, 777 1,313,844 71,775
	27,229,261	\$184,688,083	1,213,923	\$7,295,075	2,051,073	\$2,306,238	30,494,257	\$194,289,396
Breaker product Total breaker product Total washery product Total dredge product	104,659 46,615,423 872,276 519,776	574,233 \$307,229,971 2,812,678 537,075	5,155 2,189,957 322 385,236	35,731 \$12,632,276 1,613 388,942	17,360 4,559,345 49,678 1,870	32,410 \$4,005,928 52,754 3,275	127,174 53,364,725(b) 922,276 906,882	642,374 \$323,863,175 2,867,045 929,292

8,007,475 \$310,579,724 2,575,515 \$13,022,831 4,610,893 \$4,061,957 55,193,883 Grand total. (a) Value given is value at which coal left possession of producing company, f.o.b. mines and does not include margin of separately incorporated selling companies. (b) Includes culm-bank coal put through breaker.

Short-Circuits Ventilation, Saves 62 Lives in Fire At Mount Lookout Mine

The lives of sixty-two employees at the Mount Lookout Mine of the Temple Coal Co., in the borough of Exeter, sixteen miles south of Scranton, were saved on May 27 through the heroism of their foreman, Thomas Hislop. For five and a half hours they were hemmed in by dense clouds of smoke and flame from a burning building underground and blazing timbers, but were kept alive in an airway one mile from the shaft because Hislop, aided by four miners, including his son, Robert, 22 years old, had perfected a temporary system in a short time that completely short-circuited the regular mine ventilation system and swung the air currents so that the fire was not fanned by air being pumped into the shaft and at the same time fresh air was sent into that part of the mine where the sixty-two men were instructed to remain until rescued.

Only the resourcefulness of Hislop saved the men from suffocation, William P. Jennings, president of the Temple company, and S. C. Curtis, state mine inspector, declared. Had not Hislop shut off the air current the smoke and fumes from the burning timber and the fireboss shanty would have gone into the workings and smothered all.

The fire broke out soon after 8 a.m., around a shanty in the Pittston vein, 300 ft. below the surface, according to company officials, and the flames spread so quickly that sixty-two men were cut off at their places one mile from the shaft.

The sixty-two workers were trapped in the 11-ft. or surface seam of the mine when a fire started in the first aid hospital about 600 ft. from the shaft., and rapidly spread to the timbering along the seam, pouring clouds of smoke in the direction of the workers.

Hislop, who was among the fire fighters, volunteered to skirt around the flames toward the men through a return airway. Upon reaching the furthest end of the rapidly moving fire he closed the main doors and shortcircuited the ventilation back through the airway, cutting off and checking the flames. Rather than return through the airway to safety he elected to push through to where the frantic workers were huddled.



Resourceful Foreman Who Saved 62 Thomas Hislop, age 51, mine foreman of Temple Anthracite Coal Co., whose presence of mind saved lives of 62 miners in fire in Mount Lookout Mine, Wyoming, Pa., on May 27.

Once with the men he reassured them, explaining that it would be but a matter of a few hours before the flames would be extinguished and they could leave the workings in safety. The fire burned for more than four hours. It was extinguished by two streams of water pumped by Exeter and Wyoming (Pa.) fire companies in lines dropped down the shaft.

The cause of the fire has not been ascertained. One version has it that a naked-flame lamp left in a footman's shanty at the landing tipped over and started the blaze.

Thomas Hislop will be recommended to the Carnegie Hero Commission for recognition and award. W. P. Jennings, of Scranton, Pa., president of the Temple Anthracite company, who led the fire fighters in the threatened area, will present Hislop's name.

Lake Cargo Hearing July 20

The Lake Cargo Coal Rate Case, Docket 15007, has been set for hearing July 20, 1926, at 10 a.m., at the Marlborough-Blenheim Hotel, Atlantic City, N. J., before Commissioner Hall and Assistant Chief Examiner Gerry of the Interstate Commerce Commission.



Official Leads Volunteer Rescue Workers

W. P. Jennings (with pipe in mouth), president of the Temple Anthracite Coal Co., who led rescue workers in fighting Mount Lookout mine fire, Wyoming, Pa., on May 27, surrounded by volunteer aids. George F. Gallagher, superintendent of the Lehigh Valley Coal Co., right foreground. who assisted in work.

Wholesalers Hold Convention In Toledo Next Week

The American Wholesale Coal Association will hold its tenth annual convention at the Hotel Secor, Toledo, Ohio, June 7-9. Business sessions will be held in the mornings. The afternoons will be given over to a golf tournament.

The business session on June 7 will be devoted to the presentation of official and committee reports. On June 8 the convention will hear addresses by Ira C. Cochran, commissioner of the organization; Joseph Harrington, combustion engineer, who will speak on "The Use of Pulverized Fuel," and Owen Meredith Fox, executive vicepresident, Chicago Coal Merchants' Association, who will discuss "Retailer and Wholesaler Co-operation Toward the Establishment of a Fuel Research Institute."

Noah H. Swayne, 2d, of Philadelphia, will be the toastmaster at the annual association banquet on Tuesday evening. The principal speaker will be Senator James E. Watson, of Indiana. The program for the final business session includes the election of officers and the reports of the resolutions and trade relations committees.

Predicts Bright Future for Texas Coal Trade

The future of the coal business in Texas is bright, said D. M. Faulkner, of Dallas, at the annual meeting of the Retail Coal Dealers' Association of Texas, held at the Baker Hotel, Dallas, May 18 and 19. Lower prices may be expected, he said, due to the passing of trouble with Oklahoma miners, which, he declared, resulted in the diminution of union influence in that region. The year 1926 will be better than the year 1925 and by the year 1928 unusual prosperity may obtain, he said. Fuel oil, he declared will be largely removed from troubling the coal industry. Elijah Coles, past president, deplored the small attendance at the meeting and urged increasing the membership.

A number of timely topics were included in the addresses and a question box brought out interesting discussion of pressing trade problems. Wastage of coal between mine and retail yards was declared to be one of the gravest of the dealers' problems. They declared in favor of requiring railroads to weigh cars of coal free of charge at the point of destination rather than at the mine. Speakers for this measure declared that such a practice would cause railroad employees to exercise greater diligence to prevent both loss by leakage and theft by trespassers.

The convention unanimously indorsed a resolution asking that retailers be permitted three days' free time instead of two days for unloading shipments of coal.

Hugh L. Wallace, Fort Worth, was elected president and McAlester, Okla., was chosen as the 1927 meeting place. Other officers elected were Tillman Bibb, Fort Worth, second vice-president; Bruner R. Penniman, Dallas, third vice-president, and Clarence R. Goldman, Dallas, re-elected secretarytreasurer.

Pierce Defends Quality and Sizing of Anthracite

Daniel T. Pierce, vice-chairman of the Anthracite Operators' Conference, in a statement May 31, took strong exception to the charge made by Representative Hamilton Fish that anthracite operators were "selling standard quality of coal, such as chestnut or buckwheat, mixed with a large proportion of inferior grades, and often containing from 20 to 30 per cent non-combustible substance."

"The industry resents such statements," said Mr. Pierce. "The industry does not follow the practice of adulterating its product. On the contrary, it uses every care and employs every known means of removing foreign material from anthracite.

"Statements made from time to time that the anthracite industry has cut down the standard sizing of coal are not true. Partly due to non-observance of established practices during the war, there grew up certain variations in the sizing of anthracite which, once the emergency was over, caused unfavorable comment. To cure this and to establish definite standards by which dealers and consumers could test anthracite, the operators agreed, in March, 1925, upon uniform sizing for egg, stove and chestnut coal and the allowable percentages of impurities."

The only change made from former practice, according to Mr. Pierce, was in connection with chestnut, where an extra allowance was made for 5 per cent undersize due to unavoidable breakage. However, Mr. Pierce added, since the strike ended in February, no operator's output had contained the maximum undersize or impurities permitted under the adopted standards.

To determine just what percentage of degradation occurs between the mine and the consumer, the operators will begin the first of next week a series of tests which will cover each step of the operation of delivering the fuel. There will be the usual test for size and purity at the mine. Another test for size will be made at the New Jersey docks when the coal arrives, still another is to be made when the coal has been loaded on the barges, another when it is delivered in the retail dealer's bins and a final test when the coal is on the truck ready for delivery to the consumer.

Summer Coal Mining Course At State College

A five weeks' summer course in practical coal mining will be instituted soon by the School of Mines and Metallurgy of Pennsylvania State College, State College, Pa. The course, which will begin June 21, is free to all men about anthracite or bituminous coal mines, practical miners, firebosses and mine foremen especially being invited.

The first week will be devoted to the following subjects: Mine safety, 44 hours, for men not having Bureau of Mines certificates; teacher training or mining subjects, 30 hours, and renewal of Bureau of Mines certificates, 14 hours, for men who already have such certificates.

During the last four weeks, for

To Ally 500 Trade Bodies Against Snooping

With a view to combating interference of the government with the normal processes of legitimate business, members of the American Supply & Machinery Manufacturers' Association, at their annual convention at the Hotel Statler, St. Louis, May 18-20, authorized a committee to take up with the more than 500 organized trade bodies in the United States a proposal to hold a meeting to "consider ways and means of bringing forcibly to the attention of Congress the necessity of amending the Sherman and other so-called anti-trust laws so that business can function fearlessly along legitimate and sensible lines."

The executive committee of the association was instructed to assist the special committee, headed by Dixon C. Williams, Chicago Nipple Mfg. Co., in its efforts to unite these trade associations into a concrete body with a definite aim. At the same time a sum not to exceed \$500 was appropriated to defray the organization's portion of the total expenses of the centralized campaign against governmental "snooping" in purely business channels.

those preparing for state examinations, the studies embraced will be as follows: Mining law, 20 hours; mine gases, 12 hours; mine timbering, 6 hours; blue print and map reading, 10 hours; mine management, 6 hours; mine ventilation, 12 hours; safety lamps and gas detectors, 10 hours; mining methods and machines, 6 hours; mine fires and explosives, 6 hours; mechanical equipment, 10 hours; explosives, 6 hours; electives, 10 hours; conference and review, 38 hours.

Men qualified for advanced work are privileged to take optional subjects from the above and in addition the following: Mine ventilation calculations, 12 hours; mine mechanics, 6 hours; drawing and mapping, 20 hours; electricity, 14 hours; ventilation laboratory and fan testing, 20 hours; surveying, 50 hours; use of explosives, 5 hours; geology of coal, 5 hours.

Prominent mining men will speak on special mining subjects, moving pictures of operations will be shown and the Bureau of Mines safety car will be on hand during the first two weeks of the course. Further information about the course may be obtained by addressing E. A. Holbrook, dean of the School of Mines and Metallurgy, State College, Pa.

The state Department of Mines announces that examinations for bituminous mine foremen and firebosses will be held at State College on July 21, 22 and 23, at the close of this course. The department also reports that it hopes to be able to announce similar examinations open to men from the anthracite field.

Engineering Foundation Lays Plans for Research

The quarterly meeting of the Engineering Foundation was held on May 19, members and guests gathering for dinner at the Union League Club, New York. Edward Dean Adams, John Fritz medalist 1926, was guest of honor. Financial assistance was granted to

Financial assistance was granted to two research projects requested by the American Institute of Mining and Metallurgical Engineers and the American Institute of Electrical Engineers. The sum of \$4,000 a year for three years was granted for research in blast furnace slags by Professor R. S. McCaffery, University of Wisconsin. The sum of \$5,000 a year for two years was granted for research in electrical insulation by Professor J. B. Whitehead, Johns Hopkins University.

Adams Makes Gift to Foundation

On behalf of the endowment committee W. L. Saunders announced that a contribution of \$100,000 has been made to the Foundation by Edward Dean Adams. In response to an appropriate resolution Mr. Adams was elected an honorary member for life in recognition of his service as vice-chairman of the Engineering Foundation for the past ten years.

Addresses were made by Dr. John A. Mathews, president of the Crucible Steel Co. of America, on "Present Tendencies in Engineering Materials," and by Prof. Richard S. McCaffery on "Research in Iron Blast Furnace Slags." Dr. Mathews paid his respects to the present tendencies toward standardization in engineering materials through written specifications which are often practically useless. He deplored the necessity of "manufacturing down to a specification rather than up to an ideal." Unless specifications offer an advantage to both the maker and the buyer and contribute to public welfare they often are bars to progress. Dr. Mathews stated that metallurgy is rapidly becoming a branch of physical chemistry and cited alloy steels resistant to corrosion and high temperatures as examples of scientific efforts to meet engineering demands.

Begin Study of Production In Relation to Safety

Active work has been started on the American Engineering Council's study of the relationship of safety and pro-The work is being directed by duction. A. R. Berresford, executive vice-president of the Nizer Corporation, of Detroit. The study is to cover ten basic industries as follows: Iron and steel, steam railroads, cement, mining, woodworking, metal trades, paper and pulp, textiles, electric utilities, and building construction. The field work is to be completed by Sept. 1. Data will be gathered from some 2,000 plants. Records showing the accident frequency rate and its bearing on the rate of production will be studied over as long a period as new records are available. In addition a specific study will be made to determine what occurs incidental to the loss of man hours, machine hours and curtailed production.

Equipment Makers Organize To Promote Fuel Economy

A number of representative manufacturers of equipment for the more efficient burning of small sizes of anthracite, particularly for users of large quantities and where plants can be installed or altered, if necessary, at less expense than for the use of oil or other substitutes, have formed an association with the following officers: W. D. Craven, Pyramid Iron Products Co., president; F. B. Williams, Graybar Electric Co., vice-president; J. B. Nicols, American Blower Co., treasurer; F. B. James, New York Commercial, secretary.

The new organization is intended to promote efforts for fuel economy, which have been widely discussed since the anthracite strike. These discussions have resulted in the recommendation of increased use of buckwheat by both large and small consumers of anthracite, either as a mixture with other sizes or alone.

The anthracite operators have promised co-operation in order to insure a dependable supply at reasonable prices. Retailers also are giving assurance of willingness to do their part in moving the smaller sizes, which will insure a sufficiency of the larger sizes and tend to keep prices at an even level as well as prevent economic waste.

N. & W. and Virginian Protest Proposed Ban on Merger

Twelve exceptions to the proposed report of Haskell O. Davis, an Interstate Commerce Commission examiner, turning down the application of the Norfolk & Western Ry. to acquire control of the Virginian Ry. are set forth in a brief filed with the Commission by the Norfolk & Western last week.

Because of the principles involved, the Norfolk & Western asked permission to present oral arguments in support of its contention and to do so before the full commission.

The Virginian Ry. also has filed a brief with the Commission taking exception to the tentative recommendation against the merger.

A considerable portion of the examiner's report regarding financial phases of the Virginian's operations were disputed in the brief, which added that it was difficult to ascertain from the record what weight had been given these findings by the examiner in reaching the conclusion that the lease would be against the public interest.

Fayette Institute Outgrows Present Facilities

The Fayette County (W. Va.) Mining Institute held its sixth annual dinner at the Loup Creek Y. M. C. A., in Mount Hope, W. Va., May 8, with over five hundred members and guests present.

Short addresses were made by J. J. Rutledge, Chief Engineer of the Maryland Bureau of Mines; R. M. Lambie, Chief of the West Virginia Department of Mines; Dr. C. E. Jones, dean of the College of Engineering of the University of West Virginia; L. C. Hudson,

Labor Well Cared For and Contented, Says Gary

"It may and should be said that employers in the United States generally stand for fair and liberal treatment of employees," said Judge Elbert H. Gary, chairman of the board, United States Steel Corporation, speaking of labor conditions, at the meeting of the American Iron & Steel Institute, at the Hotel Commodore, New York, on May 21. "They believe in the open shop, which permits a man to work whenever and wherever he is disposed and can agree with the employer. They insist labor should always receive proper and adequate compensation, depending on the financial ability of the employer and the results of the business. . . .

"We do not believe he [the employee] should be entitled to a voice in the management of the employer's property or business unless he has a pecuniary interest and corresponding responsibility.

"It may truthfully be said that labor generally in the United States is well cared for and is contented. In some lines or places it is overpaid; in some instances perhaps underpaid, though it is hoped and believed such cases, if any exist, are exceptional and will be rectified."

former instructor in West Virginia University but now Director of Mining Extension in Maryland; C. E. Lawall, professor of mining engineering and Director of Mining Extension of West Virginia University, and Adam Crawford, Assistant Director. The speechmaking was closed by Robert Lilly, president of the institute, who stated that the organization had grown so large in membership and enthusiastic in spirit that the opening of the next term would see all present accommodations outgrown and that the time had come to look forward to obtaining quarters of their own.

R. J. Holmes, as announcer, introduced each speaker to the audience, and acted as a sort of roving chairman.

Railroads Make Big Strides In Fuel Economy

Direct purchases of fuel during 1925 by Class 1 railroads of the United States totaled \$459,465,341, 2.6 per cent less than in 1924 and considerably less than in 1923. The railroads in 1925 bought 129,325,480 tons of bituminous coal, an increase of 2.3 per cent compared with 1924 although freight traffic in 1925 was approximately 6 per cent greater. Purchases of bituminous coal in 1925, however, fell 16.5 per cent under 1923 while freight traffic compared with two years ago was practically the same, measured in net ton miles. In 1925 the roads purchased approximately 28 per cent of the total output of bituminous coal as well as about 20 per cent of the fuel-oil output.

Due to improved locomotives and other factors, the railroads of this country are operating their freight trains with the greatest efficiency in the use of fuel ever attained, and this is reflected in the reports on fuel consumption. In 1925 an average of 159 lb. of fuel was required to haul 1,000 tons of freight and equipment, excluding locomotive and tender, a distance of one mile. This was a decrease of 11 lb. from that for 1924 and 24 lb. under 1923, and was the lowest average ever attained since the compilation of reports by the Bureau of Railway Economics began, in 1920.

In 1925 more fuel oil was purchased than in 1924 by 6.9 per cent, but the total cost was greater by 22.3 per cent.

Traffic News

Recommendations and Decisions Announced by I. C. C.

The Strouds Creek & Muddlety R.R. filed a complaint with the Interstate Commerce Commission in Washington, D. C., on May 29, against the Baltimore & Ohio R.R. alleging that the division of the coal-carrying rate is not sufficient to make it profitable. The Strouds Creek & Muddlety R.R. extends from Delphi to Allensdale, in Nicholas county, W. Va., and taps rich fields of smokeless and semi-anthracite coal.

The complaint of the Fentress Coal Co. alleging unreasonable rates on coal from Tennessee points of origin to points in Iowa, should be dismissed, Examiner Jewell has recommended to the Interstate Commerce Commission.

A basis for the establishment of freight rates on lignite from North Dakota points of origin to points in Minnesota and South Dakota has been recommended to the Interstate Commerce Commission by Examiner Harris Fleming.

Examiner Fuller of the Interstate Commerce Commission has recommended a new schedule of rates on anthracite from mines on the Delaware & Hudson R.R. and on bituminous coal from the Clearfield, Westmoreland and Pittsburgh districts, to Willsboro, N. Y. He also recommends reparation to cover excessive charges in the past. Examiner Boat recommends the dismissal of the complaint alleging unreasonable rates on bituminous coal from Herrin, Ill., to points in Michigan. He recommends the refunding of certain overcharges in connection with these rates.

Condemns Proposed Reductions

Proposed reductions in rates on coal from Springfield and Riverton, Ill., to Keokuk, Iowa; Hannibal, Mo., and related points have been disallowed by the Interstate Commerce Commission in Bituminous Coal to Iowa, Illinois and Missouri. The proposed reductions were an attempt upon the part of the Alton and Wabash railroads to meet rates established by the Burlington at Keokuk in conformity to the Commission's decision in Illinois Coal Cases, 62 The Wabash and Alton I.C.C. 741. rates would have destroyed the differential adjustment prescribed in that decision.

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News Items

From



ALABAMA

Shift Convict Leasing Probe .-- The grand jury which has been probing Alabama's convict leasing system suddenly shifted its investigation recently to Banner Mine, where an inquiry into a mutiny two years ago was halted by Gov. W. W. Brandon. The decision to start a new inquiry at Banner Mine is regarded as an indication that the jury is determined to bring the leasing system to an end by its revelations.

New Washery Starts .--- The Porter Coal Co. has placed in operation its newly completed washery at Porter mine, near Palos. The company has made a large outlay at this operation recently in order to increase production and improve preparation. The mine is owned and operated by W. C. Adams and E. J. Rowe, Birmingham.

New Premier Slope?-It is understood that the Premier Coal Co., operating the Mossboro mine, at Helena, Shelby County, is contemplating the opening of another slope at that point.

Southern Seeks New Line.—The Southern Railway Co. has asked per-mission of the Interstate Commerce Commission for authority to acquire the portion of the Ensley Southern R.R. branching from its line at Parrish, Ala., and serving the Gorgas mine of the Southeastern Coal Co., the Stith Coal Co. and other operations in Walker County. The line has been in receiver-ship for a year or more. The main line extending from Ensley, Ala., to Port of Birmingham, was acquired re-cently by the Port of Birmingham Corporation to be operated by the Inland Waterways Corporation as a connecting link between Birmingham and the Warrior River barge service.

The Neill Coal Co. has opened a slope mine on the Southern Ry. near Coalburg on property leased from the Sloss-Sheffield Steel & Iron Co.

ARKANSAS

Jailed for Violating Injunction. — Lindsey Hedgepeth, of Dardanelle, Yell County, was sentenced to six months in jail and assessed all costs of prosecution by Judge Trieber in U. S. District Court at Little Rock last week for violation of an injunction restraining union miners from interfering with property or employees of the Bernice Anthracite Coal Co.'s mines at Russellville. Hedgepeth was charged with contempt of court in having intimidated two negro miners as they were approaching the mines. Lack of evidence against Will Martin, charged with having intimidated miners at a railroad

station at Russellville, resulted in the court finding him not guilty. The in-junction which Hedgepeth is alleged to have violated was issued by Judge Trieber last September following labor disturbances at the coal mines in Russellville in connection with a strike of union miners.

CALIFORNIA

Form \$10,000,000 Coal Company .-The Mt. Shasta Coal Co. has filed articles of incorporation with a capitalization of \$10,000,000 for the purpose of mining coal in Shasta County. For several months extensive development work has been carried on along Clover Creek and Oak Run, twenty-five miles northeast of Redding. Reports from time to time have told of ledges having been cut into up to as high as 14 ft. in thickness. Three different coal development camps have been maintained. Five miles of power line were built to furnish power. The company now con-trols more than 15,000 acres in the central part of Shasta County in what is known as the Oak Run and Round Mountain districts. The directors of the corporation are Charles A. Dickey, of San Francisco; H. C. Morris, of Oakland, a director of the American Bank; S. E. Biddle, of Piedmont, president of the new First National Bank of Oakland; A. P. Cross, Los Angeles capital-ist; John A. McCandless, sugar and tractor magnate of Honolulu; A. F. Hockenbeamer, of Berkeley, vice-president of the Pacific Gas & Electric Co.; Harry H. Fair, president of Peirce, Fair & Co., fiscal agents; R. Ferbeck, of San Francisco; E. L. Dow, San Fran-cisco capitalist and head of River Garden Farms, and John L. McNab, attorney, of San Francisco.

COLORADO

April Output Increases. — Colorado mines produced 805,729 tons of coal during April, an increase of 112,132 tons over March, according to the monthly report of James Dalrymple, state coal mine inspector. Total output for the first four months of 1926 was 3,430,619 tons, compared with 3,500,421 tons in the corresponding period of 1925.

The Black Diamond Fuel Co. has been incorporated to take over the mine of that name east of Boulder and to produce and sell its coal. W. W. Morgan is president of the new company; F. W. Thurman, who has been associated with him in the management of the Crackerjack mine at Marshall for eleven years, is secretary-treasurer, and Jim Bertotti, who was associated with the company

from whom the Black Diamond was purchased, is vice-president of the new company. Tom Hilton is superintendent.

Cuts Wages to 1917 Level.—The Vickers Coal Co., Trinidad, notified the state Industrial Commission last week that it was reducing the wages of its men at the Aguilar mine to the 1917 scale. The company said it took this action to place its wage scale on the basis of mines operating in the same district. About forty men are affected.

To Sell National Fuel Co.-Sale of the National Fuel Co., Denver, now in the hands of a receiver, has been authorized by District Judge George F. Dunklee, who signed a decree grant-ing the International Trust Co., as trustee, foreclosure under a deed of trust and a judgment against the fuel concern for \$1,464,375.01. H. Van Mater, receiver for the National Fuel Co., was instructed by the court to give nine weeks' notice of the sale of the property at public auction at 511 Colorado Building at noon on a date to be fixed by Van Mater. The receiver also was instructed not to accept any bid under \$400,000. The trust company was the holder of a mortgage on property of the fuel company, given to secure a \$2,000,000 bond issue. The fuel company owns property and lands in Den-ver, Boulder, Weld and Las Animas counties.

INDIANA

State Gets Coal Cheaper.-Awards recently made by the state Joint Purchasing Committee on coal for the coming year for various state institutions are substantially less than expiring contract prices. For instance, where the state last year paid \$1.73 a ton for screenings, the price under the new award is \$1.54. Successful bidders were the Jackson Hill Coal & Coke Co., White Ash Coal Co., Patoka Coal Co. and Ogle Coal Co., all of Indian-apolis; Walter Bledsoe & Co., Terre Haute; J. H. Scott Coal Co., Vincennes; Ayshire Coal Co., Oakland City; Tildesley Coal Co., Cincinnati, Ohio; Madison Coal & Supply Co., Madison, and Brazil Coal Co., Brazil. The contract will cover about 300,000 tons during the year.

Electric Road Scheme Revised.-The proposition to build an electric line from Owensboro, Ky., to Elnora, Ind., through the coal fields of Warrick, Pike, Daviess and Green counties in Indiana, has been revived. It is said that English capitalists are back of the move. The Interstate Commerce Commission refused to sanction the building of the road several months ago, but steps will be taken, it is said, to have the petition reconsidered. The company proposes to bridge the Ohio River near Rockport. It is said the aim of the company is to develop coal fields in southern Indiana.

Indiana coal fields are now operating at greater capacity than at the same period last year, according to William Mitch, secretary-treasurer of District No. 11. He said that indications pointed to normal production schedules during the summer months. About 70 per cent of the mines in Indiana are said to be in operation at the present time.

KENTUCKY

To Improve Russell Yard.—Railroad officials of Columbus have been advised that the Chesapeake & Ohio Ry. will spend approximately \$500,000 in reconstructing the yards at Russell, Ky., which is across the river from Portsmouth, Ohio. The improvement is to facilitate the movement of coal from West Virginia mines to the lakes. The coal is shipped through Columbus over the Norfolk & Western Ry., going north to the Toledo docks over the Hocking Valley Ry. Additional automatic devices will be installed in order to speed up the movement of coal.

Construction work on the new \$700,-000 electric power plant to be erected by the Kentucky Electric Power Co. at Nortonville is scheduled to start soon. The Norton Coal Co.'s mines at Nortonville will be supplied with power from this plant, it has been announced.

Storm King Mine Sold.—The C. L. Ryley Coal Co., of Lexington, has acquired the property of the Storm King Mining Co., of New York, located in Perry County. The property is located three miles east of Hazard on the Louisville & Nashville Ry. and includes the Storm King mine and more than 200 acres of land. The mine has a daily output of 400 tons. The purchaser paid \$100,000.

Arnold Mine Suspends.—The West Kentucky Coal Co. has suspended operation of its Arnold mine, at Earlington, temporarily because of unfavorable market conditions. The suspension will continue for about three weeks. About 250 men are employed at the Arnold mine and they will be distributed among the other mines of the company.

PENNSYLVANIA

P. & R. C. & I. Has Deficit.-A net loss of \$4,115,567, after depreciation, depletion, interest and taxes, is reported for the year ended Dec. 31, 1925, by the Philadelphia & Reading Coal & Iron Co. and subsidiaries. This is in contrast with a net income of \$1,020,-593, or the equivalent of 72c. a share earned on 1,400,000 shares in 1924. Coal sales in 1925 totaled \$70,623,106 against \$83,511,650 the year before. Other income was \$320,498, against \$612,406. Production costs, general expenses, etc., were \$69,674,064, against \$77,641,497; depreciation and depletion, \$1,218,091, against \$1,504,503; federal and local taxes, \$2,498,504, against \$2,346,771, and interest, \$1,668,512, against \$1,-610.092.

Constitutionality of the anthracite



Houses at the Newtownkelly Mine, in Northern Ireland Substantial work has been done by Sir Samuel Kelly at his new colliery in Ulster. Note the curbs on both sides of the street. The mine is at Coalisland, Tyrone, not far from Lough Neagh, the largest body of inland water in Ireland.

tax law is involved in the case of the Commonwealth vs. the Hudson Coal Co., argued last week before the Pennsylvania Supreme Court at Harrisburg. The case was carried to the state's highest tribunal on appeal from a decision of the Dauphin County Court of Common Pleas which held that the company should pay the state the sum of \$43,350 in taxes.

During the present spring thirtyseven mining companies of Pennsylvania planted more than 1,565,000 trees on their property. These trees will produce mine timbers, ties and props in from 25 to 40 years. The state Department of Forests and Waters has announced that up to the present time the mining companies of Pennsylvania have planted more than 8,383,000 forest trees supplied from the state nurseries.

Proctor Mine Deserts Union.—Proctor mine, located at Force, has resumed operations on the 1917 scale, adding another mine to the list of those that have deserted the union rate.

Randolph Disaster Due to Dynamite. After hearing the testimony of almost a score of witnesses during a period of five hours, the coroner's jury convened to inquire into the cause of the fatal accident at the Randolph colliery, Port Carbon, on May 6, in which five men lost their lives, returned a verdict finding that the men met their death as a result of an explosion of dynamite. Mine Inspector Brennan testified that he visited the mine on March 18 and found gas and gave instructions regarding changes in ventilation to eliminate the trouble. The company had the changes under way when the explosion occurred. The inquest was conducted by Coroner K. M. Schultz at his office in Port Carbon.

As a reward for long and faithful service in the mines of the Pittsburgh Coal Co., 24 miners have been placed on the pension list by favorable action on their applications by the advisory committee governing the pension fund of the company. This makes a total of 246 miners on the pension roll. More than \$45,000 is required to fulfill the pension payments for one year.

Supreme Court Allows Bell Appeal.-John A. Bell, Pittsburgh banker and

coal operator, has been granted an appeal by the state Supreme Court of Pennsylvania from his conviction last fall on a charge of embezzling more than \$600,000 of the funds of the defunct Carnegie Trust Co., of which he was president. The appeal is being taken on a constitutional point relating to the statute of limitations. Bell's counsel contended that the statute of limitations of four years should have governed his indictment under the act of 1878. The Superior Court declared that the act was unconstitutional. The law had been on the statute books of Pennsylvania for nearly 50 years without its constitutionality having been tried before the higher courts. The case will be argued before the next session of the state supreme court in Pittsburgh.

Poland Fire Loss \$40,000.—Fire at the Poland coal plant of the Maple-Sterling Coal Co., in Greene County, May 25 destroyed two tipples, two coal bins, two dumps, three motors and the entire conveying and loading system, with a total estimated loss of \$40,000. Origin of the flames is as yet undetermined. The flames were first discovered by John Barney, clerk of the coal company's commissary. With the aid of other men about the plant he succeeded in saving the main tipple. The plant will be rebuilt immediately, officials of the company say.

The Snowdon Coke Co. has completed the erection of coke crushing and screening equipment at its plant near Brownsville, Fayette County, and is trying it out.

WEST VIRGINIA

The Wilhelmina Collieries Co. has changed its name to the Morningside Land Co., and the Talbott Chambers Coal Co., a foreign corporation, will hereafter be known as the Dragon Coal Co.

The Buckeye Coal Mining Co. has filed a certificate of dissolution with the Secretary of State of West Virginia, and the Vester Coal Co. has been dissolved by deed of sale.

Since beginning to operate its No. 1

mine in the Scotts Run field on an openshop basis the Gilbert-Davis Coal Co. has been able to increase its daily loadings to a point above 14 cars a day. This was the last company in the Scotts Run field to cease operating its plants under an agreement with the union.

By foreclosure proceedings in Cincinnati on May 15, it is announced, the Otto Marmet Coal & Mining Co., of Raymond City, Putnam County, W. Va., obtained a clear title to its property, which was sold several years ago to J. C. McKinley, of Wheeling, who went into bankruptcy some time ago. Mortgages against the property totaled \$1,250,000. The property consists of several mines at Raymond City, steamboats, barges, wharfs and coal yards The company proposes in Cincinnati. making some extensive improvements, according to reports.

Judge Birk S. Strathers, of the Har-rison County Circuit Court, has been asked to appoint a receiver for the Francois Coal Co., operating a mine at Norwood, in Harrison County; the Anna May mine, in Monongalia County, and the Vincent mine, in Marion County. The petition was made in the suit of the Clarksburg Trust Co., trustee, and John A. McNichol, president of the coal company, brought for the purpose of getting a court order for the sale of the property and at the same time have a receiver appointed to operate the mines but with authority to borrow not more than \$20,000. Indebtedness of the company is approximately \$180,000, it is said.

More Houses for Nelson Fuel.—The Nelson Fuel Co., Leslie, Greenbrier County, will soon start the erection of 50 new houses at its plant, which is lo-cated along the Sewell Valley Ry. It probably will require 60 days to do the work and about \$50,000, it is reported, will be expended. The Sewell seam is mined there.

New Babcock Plant.—The Babcock Coal & Lumber Co., Cliff Top, Fayette County, is erecting a wooden tipple with shaker screens, loading booms and conveyor lines. The tipple will have a capacity of 1,500 tons daily. The plant is located along the Chesapeake & Ohio Ry. and will be completed in 90 days. The Sewell seam is mined there.

Safety Day Committee Named .-- In preparation for the observance of Safety Day, to be held Aug. 31, Robert M. Lambie, chief of the state Department of Mines, who is acting as chairman, has named the following committee on general arrangements: Archie Forbes, Lundale; Clyde McDowell, Thomas; J. V. Berry, Bethlehem Mines Corp., Johnstown, Pa.; T. J. McParland, Gary; Vitus Kleir. Gary: G. L. Wilson, Minden; Edgar Blackwell, Scarbro; C. J. Flippen, Kingston: James Gatherum, American Rolling Mills Co., Middle-town, Ohio; W. A. Eads, Fordson Coal Co., Stone, Ky., and W. H. Forbes, U. S. Bureau of Mines, Huntington. It is planned to hold a state first-aid and mine-rescue contest on Aug. 31. Huntington probably will be selected, but this has not been definitely decided.

Rock-Dusting Spreads Rapidly .--- A year ago there were only the No. 2 and



Newtownkelly Mine, in Ulster, Which Sir Samuel Kelly Owns

This mine at last reports was still operating, and Sir Samuel Kelly declared that he did not anticipate that the men would refuse to work or that the railroad would fail to give it service. The administrative area, known as Northern Ireland, like the Irish Free State, is free of the strike fever.

the No. 12 mines of the Boone County Coal Corporation, at Sharpless, were thoroughly rock-dusted. A year later finds 30 mines owned and operated by twenty-two companies as being rockdusted-seven in the Panhandle district, five in the Pocahontas field, four in the New River field, two in the Logan field, two in Boone County and one in the Thacker field.

Plan Road to Untapped Field.-The Chesapeake & Ohio and the New York Central railroads will co-operate in buliding a 39-mile connecting line bebranches of the two tween railroads through several counties of West Virginia rich in coal and timber hitherto A charter has been apinaccessible. plied for at Charleston by the Nicho-las, Fayette & Greenbrier R.R., capitalized at \$8,000,000. The incorporators are equally divided between the New York Central and the Chesapeake & The charter calls for the con-Ohio. struction of a railroad from Swiss, in Nicholas County, the terminus of the Kanawha & Michigan, which is a sub-sidiary of the Central lines, to a point near Rainelle in Greenbrier County, on the Sewell Valley R.R., which in turn connects with the main line of the C. & O. at Meadow River.

Sale of the property of the Otto Marmet Coal Co. in West Virginia to Otto Reeselin, for \$75,000, as authorized by the District Court for the southern district of West Virginia, has been approved in an ancillary decree handed down by the federal court at Cincinnati. The suit against the company was brought by the Fourth Central Trust Co. of Cincinnati and the property sold at Charleston under order of the U. S. Court there.

CANADA

Denies Seeking Subsidy .--- "We have never, at any time, approached Mr. McCrea, or any other member of the Provincial Government, on the subject of a subsidy for the further development of anthracite at Larchwood, Ont., said Albert Slade, secretary-treasurer

of the British-Colonial Mines Co., in Toronto, commenting on a statement to the effect that the Minister had denied promising such a subsidy.

New Kay Moor Tipple Completed.-A new steel four-track tipple, among the best along New River, has been completed at Kay Moor No. 1 mine of the New River & Pocahontas Consolidated Coal Co. It has a capacity of 250 tons of coal an hour, and an output of 900 tons a day is now being handled. This mine, which was formerly owned by the Low Moor Iron Co., was purchased a little over a year ago by the New River & Pocahontas Consolidated Coal Co., which is the operat-ing company in West Virginia for the Berwind-White Coal Mining Co., of Philadelphia.

Foreman "Exams" Announced.-The West Virginia Department of Mines announces examinations for mine foremen and firebosses as follows: Mechanical Hall, West Virginia University, Morgantown, July 26; Central School Building, Elkins, July 29; high school build-ing, Welch, Aug. 9; high school building, Williamson, Aug. 12; Junior High School Building, Beckley, Aug. 16; Cen-tral Junior High School Building, Charleston, Aug. 19; high school building, Logan, Aug. 26, and high school build-ing, Wheeling, Sept. 2.

Ontario Still Seeks Alberta Coal.---At a meeting on May 21 of the Ontario committee on coal, composed of mayors and other officials of a number of Ontario cities and towns, attended by producers and dealers of Ontario and Alberta, a sub-committee was appointed to inquire into the possibility of making a temporary arrangement for bringing a supply of Alberta coal eastward immediately. Premier J. E. Brownlee, of Alberta, will be assured of every assistance in any plan he proposes to obtain a lower freight rate on coal moving eastward. So far the determination of Sir Henry Thornton, president of the Canadian National Rys., to maintain the \$9 rate remains unchanged.

Among the Coal Men

Robert Grant, who for several years has been president of the New England Coal & Coke Co. and the New England Fuel & Transportation Co., with headquarters at Boston, has also been elected president of the Mystic Steamship Co. and of the new Mystic Iron Works.

Duncan C. Kennedy, secretary of the Kanawha Coal Operators' Association accompanied by his wife and daughter, will sail on June 26 on the "Transylvania" for a two months' trip abroad. They will visit England, Scotland, France, Switzerland, Belgium, Holland and Germany.

Dr. W. S. Blaisdell, an Allegheny Valley coal operator, residing at Punxsutawney, Pa., is in the Clifton Springs (N. Y.) sanitarium, suffering from intestinal trouble. He is much improved, however, and expects to be at home within two or three weeks.

Lee Long, vice-president of the Clinchfield Coal Corporation, Dante, Va., has been elected president of the Virginia Coal Operators' Association. The new vice-president is Webb J. Willits, president of the Norton Coal Co., Norton, Va. C. B. Neal, also of Norton, was re-elected secretary-treasurer at the recent annual meeting held there.

L. E. Young, general manager of the Union Colliery Co., of Dowell, Ill., has been elected president of the Apollo Club of St. Louis. This is one of the highest class vocal organizations in the Middle West.

A. H. Crane, secretary-treasurer of the West Virginia Coal & Coke Co.; J. Blaine Moore, chief accountant, of Fairmont, W. Va., and C. C. Campbell, auditor, of Omar, W. Va., were in Cincinnati, May 10 to 12 conferring with W. M. Wilshire relative to moving general headquarters of the company there

Kirby Thomas is examining coal properties in Butler and Armstrong Counties, Pennsylvania.

Dr. T. D. Scales, who for many years was heavily interested in the John Bull coal mine and the Erie Canal coal mine, near Boonville, Ind., is now engaged in banking on a large scale. He is president of the Farmers and Merchants National Bank at Boonville; president of the Newburgh State Bank at Newburgh; vice-president of the City National Bank at Boonville and director of the Citizens' National Bank at Evansville, Ind.

J. G. Julian, who for many years was associated in the development of the coal industry in Evansville and other southern Indiana towns, has been engaged as manager of the Luhring Investment Co. at Evansville, Ind., and will help promote real estate in that city.

Robert Z. Virgin, editor of the *Coal Trade Bulletin*, Pittsburgh, Pa., until it suspended publication recently, and former assistant director of the mining extension department of West Virginia University, Morgantown, has joined the sales force of the Koehler Manufacturing Co., Pittsburgh, which manufactures the Wheat super-electric cap lamps for miners.

L. T. Putman, for some years assistant to the general superintendent of the Old Ben Coal Corporation at Christopher, Ill., has been transferred to the company's newly purchased properties in West Virginia.



Charles O'Neill

O'Neill Succeeds Clark.—When the executive committee of the Association of Bituminous Coal Operators of Central Pennsylvania met at Altoona on May 17, B. M. Clark, of Indiana, Pa., resigned as president, and Charles O'Neill, of Altoona, was elected in his place. The association deals with the wage scale for the Central Pennsylvania Coal Producers' Association, of which Mr. Clark is president and Mr. O'Neill secretary. The two bodies will hold their annual meeting June 8.

S. A. Bacon, of London, England, connected with D. L. Flack & Sons Co., Ltd., London, coal wholesalers, visited the mines of the New River Coal Co. in southern West Virginia on May 13.

Charles Fox, of Terre Haute, Ind., former secretary of District No. 11, United Mine Workers, and one of the most popular members of organized labor in Indiana, has been elected chairman of the Vigo County Democratic Committee. Mr. Fox at one time was president of the Indiana Federation of Labor and during the Goodrich administration was appointed a member of the state Industrial Board.

John Griffen, formerly assistant fuel engineer to the Lehigh Coal & Navigation Co., at Lansford, Pa., and later fuel engineer to the Hudson Coal Co., making tests on the burning of pulverized anthracite in stationary boilers and investigating the reclaiming of fine coal from breaker slush, after eight years

spent installing equipment for such reclamation on behalf of the Dorr Co., has become sales engineer of the American Rheolaveur Co., of Wilkes-Barre, Pa.

Dr. Henry Mace Payne has been appointed consulting engineer and geologist to the Gulf, Mobile & Northern R.R. Dr. Payne will retain his connection as consulting engineer to the American Mining Congress, but has discontinued his office at 300 Madison Ave., New York City.

Clyde G. Brehm, of Uniontown, Pa., master mechanic and in charge of safety work at the coal and coke plants of the Oliver & Snyder Steel Co., has been appointed assistant general superintendent.

Charles H. Hinsey, of Uniontown, Pa., has been appointed general superintendent of the Oliver & Snyder Steel Co.'s coal and coke plants (Oliver Nos. 1, 2 and 3), near Uniontown, to succeed John H. Lane, who died last January. For many years Mr. Hinsey has been chief engineer of these properties, and shortly before Mr. Lane's decease he also was made assistant general superintendent.

George W. Hay has been appointed general manager of operations of the Consolidation Coal Co., with headquarters at Fairmont, W. Va.

P. J. Walsh, of Uniontown, Pa., has resigned the position of general superintendent of the Guy C. Corrado interests, with headquarters at Connellsville, Pa., and a number of small coal and coke plants scattered throughout the Connellsville coke region. Most of these plants have been closed down since the settlement of the anthracite strike, so that the position will not be filled at present. Mr. Walsh has not yet made any other connection.

William T. Payne, president of the East Boston Coal Co., Kingston, Pa., has been chosen chairman of the board of directors of Burns Bros., New York City, in succession to the late S. M. Williams. Mr. Payne, who also is vicepresident of the Second National Bank of Wilkes-Barre, Pa., has been acting chairman.

Obituary

Albert Kemmerer Cosgrove, vicepresident of the Cosgrove-Meehan Coal Corporation, of Johnstown, Pa., died in Homeopathic Hospital, Pittsburgh, the on May 25. He was stricken with pneumonia while on business in Pittsburgh. Mr. Cosgrove was born in Cambria County, Pennsylvania, Dec. 24, 1890. He was graduated from Lehigh University in 1913 with the degree of mining engineer. He entered the coal business with his brothers under the firm name of Cosgrove & Co., and for a time was located in Philadelphia, in charge of the offices there. He later was made vice-president of the Cosgrove-Meehan corporation and moved to Johnstown. He is survived by his mother, one sister and two brothers, George D. Cosgrove, of the Grazier Supply Co., of Johnstown, and John C. Cosgrove, chairman of the Cosgrove-Meehan corporation. The body was taken to Johnstown for interment.



Bituminous Coal Market Tone Firmer, Aided by British Strike and Heavy Lake Movement

The bituminous coal trade of the country enters the new month with its technical and actual market position improved. The chief factor in this betterment, of course, has been the steady flow of coal to the lakes. Although the season was slow in starting, the weekly movement now tops the 1,000,000-ton mark. This diversion of tonnage from all-rail channels has had a direct beneficial influence upon a large part of the Appalachian Region and indirectly has helped other fields.

A secondary favorable factor has been the prolongation of the British strike. To the speculative element in the industry the reaction, both in prices and in the volume of buying, has been disappointingly feeble. Nevertheless, there has been a moderate increase in foreign orders and an expansion in bunker trade. This has contributed to a healthier undertone in the Atlantic seaboard markets.

Production as a whole also has been cut closer to actual consumer demand. During the week ended May 22 the total bituminous output was estimated by the Bureau of Mines at 9,295,000 net tons—or 4,000 tons less than during the preceding week. Production rates recorded in those two weeks marked the first increase in output in a month. The increase, however, falls far short of equaling the weekly lake dumpings, which totaled 1,256,679 tons of cargo and 55,161 tons of vessel fuel for the week ended May 30.

Spot Prices Stronger

These favorable factors are reflected in an unevenly distributed increase in spot quotations. *Coal Age* Index of spot bituminous prices on May 31 was 160 and the corresponding price was \$1.94. A week earlier the figures were 157 and \$1.89, respectively. Eastern and

southern slack prices were higher and there was a stronger tone to pool quotations along the Atlantic seaboard. Illinois and Indiana figures were unchanged. The price situation at the Head of the Lakes and in Colorado and Utah was unsettled.

The Central Competitive Field probably is the hardest hit in the present struggle for business. Ohio, except for a few mines in the Pomeroy Bend district and operations with direct dock connections, is out of the lake picture. Non-union tonnage is growing in western and central Pennsylvania, but profits are not keeping pace with the increases.

Anthracite Decline Accelerated

Current weekly anthracite output is now making clear the justification for the complaints as to market conditions voiced in the hard-coal trade for some time back. During the week ended May 22 the estimated output dropped to 1,750,000 tons. Part of this decline, it is true, was attributable to time lost by the miners in voting and electioneering for Governor Pinchot. Consumer demand, however, will not absorb full-time production.

The larger companies have been able to move their tonnage of domestic sizes through the regular channels of trade. It is freely admitted, however, that these companies soon must look for new business unless the market improves. Nominal premiums are the best that average independent shipper can command and there are some who are ready to make concessions to move tonnage. Steam sizes, except barley, drag.

The Connellsville coke trade is dull. Production during the third week in May showed a small increase, but spot quotations on standard furnace and foundry grades, though nominally unchanged, were softer.



Middle Western Coals Weak

Neither steam nor domestic orders for Illinois and Indiana coals brightened the outlook in the Chicago market last week. There were some operators who favored raising the price on 6-in. lump 10 or 25c. on June 1, but the majority did not believe buying conditions would support such a move. Eastern quotations, on the other hand, are stronger -largely because of shipments to the lakes.

Potential overproduction and the inroads of non-union coal, rather than a decline in general industrial activity, explain the weak market for steam grades in the Middle West. Offerings from the strip pits also help depress prices on shaft-mined coal. In southern Illinois screenings and small nut sizes find a readier market than other offerings. The Duquoin and Jackson County fields are running less steady than southern Illinois proper.

The Mt. Olive group is in worse shape than the Jackson-Duquoin operations. In the Standard field the same unsatisfactory conditions of weeks' standing still prevail. All fields report accumulations of unbilled loads of large sizes. Many mines are compelled to crush coal to take care of screenings contracts. Local domestic demand is slow in both Chicago and St. Louis. Country trade, too, is backward.

Kentucky Improves Position

Moderate improvement marks the course of the Kentucky markets. The lake trade is absorbing increasing quantities of eastern Kentucky coal and there is some demand from Georgia and the Carolinas. Western Kentucky is picking up scattered orders for small screened coal in the South. The greater part of the western production, however, is moving northward.

The comparative scarcity and high prices commanded by screenings during recent weeks have strengthened the de-

Kentucky mine-run is \$1@\$1.40. In the eastern part of the state byproduct mine-run brings up to \$1.65, but other grades range between \$1.25 and \$1.50. Prices on prepared coals show no important changes.

The docks at the Head of the Lakes have been kept busy unloading cargoes since the opening of navigation. The first week the movement got under way 67 vessels were unloaded; the second week, 48, and the most recent week for which figures are available, 65 cargoes, including 6 of anthracite. Dock interests now estimate that they will need 10,000,000 tons of bituminous coal this season and approximately 900,000 tons of anthracite.

Dock Price Situation Unsettled

Dock prices are badly unsettled. Concessions running up to 75c. have been reported on Youghiogheny, Hocking and splint lump. Pocahontas lump and egg mand for mine-run. Eastern Kentucky are \$7, and stove is \$6.75. As a result slack is bringing \$1.10@\$1.25 and of the decline in spot quotations many western Kentucky, \$1@\$1.25. Western large industrial consumers refuse to

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

Low-Volatile, Eastern	Market Quoted	June 1. May 17 1925 1926	' May 24 1926	May 31 1926†	Midwest	Market Quoted	June 1 1925	May 17 N 1926	lay 24 1926	May 31 1926†
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Curre	nt Quota	tions—S	opot Pr	rices, A	nthracite—G	ross Tons, I	F.O.E	B. Mino	es	
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renew contracts. Current movement of coal off the docks also is falling. Trade at the Twin Cities is normal,

Trade at the Twin Cities is normal, but economies in fuel consumption and shifts in manufacturing enterprise have reduced the total demand. Prices on all-rail coal for steam and domestic purposes are well maintained. Local trade at Milwaukee is quiet. The docks, however, are working at a rapid rate to take care of the cargoes coming from the lower ports. Anthracite receipts are increasing.

Southwestern operations are marking time. Kansas mines are selling little but screenings. Early orders for threshing coal are the only bright spot in the Oklahoma situation. There has been little tonnage mined in Arkansas since the new coal year opened, but operators in that state are laying plans to push sales of storage coal this month.

West Drives for Storage Orders

Utah operators are staging an energetic drive for summer storage orders on domestic lump. Coal is being offered to the householder at Salt Lake City for \$6.45@\$7, as against an earlier price of \$9. Consumers are making some response to these inducements, but are not working the retail distributors to death filling orders. Two C. O. D. retail companies which have not met these prices are urging buyers to ignore the storage rates on the ground that there will be no increase in their prices next winter.

How long this price drive will last is uncertain. It was started, it is reported by the insistent demands of the smelters and other large industrial users for more slack coal. As a result of the low lump prices, there has been a substantial reduction in the number of "no bills," which two weeks ago had passed the 1,000-car mark.

Storage prices have been less succesful in stimulating demand in Colorado. As a matter of fact, production has been declining. Steam sizes are going for what the market will bring. Effective June 1, Walsenburg-Canon City lump was quoted at \$4.75; nut, \$4.50; chestnut, \$3; Trinidad lump, nut and fancy chestnut, \$2.95; Crested Butte bituminous lump, \$4.75; nut, \$4.50. Crested Butte anthracite is \$6.75 to \$8.25, depending on size. Kemmerer-Rock Springs domestic sizes are \$3.50, mines; steam coal, \$1@\$1.30.

Cincinnati Market Stronger

On the whole, the market at Cincinnati was slightly stronger last week, despite some congestion in lake move-

ment. High-volatile producers were heartened by the announcement that the Island Creek Coal Co. schedules for June would show advances. This company is now asking \$2.50 for 6-in. lump, \$2.25 for 3-in. lump, \$2 for egg and 14-in. coal. One or two other large West Virginia operators already have followed suit and several Hazard shippers have advanced their price on block to \$2.30. High-volatile slack is stronger and mine-run maintains its position.

Pocahontas producers will endeavor to hold to the \$3 price on lump throughout



June. The same price is asked for egg; stove is \$2.50, and nut, \$2.25. The standard circular price on mine-run is \$2, but spot sales have been made at 15@25c. under that figure. Slack is the weakest member of the low-volatile family.

During the week ended last Saturday 14,864 carloads of coal were moved through the Cincinnati gateway. This total, which was an increase of 306 cars over the preceding week, including 4,-654 loads en route to Toledo and Sandusky for lake shipment. There also was a slight increase in the number of empties sent to the mines.

Lake Embargo Hits Columbus

Another embargo on lake coal to Toledo and Sandusky, placed early last week, reacted unfavorably upon the Columbus market. Prompt modification of the Toledo embargo relieved the situation somewhat, but enough track coal was offered at concessions to worry the Columbus coal men. Aside from screenings, the all-rail industrial market is dull and featureless. Little domestic tonnage is moving. Southern Ohio production is between 15 and 18 per cent of capacity.

Northern Ohio is no better off than the central and southern parts of the



state. Slack quotations in the Cleveland market are up 5 to 10c. Stripping operations are holding their own against non-union competition for steam business, but the shaft mines are waging a losing battle.

During the week ended May 15 the No. 8 field produced approximately 188,-000 tons, or about 26 per cent of capacity. This was 22,000 tons less than during the preceding week and 28,000 tons under the figure for a year ago. Except in the case of mines with close dock affiliations, Ohio is shipping little coal to the lakes.

Pittsburgh Non-Union Output Grows

There is a slow but persistent gain in commercial non-union production in the Pittsburgh district. The strength of the union output in that field lies in the captive mines. General demand for coal shows no improvement. The Connellsville region is selling only a small quantity of coal in the steam market. Its business in gas and byproduct coals is less than normal.

Central Pennsylvania conditions show little change. During the week ended May 22 the district loaded 12,887 cars, as compared with 12,965 cars the week preceding. Pool 1 coal is quoted at \$2.50@\$2.75; pool 71, \$2.30@\$2.50; pool 9, \$2.10@\$2.25; pool 10, \$1.75@\$1.95; pools 11 and 18, \$1.60@\$1.65. An increase in the quantity of unsold

An increase in the quantity of unsold coal on tracks has further dampened the sodden spirits of the Buffalo bituminous trade. Nominal mine quotations, however, are: Youghiogheny gas lump, \$2.15@\$2.35; Pittsburgh and No. 8 steam lump, \$1.65@\$1.85; gas or steam slack, \$1.30@\$1.50; Allegheny Valley mine-run, \$1.50@\$1.75. Cambria County mine-run is \$2@\$2.25; Indiana County mine-run, \$2.10, and lump, \$2.85.

Export Demand Relieves Piers

There now is enough export demand to relieve Hampton Roads shippers of heavy accumulations of coal at the piers, but this has had little effect upon spot prices for New England delivery. Quotations on Navy Standard coal at the Southern piers have oscillated between \$4.50@\$4.65 and \$4.65@\$4.85. On cars at Boston and Providence an effort has been made to establish a \$5.60 basis for future business, but some September tonnage has been closed at \$5.40.

The course of the trade during June

is highly problematical. There is no domestic support for a strong market. As soon as the British strike is over, renewed dullness and lower prices are forecast. Current buying is on a handto-mouth basis. There is, however, a slightly more optimistic feeling in industrial circles, but nothing to warrant belief in a booming demand for coal.

COAL AGE

The all-rail situation on central Pennsylvania offerings is unchanged. There is little general spot buying. Most of the movement is restricted to the usual narrow strip of territory not far east of the Connecticut River.

Seaboard Watches British Situation

New York, Philadelphia and Baltimore find it more cheering to speculate on export prospects than to contemplate bituminous demand at home. Some charters have been closed since the British strike began, bunkering activity has increased and there is more inquiry from prospective foreign buyers. In the New York market dumpings have been steady, but consumers are not buying freely.

not buying freely. Industrial purchasers placing business with Philadelphia houses are making no move to increase their stockpiles. Producers are hoping that the railroads will place contracts before long. In the spot market the most active feature is gas slack, but there have been no sharp advances in prices. Competition for business is too keen at Baltimore to worry purchasing agents over prices, quantity or quality.

While there has been a gradual slow- cago and 3,500 tons for Racine. Vessel ing down in the Birmingham district, rates will be the same as last year, viz., the underlying situation is sound. 90c. to Racine, 55@60c. to Chicago, 50c.

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There is no overproduction of highgrade coals and little surplus of less favored grades. Contract orders are absorbing the bulk of the steam-coal output. The limited quantity of highgrade domestic tonnage offered on the spot market finds a ready sale; medium and lower grades are sluggish. Foundry coke is firm at 60 (6.50, ovens. There is a fair demand for egg coke at \$5 and nut at \$3.50.

Company Anthracite Steady

The New York market reports a steady but unhurried movement of company anthracite. Most of the tonnage is going to old customers, but, unless the situation changes, it will not be long before some of the companies will be able to take on business from other sources. Except for occasional sales of straight stove at 10@15c. above company circular, independent shippers are unable to sell the larger sizes at a premium. Barley is the only steam size showing any strength.

At Philadelphia, on the other hand, backward consumer buying has slowed up the movement of both company and independent domestic coal. Pea is the only size which maintains any great strength. The disposition of nut threatens to assume the proportions of a real problem. Further reductions in premiums are resorted to by independents to move coal, but buyers show little interest in anything above company circulars. There is a surplus of all steam sizes. The Baltimore anthracite trade still marks time.

Buffalo demand for anthracite and for anthracite substitutes is quiet. Ice conditions outside the harbor still interfere with the free movement of lake tonnage. Loadings for the week totaled 52,900 net tons, of which 22,100 tons cleared for Superior and Duluth, 20,500 tons for Milwaukee, 6,800 tons for Chicago and 3,500 tons for Racine. Vessel rates will be the same as last year, viz., 90c. to Racine, 55@60c. to Chicago, 50c.



to Milwaukee and 40c. to Duluth and Superior.

Canadian Demand Maintained

Although more moderate weather has Although more moderate weather has taken the edge off household demand for hard coal at Toronto, retail de-liveries are being kept up by fill-up orders for next winter. Coke, too, is in good demand. Welsh anthracite also finds a ready sale. The bituminous market is quiet. Retail prices are: Anthracite stove, \$15.75; egg and nut, \$15.25; pea, \$12.50; coke, \$12.50. The outlook for spot coke in the

The outlook for spot coke in the creased 440 tons.

Connellsville region grows progressively darker. Movement is light and prices are softer, Spot furnace coke is prices are solter, Spot lurhace coke is quoted at \$2.85@\$3, with very little tonnage at the higher price. Spot foundry holds at \$4@\$4.50, but there is no real volume of buying. Production in the Connellsville and Lower Connellsville regions during the week ended May 22 was 155,450 tons, according to the Connellsville Courier. Furnace oven output, 90,840 tons, showed an increase of 140 tons over the preceding week. Merchant oven output, 64,610 tons, inmany, Belgium-Luxemburg and Holland, of coke; Great Britain, Belgium-Luxemburg and Germany, of patent fuel.

May End Australian Strike

The sympathetic strike of coal miners and engine drivers called in Australia probably will experience an early settlement, according to a recent cable to the Department of Commerce at Washington. The relief funds are exhausted and the miners are anxious to return to work. The unions are permitting coal shipments to the Broken Hill Steel Works, one of the important Australian mills.

Export Clearances, Week Ended May 27 FROM HAMPTON ROADS

For Danish West Indies:	Tons
Dan. Str. Niels R. Finsen, for	
Curacao	2,685
Br. Str. Trafalgar, for Curacao	6,971
For Canada:	
mer. Str. Frank J. Peterson, for	
Quebec	2,624
mer. Schr. R. R. Govin, for Gaspe	1,086
Jor. Str. Lovstakken, for Montreal.	3,788
Dan. Str. Ivar, for Montreal	3,051
For Miquelon:	
Vor. Str. Laly, for St. Pierre	2,166
For Argentine:	
Br. Str. Llangallen, for Buenos Aires	5,411
amer. Str. Crofton Hall, for Monte-	
video	2,344
vor. Str. Neptunian, for Montevideo.	5,469
Sr. Str. King Edward, for Buenos	
Aires	6 409
Sr. Str. Homecliffe, for Montevideo.	5,273
Sr. Str. Taina, for Buenos Aires	5,901
For Gibraltar:	0 5 0 5
For Core Vorde Jalanda	9,000
For Cape verue Islands.	E 70E
NOR. Str. Capto, for St. Vincent	0,100
For Jamaiaa :	4,411
Jor Str Cofion for Kingston	2 710
Amor Sahr Orleans for Salt Piver	1 110
Swed Str John Lundwall for Kings-	1,110
ton	1 9 9 1
For Canary Islands	1,001
Rr Str Antar for Las Palmas	9 4 5 3
St. Str. Hinter, for Bas Fannas	0,100
FROM BALTIMORE	
For Italy:	
tal. Str. Color, for Civitavecchia	6 246
For France:	0,410
tal. Str. Humilitas, for St. Nazaire	6 201
Elen Olihanitani, for our traballor,	0,201

Br. Str. Romera (for Italy)..... 6,927

Hampton Roads Coal Dumpings*

(In Gro - T---

(
N. & W. Piers, Lamberts Pt.: ons dumped for week.	May 20	May 27
Virginian Piers, Sewalls Pt.: ons dumped for week.	90 355	93 754
C. & O. Piers, Newport News: ons dumped for week	156 752	150 259
* Data on cars on hand, tonna onnage waiting withheld due to shi	age on h	and and otest.

Pier and Bunker Prices, Gross Tons PIERS

May 22

May 29t

Pool 1, New York \$5.50@\$5.75 Pool 9, New York 4 90@ 5.20	\$5.50@\$5.75
Pool 10, New York 4, 70@ 4 90	4.70@ 4.85
Pool 11, New York 4, 40(a) 4, 65	4,40@ 4,65
Pool 9, Philadelphia 4.95@ 5.30	4.95@ 5.30
Pool 10, Philadelphia. 4.70@ 5.00	4.70@ 5.00
Pool II, Philadelphia . 4.35@ 4.65	4.35@ 4.65
Pool I, Hamp. Roads. 4.50	4.450 4.50
Pool 2, Hamp. Roads. 4.30	4.10(a) 4.15
Pool 5, Hamp. Roads. 4.00(a) 4.10	4.00(@) 4.10
roois 3-6-7, namp. Rds. 4.00	4.00@ .410
BUNKERS	
Pool 1, New York \$5.75@ \$6.00	\$5.75@\$6.00
Pool 9, New York 5. 15@ 45	5.15@ 5.45
Pool 10, New York 4.95@ 5.15	4.95@ 5.10
Pool 11, New York 4.65@ 4.90	4.65@ 4.90
Pool 9. Philadelphia. 5. 20@ 5. 55	5.20@ 5.55
Pool 10, Philadelphia 4.95@ 5.25	4.95@ 5.25
Pool II, Philadelphia. 4.60@ 4.90	4.60@ 4.90
Poel I, Hamp. Roads. 4, 60	4.50
Poolo 5, Hamp. Roads, 4, 40	4.15
roots 5-6-7, framp. Rds. 4, 10	4.00@ 4.10
T Advances over previous week she	own in heavy

type; declines in *italics*.

Foreign Market And Export News

British Coal Subsidy Hit German **Export** Trade

March returns for Germany show rising imports and declining exports. The explanation given in German mining circles is that the British subsidy has enabled importers to offer British coal at prices at or slightly below even the recently reduced German summer season prices. At the same time it is reported that in markets outside of Germany competition from British coal has become considerably keener. In several reports it is noted for the first time that Dutch coal is coming into evidence on foreign markets.

German imports and exports in the first quarter of the current year are set out in the accompanying table. The corresponding figures for 1913 are added for comparison.

Coal Imports by Germany

-January to	March-
1926	1913
Metric	Metric
Tons	Tons
1,231,546	2,177,843
12.708	139,996
426,155	1,732,519
. 579	6,231
33,189	35,693
	-January to 1926 Metric 1,231,546 1,2708 426,155 579 33,189

Coal Exports from Germany

Bituminous	3,563,332	8,460,214
Brown Coal	8,130	19,730
Patent Fuel: Brown Coal	220,599	261,972

As the deadlock between Germany and Poland concerning exports from Polish Upper Silesia continues, Great Britain is now practically Germany's chief supplier of foreign coal. In districts reached by water British coal enjoys an advantage in price over German coal and a number of consumers, chiefly gas works, give it preference on account of quality. This preference is so marked that a sharp differential in favor of German coal would be needed to eliminate British coal from German markets. So far the German syndicates have not been able to establish such a differential. But some sort of working arrangement between German and British mining interests is ultimately expected as an outcome of the British crisis.

In exports a broadening of the German foreign market is noticeable in spite of the slight drop of the total. This decrease is due chiefly to reduced shipments to certain European countries, principally France, which gets most of her German coal on reparation account. (Reparation coal is not included in the export returns). The wide span which is still separating the present volume of foreign coal business from that of 1913 is caused in the main by the loss of business in the case of a few Europeaen countries, notably that of Austria-Hungary, Russia and Switzerland.

Belgian Market Stronger

Brussels, Belgium, May 20.-Some improvement has taken place in the Belgian coal market since the first of the month. The full force of the British strike, however, has not yet been felt. There are still many consumers who refuse to augment their coal stocks. When these buyers enter the market it is felt that a shortage will be inevitable and that prices will advance sharply.

French Prices Advanced

Paris, France, May 20.—Prices in the Nord and Pas-de-Calais were increased May 16 to cover the advances in wage rates which went into effect at that The new schedules raise the time. price on raw smalls and on screened and unscreened industrial coals 10 fr. per ton; washed coals, 11 to 13 fr.; ovoids, 10 fr.; briquets, 12 fr.; coke, 15 fr.; domestic coals, 20 fr.

Demands for higher wages are pending in other districts and there seems to be no doubt that increases will be granted. Collieries in the Center and the South already have anticipated this move by increasing prices 10 to 15 fr.

Demand for French coals is naturally more active as a result of the British The government also is facilistrike. tating the entrance of non-reparation coals.

April imports of coal into France totaled 1,571,105 metric tons; coke, 436,827 tons; patent fuel, 73,966 tons. During the same month this country exported 386,400 tons of coal, 31,311 tons of coke and 15,642 tons of patent fuel. Germany and Great Britain were the chief sources of coal imports; Ger-

Coming Meetings

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

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

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

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

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

The National Association of Purchasing Agents. Annual convention at Los Angeles, Calif., June 9-12. Secre-tary, W. L. Chandler, Cleveland, Ohio.

American Society for Testing Mate-rials. Convention at Haddon Hall, Atlantic City, N. J., June 21-25. Secre-tary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

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

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

American Society of Mechanical Engineers. Spring convention at San Francisco, Calif., June 28-30. Secre-tary, Calvin W. Rice, 29 West 39th St., New York City.

Illinois and Wisconsin Retail Coal Dealers' Association. Thirty-first annual convention, Highland Hotel, Lake Delavan, Wis., June 28-30. Managing Director, N. H. Kendall, Great Northern Hotel, Chicago, Ill.

Fifth International First-Aid and Mine-Rescue Contest, San Francisco, Calif., during the first week of September, 1926, under the auspices of the Bureau of Mines, Department of Commerce.

Coal Mining Institute of America. Annual meeting, Chamber of Com-merce, Pittsburgh, Pa., Dec. 8, 9 and 10. Secretary, H. D. Mason, Jr., Box 604, Ebensburg, Pa.

Trade Literature

Safety "Arktite" Plugs and Receptacles, Interlocking Switches and Plugs, Safety Hand Lamps. Crouse-Hinds Co., Syracuse, N. Y. Bulletin Pp. 8; 8x10¹/₂ in.; illustrated. Bulletin No. 2086.

Chicago Pneumatic Tool Co., Chicago, Ill., has issued a folder illustrating and describing its various types of electric and steam-driven compressors.

New Equipment

Shovel Cleans Back of Kerf. **Aiding Fall of Coal**

Bugdust from the undercut made by a mining machine heretofore has been removed in a more or less desultory and haphazard manner by means of hoes, shovels, scrapers and the like, equipment in the majority of cases but ill-adapted to the work in hand. The need for an efficient tool for this purpose became so great that the Pitts-burgh Shovel Co., 1832 Oliver Bldg., Pittsburgh, Pa., has developed and placed on the market the special shovel shown in the accompanying illustrations. This tool is capable of removing



Clean the Kerf and Save Powder

This scraper's shovel has a broad flat blade and a long handle with an almost negligible lift. It can be thrust clear to the back of any ordinary undercut, re-moving all the bugdust and leaving the kerf in the best possible condition for shoot-ing. No undercut attains its maximum pos-sible efficiency unless it is thoroughly cleaned out sible efficiency cleaned out.

practically all bugdust from a kerf, leaving the undercut in the most effective possible condition for blasting.

The blade of this shovel is of special design and shape, built of highcarbon steel, 14§ in. wide and 16 in. The handle is of selected secondlong. growth Northern ash, 6 ft. long, the total length of the finished shovel being 7 ft. 2 in. The lift is extremely lowalmost but not quite negligible. This permits the tool to be thrust to the extreme rear of the undercut.

The following advantages are claimed for this shovel by the manufacturers: All bugdust can be easily and quickly removed from an undercut; one-third less explosive is required to bring down the coal; a larger percentage of lump



Shovel that Gets in Under

It is a peculiarity of human nature that men will do willingly and thoroughly that which is easy, but are likely to shirk if the task in hand is hard. The special blade, long handle and low lift of this tool admir-ably adapt it to removing the bugdust to the extreme rear of the undercut and, what is perhaps equally important, they make this operation easy.

is produced; cleaner coal containing less slate, ash and fine material is obtained. Safety is greatly increased through the removal of dangerous fines, and the safety provisions of the state laws are effectively carried out. This results in lower insurance premiums because of total bugdust removal. All of these advantages are made possible because men will willingly and thoroughly remove all bugdust from an undercut when this can be done with the ease resultant upon the use of a tool suited to the purpose.

Many mining officials regularly assure themselves that the working faces are being undercut in an efficient and workmanlike manner, yet forfeit many of the advantages realizable from such undercutting by not making sure that the cuts are thoroughly cleaned out. A machine kerf is narrow at best; to attain its fullest possibilities it should be entirely unobstructed.

Electric Heater Makes Sand Flow Freely from Pipe

In order to eliminate the uncertainty and danger incident to clogging of a locomotive's sand pipe from water or freezing, the Crawford Machinery Co., Bessemer Building, Pittsburgh, Pa., is marketing the safety electric sander shown in the accompanying illustration. This simple device assures a dry and unobstructed end on the sanding pipe and a dependable flow of sand at all times.

As is well known, dry sand will not flow from the end of a wet pipe without some of it sticking to the interior surface. This decreases the effective delivery area, and if it becomes cumulative, as is frequently the case, the entire cross-section of the pipe may be effectively clogged. Many accidents and much delay to traffic have occurred on railroads, street-car lines and on mine and industrial roads generally from this cause.

ELECTRIC HEATING AVERTS CLOGGING

After long study and experimentation, a railroad locomotive engineer who, during his 32 years of active service, encountered many difficult trips, because of the clogging or freezing of the sand pipe on the engine, devised the equipment here shown. In construction this device is extremely simple. It may be attached to the end of the sand pipe nearest the rail and is heated electrically. By this means it is possible to drive moisture out of the pipe, keep it out, and positively avoid clogging.

This electric sander is fastened to the lower end of the sand pipe next to the rail. If rubber hose is used at this point it is removed and the pipe extended so as to permit proper attachment. The sleeve of the sander is slipped over the end of the pipe and made fast by heavy set screws and lock nuts.

The necessary wire connections to any convenient source of electrical supply are easily made and are readily accessible for inspection. The function of the device is to keep the delivery orifice dry, and thus to permit of a flow of sand thereby assuring adequate traction and maximum adhesion for braking whenever this is needed.

Should the end of the sand pipe be submerged in water, the sander will immediately respond as soon as the device rises above the surface of the liquid. The heat generated by the passage of current is sufficient to dry the end of the pipe in a few seconds. It is thus positively effective in operation, and may be applied to any sand pipe on any type of locomotive or street car.

Mine locomotives thus equipped are able to handle trips on heavy grades with greater efficiency and with perfect confidence on the part of the motorman, as moisture in the mines or water through which the machine may be



Sander with Electric Heater in Operation

This device consists of an electrically heated orifice or nozzle that may be slipped over and fastened to the end of the sand pipe. This will effectively dry out the pipe and permit an unobstructed flow of sand within a few seconds after total submergence in water.

compelled to pass will not in any manner clog the sand pipe.

Many motormen have been badly injured and some have been killed in trying to release sand from clogged pipes while the trip was running away on a heavy grade. As a rule the motorman has no recourse when he is unable to release sand on a wet or slippery rail.

Electric Capstan Pulls Cars

In the accompanying illustration may be seen the improved electric capstan car puller designed and manufactured by the Clyde Iron Works, of Duluth, Minn. In this machine a vertical winch head, or capstan, is bolted direct to a rugged bevel gear which is driven by an electric motor through two sets of intermediate gears and a bevel pinion.

The unit is said to be of exceptionally sturdy construction, having all parts totally inclosed and covered with a semi-steel housing so as to be dustand weatherproof. This is a valuable detail of construction, as a car puller is exposed to the elements at all seasons of the year. The capstan head is fitted with renewable bronze bushings.

All the gears are of steel, except the intermediate gear, which is semi-steel, and the motor pinion, which is of Bakelite Micarta, making operation practically noiseless. The frame is so constructed that all gears run in a bath of oil, insuring perfect lubrication. An Alemite greasing system is provided throughout. A hand-operated pawl for



Despite Rail Conditions, Places Cars Wherever Desired

Fitted with electric motors wound for any desired current, these machines are said to form reliable units for spotting or respotting coal cars under the tipple or material cars elsewhere.

holding the load when the capstan is stationary also is furnished. The operation is controlled by a push button arranged for foot control. Over-load and low-voltage protection is provided.

These car pullers are built in three sizes, having line pulls of 3,000, 6,000 and 10,000 lb. at a speed of approximately 40 ft. per minute. They are equipped with 5-, 10-, and 15-hp. motors respectively for the available current.

New Metal-Filled Packing

A type of metal-filled packing designed for use on piston and valve rods and other services where high steam pressures are encountered has been brought out recently by the Garlock Packing Co. of Palmyra, N. Y. It has a wearing surface of soft metal inclosed on three sides by a covering of asbestos and rubber. The metal filler in the channel of the packing is of special design and is perforated and cut to fit the various sizes of rod. The design of the filler is such that it tends to hold a large percentage of lubricant and to make the sections or studs seal one another against the pressure.



Metal Filled High-Pressure Packing

Within the channel of the packing is a specially perforated and cut metal filler that is porcus and capable of holding much lubricant. This packing, therefore, is capable of being used without other lubrication for a long time.

New Companies

Rosedale Fuel Co., Fairmont, W. Va., recently was organized with a capital of \$1,000,000, by C. H. Humphreys, Charles E. Hawker and R. S. Waller, all of Fairmont, and James E. Gaskins and Robert D. Bradford, both of Morgantown, W. Va.

The Magnolia Coal Co., Poteau, Okla., with a capital of \$15,000, has been in-

corporated by William F. Faither, Paris, Ark., and Joe R. Edelmann, Poteau.

The Vermillion Coal Co., of Charleston, W. Va., was organized recently with George E. Merryman, Charleston, president; J. P. Bess, Orgas, vicepresident, and H. N. Greenlee, Charleston, secretary and treasurer. The company recently acquired the mine of the late A. E. Moore, of Charleston, which is located on the Chesapeake & Ohio Ry. at Orgas, Boone County. The Cedar Grove seam is being worked there.

The Kimbolton Co-operative Coal & Mining Co., Kimbolton, Ohio, has been chartered with a capital of \$10,000 to mine and sell coal on the co-operative plan. Incorporators are: James Hardwidge, Joseph Latchic, Everett Rose, John S. Dobransky and John B. Dobransky.

The Roach Creek Coal Mines, Inc., Cincinnati, Ohio, has been chartered with a capital of 10,000 shares of stock, no par value, to operate mines and deal in coal. The incorporators are Loyal S. Martin, Bernard J. Giliday, W. M. Mance, Anna F. Watts and Ruth McConnell.

The Hilltop Coal Co., Crooksville, Ohio, has been incorporated with a capital of \$50,000 to mine coal in the Crooksville field. Incorporators are Frank Sample and Charles Sample, of Saltillo, and Ruth Wall, Mary Detenbeck and C. F. Ribble, of Zanesville, Ohio.

The Canada Process Fuel Co., Ltd., of Halifax, N. S., has obtained papers of incorporation for the purpose of mining coal and kindred mineral products, with a capital of \$1,000,000, by William Marshall Rogers, Henry Poole Mac-Keen, Joseph Patrick, Connolly, and others, of Halifax.

A charter has been granted to the Maywood Coal Co., Laville, Boone County, W. Va., with a capitalization of \$10,000. The incorporators are C. L. Burns, C. L. Milligan, E. R. Milligan and W. M. Erwin, all of Laville, and N. E. Milligan, of St. Albans.

The Ideal Fourth Vein Coal Co. has been incorporated at Jasonville, Ind., with a capital stock of \$25,000 to do a general coal mining business. The incorporators are Vaughn Daugherty, Sam Harrison, Oscar Lafoon, Ross Bond and Charles Stewart.

A charter was issued recently to the Raleigh-Wyoming Mining Co., of Charleston, W. Va., with a capitalization of \$50,000. The incorporators are W. G. MacCorkle, T. L. Johnson, J. M. Britton, Y. Riffe and T. S. Clark, all of Charleston.

The Minot Colliery Co. has been incorporated in Minot, N. D., with a capital stock of \$50,000, and will manufacture briquets. John Nedreloe, L. J. Wood and J. A. Verzott are interested.

The Big Run Coal & Clay Co. has been incorporated in Ashland, Ky., with a capital of \$313,000, by C. A. Coleman, John R. Means and S. F. Hoge.

W. H. Bowater, Inc., has removed its offices to the Whitehall Building, 17 Battery Place, New York City.