

COAL AGE

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R. Dawson Hall
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To What End?

BIG ATTENDANCE, excellent and novel exhibits, papers by the brightest minds in the coal industry marked the American Mining Congress Exposition and Conference. A great event it was, in the opinion of every one present, full of promise for the industry. But its value depends on the action of those who attended. Will it find a disposition in those who participated to think vigorously but to act without purpose or decision? Only by making use of what was seen and heard can any permanent profit come to those who attended. Not what they heard, nor what they saw, will attest the value of the meeting. The true test is to be found in what will be attempted and achieved by men who gained inspiration from what they saw and heard.

It would be well if each mine manager, superintendent, mining, mechanical and electrical engineer who took time and expended money in attending the exposition wrote down for the operator's benefit just what he learned that would reduce operating cost, laying special stress on such equipment as can be put in operation only with the approval of the operator or of the executive next above him. He should make his ideas definite. Impressions are good but insufficient. What are the actual savings in operation? What the costs of investment? The statements should be made concrete, for if the program proposed, its profits and its costs be put in plain black and white, they will carry conviction with them. Properly equipped, a mine can make such large savings that the trip to Cincinnati can be paid for many hundred times over.

So the participants should take the time to record and use what has been obtained even if a few routine duties have for a time to be ignored. The purpose of going is only half accomplished when the suitcase is unpacked in the home town. It may take weeks to set in motion what the trip revealed, but wires should be laid without delay for effective use in completing the program which attendance at the meeting indicated would best lower production costs.

Coal-Dust Shelving

ROCK-DUST BARRIERS are useful in extinguishing explosions, and seeing how neatly they operate, one wonders why coal men are not more eager to eliminate "coal-dust shelving" from the mines, by which term may be designated the horizontal timbering on which coal dust so readily collects. Frequently the roof is permitted to fall to a height of twenty or thirty feet, and cross timbers resting on timber sets fill up the intervening space. This forms the equivalent of a series of shelves. Such shelving is dangerous. A set of timber may be torn down and a cloud of dust will fall that may be readily ignited by a short circuit or, possibly, an open lamp.

If, in places where such injury to the roof is likely to occur, a coating of cement mortar had been used

the fall probably would never have happened, the timber would have been saved and the explosion would have been obviated. A little care to avoid the introduction of such shelves will increase the air-carrying capacity of the roadway, save the cost of removing dust from timbers, reduce the hazard from displaced sets, decrease the fire risk, lighten the entry and perhaps save the most disastrous kind of an explosion. A rock-dust barrier is an antidote for such coal-dust shelves, but why not avoid the erection of such shelving by the judicious use of cement?

Just to Be Different

SOME ENGINEERS delight to advocate standardization, but not a few knife it every time they have an opportunity. In fact an engineer is often the worst enemy standardization has. The average business man usually is willing to buy what the market offers, but some engineers, just to put the stamp of their individuality on the plans or to get credit for genius, specify something—anything—the market does not provide.

Men of this type delight in changing specifications. Any man can agree but, he observes, it takes real intellectual power to differ. There is truth in that contention so long as the differing is to some good end. Too frequently it takes the form of inducing the manufacturer to adopt something he has tried and proved to be undesirable, or at least something he knows will fail or at least embodies parts that are not necessary.

However, there are exceptions. The insurgency against standards by men who have the ability to design and define better equipment is a source of progress to be encouraged. Standards must not, at least unduly, bind progress, and the engineer will sometimes compel an improvement that the manufacturer fails to recognize or one which, for purposes of manufacturing but not of operating economy, he hesitates to make.

But changes made just to be different, just to substantiate the claim that the engineer "helped" in the design, mere idiosyncracies that destroy the regular processes of manufacturing, are to be deplored. As a rule the equipment of the manufacturer is the product of much earnest thought, patient experimentation and long experience, and it is not to be carelessly swept aside by men who have given it no thought and no trial and have no experience in the operation of the device, and who seek a change merely to claim a share in the triumph which the installation of the machine will assure. They like to say: "Works like a charm, but it wouldn't have done so well if I hadn't insisted on this or that." When such a statement is true the insistence on the change may be well justified, but we fear that in many cases a standard design would be cheaper and more effective.

How fatal at times, when the specifier is in a maze of doubt, is the need for writing specifications! It

is true that the manufacturer's plans and even his materials might be considerably modified without much harm to the resulting equipment. There is an element of chance in even the most careful design. But it does not follow that, because the manufacturer has made a guess or two, the purchaser should make another, for the design has been tested and the shop practice has been built around the model thus designed. Consequently, on the one hand the manufacturer's judgment has been sustained by experience, and on the other, he has ventured so much on its correctness that unless it is proved wrong it is best not to make any change. The pen of the specifier is a fearful and wonderful instrument. Much harm can be done by it with the most excellent intentions, but in the hands of a capable mechanical and electrical engineer it is fruitful of good result.

Another matter not always realized is the fact that the manufacturer when called upon to make special designs is an innovator and cannot be expected to guarantee his machinery thus changed. He certainly does not care to do so when the change has been made to his own detriment and, as often happens, against his better judgment.

Unity in Business

BY STEADY, energetic and truly patriotic effort the Chamber of Commerce of the United States has established itself as a strong, creative body from which much may be expected. The word of the business world needs to be heard. Labor has its council in the American Federation by which it is enabled to speak as a unit. It is only fitting that business should have similar representation, not as a body inimical to labor but as representing the viewpoint of men whose judgment as to the best interests of the public may be, and will be, helpful in framing national policies.

Though representing only a group in the body politic, the business men constituting the Chamber have taken a quiet and broad view of national affairs, seeking not so much their own advantage as the large interest of the American people. They have, moreover, arrived at a degree of teamwork which cannot fail of assistance in framing legislation on a broad basis of mutual help. Industries no longer view themselves as separate units striving to better themselves to the disadvantage of the other units. They are not "robber barons" bent on preying upon one another or on those they employ. In the Chamber of Commerce they meet to promote a common national interest. The mine owners are not there to launch an attack on the carriers, nor the carriers to harass the mine owners. They are met to find the common interest and to ascertain ways of improving the well being of their own and other industries.

These are indeed helpful contacts. The mixing of different interests is always advantageous. Travel, they say, broadens men, only it is not travel that does it, but contact. Nowhere is contact more marvelously rapid than at conventions, and at no convention is it broader both geographically and industrially than in the Chamber.

No industry, it may be added, needs the influence of this organization more than that of coal mining. Being frankly a provincial industry almost all of its operators, if not its industrial leaders, are away from the larger cities. It is an industry segregated from whole states in which its many clients and the most important of them live. It needs to keep in touch with other indus-

tries that it may advance its proper interest by representing its viewpoint in a broad, conservative way, at a point where the very atmosphere favors a kindly, thoughtful, and dispassionate consideration of its claims

Coal mining needs to be an integral part of the national consciousness. It cannot glory in "splendid isolation." It needs friends if ever an industry did. It needs also the long view. It should interest itself in the Chamber and do it in a broad, contributory spirit. Essential and fundamental in patriotism is the spirit of co-operation, co-ordination and fellowship.

The Chamber of Commerce of the United States, recently dedicated its new building with appropriate ceremonies, celebrating thereby, thirteen years of constructive effort and steady progress. May its future be as progressive as its past! May it find a formula of co-operation in the welter of disagreement! May it seek national policies that will build a structure of business as delightful to the consciousness of men as the edifice it has erected in Washington! May it be a force for sound economic thinking and a center of co-operation!

With 1,300 local chambers and trade associations in its membership and 12,000 individual and associate memberships, with an annual income of \$1,000,000, and, better still, with a record for excellent leadership and honorable achievement it can look forward to a brilliant and helpful future, an aid to all who wish well for our nation and the whole world.

Why Dine at the Second Table?

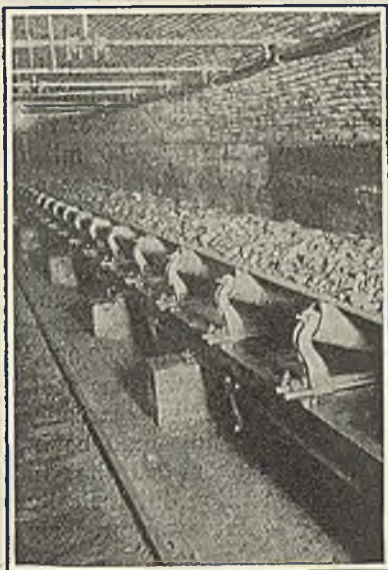
FROM ALL SIDES the anthracite industry is being assailed. The high costs of operation are making hard coal a "luxury fuel" and it is a luxury some are not willing to afford. A leading cure for high costs is better equipment. We believe anthracite men realize that fact. But, if so, why do they not attend in large numbers the expositions and congresses where these problems are being studied and solved?

The bituminous industry has been regarded with contempt by many hard-coal men, but steadily that industry has increased its efficiency. It has its expositions for the study of new machinery and materials. Most of the equipment is just as applicable to anthracite mining in some one of its many phases; some is even more applicable.

If the anthracite industry does not have its own show—and that is not necessary—it should attend those already being held. If it did, it would soon have its own viewpoint given appropriate attention. It could contribute and could learn from the contributions of others. Why stand alone when so much is to be gained from co-operation? Why should so much progress in the development of coal mining today get its first start and exemplification at the bituminous mines? Certainly not because the anthracite operator has not the wherewithal, financially and mentally, to take a leading part in technical advances.

THE ATTENDANCE at the American Mining Congress in Cincinnati of so many anthracite men was encouraging. It is to be hoped that this indicates a greater community of interest developing between the bituminous and hard coal branches of the industry. There is real benefit to be gained from better mutual understanding.

American Mining Congress Draws Many To Cincinnati



Great Machinery Exposition and
Four Days' Discussion of Mine
Problems Bring Out Best Ideas
Not Only of Bituminous Men but
Anthracite Producers as Well

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



A MORE INTERESTING program than ever, better exhibits, and a larger attendance than at previous meetings marked the National Exposition of Coal Mining Machinery and Equipment of the American Mining Congress in Cincinnati, Ohio, during last week. This year, though some of the larger anthracite companies had no officials present, there was, for the first time, a good representation from the anthracite region. It is certain all those who attended will be repeaters next year, many regretting that they had not brought more of their officials with them.

There is no great difference basically between the bituminous and anthracite regions and in many instances papers presented by anthracite men gave facts and figures that were duplicated by the bituminous men present. The differences between the two branches of the industry has been played up to the disadvantage of both. When the representatives of anthracite and bituminous regions get together they soon reveal the close analogies between their problems. About 1,800 persons were present and both the show and the four days of meetings drew large crowds of interested spectators and hearers.

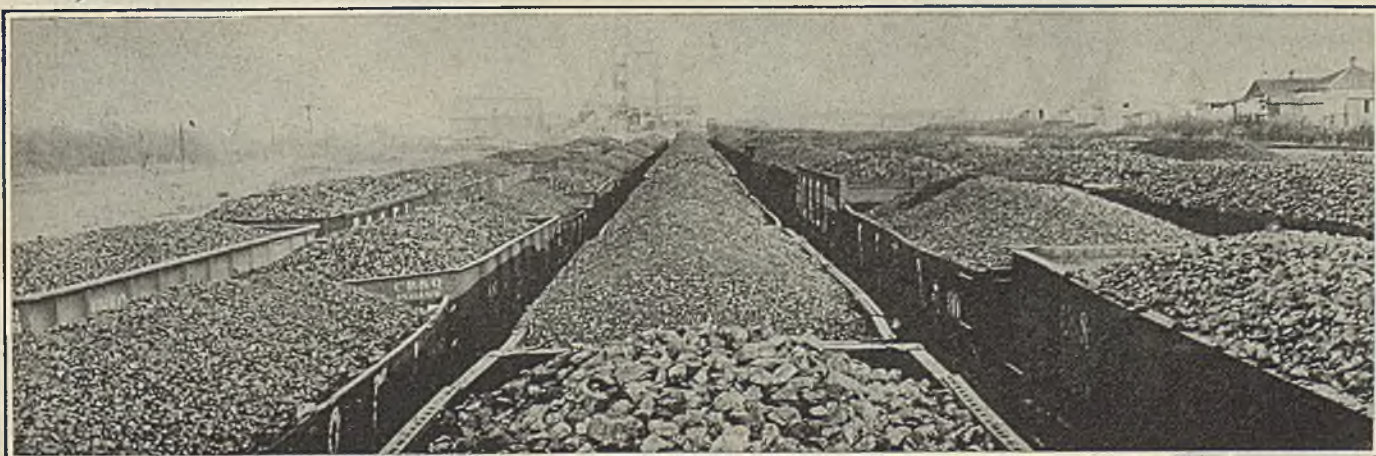
Everyone was too busy to care much about entertainment. However, a well-attended, well-staged smoker was held on Wednesday, May 27, and a banquet on

Thursday, May 28. J. C. Wilson presided at the banquet, introducing as first speaker E. W. Parker, Anthracite Bureau of Information, Philadelphia, Pa.

Mr. Parker declared in his address, entitled "Some Problems in the Anthracite Industry," that the producer of anthracite had been in the past able to sell his broken coal for blast furnace and steamboat use. These large coals were no longer in much demand and had to be broken up. That was one of the causes for the large quantity of small sizes produced, for which the anthracite producer had to find, and was finding, new uses.

H. L. Gandy, executive secretary, National Coal Association, said that the coal industry was in trouble because of the prodigality of Nature and the lack of judgment of man. The coal industry was not one where lowering of price has an immediate effect on the volume of business, or there might be more excuse for the low prices prevailing. Low price and low demand in the coal industry go hand in hand. No reduction in price, no matter how drastic, can induce the purchaser of coal to buy one pound more than will drive his engines and heat his house.

The unfortunate condition in the bituminous industry has been brought about partly by the annual displacement of 75,000,000 to 100,000,000 tons of coal by oil,



and by economies in the use of coal causing 60,000,000 tons less coal to be produced and, further, by the reduction in the use of coal by railroads due to the smaller tonnage of coal handled.

The glut of coal has been increased by the great advances in the use of mechanical devices. The excess production has caused the operators to increase the productive capacity of their plants so as to reduce costs, and this had a further effect in increasing the glut of coal and in deepening the sag in the price curve.

He contended that it was always a healthy condition in any industry for it to have some excess capacity. The duty of the coal industry he believed was not to remove entirely that condition but to learn to exist happily under it as other industries do. The two great and malevolent conditions in the industry were the tendencies to sell below cost and ship without prior orders.

George B. Harrington, Chicago, Wilmington & Franklin Coal Co., Chicago, Ill., spoke briefly on the coal situation and was followed by James F. Callbreath, secretary of the American Mining Congress who introduced Phil Penna. Mr. Penna said it was well for manufacturers and mining men to get together as at the present meeting where they could learn to appreciate one another. Lack of acquaintance was one of the principal difficulties in all human relations. Labor and capital should meet and learn to know each other, but the union was jealous for it knows that acquaintance spells friendship and friendship the decline of union supremacy.

Mr. Callbreath declared that unless the operator sold his coal first and mined it afterwards he would be forced out of business.

W. L. Affelder made an address with lantern slides showing charts used by him to keep track of costs of production. He declared that the whole labor and supply cost of the coal might go down but that in the total cost per ton might be found items that went either up or down. By learning which went up and inquiring why, keeping in mind the volume of production at any time, it was possible to ascertain leaks in cost which

might otherwise be overlooked or condoned. He read letters which had been addressed to his local officials calling attention to excessive costs which marked wastes in operation.

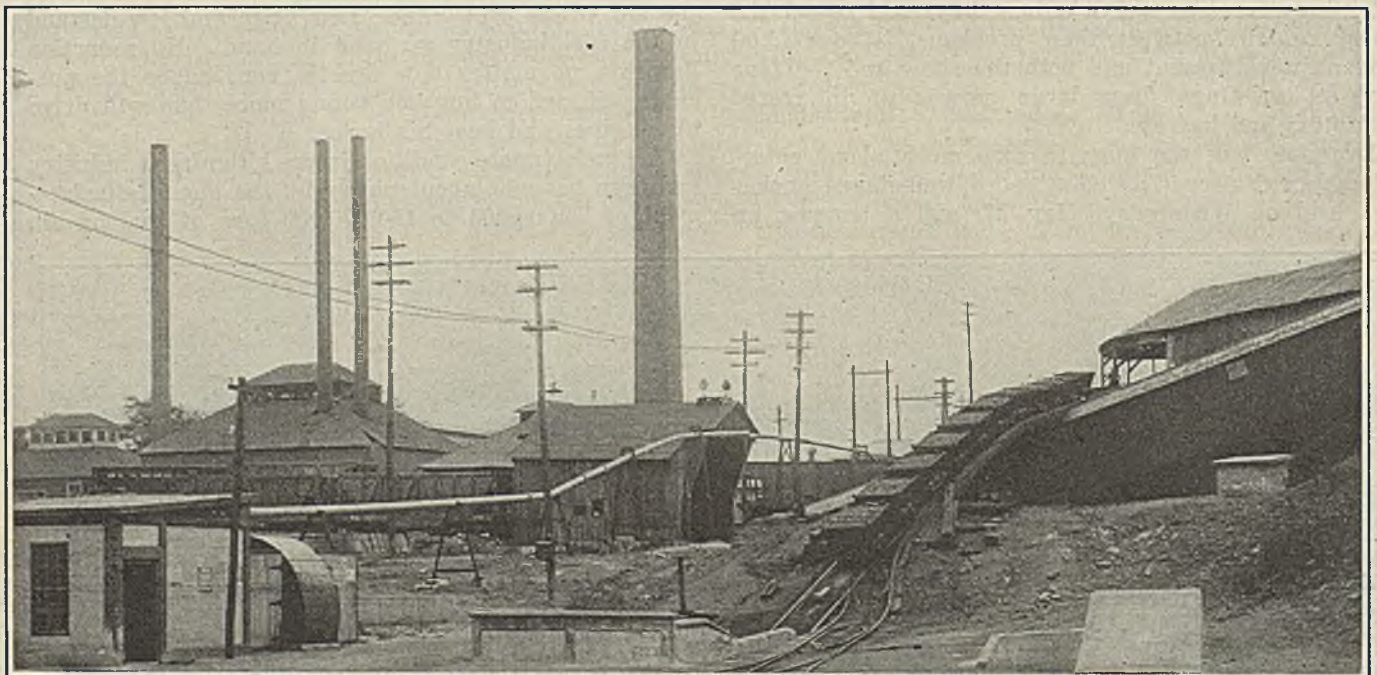
J. Ernest Allen, Hayden Stone & Co., New York City, spoke on the "Coal Industry and the Investing Public." He pointed out that 750,000 men were employed in it, twice as many as in the steel or in the automobile industry. America produces, said he, 45 per cent of the coal of the world. Underground were 200,000 miles of railroad, a length comparable with the mileage of standard-gage road on the surface which is 400,000 miles. The 50,000 miles of electrified track underground was equal to the mileage of all the surface electrified roads of the country—street railways and railroads.

The New York Edison Co. is about to spend \$50,000,000 on a big power plant and that plant will use coal. He felt that coal might suffer from oil, but basically coal was the great source of power and would be in the future. This fact made the banker feel that in an investment in coal he had something intrinsically safe so long as his choice of a property was properly made.

Mr. Allen said that 97 per cent of the mines were of the smaller types. Only 3 per cent were larger mines capable of meeting severe competitive conditions. He believes that consolidations are necessary. The smaller units should be amalgamated into a reasonable number of larger units.

The banker needs, said Mr. Allen, a long record of profitable operation, if he is going to dispose of the securities he underwrites. He does not desire to keep them on his hands and he knows the investor must be satisfied that the bonds and stocks will bring him assured income.

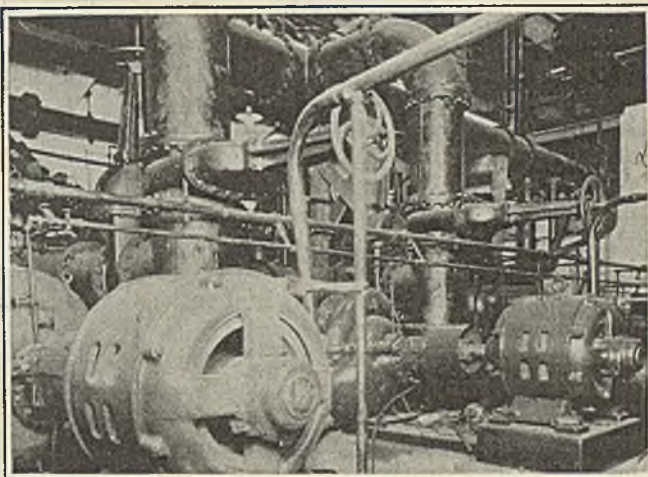
"Choose your banker," said Mr. Allen, "and then be frank with him. Lay all your cards, face up, on the table. The banker will not betray your confidence. Do not think he will want to run your business. His interest is in banking and he is wise enough to know that he cannot be both banker and industrialist."



One of the South's Good Coal Properties—Sayreton Mine, Republic Iron & Steel Co. Near Birmingham, Ala.

Mechanical, Electrical Difficulties

Wide-Awake Group of Mining Men Discusses Use of Acid-Resisting Metals, Speed Reducers, Watthour Meters and Storage Batteries



RUNNING TRUE to the announcement, the Cincinnati meetings were meetings of operating men. R. L. Kingsland, superintendent of the power and mechanical department, Consolidation Coal Co., Fairmont, W. Va., faced a large and highly representative assemblage when, as chairman of the first morning session, he opened the informal meeting, by getting straight at the work in hand, calling on J. A. Malady, electrical engineer of the Hillman Coal & Coke Co., Pittsburgh, to comment on "The Use of Acid Resisting Metal for Mine Drainage Equipment." Mr. Malady outlined the practice and experience of the Hillman Coal & Coke Co. in the handling of mine waters having from 10 to 500 grains of sulphuric acid per U. S. gallon. Up to 1922, his company tried out and used cast iron, acid resisting bronze, and cement, in pump construction. In 1922, it began experimenting with chrom-iron. A piece of this alloy, after 90 days submersion in a highly corrosive water, showed no appreciable loss of weight. As a result, valve parts made of this metal were installed in several mine pumps, followed by the use of other parts, and finally by the use of chrom-iron metal for the casings of centrifugal pumps.

NO LOSS AFTER TWO YEARS

After two years of actual use, no loss could be detected in the new parts. As a comparison, the acid resisting bronze formerly used under the same conditions, lasted only fifteen days to three months. Mr. Malady stated that apparently the manufacturers have not been able to keep pace with the needs and developments of the user.

To this, W. H. Wadington, of the Driver-Harris Co., replied that the wide variety of sizes and types of parts which this company is asked

to cast of "Cimet" requires the constant solving of new problems in the handling of the new alloy. Pump casings weighing as high as 2,500 lb. each, have been made.

Mention of sand pumps brought out the point that the operator should always specify that the pump is to be used for sand, for the reason that the manufacturers can then vary the grade of hardness of the metal to suit the condition under which the machine will be expected to operate.

L. W. Householder, chief engineer, Rochester & Pittsburgh Coal Co., stated that the chrom-iron pumps which his company has in use, have operated for more than 4,000 hr. and show no signs of wear, the present indications being that they will last indefinitely. The acid-resisting bronze pumps lasted only about 8,000 hr., and the cement-lined pumps only 4,000 hr.

DESCRIBES LOCAL SPOT FAILURES

An investigation of local spot failures in bronze cases was described by Mr. Kingsland. Analysis of the part adjacent to one failure showed 0.14 per cent zinc, while the unaffected parts showed no traces of zinc. Others present also stated that zinc content is a detriment in acid-resisting bronze.

Mr. Kiser called attention to the lack of uniformity in physical hardness and tensile strength of an individual casting and of separate castings of the chrom-iron alloy, suggesting that the manufacturers try to eliminate these features.

Hardness, as explained by Mr. Wadington, is regulated to a great extent, by the purity of the content. Recently it has been found that the adding of 1 to 2 per cent of nickel eliminated to a great extent the tendency toward porous and uncertain castings, but this amount of nickel in an alloy containing 28 to

30 per cent of chromium, apparently does not decrease the acid-resisting properties.

Carl Lee, electrical engineer, Peabody Coal Co., Chicago, inquired as to the methods that others are using for checking the wear of centrifugal pumps by measuring the water delivered. Mr. Kiser stated that his company fits each pump with an ammeter and that when the current drops 10 per cent below normal, the pump is opened to investigate the trouble. Mr. Kingsland advocates the use of both a voltmeter and an ammeter, in order to avoid the errors due to voltage fluctuations.

A. B. Jessup called attention to the practice of one company of neutralizing the acid of mine water before use in a coal washery. Roughly speaking, the water requirements are 1,000 gal. per minute per 1,000 tons daily coal production. About one ton of lime per day is required. The cost of this treatment, including labor, is \$10 to \$12 per day. Considerably more than this amount is saved by reduced maintenance of the screens, chutes and other equipment. Only about 60 per cent of the acid in the water is neutralized. This degree of neutralization is sufficient to prolong the life of the steel plates and screens to a period greater than the life of bronze when used with the plain untreated, acidulous mine water.

ADVANTAGES OF SPEED REDUCERS

The second subject discussed was "Speed Reducers." H. D. Smith, general superintendent of the American Coal Co., McComas, W. Va., outlined the advantages of this type of drive and described the applications at the American Coal Co. mines where seventeen speed reducing units are in operation or in the process of installation. Some of these have been in use over 18 months and as

yet none have shown any signs of trouble.

Speed reducers proved to be of particular advantage in the remodeling of old tipples, because of the small space required. A 50 to 1 reducer replacing an open gear train, of, for instance, five to ten countershafts, goes in a case 24-in. to 30-in. in diameter. Although the speed reducer runs 10 to 20 per cent higher in first cost than open gearing, there can be a material saving in the cost of the supporting structure. Besides the space-saving feature, the speed reducer has the advantages of higher efficiency, absolute protection against dust on wearing surfaces, greater safety, and of making it possible to use a high speed motor which is much cheaper and may operate with better efficiency.

The third subject dealt with at the morning session was "Economies Which Can Be Effected by Proper Use of Watthour Meters." William Lamont, general superintendent of the Sterling Coal Co., Bakerton, Pa., described the use of watthour meters by his company. He rates the watthour meter as the watch dog of the power cost. Power distribution at the Sterling mines averages as follows: Transportation 43 per cent, ventilation 27 per cent, cutting 11 per cent and pumping 19 per cent. Mr. Lamont described and exhibited several forms used in keeping a log of meter readings. His company's practice of reading certain meters hourly, is rather unusual. In one instance a high reading led to an investigation of trouble on the line. This proved to be a broken 500,000 cm. ground or return line, the break being concealed by a fall of rock.



J. A. Malady

Electrical Engineer, Hillman Coal & Coke Co., Pittsburgh, Pa., who spoke at Cincinnati on "The Use of Acid-Resisting Metal for Mine Drainage Equipment."

Mr. Lamont stated that the Sterling company is now experimenting with the application of watthour meters to mine locomotives. His contention is that there cannot be an intelligent check without meters for determining the distribution.

In reply to a question by Graham Bright, of Pittsburgh, as to the trouble in keeping watthour meters in working condition on mine locomotives, Mr. Lamont stated that the experiments on this application are not far enough along to justify any conclusions. Josiah Keely, general manager of the Cabin Creek Consolidated Coal Co., Kaford, W. Va., stated that meters proved to them that a \$2,500 investment in copper could be paid for in two years by the power saving effected.

Carl Lee gave an interesting de-

scription of conclusions based on ten to twelve years of meter distribution at mines of the Peabody Coal Co. The power per ton taken by electric hoists has varied as little as 0.5 per cent from one year to another, and some of the hoists, after twelve years of service, show practically no increase, indicating the constant efficiency of electrical equipment, if properly maintained.

During the period of the war, when large production was the great factor, Mr. Lee stated that power requirements per ton inside of the mines increased almost 40 per cent. This has now been reduced to the pre-war figure by additions of copper.

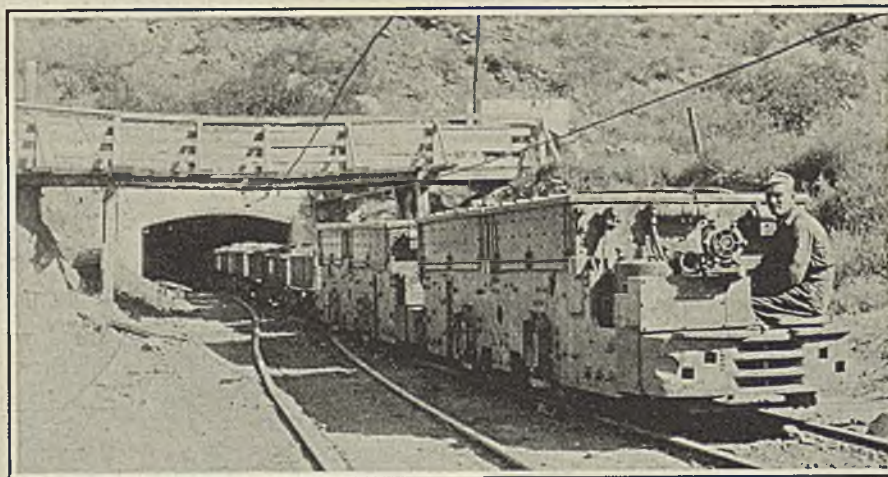
Graham Bright asked for experiences on metering of houses owned by coal companies. Mr. Kingsland stated that, in his opinion, it pays to install a meter in every house. J. H. Edwards, Associate Editor, *Coal Age*, stated that Mr. Sienknecht, of the Blue Diamond Coal Co., Kentucky, has concluded that it will pay his company to install house meters at each mine. The company now has one property metered and collects an average of \$1.90 per house per month at a rate of 7½c. per kw.-hr. as compared to an average of \$1.05 per month per house at the company's other mines.

METERS SAVE POWER

In reply to this, several operators who are using meters and consider that it pays, stated that their experience has been that, after the first month, the average revenue per house drops below that resulting when the flat rate of charge is in force, which, of course, means a marked decrease in the amount of power used on the house lighting circuit.

B. F. Grimm, superintendent of the power and mechanical department, West Virginia Division, Consolidation Coal Co., Fairmont, contended that watthour meters will not necessarily tell the condition of circuits, because of the other factors which influence the relative power consumption per unit of coal production. He thinks that the graphic voltmeter is the best instrument for checking circuits.

"General Use of Storage Batteries in Mines" was the last subject discussed at the Tuesday morning session. J. B. Hicks, electrical engineer, Consolidation Coal Co., Fairmont, led by describing six applications of storage batteries at mines.



Big Tandem Storage Battery Locomotive

These two 80-cell units are used by the Phelps Dodge Corp. in its Stag Canyon mines at Dawson, N. M. These mines eventually may be converted completely to storage battery operation for safety's sake. Experimentation with battery units has been going on at Dawson for more than a year.

The Consolidation company's experience started in 1915, when it installed two special-type, combination, trolley and battery locomotives for gathering. Four years later it had fifty-one of the combination locomotives in use.

Now this firm is using several straight storage battery locomotives in gaseous mines. For gathering, a battery of 55 kw.-hr. capacity is used, the average performance being eighty to 110 cars gathered in an 8-hr. shift, the odometer indicating an average of eighteen miles travel. The main line haulage locomotives consist of a chassis and a set of two batteries and their compartments. One battery is used while the other is in the barn being charged. The capacity of each battery is 110 kw.-hr. and there are enough cells to make the operating voltage approximately 230. The batteries are changed in the middle of each shift, which change requires only about 6 min. One of these loco-

motives hauled last year 238,000 tons of coal and it is estimated that the two batteries of one locomotive will haul between 500,000 and 600,000 tons of coal before having to be replaced.

Batteries have now been used over two years for operating coal cutting machines in gaseous mines of the Consolidation Coal Co. These batteries have a capacity of 91 kw.-hr. and the trucks on which they are mounted are self-propelling. It is estimated that one battery will in its life, cut 350,000 tons of coal of a character similar to that in the Pocahontas field.

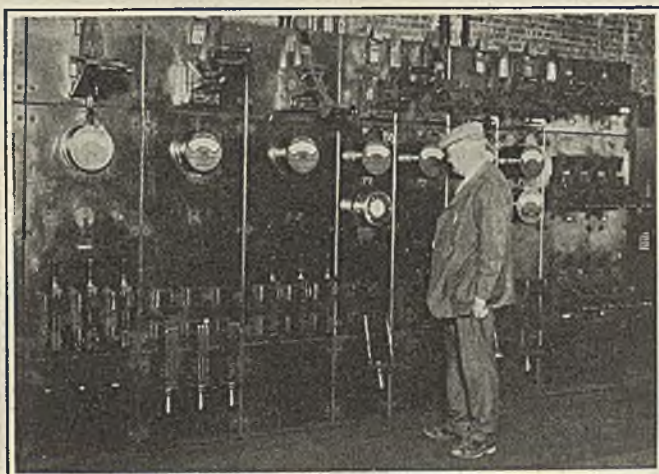
Mr. Hicks stated that the Consolidation company now has two electrically operated mines which are practically devoid of any stationary electric circuits, and will have a third in a short time. Two applications of batteries, which as yet are in the development stage, are the portable battery truck for operating mine pumps, and portable air compressors.

The sixth application of the batteries about the mines, as mentioned by Mr. Hicks, was that of a stationary unit at tippie to operate an engine-coaling larry in case of failure of line power.

Mr. Brant described the two nineteen-ton battery locomotives which are operated in tandem on a main haul in a New Mexico mine.

The total battery capacity is 465 amp.-hr. The batteries are boosted from a trolley during a 12-min. outside haul, resulting in a 100-amp.-hr. finish of the shift. This duty requires about 565 amp.-hr. This battery locomotive was installed as a result of an explosion which took place in the mine before the trolley wires were eliminated.

Commenting on the use of battery cutting and hauling by the Consolidation Coal Co., Mr. Kingsland stated that the big thing to be gained is safety, this, apparently, can be done at a sacrifice of little, if any, in operating cost.



Control of Equipment In Coal Mines

Engineers Review Many Problems
Involving Pumps, Fans, Tippie
Machinery, Haulage Motors and
Types of Automatic Substations

"CONTROL of Mining Equipment" was the general subject at the Mining Congress during the second session for technical men. There was much interested discussion of mechanical and electrical problems. A. B. Kiser, electrical engineer of the Pittsburgh Coal Co. presided as chairman.

The first subject, Mine Pumps, was introduced by W. H. Lesser, electrical engineer of the Madeira Hill Co., Frackville, Pa. In this locality twelve to fifteen tons of water are pumped per ton of coal shipped. Mr. Lesser reviewed the developments in mine pumping, starting with the early steam pumps, some of which were equipped with floats for automatically operating the steam throttle. He showed how the introduction of the centrifugal

pump led to less work for the pump station attendant and naturally to the final elimination of the services of an attendant made possible by complete automatic control.

Many stations in the anthracite mines have a capacity of 1,000 gal. per minute or more, and the average head is between 300 and 600 ft. Squirrel-cage motors are used on the ordinary sizes, but slip-ring motors are employed on the larger pumps.

Mr. Lesser described in detail the operation of a typical automatic centrifugal pumping unit. Every emergency is provided for in the control equipment used.

Mr. Pierce stated that his company has had fourteen pumps operating automatically for over one year. The units are of 1,000 gal.

capacity and pump against a 500 ft. head. In order to eliminate, so far as possible, all chances of trouble, the centrifugal pumps have been equipped with thrust bearings of the ball or roller type, also with thermostatic relays. These pumps receive attention only during one 8-hr. shift, this attention being provided by an inspector who makes the rounds of all pumps. A labor saving of \$8,000 per year has been effected.

On many automatic pumping plants, no foot valve is installed in the suction line. This necessitates the use of a dependable check valve in the discharge. Several users contended at the meeting that the ordinary single-clapper-type of valve is not sufficiently dependable. Mr. Kiser cited a recent case at a Pittsburgh Coal Co. mine where a

single-clapper type valve stuck open, causing damage to the pump by over-speeding in the reverse direction. The multiple valve was mentioned and favored by several operators and no one reported accidents with installations using this type.

In introducing the second subject, Mine Fans, L. W. Householder, chief engineer, Rochester & Pittsburgh Coal Co., Indiana, Pa., read and commented upon a paper published some time ago by Mr. Montgomery, of The Jeffrey Mfg. Co. In the comments he predicted an increasing use of booster fans, which, heretofore, in many cases have been frowned upon, because of the lack of a permissible motor.

An important point which Mr. Householder emphasized is the common tendency for a company to put in a fan which is far too large for the present requirements. Often a fan is selected with the idea of handling the ultimate volume of air necessary and in most cases this ultimate requirement is overestimated and never reached. This means that for years a fan designed for large volume and high pressure is operated at a fraction of its capacity. This results in excessive power losses which, in most cases, would more than pay for the installation of the second fan.

Mr. Kiser described an interesting fan installation at an idle mine of the Pittsburgh Coal Co. The fan normally operated at 142 r.p.m. and required 157 kw. It is equipped with a variable-speed, brush-shifting motor. The fan is now operated at 90 r.p.m. and taking only 40 kw. At 1c. per kw.-hr. this means a saving of \$642.42 per month.

Tipple Machinery was the subject introduced by W. C. Adams, consulting engineer, Allen & Garcia Co., Chicago. He emphasized the desirability of a central control point from which the operative could see all equipment, and suggested that this should be carefully taken into account in the design of a tipple. Proper cascading of controls is important so as to prevent the piling up of coal at any point in case any section of the equipment is stopped.

Mr. Adams advocated the use of time-limit control for tipple motors to prevent damage to motors during starting service. With mere current limit acceleration a motor may "hang" on the line at zero or reduced speed and be damaged if not properly protected.

Mr. Kiser called attention to the fact that on the new time-limit controllers now available, there are no vertical surfaces to catch the dust. This feature, he thought, would eliminate trouble with this type of control. Mr. Adams stated that new motors with double-wound rotors but without slip rings are finding wide favor for tipple work, because of the elimination of complicated wiring and multi-contactor starters. The disadvantages of this new-type motor are its slightly lower efficiency and lower power factor.

Operators were cautioned against the practice of using rotor resistance speed control with wound-rotor induction motors on shaker screens. The objection to this practice is that the speed varies with the load. Mr. Householder called attention to the lack of consideration of tipple designers to the time required for coal to travel from the dump to the car.

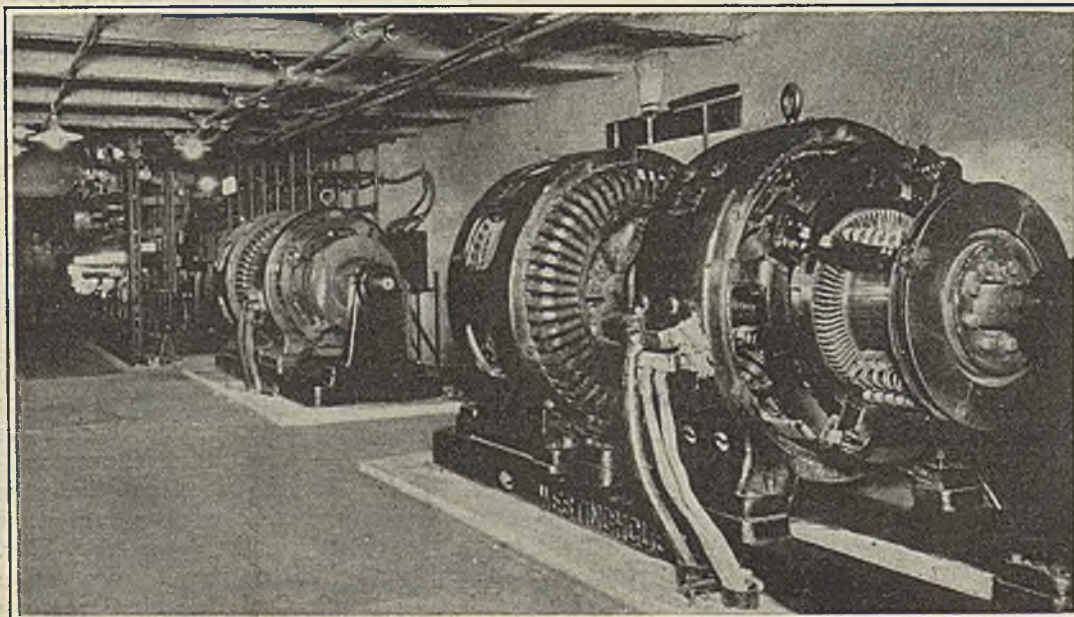
When mine run coal is being loaded, after screening and picking, the result is that large quantities of slack are loaded before any lump reaches the car. This applies every time the tipple is started after being emptied of coal.

The control of mine haulage equipment was brought before the meeting by Graham Bright, consulting engineer, Pittsburgh. He showed why for years, the drum controller was a fairly satisfactory device. This was because of the rather poor voltage regulation on the mine trolleys. If a locomotive got stuck with a heavy load, the voltage dropped very low, making the arc easy to extinguish when the controller opened the circuit.

The more general use of alternating current and the introduction of the automatic substation have made a wonderful improvement in the average voltage regulation. Mr. Bright described the arc master as a crutch for the old controller. The real solution is the substitution of contactor control, which is nothing more than carrying the idea of the arc master a little further and employing it to break heavy arcs.

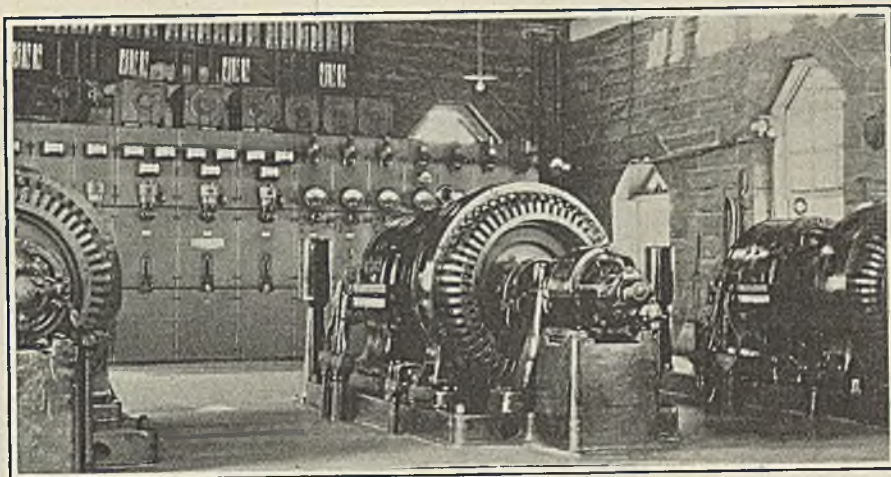
The use of contactor control has proved to be a blessing to some mines, because it necessitates keeping feeder and trolley circuits in proper condition. If the line voltage gets too low, the contactors may refuse to operate.

Other advantages of contactor control are: The main controller is away from the operator, thus decreasing the danger; a power saving is effected, especially in gathering work by the fact that the locomotive is always started in series; contactor



Power on the Spot

This underground sub-station represents the last word in the modern delivery of electric energy to the places where it is used in the mines. This photograph was taken underground in the new giant Orient No. 2 Mine of the Chicago, Wilmington and Franklin Coal Co., at West Frankfort, Ill.



Mine Substation of the New River Co., at Mabscot, W. Va.

The equipment consists of three 150-kw. synchronous motor-generator sets with their control apparatus. Although installed in 1914, the equipment in this substation looks as though it might have been put in during 1925, thanks to high-class design and workmanship of the original installation and to the care it has received. This substation supplies direct current at 600 volts to both the Mabscot and Beckley mines.

controllers more conveniently can be made flame-proof, because they are not so limited as to space as the drum controller, which must ordinarily be mounted in the cab.

Mr. Kiser stated that the installation of automatic and semi-automatic substations almost demands contactor control of locomotives, for the reason that with drum control an automatic substation may be locked off the line by the operators of several locomotives keeping the controllers on a running point while waiting for the return of power.

In connection with the mention of the permissible controller, Mr. Bright stated that the tendency is now to eliminate gauze openings and to make the box air-tight and strong enough to withstand pressures as high as 100 lb. per square inch which may be developed by a severe electrical arc or explosion.

Mr. Bright mentioned a test made in a mine near Pittsburgh, which showed a higher efficiency for locomotives equipped with series-parallel controllers and two motors each with single-gear-reduction drives, than for locomotives equipped with a single motor and worm gear drives. He stated that it was not determined how much of the saving was due to the use of spur gears and how much due to series-parallel operation.

There was some discussion of permissible fuses of the type which can be renewed without bringing the equipment to the outside. Mr. Bright described a multiple type which gives the operator a chance to insert several fuse elements in succession by simply turning a crank or handle in the outside of the box. Mr. Illsley described another type in which the

fuse is turned and the contact broken, after which this fuse can be removed and the element renewed.

The subject of control of automatic substations was presented by T. F. McCarthy, electrical engineer, Clearfield Bituminous Coal Corp., Indiana, Pa. The semi-automatic substation he defined as one having direct-current reclosing circuit breakers, thermostatic bearing relays and single phase, low voltage, and overload protection on the alternating-current side. The semi-automatic station is satisfactory where the equipment can be reached without much delay, in case of failure of the alternating-current voltage, that is, when these failures or line interruptions are not too frequent.

The full automatic substation is one protected against every condition and thus, outside of cleaning and

inspection, requires no attention. He said, his company is now saving between \$35,000 to \$40,000 per year by the elimination of substation operators. Full automatic substations are used in connection with the semi-automatic type, the combination usually being one full automatic, and several semi-automatics in parallel.

As to the class of men necessary for taking care of full automatic substation equipment, Mr. McCarthy stated that anyone who can read a wiring diagram is capable of handling this work. Of the four, full automatic substations, which they have in use, one is a 6,600-volt motor-generator set, two are 500-volt converters and one a 250-volt converter.

Mr. Kiser called attention to the developments in high-speed circuit breakers, which break an arc before it gets to any appreciable size. The use of such a breaker he said, eliminates the necessity for further development in the arc chutes.

E. L. Hough, of the General Electric Co. called attention to the heating problems brought about by the use of automatic substations. With such equipment, the door and windows of the building are usually kept closed and locked, instead of open, whereas, manually operated stations are always in constant attendance and frequently opened. This means that many of the automatically equipped machines are running warmer than they should. The ventilation should be given particular attention when the building is being designed. The best plan is to provide ducts for the passage of air.

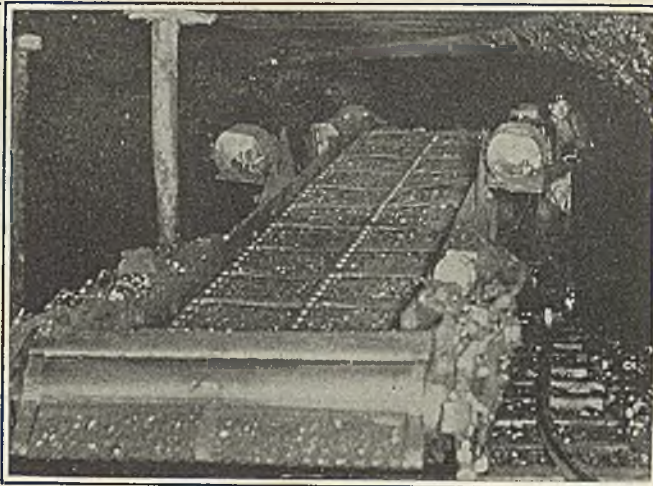


Many Factors Contribute to Good Haulage

In this main haulway where tremendous tonnages move daily, concreted road bed, 90-lb. steel and good engineering have contributed to reduce transportation costs to a minimum.

Underground Loading By Machines

Keen Observers Review Progress
in Development of Loaders and
Experts from Many Mines Tell of
Experiences with Various Types



"MECHANICAL LOADING is inevitable," said Eugene McAuliffe, president of the Union Pacific Coal Co., who served as chairman of the Wednesday morning and afternoon sessions of the American Mining Congress devoted to the practical problems in machine loading. He thus voiced the sentiment of not only the other speakers but the audience as well. About 800 were present and all kept their seats until after the last word was spoken and the meeting adjourned.

Mr. McAuliffe continued: "The nation's whole industrial structure is being stabilized; and in this adjustment mechanization is the greatest force. The producer who has the finance and the courage to mechanize will be among those saved while those who lack these requisites will be among the missing. The shift from almost unlimited use of hand shovels to loading machines in coal mines is not revolutionary by any means; other industries have done as much and more."

MADE COMPREHENSIVE SURVEY

The degree to which loading machines and their operation have advanced, as determined by the research study of this problem by the Carnegie Institute of Technology in conjunction with the U. S. Bureau of Mines, was outlined by F. E. Cash, senior investigator. During this study, Research Fellow E. H. Johnson visited sixty-four coal mines in all parts of the country to observe the performance of thirty-five different kinds of machines. A number of other devices in various stages of development are known to exist. These, however, will not be included in the report of the study, it being the desire of those interested to keep the facts hidden until after the "bugs" are removed. He

stressed the point that loading equipment for old mines generally must be different from that applied to new ones. With the aid of lantern slides, Mr. Johnson described a number of types of loaders that are now in use.

According to Abner Lunsford, general manager of the Fordson Coal Co., Stone, Ky., who was one of the speakers on "Practical Experiences in the Use of Mechanical Loaders," too much emphasis cannot be laid on co-ordination of efforts which eventually will make machine loading successful in many mines. The problems relating to the practice fall into two classes: That having to do with the machines themselves and that bearing on mine methods and layout. The engineer must be allowed to play an important part in this work. He is of the belief that 75 per cent of the machine troubles now encountered could be removed easily if the manufacturers spent more time in the mines studying conditions and methods.

Mr. Lunsford described the conditions under which loading machines are at work in his mines and gave the results obtained by their use. In Henry Ford's Kentenia mine a tract of about 250 acres of the Wallins Creek seam has been set aside for loading machine experiments. This seam is 6 to 7 ft. thick, is free from partings and is overlaid with 8 ft. of drawslate and overburden averaging about 800 ft. in depth. In this are strata of massive slate and sandstone.

ONLY TWO MEN REQUIRED

One of the machines being used is the McKinlay entry driver and loader. The first machine of this type that was installed required a crew of three men—a runner, a helper and a car trimmer. A new McKinlay machine, which has been

recently installed, requires the services of only two men. As this machine advances, cutting and loading proceed simultaneously. The coal is fed from the machine to a Jeffrey portable conveyor. Flexible canvas tubing and a booster fan take care of the dust made during the cutting operation.

In a test run with this equipment an entry was advanced 30 ft. in 3 hr. and 3 min. of actual operating time, but because of poor voltage at the advanced face the test could not be continued throughout a full 8-hr. period. A new substation is now being constructed so that before long the shift capacity of this machine will be known. In spite of the difficulties first encountered with the machine and in its application, it is advancing entries at a less cost than by hand methods. The McKinlay machine easily should advance an entry 40 ft. in 8 hr., day in and day out, or at about three times the speed of customary methods.

LOADED 1.1 TONS PER MINUTE

A 5 B U Joy also is being used for narrow work in this mine. This machine has been tried out on a longwall face. Under such conditions it has loaded as much as fifty-five 3-ton cars in 2½ hr. or at the rate of 1.1 tons per minute including delays. It is capable of loading three tons of coal in 57 sec. However, difficulty in controlling the roof has precluded mining on a long face, for the time being, at least.

He said the 5 B U Joy is a successful loading machine; some trouble has been encountered in the failure of a few individual parts, but this can and is being overcome. Although it is employed in narrow work the Joy has reduced costs 29c. per ton. Further details of the work being accomplished by these two

types of machines will appear in a later issue in an abstract of Mr. Lunsford's paper, which he merely outlined at the meeting.

Josiah Kelly, general manager of the Cabin Creek Coal Co., Kanawha County, W. Va., wanted to know whether the presence of partings in a bed prevented the use of the McKinlay entry driver. Mr. Lunsford replied that under such circumstances the coal loaded by this machine would have to be thoroughly cleaned.

Many of the details of the O'Toole long-face cutting and loading machine, and also its performance, were given by its originator, Col. Edward O'Toole, general superintendent, U. S. Coal & Coke Co., Gary, W. Va. Inasmuch as an article on this machine appeared in last week's issue of this magazine, remarks will be confined only to its more recent accomplishments and to the Colonel's personal beliefs.

When faced by a shortage of labor, he always has looked around for a machine, not for men. This attitude of mind led him to build his mining-and-loading machine. He gave an interesting account of an entry driver that was brought from England by the Sullivan Machinery Co. and tried out in 1891 in the Leisenring No. 1 mine of the H. C. Frick Coke Co. A thorough test of this machine was made, during which it advanced a single entry a distance of 1,300 ft. to daylight.

"It is unfortunate," he said, "that the coal industry stood still in the past. Ore mines are 'way ahead of us in the use of labor-saving ma-

chinery. The old breast cutting machines were out of date twenty years ago; and yet a few companies are still using them. Power developed by hand labor is over 400 times more expensive than mechanical power."

He is firm in the belief that the enormous pressures exerted by the roof should be utilized, rather than explosives, in breaking down the coal. Mr. O'Toole maintains that it is practicable to mine and load large tonnages by a few large machines. He prophesies that the time will come when a large acreage of coal will be mined out by moving away from the center of the property in successive cuts which will recede in all directions toward the boundaries, in somewhat the fashion of a farmer in ploughing his field or that of steam shovels in stripping coal.

RECORDS OF O'TOOLE MACHINE

In the last eighteen months seventeen acres of coal has been mined and loaded by one O'Toole machine in the No. 6 mine of the U. S. Coal & Coke Co., at Gary, W. Va. With a crew of eight men this machine has attained the following records:

63 tons in one hour, or 7.875 tons per man-hour.
318½ tons in 8 consecutive hours, or 4.97 tons per man-hour.
518 tons in 16 consecutive hours, or 4.05 tons per man-hour.
672 tons in 24 consecutive hours, or 3.5 tons per man-hour.
1,274 tons in 48 consecutive hours, or 3.318 tons per man-hour.

Throughout the eighteen months that this machine has been in operation it has loaded 115,000 tons and including all delays due to changes on the machine and in operating methods, it has averaged 1.667 tons

per man-hour. The greatest production of this machine for one month (March, 1925) was 10,000 tons.

As this machine both under cuts and loads the coal, a great deal of time had been lost in the past in handling the machine cuttings. This objection has been overcome by a mechanical arrangement which automatically gathers the bug dust and loads it onto the machine conveyor which carries the coal to the mine cars.

500 TONS PER SHIFT IS LIMIT

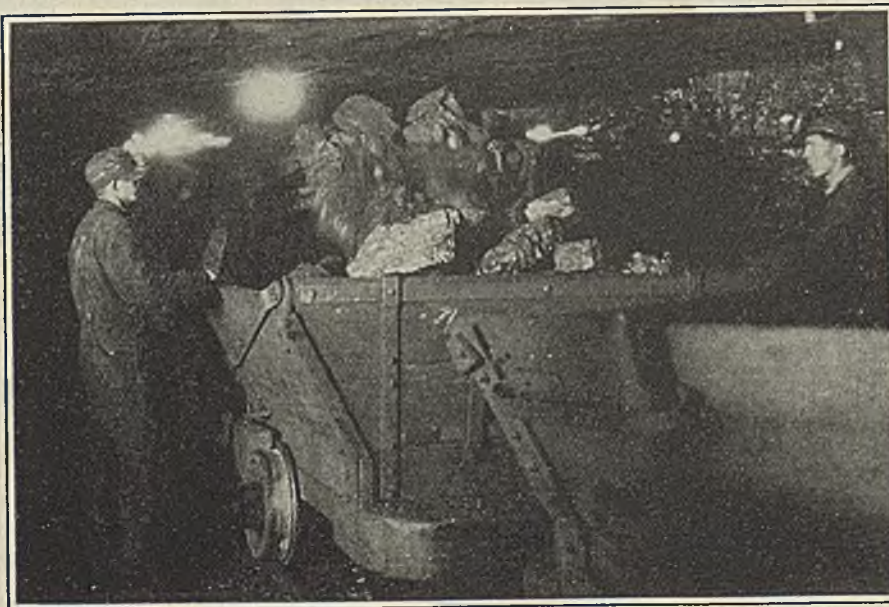
"Mr. Wooten, Consumers Fuel Co., Salt Lake City, Utah, asked Colonel O'Toole whether a continuous conveyor would increase the capacity of the machine, remarking that supplying and spotting cars must hold up the operation. The Colonel stated that that would depend entirely on conditions. He believes the limit of a single loading point with the present-day portable conveyor is about 500 tons per shift. Edwin Johnson, of the U. S. Bureau of Mines, mentioned that the Movor lateral conveyor will handle at least 1,500 tons in a shift.

Mr. Schwartz, of the Fordson Coal Co., Kentucky, wanted to know what is the mechanical limit of the length of the O'Toole machine. The reply was that this depends upon the strength of the single cutter chain employed on the machine for cutting the coal and on the hardness of the coal cut. Colonel O'Toole thinks this limit is about 250 ft.

MCAULIFFE ON "SIDE ISSUES"

In opening the Wednesday afternoon discussion of "Practical Experiences in the Use of Mechanical Loaders," Chairman McAuliffe cautioned mining men not to overlook the side issues while dealing with machine types and mine layouts. Ventilation facilities must be kept constantly in mind. The cleaning of machine-loaded coal is another important factor. If possible, some provision should be made whereby at least part of the refuse from the seam might be stowed in the mine to avoid the expense of hauling it outside. In commercial mines means to obtain a high percentage of lump coal must be provided; otherwise the advantages gained through the employment of machines will be lost.

If mechanical loading is to be made a general success, the managements must get squarely behind it. Too often machines have been purchased with the approval of the



Fast Production Is the Loading Machine's Forte

This one was able to fill 2-ton cars at a rate of one car in two minutes. The number of operators in the picture indicates experimental conditions only.

higher executives who place them in the hands of their mine bosses, after which no further attention has been paid to their use.

Labor is destined to accept mechanical loading by sheer necessity. If, locally, it does not, those mines employing hand methods will be compelled to close down and its labor remain idle or drift into other industrial work.

DISCUSSES OLDROYD LOADER

A paper on the accomplishments of the Oldroyd loader was presented by T. F. Whalen, general superintendent of the Pittsburgh & Erie Coal Co., Pittsburgh, Pa. It dealt chiefly with the capacity of this machine, the facility with which it is handled, and the advantages derived from loading coal mechanically. The substance of his paper appeared in *Coal Age*, Dec. 18, 1924 (Vol. 26, No. 25) pp. 857-865.

In the absence of George B. Harrington, president of the Chicago, Wilmington & Franklin Coal Co., who had been scheduled to give his experiences with loading machines in the New Orient mine, in Franklin County, Illinois, L. D. Smith, his chief engineer, spoke. He added much to the wealth of information exchanged in an interesting series of practical operating discussions.

Machine loading was in its infancy—and still is, for that matter—when the New Orient mine was first opened up. Consequently, the mine layout chosen was a panel system for hand-loading methods. While, at first, it looked as though mechanical loading in room work would be undertaken by the company, it felt as though it did not have sufficient assurance of its feasibility to warrant a large investment in the necessary equipment; and, therefore, the Myers-Whaley and Joy machines which the company installed were confined to entry driving.

MACHINE LOADING IN ROOMS

About the first of this year the company turned its attention to machine loading in rooms. The seam of coal being mined is 9 to 12 ft. thick. The coal is tough and possesses no cleats. One panel of rooms was accepted as a unit, in which were placed two loading machines. This mine is equipped with 6½-ton mine cars. Their large capacity lowers the proportion of time lost in shifting as compared with that of loading-machine operations in mines with small cars. One locomotive serves

two loading machines. During the shifting periods the machine crews oil the machines, make minor adjustments, pick down standing shots and set timbers—work which is always necessary.

CLOSER SUPERVISION REQUIRED

The need of closer supervision than that followed in hand-loading methods to derive the greatest degree of co-ordination of all phases of mining was immediately manifest at Orient. Separate cost accounts of all machine-loading panels are kept to enable a comparison of each of these panels or units with a similar hand-loading unit. The handling of bug dust is an obstacle to the machines. Operations in Franklin County are compelled to load out machine cuttings before the coal is shot. It is impractical to do this by machine and, as a result, additional labor is charged to the machines.

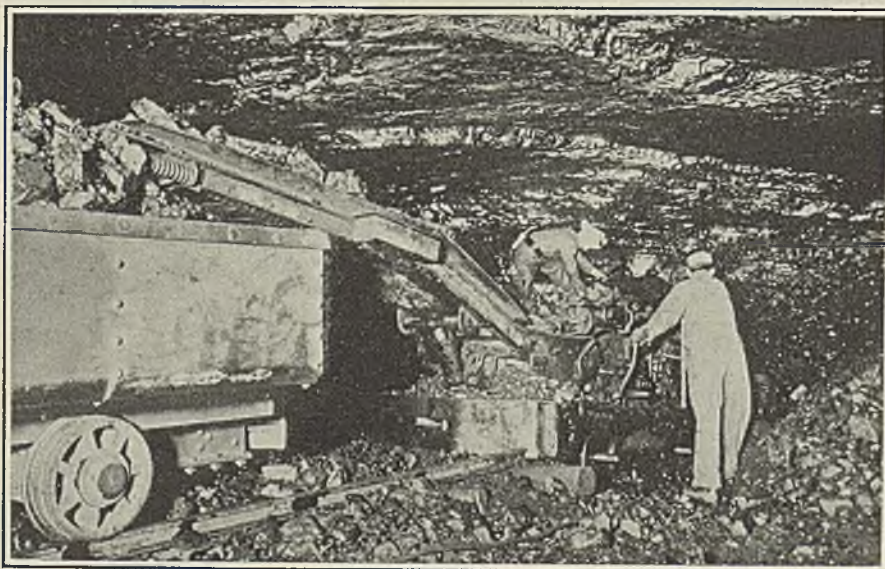
The market for this coal demands lump. Experiments are being carried out in an effort to maintain the same proportion of lump as is obtained by hand-loading. It has been discovered that the shift production of a loading machine roughly varies with the degree of shooting. The coal must be rolled out if the machines are to do their best. The company is experimenting with shearing cuts and snub shots by which it hopes to satisfy the requirements of the loaders. The snub shots, two in each face, are placed about 18 in. from the bottom. These are loaded out one day. The next day the main body of the cut is shot and loaded out mechanically.

This company has made no changes in its mine layout. It is on the alert for some system which can be applied to its conditions.

In answer to a question by E. J. Christy, a mining man from Indiana, as to the daily output of the machines in the New Orient mine, Mr. Smith said 175 to 185 tons frequently is loaded by one machine in a day. W. L. Affelder, assistant to the president, Hillman Coal & Coke Co., Pittsburgh, Pa., inquired whether this mine is gaseous. "Not any more than the average mine in the Central Competitive Field," replied Mr. Smith. This question was asked in order to bring out the attitude of the Illinois state mine department toward open motors. Mechanical loading is being held back in Pennsylvania because many of the machines are not equipped with explosion-proof motors, a requirement of that state.

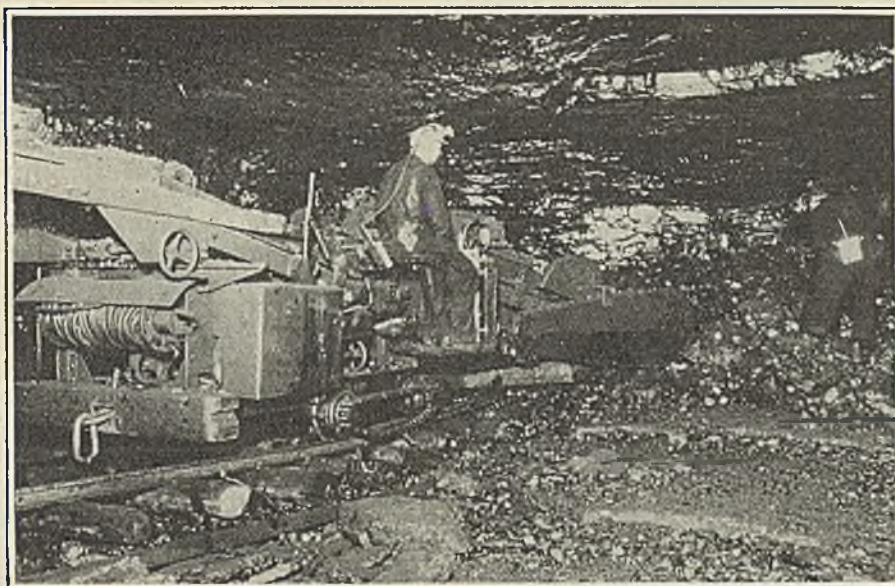
"SOLD" ON MACHINE LOADERS

The next speaker was I. N. Bayless, general superintendent of the Union Colliery Co., Dowell, Ill. "It has been my observation," he said, "that a loading machine quickly will load out the first few cars of coal and that the time of loading increases with each succeeding car." His company is experimenting with snub shots. It is working the No. 6 seam in a panel system, 20 rooms to a panel. Its methods are quite similar to those at the New Orient mine. One Myers-Whaley and two Goodman power shovels are used. The company is "sold" on machine loading and is trying to work out its



Big Cars Gave This Machine an Opportunity

Wide rooms in 10-ft. of coal enabled the loader to fill more than one big car at a setting and production was high so long as mishaps did not occur.



Machine Loading Gets Best Chance in High Coal

This sturdy machine was used largely for entry driving but also made a showing in room work where a big tonnage came down at each fall. The machine did not smash under rough usage.

own problem. An experiment with long faces is under way to determine whether the roof which contains three strata of limestone will act favorably.

Mr. Lesser, of the Madeira-Hill Coal Mining Co., asked for the daily output of the three machines. During a period of about twenty-five days in May the combined tonnage per day averaged about 380 tons, requiring the employment of 15 men.

TRIED CUSHIONED BLASTING

"Has cushioned blasting been tried?" asked N. S. Greensfelder, Hercules Powder Co. "It has in connection with hand loading," Mr. Bayless replied. Rock dust is used for the purpose with satisfactory results. Mr. Bayless said the roof was supported at the face in rooms where loading machines are used by putting a 4- x 12-in. cap on the jack post of the Goodman power shovel. Rooms are driven 21 ft. wide.

Bituminous mine managers were given an opportunity, probably for the first time in an open meeting, of hearing about the mechanical methods of loading in the anthracite field. Cadwallader Evans, Jr., general manager of the Hudson Coal Co., Scranton, Pa., had been listed to speak on his company's methods. His place was taken by H. D. Keiner, engineer in charge of mechanical mining, of the Hudson Coal Co.

ANTHRACITE PROBLEMS

The state of depletion of the more easily mined coal in the anthracite properties has brought two prob-

lems before the mine owners: How to mine thin seams of coal at a reasonably low cost and how to recover abandoned pillar coal from caved sections.

In 1914 the Lehigh Valley Coal Co. in its Seneca colliery tried the scraper loader and later gave up the idea. The Hudson Coal Co. took up the work where the former company left off. In coal less than 30 in. thick, this method worked many economies, particularly by eliminating much of the track work. Mechanical loading further justified itself by requiring only one or two contract miners for six or seven laborers, whereas hand loading enabled the employment of only one laborer for each miner. In 1915 this company started to mine thin seams by driving chambers with undercutting machines and hand loading. Two years later it tried to work by the same mine layout, using jackhammers, shooting off the solid, and loading with scrapers. Fairly satisfactory results were attained.

SCRAPER LOADER FOR LONGWALL

However, the company soon realized that the scraper loader is best suited to longwall mining, a system first adopted about 1919. A four-drum hoist was tried, two drums for the scraper and two for mine cars. The scheme employed required an extra haulage road.

It later gave way to a simpler arrangement involving a two-drum hoist which is now the standard. It is equipped with a friction clutch and a 25-hp. motor drive which gives a rope speed of 400 ft. per minute.

By such means, in 1916, this company mined 17,600 tons from seams averaging 44 in. thick. In 1924 it mined 1,955,000 tons from seams averaging 33 in. thick.

Eight men on a crew in chamber work with the scraper loader reduced the cost 14 per cent. With eleven men on a crew in longwall work, the cost has been lowered by 17 per cent as compared with hand loading.

Longwall mining is confined to thin seams above which are no overlying seams apt to be disturbed. The minimum thickness of seam in which the scraper can be employed is about 18 in.

During 1924 the average output per employee per day was 4.5 tons. The average output per scraper per day was 40 tons. The maximum output from a scraper for a single day was 83 tons.

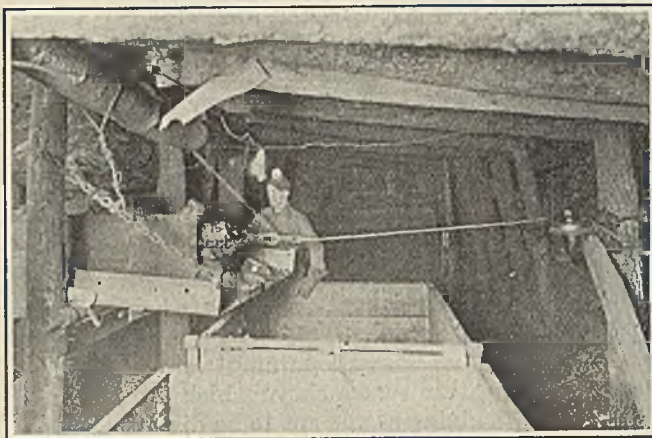
This company is using a Myers-Whaley shovel for opening up old caved entries. With this machine an entry has been cleaned up for a distance of 115 ft. in six shifts. In the same time, hand labor makes an advance of only 35 ft.

COMPANY BUILDS OWN MACHINE

The attention of the men was again turned to the problem as applied to bituminous mining by N. H. McClevey, Pike County Coal Corp., Petersburg, Ind. From 1920 until 1922 his company spent about \$250,000 on loading machines which hardly met the conditions encountered in its mine. It wanted a drag-line machine because of the simplicity of that type, and, not finding the kind it desired, the company decided to build its own. This resulted in the construction of the McClevey scraper, now known as the Ace, a huge scraper capable of moving more than six tons at a load. Details of this machine and the methods employed by this company will be described by an article in a later issue.

Mr. McClevey warned his audience to step out on the right foot in establishing a wage rate for machine mining, at least when it is applied to longwall. With any luck at all a cutting machine crew may cut in one night two faces each 200 ft. or more in length. At the rate of 14.7c. per ton these men each would collect a bank president's salary.

This is the company's fifth year in the practice of loading coal mechanically. It is now realizing a satisfactory return on its investment.



Adapting Loaders and Mining Methods

Varying Conditions Underground Must Be Considered Carefully so that Machines Will Render Maximum Service at Lowest Cost

UNDER THE chairmanship of Abner Lunsford, general manager, Fordson Coal Co., Stone, Ky., the Thursday morning session was confined to a discussion of joint development of mining methods and loading machines. Before inviting general discussion, Mr. Lunsford called attention to the fact that in the meeting on the day previous he had neglected to state that he is using in a West Virginia mine Goodman scraper loaders in coal as thin as 28 in. These loaders show a saving over hand methods, and moreover make it practicable to mine coal thinner than could be attempted without the use of machines.

T. E. Jenkins, general manager, West Kentucky Coal Co., Sturgis, Ky., who was slated to talk was unable to be present but sent a letter, which was read, outlining his experience with Joy loaders. He stated that any deviation from the room-and-pillar system resulted in injury to valuable farm land by reason of the consequent surface subsidence.

METHOD OF WORKING

As a result, their experiments have been confined principally to the advancing room-and-pillar system. The rooms are driven 30 ft. wide and are double tracked. Each machine loads approximately 100 tons per day, usually having to move into the third place to get this quantity. Mr. Jenkins called attention to the difficulty of properly picking coal, inside the mine, on any type of conveyor, by artificial light. When cleaning his coal, the hand loader selects the impurities to a large extent by noting the weight of the lump when loading it into the car. The coal is subjected to a gravity test as much as a visual examination.

H. S. Gay, general manager, Gay Coal & Coke Co., Mt. Gay, W. Va., read a paper describing the mechanical loading at his mine in Logan

County, W. Va. His first experiments were made in 1913 and up to the present he has tried four makes and seven different types of mechanical loaders. At present, two types of Joy loaders are in use.

In one section of the mine, where loading is mechanical, there is a soft and friable slate and shale parting 12 in. to 24 in. thick which is removed with an arcwall cutting machine, by making two or three cuts in the parting. A 200-ft. face is worked and a new type Joy loader, which will work in either direction, is used to load directly into the trip of mine cars. This one machine is loading 250 tons daily and in one case loaded 308 tons in six hours. Two men with one machine are doing the work of fourteen hand loaders.

MINE GRADES SLIGHT

In reply to a question by Eugene McAuliffe, Mr. Gay added that the mine grades are slight, 1 to 6 per cent, and the rooms are driven on the pitch.

In reply to W. L. Affelder, Mr. Gay stated that the introduction of mechanical loaders had not made it necessary to increase the tippable force.

Answering a question by L. E. Young, Union Colliery Co., of St. Louis, Mr. Gay stated that none of the loose coal cleaned up by hand at the machine-loaded faces is included in the production figures which he submitted.

In reply to Charles A. Hamill, chief engineer, Sycamore Coal Co., Cinderella, W. Va., Mr. Gay said that the introduction of mechanical loading at his mine had not affected the percentage of lump.

A diversion to mining in pitching seams was introduced by a paper read by F. E. Dunlap, general manager Helena-Straven Coal Co., Straven, Ala. The pitch of the mine described is 35 deg. or 68 per cent near the outcrop and, at the present

stage of operation, the cover averages 500 to 700 ft. The pitch in the lower portions of the mine is only about 15 deg.

A modified longwall system is used, about 50 per cent of the coal is taken on the advance with expectation of getting most of the remainder on the retreat, bringing the total recovery to approximately 85 per cent. The mine is less than four years old, so that, up to the present, only six rooms have been driven, the farthest advance being 1,300 ft. from the main entry. The width of the room is 200 ft., and it is planned to continue the driving of these rooms to the property line which is about one mile from the main entry.

On the steeper walls or faces the coal slides down by gravity and directly into the cars on the entry, but on the faces that are of lower pitch, conveyors are used. These conveyors are made at the mine and are driven by 5-hp. motors.

In reply to a question by Edwin H. Johnson, research fellow, Carnegie Institute of Technology and U. S. Bureau of Mines, as to the method of ventilation, Mr. Dunlap explained that the 5-ft. chute openings in the chain pillars along the lower or loading entry are closed tightly so as to conduct the air to the face, where it passes the length of the wall and out on the upper side of the area.

TIMBER TO BE RECOVERED

In reply to another question, Mr. Dunlap explained that a row of 6-ft. timbers are set for each cut and these on about 5-ft. centers. Usually breaks are made every 75 ft. as, at that distance, results can be obtained as soon as the posts are withdrawn. So far, no attempt has been made to recover any of the timber, but it is the expectation to work out a system whereby as many as one-third of these can be recovered. No attempt was ever made to recover timbers in

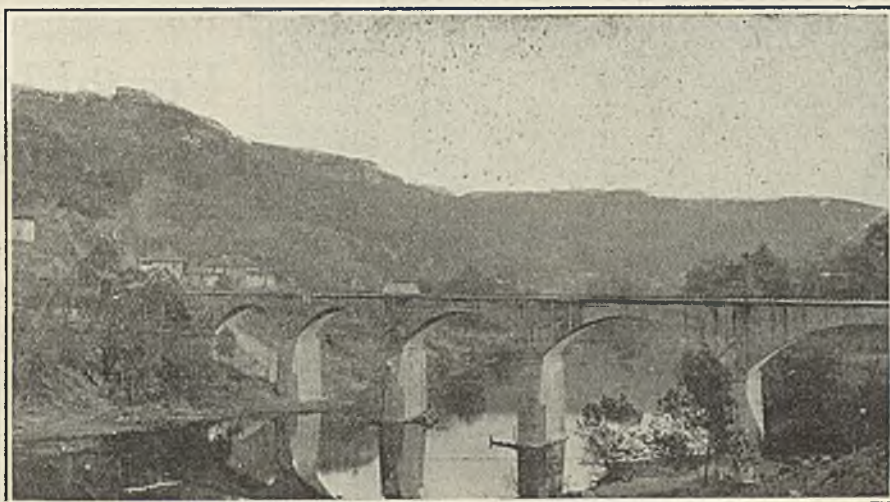
the old room-and-pillar system formerly used in this territory.

As to the use of cutting machines on the steep faces, Mr. Dunlap stated that they have had no trouble in cutting up the steepest faces of nearly 40 deg. Ordinarily, a 200-ft. face on this pitch is cut in six hours.

Experiments with Joy machines and Goodman scraper loaders were described by W. G. Duncan, Jr., general superintendent, Duncan Coal Co., Greenville, Ky. The first machine was put into service in April, 1923. To date the machines have not been able to show any material decrease in the cost of production but the company feels satisfied in the knowledge gained which will aid it in taking fullest advantage of future mechanical loading developments.

The Joy machines, with a crew of seven men, including the cutters and haulage labor (that is, the drivers of stock) average 61 tons per day, and the best that has been loaded is 81 tons. The labor cost was reduced 30 per cent, but other increased charges almost balanced the saving. In fairness to the machines, he stated that their percentage of slack is much greater than it should be, for the mine cars are too high. Many lumps are crushed between the conveyor and the roof. The coal is only 48 in. thick.

The Goodman scraper loaders were first tried on a 200-ft. face, split in the middle by an entry, and the coal pulled two ways toward the center, but, on account of adverse roof conditions, the system was abandoned, and single entries 200 ft. long were



This Graceful Concrete Bridge Spans South Fork at Yamacraw

South Fork, or as it is sometimes termed Big South Fork, is a branch of the Cumberland River. The Kentucky & Tennessee Ry. at this point forsakes the Big South Fork for Rock Creek.

driven and slabbed on both sides, thus giving the mining machine a 200-ft. circuit of cutting.

With the scraper loader the labor costs were reduced 35 per cent but in this case, also, the saving was largely offset by increased costs in other directions. The quality of coal is good. By snubbing and using "C" powder there was a marked increase in the lump.

Mr. Duncan related that a car of extra large lump was sent to a customer who was a habitual kicker for large coal. Most of the lumps were larger than anyone could use—some weighing a ton—but apparently the customer was satisfied, for nothing was heard from him. However, when, at a later date, ordinary 6-in. lump was shipped, he raised

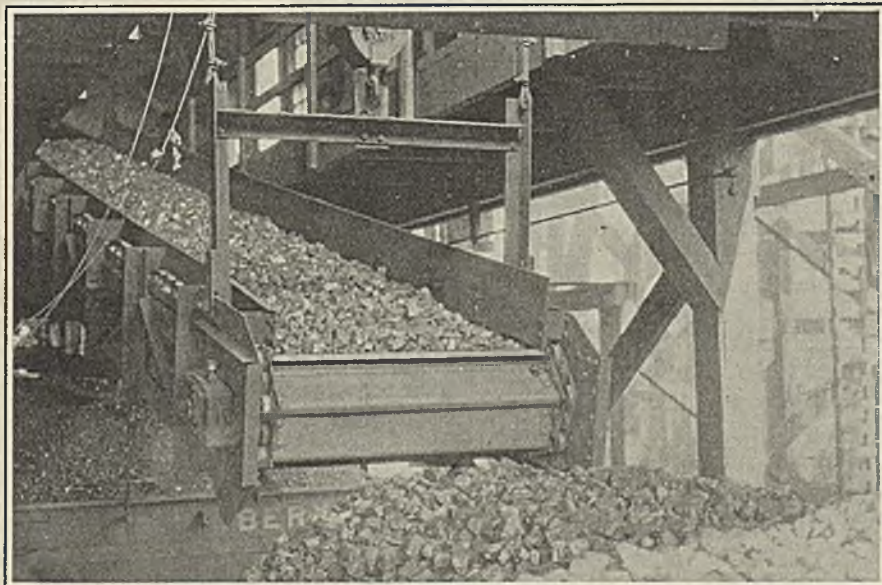
the same old kick harder than ever.

As yet, Mr. Duncan stated, that they are not ready to go to mechanical loading. He explained that hand loading and mechanical loading cannot be mixed but must be either used in separate mines or in distinctly separate sections of the same mine.

In the open discussion following Mr. Duncan's talk, Carl Lee inquired if any companies have found a successful way in which the refuse from the machine-loaded coal can be separated inside the mine. This was answered by a description of the method in an anthracite mine, where scraper loaders are used. Here hand rakes are utilized to take off a large portion of a band of slate which falls with the coal, but in this case, nevertheless, about 300 lb. of slate still remained and was found in each 5,000-lb. mine car.

W. D. Ingle, of the Ayrshire Coal Co., Oakland City, Ind., stated that he has six Joy machines of the type 5 BU. He is double shifting them with no marked increase in mechanical troubles. This report was contrary to the experience reported by another user, who stated that he had found double shifting impractical, because no one man or crew could be held responsible for the mechanical condition of the machine.

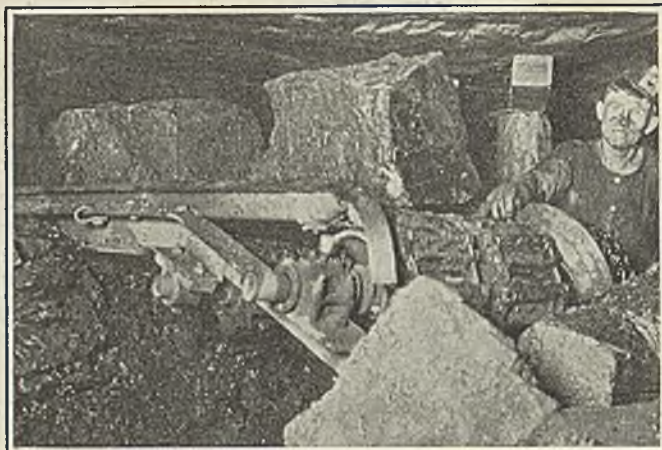
Answering to an inquiry as to whether he had made any improvement in cost in his more recent experiences with the Joy machine Mr. Ingle replied in the affirmative stating that the use of the larger machine had enabled him to get better results. The rates paid are \$10.07 per 8-hr. day for each of the two machine operators and \$7.10 per day for other labor, except the motormen who get \$8.12.



Courtesy Bertha-Consumers Co.

Good Loading Booms Help Market Good Coal

This one at the Rachel Mine of the Bertha Consumers Co. has just finished loading a car of egg. It is a pan conveyor built to handle a heavy tonnage with least possible degradation.



Portable Conveyors in Mining Service

They Are Proving Their Value in Moving Coal Away from the Face with Speed and Economy—"All-Conveyor Mines" are Developing

AT THE Thursday afternoon session W. L. Affelder, Pittsburgh, Pa., presided in place of T. W. Dawson, consulting engineer, H. C. Frick Coke Co. That company was represented by E. C. Auld, constructing engineer, who talked about the conveyors which his company has installed. Face conveyors have been utilized in an experimental way—experimental because the company is not satisfied with them. It is now trying a new, heavy, face conveyor.

Much interest was manifested in the 4-mile, Colonial Dock, main-line underground belt conveyor. As first installed, this famous conveyor consisted of twenty units, the longest of which was 1,510 ft. Recently units nine and ten were combined into one having a length of 2,439 ft. John Malady, electrical engineer, Hillman Coal & Coke Co., asked about the steepest conveyor grade. It is 15 per cent.

F. G. Wilcox, president of the West End Coal Co., Scranton, Pa., aroused a lively interest in shaking conveyors, a type which is widely utilized abroad. It is used to a rather limited degree in the anthracite field and hardly at all in the bituminous mines, except at a few mines in the South. His paper will appear in a later issue.

ADVANTAGES OF SHAKER CONVEYOR

J. D. March, Aluminum Ore Co., Belleville, Ill., asked what the advantage is of the shaking conveyor so far as the cleaning of coal is concerned. A cleaner coal is loaded onto this conveyor than in mine cars, Mr. Wilcox said. Large pieces of refuse can be hidden in a wagon but not on this conveyor. "Can these be used in pitching seams?" asked John A. Garcia, Allen & Garcia Co., Chicago, Ill. Mr. Wilcox assured him that within limits, the greater the pitch, the better the shaking conveyor per-

forms. It will work on the level but an attempt is made, where possible, to set the shaker on a 1-deg. pitch.

Further details of the various types of shaking conveyors were supplied by E. H. Johnson, U. S. Bureau of Mines. One type is hung from a double row of props by hooks or chains. It affords low power consumption. Power units vary in capacity from 7 to 20 hp. He knows of one installation in which one, 10-hp. motor drives six such conveyors on a 3-deg. pitch. He briefly described the National longwall shaking conveyor. This type is actuated on cradles and rests on the mine floor.

JESSUP DESCRIBES HIS MACHINE

A. B. Jessup, of the Jeddo-Highland Coal Co., of Hazleton, Pa., was asked to tell of his observations of shaking conveyors in foreign countries. He has visited a number of mines in Europe where shaking conveyors are used. He described the type he uses in his anthracite colliery. It is made up of 4-ft. sections which are assembled with bolts and hung from 2-in. horizontal pipes between two rows of posts on 4-ft. centers, by means of 18-in. long S-hooks. The sections themselves are semi-circular in cross section, 20 in. wide and 7 in. deep, made up of $\frac{1}{4}$ -in. sheet iron.

The success of the shaking conveyor rests chiefly on its motion which must be adjusted to meet each particular condition. His conveyor is actuated by a 5-hp. motor which imparts an 8-in. stroke, positive in both directions. By means of a double reduction gear, an electric motor can be utilized as a drive to impart to the shaker about 60 strokes per minute.

Uniform reciprocation is not the thing. The ideal motion is uneven—gently forward and downward, if the

conveyor is set on a slope, and quickly backward by sudden jerks. He has seen installations of shaking conveyors or chutes in Europe which carry coal up 5- to 10-deg. slopes. He has used this type of conveyor long enough to warrant recommending its careful consideration by bituminous men.

Mr. Jessup uses the shaking conveyor where a sufficiently steep chute cannot be provided to drop the coal by gravity and in veins that are too low for mine cars. Last year his company loaded over 100,000 tons over these conveyors. The men made money. His company assigns one or two men to each conveyor in chamber work. It has not tried the conveyor in longwall work. The average output for each conveyor is about 500 cu.ft. a shift, which by no means is the conveyor's capacity.

The kind of shaking conveyor used by the Montevello Coal Mining Co., Birmingham, Ala., was described by D. A. Thomas. It is of the roller and cradle type, has flared sides, is 24 in. wide and in 9-ft. sections. The company obtained its first conveyor from Mavor & Coulson Co., of Scotland.

FURTHER DETAILS GIVEN

J. W. Needham, St. Paul Coal Co., of Chicago, asked for further details about the use of this conveyor. The Montevello Coal Mining Co. is using four units on 325-ft. faces. The longest unit tried was 435 ft. These have a capacity of 30 to 70 tons per hour, depending upon the pitch. As the pitch increases, so does the capacity. On a 26-deg. pitch along a 325-ft. face, the conveyor will yield a maximum output of 70 tons per hour. However, the actual daily output from one unit is not nearly so great. Each 325-ft. wall will yield 140 tons in 8 hr. from 11 men, or 12 to 13 tons per hour in a 30-in. seam.

Three men will move the conveyor forward in 4 to 5 hr. of the night shift. The company tried the drag type conveyor before it adopted the shaking type. The former possessed this disadvantage: In order to advance it after a cut had been loaded out, the timbers between the conveyor and the face had to be taken down and reset. The sectional shaking conveyor is moved without disturbing the timbers. Eugene McAuliffe asked the cost of one unit. A 325-ft. unit including the water drive costs about \$3,500.

Mr. Thomas said the average output per man in each conveyor battery is 5 tons per shift; twenty-nine men make up a battery crew. W. L. Affelder remarked that this output is rather low considering the fact that conveyors are used; on the other hand it is high, as output goes, for low-seam coal. But Mr. Thomas explained that this conveyor enabled them to work coal the cost of which would be prohibitive if mined by any other means. His company has been mining its coal by longwall and shaking conveyors since 1916. Prior to that time it attempted to work by a room-and-pillar system. By the latter, the mine's maximum daily output was about 125 tons, which does not compare favorably with 600 tons, now being produced each day with conveyors and with less effort.

Although much has been said in the past about the V-system of the West Virginia Coal & Coke Co.—and probably it has been discussed more than any other system—G. B. Southward, chief engineer of that company and the originator of the system, gave some facts to be remembered about V-mining. Since July of last year, in the Norton mine, two panels of ten faces each are showing a capacity of about 2,000 tons per day. In addition to that, the development work yields about 500 tons per day.

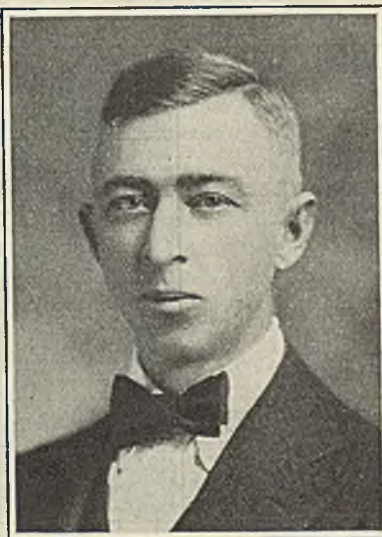
ECONOMIES OF MACHINES

When a mine owner hesitates in considering the purchase of a sectional conveyor because of its high first cost, he should be greatly reassured by the following facts which point out the economies of concentrated mining, as given by Mr. Southward, covering the savings in the Norton mine:

The V-system with conveyors has reduced the working area to less than one-fourth that required for room-and-pillar mining. To produce 2,500 tons daily from two panels, 4,400 ft. of conveyor is required. By this

system the number of main-haulage locomotives has been reduced 20 per cent; gathering locomotives, 50 per cent; mine cars, 25 per cent; lineal feet of main haulways, 50 per cent; light steel haulways, 66 per cent.

In answer to a two-point question by Eugene McAuliffe, Mr. Southward said that the thickness of the seam being worked is 5 ft.; the seam dips from 2 to 10 per cent and



F. G. Wilcox

President and general manager of the Price-Pancoast Coal Co., and the West End Coal Co., of Scranton, Pa.

the layout is arranged to take advantage of drainage by gravity.

Charles Enzian, mining engineer, Berwind-White Coal Mining Co., Windber, Pa., asked about the thickness of overburden under which the V-system can be worked successfully. The cover over the Norton mine varies from 200 to 300 ft. A mine in Illinois is mining by V-faces under a cover of 700 ft. In his paper Mr. Southward had mentioned the fact that over a long period of time the production per employee at the Norton mine averaged nine tons per day. An inquiry from W. L. Affelder brought out the point that the tippie men were not included in the calculation.

The difficulty of ventilating the single entries from which the V's are turned was presented by Mr. Downer. In the Norton mine, no gas is encountered so that the single entries can be safely ventilated by canvas tubing and a blower while they are being driven. The occurrence of a thick rock parting in the seam at Norton precludes the use of loading machines. Everett Drennen said this system has been worked successfully in Illinois using Joy loaders and the Movor conveyor.

"The ideal system of loading and transporting coal is by a continuous system of conveyors from the face to the tippie or shaft bottom," said E. B. Raiguel, chief engineer, Coal Service Corporation, Huntington, W. Va. He thinks greater economies can be obtained by dividing shifts into cycles, with as little interruption as possible between cycles and shifts.

"Conveyors as an adjunct to mining are not so new after all," said Chairman Affelder. He pointed out that they were used twenty odd years ago in the Vintondale mine, Vinton, Pa., in connection with longwall mining. This mine had roof which did not act favorably over longwall faces; consequently the company gave up the idea of long face conveying.

Inasmuch as E. F. Miller, general superintendent of the Bertha-Consumers Coal Co., by being absent, failed to contribute his company's experiences with conveyors on long faces, E. H. Johnson, U. S. Bureau of Mines, volunteered to describe briefly the system Mr. Miller's company employs. Movor and Fairmont conveyors are utilized on 100-ft. faces. These are protected by two rows of staggered cribs, the front of which is kept as close to the face as possible. The crib logs are each 8x8x30 in. A key log is set on slack which, when scraped out, causes the crib to topple forward. With each advance of one cut the rear row of cribs is torn down and set up as the front row during the succeeding cut. This system is being worked in the Rachel mine near Fairmont, W. Va., in the Pittsburgh seam.

METHOD OF SUPPORTING ROOF

It was not entirely clear to one man in the audience how Colonel O'Toole supported his roof while advancing the long face with his long cutting and loading machine. John M. Schwartz, Fordson Coal Co., Kentonia, Ky., explained that the roof in the Colonel's mine contains 35 to 40 ft. of sandstone. And yet, while 17 acres of coal have been mined out in a continuous sweep, the long face has never been lost. Much of this success depends upon 100-ton jacks of the attached-pump type which are used. These are placed in rows on 3-ft. centers. Each jack supports a 10- x 12-in. cap piece. Light warning props are set up behind the cribs.

Observing that the audience was much interested in methods of roof support which either eliminated or

limited the use of timbers, Heber Denman, president of the Paris Purity Coal Co., Clarksville, Ark., undertook to describe the type of jack he is using in longwall work, in spite of the fact that an attack of laryngitis prevented him from speaking in the Thursday morning session as scheduled. He employs sand as the medium to cushion the jack, allowing the roof to settle gently. It consists of a heavy

cylinder into which fits a plunger which in working position rests on sand in the cylinder. A bleed valve or plug is provided at the bottom of the cylinder.

Despite the fact that the sand is subjected to an enormous pressure and is greatly compressed, it is easily removed from the cylinder. When the valve is open, a few raps with a hammer, together with what pressure the roof exerts until after

the jack is cleared, causes the sand to run from the cylinder. The ones now being used are made of cast iron and weigh about 400 lb. each.

He now is trying a new grade of steel which will lower the weight of each jack to about 200 lb. He is using a double, chain-conveyor which carries the coal (does not drag it). The unit is 300 ft. long and enables the loading of one cut each working day.

Rock-Dusting Costs And Practices

Authorities on Safety in Mining Discuss Ways of Getting Greatest Degree of Protection from Dust at Low Charge Against Operation



ALTHOUGH one of the speakers introducing the subject said that, of late, so much has been written and told about rock dusting that it might appear that there is little left unsaid, deep interest pervaded the Friday morning meeting when "Effective Practice and Actual Costs of Rock Dusting" was the official topic. A. C. Callen, University of Illinois, acted as chairman.

First, Arthur Neale, general manager, Pittsburgh Coal Co., outlined the rock dusting experience and practice of that company. The company began in 1915 but not until one year ago did it go into the matter in earnest. Limestone dust such as is now used, costs \$4.40 per ton plus \$1.60 freight. After tests with high- and low-pressure methods of applying the dust, the company engineers selected the high-speed low-pressure method and are now using the Legrabon machine, which costs approximately \$1,350. During the last five months of 1924 and the first three months of 1925, 81 miles of track entry was dusted at a cost of 1.9c. per lineal foot. There was deposited, per lineal foot an average of 3.08 lb. of dust.

Old entries are dusted by cutting small holes in the stoppings every 500 ft., then carrying a 300-ft. flexible tubing from the machine through the hole into the entry, and

dusting each direction as far as the hose will reach. The method of determining the frequency of dusting is by analysis of road samples, taken every thirty days. Whenever the incombustible content drops below 65 per cent, the place is redusted. Mr. Neale stated that some of his men estimate a reduction of 3 per cent per month in the ash content, but that he believes it is much greater than this figure.

The practice of the Pittsburgh Coal Co. is to use rock-dust barriers to isolate worked-out areas. A wood, trough-barrier holding 1,043 lb. of dust costs \$32.25. Mr. Neale stated that but few barriers are used, for the reason that they may not be quick enough to stop propagation of an explosion.

CHECK DUST AT SOURCE

He called attention to the important point of holding the dust down at the source. In the Pittsburgh Coal Co.'s mines about 2 gal. of water per lineal foot of space is used on mining machine cutter chains. All bug dust is loaded in the bottom of the car and covered by lump and all empty cars are washed clean of dust at the tippie.

As to the kind of rock to be used, Mr. Neale stated that due consideration should be given to the health-affecting properties of the dust and

that, where possible, a dust of light color should be used so as to aid illumination. It has been found that the finer the dust the better aid it is to illumination.

In the discussion following Mr. Neale's paper, Roy Reddie, mining engineer, Knoxville, Tenn., stated that dust of an easily disassociated carbonate is the best to use, for the reason that much heat will be absorbed by disassociation and carbon dioxide will be generated. He cautioned against the attempt to grind the dust in a small mill at the mine, for the reason that pulverizing to 200-mesh is a job for a large, well-equipped mill. Suitable dust can be purchased at Knoxville, Tenn., for \$3.50 per ton.

HARRINGTON EMPHASIZES WATER

The paper read by Dan Harrington, consulting engineer, Salt Lake City, Utah, which described the rock dusting experiences and practices in the Rocky Mountain States, emphasized the necessity for the continued use of water. Rock dusting is only one of a number of things which should be done. He outlined the practices at the larger Utah mines. As a rule no rock dusting is done in the return airways, for the reason that so much water is used on the floor of the entries, even though rock dusted, and at the faces, that the re-

turn airways are saturated with moisture. The extremely dry atmosphere of that locality makes it necessary to use water at all times. There is no such thing at any time of the year as sweating of the intake airways.

Limestone dust is most commonly used, this costing \$3 to \$3.50 per ton at the mill, the added freight cost being about \$2 per ton. Mr. Harrington favors high-pressure dusting, claiming that a thicker coating can be obtained by that method. The costs of high-pressure dusting average 4c. to 6c. per lineal foot of entry, where these are driven about 14 ft. wide in 8- to 10-ft. coal. The low-pressure dusting cost may run as low as 2c. per lineal foot.

DUST NOT INJURIOUS

It is Mr. Harrington's opinion that there is little to fear from the health standpoint with any dust. He maintains that there cannot be enough in suspension to be of any harm. Some mines in the West are using rock dust having 60 per cent silica. The silica dust is to be preferred for barriers in the return air, because of lesser tendency to absorb moisture. It is now the practice to cover return air barriers with oil-cloth, as a means of keeping the dust dry. A barrier of thirty troughs holding a total of 300 to 600 lb. of dust costs \$50 to \$60.

Metal barriers are now coming into use to replace those made of wood. The metal barriers show indications of being more economical because of their longer life. Mr. Harrington closed by adding that in Utah—although the mines are going to rock dusting—they are also going

to the use of more and more water.

Following Mr. Harrington, A. B. Kiser, electrical engineer of the Pittsburgh Coal Co., said that that company abandoned high-pressure dusting, because it was necessarily slow. As to the thickness of the coating of dust, he stated that no attention is paid to that, but instead judgment is based on frequent tests of road samples.

SHOULD START AT FACE

Mark Hopkins asked Mr. Harrington if he knew of an instance of an explosion happening in a rock-dusted mine. Mr. Harrington replied in the affirmative. It happened in the Rains mine, but was no discredit to rock-dusting, because only a part of one slope and a main level close to the surface had been dusted, and the explosion originated at a point far from the rock-dusted area. Mr. Neale commented that any mining company intending to rock dust, should always start at the face where the real danger exists, instead of starting near the mine entrance.

In reply to a question by N. S. Greensfelder, Mr. Harrington stated that many mines in Utah are using rock dust stemming. Mr. McAuliffe told of his belief in rock dusting as a safety measure, but stated that he had great difficulty in getting it under way. As a former speaker mentioned, he also cautioned against attempting to grind rock dust to 200-mesh in a mill of small size. In Wyoming, dust costs \$9 per ton delivered at Rock Springs. He agreed that too many companies start to dust at the mouth or entrance instead of at the face.

W. C. Holman, chief engineer,

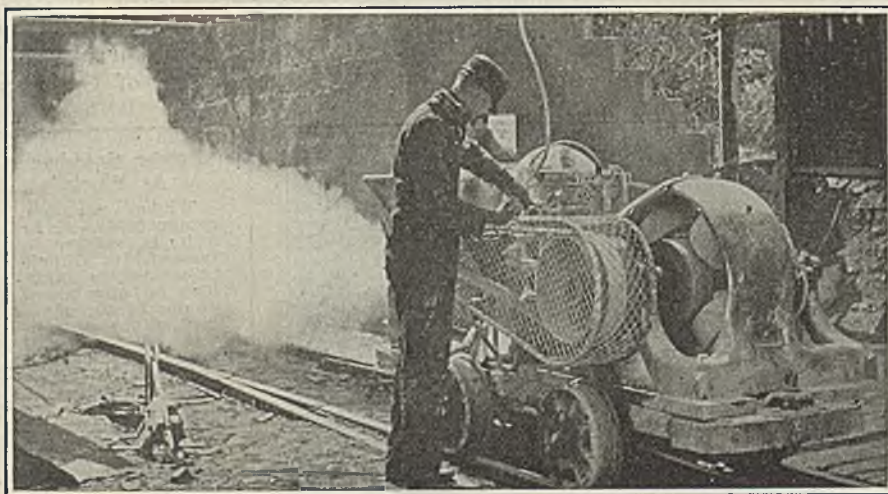
Phelps-Dodge Corporation, Dawson, N. M., was unable to attend the meeting so his paper was read by James W. Needham, of the St. Paul Coal Co., Chicago. A high-pressure machine similar to a cement gun is used by the Phelps-Dodge company. Ordinarily, two applications of dust are made per year, however, this is governed by analysis. Two men, working an 8-hr. shift, will dust 2,000 ft. of entry, using approximately four tons of dust. Dust ground at the mine costs \$3.60 per ton, while that shipped in costs \$9 to \$10 f.o.b. mine. The cost of dusting 5,000 ft. of entry in the mines at Dawson, using 3.8 lb. of dust per lineal foot, was 2.6c. per lineal foot. It is the practice to keep the roadways covered with adobe, but not necessarily brought into the mine in the pulverized form. The traffic on the haulage ways pulverizes and stirs up this material, it being the practice, at intervals, to drag a pine tree top back of a trip.

COST 2.6C. PER LINEAL FOOT

In co-operation with the Bureau of Mines, a number of tests were made at Dawson on mixtures of coal dust and rock dust from the mines. An explosion was propagated through a mixture of 50 per cent coal dust and 50 per cent shale with no gas present. In atmospheres containing 1 per cent methane, 40 per cent coal dust, and 60 per cent shale dust, explosions also were propagated. Muditing has been found practical, according to Mr. Holman's paper. He brought out the fact that 34 lb. of adobe mud per lineal foot of entry can be applied at a cost of 1.8c. for material and 4.2c. for labor—the labor scale being 75c. per hour. Water is used on all cutter chains, the amount being 5 to 6 gal. per lineal foot of cutting. Automatic sprays are installed every 500 ft. on all entries which are not dusted. Rock-dust barriers cost about \$60 each, installed.

COMPARATIVE COSTS

W. J. Ryan, of Pittsburgh, stated that the costs of rock dusting in the West, as given by Mr. Harrington, are rather high. He said 4 lb. per lineal foot of dust costing \$7.50 per ton delivered, can be put in the mine at a cost of 2.2c. in the Pittsburgh district. In reply to this, Mr. Harrington stated that his figures included dusting in air-ways, where no track is provided.



This Is the Phelps-Dodge Duster

The machine, now in use after long experiments at the coal mines of the corporation near Dawson, N. M., has been equipped with a safety guard over the exposed belt as its most recent refinement. It was photographed at the portal of Phelps-Dodge Corp., Mine No. 1 by W. C. Holman, chief engineer of the company.



Cutting and Shooting Experiences

Snubbing, Shearing, Horizontal Cuts in Top, Bottom and Middle All Help to Improve Grade of Output — Art of Shooting Advances

THE FAIR sized crowd which attended the Friday morning session on rock dusting was further thinned by departures at noon of many of the men. The attendance of about 100 men at the last session was small as compared with that of the earlier sessions; but the perseverance of those who stayed to the last was well rewarded by practical information on "Effective Cutting and Shooting Methods to Secure Greater Realization." This session was conducted by Chairman George F. Osler, vice-president and general manager of the Pittsburgh Terminal Coal Corp., Pittsburgh, Pa.

After a company has decided by experiment the best methods to employ in the shooting of coal to meet its own peculiar conditions, the job is only about half completed for there yet remains the necessity of educating the men. This, in substance, was one of the most emphatic points of a paper read by C. P. Anderson, New River Co., Mt. Hope, W. Va., on the discipline exacted and the methods followed by his company to obtain more lump coal by better shooting.

Too many companies are negligent in this matter during prosperous

periods and spasmodically adopt and drop policies governing shooting with the coming and going of dull markets. His company has worked out its problems in this regard and has laid down hard and fast rules. Mr. Anderson's paper will appear in a coming issue of this magazine.

L. E. Young, general manager, Union Colliery Co., St. Louis, Mo., confined his talk to methods tried by his company in snubbing the No. 6 seam of Illinois to produce more lump and easier loading by machines. This seam is from 9 to 11 ft. thick and is divided by a band of blue slate 18 in. above the floor. The Illinois contract directs the miner to snub each cut. The general specifications call for a snub cut which extends halfway to the limit of the kerf, flaring outward to an elevation equal to half its depth. It is the usual practice where snubbing is followed in the No. 6 seam, to make the blue slate band the upper limit, removing as much as possible of the refuse in this operation.

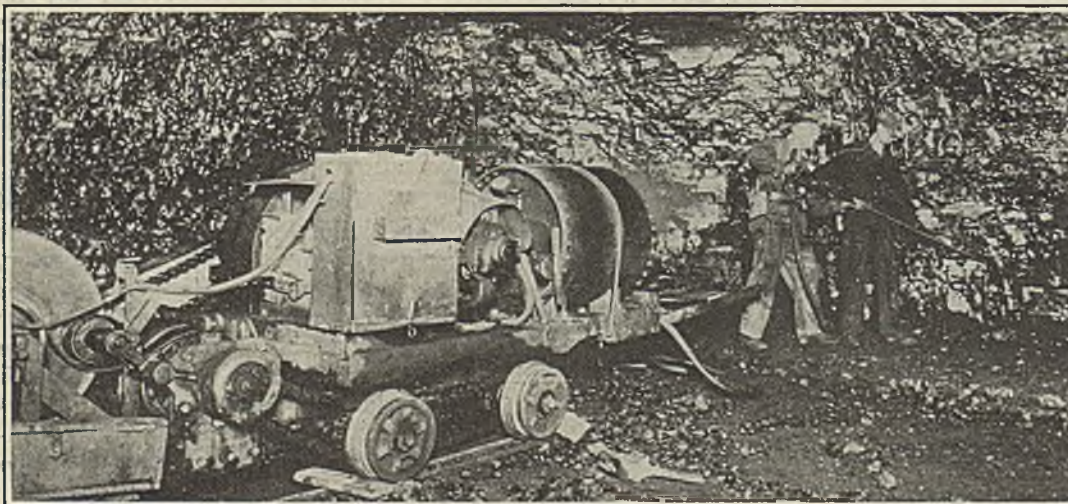
He has tried out a number of snubbing methods: By hand; with a shortwall machine equipped with an additional cutter bar; with air hammers, and by snub shots. His basis

of comparison of the merits of the several methods are percentages of 6-in. lump. The proportion of this size derived without snubbing is 15.7 per cent; with hand snubbing it is 17.9 per cent, and by snub shooting it is 21.7 per cent.

In its snubbing experiments, the company has tried out several DP 21 type Sullivan hammers to which air is furnished by a portable compressor. These hammers are manipulated to cut a snub downward from the slate band and inward to a depth of about 4 ft. The results of these experiments were not given.

For the machine-snubbing experiments a 35-hp. motor on a standard undercutting machine has been changed to a 50-hp. motor. This machine was first equipped with a 7-ft. cutter bar above which was a 3½-ft. cutter bar that cuts the snub. It is now provided with a 6½-ft. cutter bar on the bottom and a 4-ft. cutter bar on the top. Thus far, machine snubbing has not proved as successful as shot snubbing, as the comparison already given shows.

This specially-equipped shortwall machine, however, in the work it performs compares favorably with the standard machine of the same



Power Snubber At Work

This portable, compressed-air unit is getting a try-out in Illinois mines where snubbing is being tested as one means of reducing the proportion of fine coal produced. The experiments have not yet progressed far enough to prove the entire benefit of the process under Illinois conditions but mining companies feel they are going to increase their lump proportions at least a little—and a little means much financially where tonnages are heavy.

type under similar conditions. It will cut six places yielding about 300 tons in a shift. In thirteen consecutive days of May it mined, 4,000 tons. Mr. Osler remarked that an intensive campaign in snubbing carried out by the Pittsburgh Terminal Coal Corp., which mines the Pittsburgh seam, did not decrease the proportion of slack, though it did improve the appearance of the prepared sizes.

Rounded- and straight-face top-cutting machines and their operation were described briefly in an illustrated talk by C. E. Reynolds, superintendent, Allegheny-Pittsburgh Coal Co., Parnassus, Pa. When chains are worn and bits dull the coal is rubbed out rather than cut out. He said a close watch should be kept on machine men who often are in the habit of inserting bits out of gage. Chain repairs should be inspected to make sure that replaced lugs are in the right position. He pointed out the advantage of power charts as a means to determine whether a cutting machine is functioning properly. Over a period of three years the cost of maintenance of cutting machines as allocated to each ton of coal is 1½c.

SHOOTING ANTHRACITE

Leading up to the next talk, Mr. Osler explained that anthracite operators are as anxious as bituminous mine owners to increase the output of lump coal. The problems of shooting anthracite in the mines of the Glen Alden Coal Co. were presented by Charles Wagner. His talk was illustrated with lantern slides. During a period of nine years his company observed that the percentage of prepared sizes steadily decreased, partly due to the mining of thinner and thinner seams. An investigation finally was launched for the purpose of determining the factors which had influenced excessive breakage in shooting. A party of sixty-five men made this investigation and reported the existence of 160 different conditions, each of which calls for individual procedure in shooting.

He outlined the sequence of shooting a face which presented three different conditions. The seam is 8 ft. thick and divided by a thick, heavy, rock parting. The first condition requires the shooting and loading out of the bottom coal bench; the second makes necessary the shooting and gobbing of the parting, and the third the shooting of the top coal bench. The quantity and placing of explo-



C. E. Reynolds

Mine superintendent for the Allegheny Pittsburgh Coal Co., at Parnassus, Pa., who spoke at Cincinnati on "Horizontal Cuts in Top, Bottom and Middle."

sives are varied for each. Of course all the shooting is done off the solid.

A large number of tests were conducted in all conditions and best procedures arrived at, which were then adopted as standards. The quantity of explosive specified for each standard is slightly less than the average quantity used in the best tests for each condition. By using in a standard test, the same explosive in similar conditions but in different mines, the company has learned that results may differ widely.

As a result of the investigation, the company has succeeded in reducing the consumption of explosives 27 per cent and the drill feed 13 per cent. One colliery reduced the cost of explosives about 12 per cent at the same time increasing the yield of prepared sizes 4½ per cent. Many of the miners at first opposed system in shooting but they have since been

convinced of its merits, the chief of which is that it enables them to mine in equal periods of time 18 per cent more coal than the slipshod practices in the past.

"The easiest way to get lump coal," said T. G. Fear, general superintendent of the Inland Collieries Co., Indianola, Pa., in a talk on this subject, "is by the use of black powder." But he does not recommend the use of this explosive. Permissible explosives are used exclusively in the mines of his company. However, he indicated the possibility of making black powder safe when used in conjunction with rock dust stemming and has recommended a study of this combination by the U. S. Bureau of Mines.

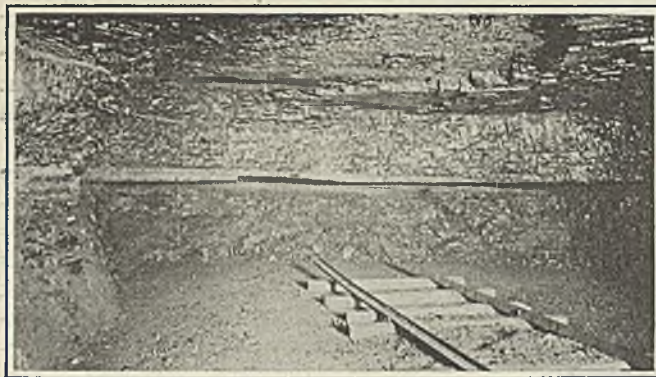
Efforts to produce more lump coal in any mine are always repaid inasmuch as large sizes are more easily cleaned than small, Mr. Fear thinks. Fourteen years ago he carried out tests to determine the relative effectiveness of permissibles and black powder toward increasing the proportion of lump coal by better shooting methods. In these tests, permissibles yielded 5 per cent more lump coal and the latter 15 per cent more than had been customary at the mine. The tests were made in the 3½-ft. thick Swanee seam which is friable. Air-spacing was used and the density of the stemming was increased gradually toward the collar of the hole. Air-spacing is not new; it was patented by a Pennsylvania man about thirty-five years ago, he said.

Different conditions in various parts of a mine necessitate constant study and supervision to obtain the most lump coal. All holes should be tested by the shotfirer to make sure that the miner has not padded them



The Result of Top Cutting in Utah

Experiments in Clear Creek Mines showed that great reductions could be made in the use of powder and that there were other benefits to this type of mining.



Middle Cut

This middle band in one of the Elkhorn (Ky.) mines of the Consolidation Coal Co. is of soft shale and usually is 4 in. thick. A machine cut often removes it but sometimes it is necessary to pry it loose with a bar.

with a cartridge to which the former might otherwise add the regular quantity producing an over-charged shot.

Mr. Fear uses rock dust stemming in shot holes. Air-cushioning is provided by a 1½-in. diameter dummy in a 1½-in. hole. The end nearest the explosive, of the dummy, is left open to make more effective the rock dust which it contains. Each shot hole is tamped with 3½ lb. of rock dust. With rock dust stemming he has been able to reduce the consumption of powder by 22 per cent and has obtained lumps which must be rolled by the miner because of their size. The use of rock dust in shooting, tends to eliminate much of the smoke following detonation.

One year ago the Bertha-Consumers Co., operating a number of

mines in the Pittsburgh seam of Pennsylvania and West Virginia, launched a campaign for more lump coal. The methods and results were given in a talk by W. L. McCoy. It is not always possible to increase the lump, even with the best methods, for some seams possess physical properties which militate against the end desired. For instance if a seam is broken by cleats on small centers the bulk of the coal must necessarily break into relatively small sizes by shooting. Much depends also on the method of working, chiefly the proportion of the depth of cover to the width of supporting pillars.

Mr. McCoy's company requires all bug dust to be loaded out before a place is shot. Shot holes have a diameter of 1½ in. An air space is

left at the rear of a hole by backing the charge of explosive against a spacer. Soft wet clay is used for stemming which is gradually tamped more compactly toward the collar of the hole. By this method the company has succeeded in reducing the length of a charge for a tight shot from 30 in. to 19 in., and for a butt shot 12 in. to 14 in. deep to a maximum of 8 in. The tight shot is loaded out before the butt shot is fired.

In the No. 8 Pittsburgh seam where the coal is 4 to 5 ft. thick, snub cuts taper from a point 8 in. above the kerf and on the face downward and backward to a depth of 2½ ft. In 1924 the Bertha-Consumers Co. increased its prepared sizes 9 per cent at a reduction of 20 per cent in powder consumption by snubbing.

To make effective standard methods for obtaining more lump coal, the miners must be disciplined and educated to it. Mr. McCoy said. They should be shown that better shooting will provide more lumps for loading by hand rather than by shovel; that the mine car can be more safely and effectively topped to a high level and, best of all, it will enable the mine owner to hold his own in competitive markets and thus provide more regular work for the miner.

Gandy Scans Coal Industry's Future

HARRY L. GANDY, executive secretary of the National Coal Association, in his talk at the American Mining Congress banquet, took a look into the future of coal thus:

"I have called your attention to the fact that a great industry has been going through a period of distress. Let us turn from this rather gloomy picture of the immediate past to a consideration of the signs of dawn already appearing.

"In the first place, not in a perfunctory way, but from profound conviction, and speaking not as an official of an organization but as a citizen of my country, I want to express my deep-seated distrust of all projects for reforming this or any other private industry which involve bringing them under the supervision and regulation of bureaucratic governmental agencies. Artificial regulation leads only to worse confusion.

"There are some signs of promise in that the rising price of oil is slowly but surely eliminating it from competition with coal in certain heating and industrial uses. There is a limit to the economies that users of coal may bring about through more perfect combustion. The hydro-electric field also has its limitations. Thus there are indications that the growth and development of the country generally will in time be more correctly reflected in the rising curve of production.

"I do not believe that the solution of our present difficulties will necessarily take the form of reducing output. It may well be doubted whether the amount

of bituminous coal purchased by consumers during the current year, for example, would have been reduced by so much as one per cent if the prevalent price had been high enough to yield a reasonable return to the industry. The real problem then reduces itself to this: What arrangements can be devised which will prevent the price of coal from falling below a profitable level?

"The problem is complicated owing to the fact that the cost of operation varies much from company to company and from mine to mine. It is necessary, therefore, to define a profitable price not as one which will yield a profit to every coal mine in operation, including the most costly, but rather as one that will enable operators to place on the market all the coal society demands without incurring loss on any material portion of the industry.

"When the problem is thus defined the answer becomes sufficiently obvious. Whenever operators acquire sufficient courage and self-control to resolve that no coal shall go out from their mines at an unremunerative price, our difficulties will be over. Something can be done to relieve the situation by special measures, such as abandoning the suicidal practice of shipping coal unconsigned, or permitting and encouraging consolidations similar to those authorized and ultimately to be required among the railroads of the country which present a similar problem of unequal costs of operation, but the complete cure can be attained only by converting operators to sound financial principles."

New Equipment Shown At Cincinnati

Exhibits Range from Explosives to Automatic Substations — Only Few High Lights Can Be Here Described

By Frank H. Kneeland

Associate Editor, *Coal Age*
New York City



MANY INTERESTING pieces of equipment applicable to coal mining were on exhibition in the Music Hall at Cincinnati, Monday to Friday, May 25-29, inclusive. In all, approximately 125 manufacturers showed their products to the coal mine operators. An excellent attendance showed a keen interest in the various mechanical and electrical devices. Space here available forbids any attempt at a complete description. It is rather the "highlights" that will be touched.

The trend toward mechanization of the mines was evidenced everywhere. Thus the enterprise Wheel and Car Corporation showed a particularly large steel car intended specifically, but not necessarily exclusively, for use with loading machines. The inside dimensions of the car body were 7x10 ft. with a height of 26 in. Level full, this car will hold 168 cu.ft. of coal. Yet it stands only 31 in. high above the rail. By placing extension or "sideboards" on this car, its depth could be fur-

ther increased by 17 in. giving an added capacity of 119 cu.ft. or a total of 287 cu.ft. water level measure.

This car was of the solid-body type, with one low end making it suitable for operation in conjunction with a Coloder and for discharge in a rotary dump. The coupling contains a swivel so that these cars may be discharged one at a time without uncoupling from the balance of the trip.

NEW TYPE RUNNING GEAR

The running gear of this car is a more or less radical departure from standard practice in mine car construction. Each car is fitted with four wheels, each of which is carried on an independent axle which is provided with a journal box on each end.

These journal boxes are bolted to the frame securely. Thus each wheel is free to revolve independent of all the others, making the car easy to handle around track curves. Above each wheel in the bottom of the car is a swaged cover-

plate. These project upward several inches, but do not interfere in the least with the discharge of coal in a rotary dump. The interior of the bed is braced with heavy angles.

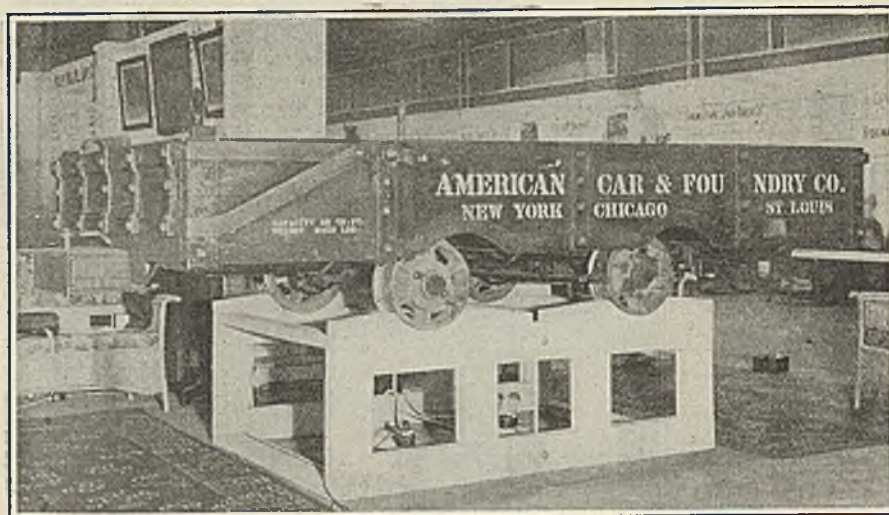
Band brakes are provided on all four wheels. These consist of a strap passing over the top of the wheel and fitted with a "half sole." This is a $\frac{1}{2}$ -in. steel brake shoe which takes the wear of braking. There are no gusset plates inside of the car box, but 4x1-in. belts are provided on the outside. On either end, this car is fitted with a steel casting draw-head which operates on a heavy spring, like the draw head of a railroad car. The total weight of the car is approximately three tons, while the sideboards weigh 400 to 500 lb. additional. Timken roller bearings are used on the journals. It is believed that this car will hold five and one-half tons of coal as delivered from the conveyor of a machine in a 4 ft. bed without trimming. Fitted with sideboards and given a fair topping with hand loading, it would doubtless hold at least ten tons.

Another car of low design and large capacity was that exhibited by the American Car and Foundry Co. This was of a composite wood and steel construction, the inside dimensions of the box being 6x10 ft., 6 in. with a depth of 16½ in. The total height above the rail to the top of the sides is 29 in., and the water-level capacity 85 cu.ft. These dimensions may, of course, be altered to suit the specific needs of the purchaser. One of the chief ends in view in designing this car was to obtain ease of repair. Attainment of this end permits this car to be kept in practically continuous service, which means that fewer cars are necessary to equip a mine for any given



Big Car Intended for Machine Loading

This shows the car fitted with low sides; its capacity can be greatly increased by using "side boards." Note that the end is even lower than the sides of the car. This is to allow easy loading by machine over the end.



Low Car That Can Be Repaired Easily

This car is of composite construction and so designed as to be repaired easily. Thus the removal of a few bolts will permit the withdrawal of any floor board. The sides can be renewed with equal ease. Of course it is not the intention that cars shall be injured and require repairs, yet such mishaps occur and at such times ease of repair is desirable.

anticipated daily or weekly production.

In this car also the wheels are covered with the pressed plate housing. The under frame is of steel while the sides and bottom are of both steel and wood construction. Thus the car lacks the rigidity sometimes unavoidable with all-steel construction and which may be the cause of trouble on an uneven track. All wooden portions of this car, however, may be renewed readily without removal of rivets and without any necessity for jacking the car up. The side of the floor is a steel sheet flanged up over the outside of the sideboard and down under the wooden bottom section of the floor. Thus it is approximately a Z-section. Five belts encircle the car body at each of which a strap spanning the inverted U-section draw-bar forms virtually a truss adding strength.

This car regularly is equipped with open-hub self-oiling wheels on 3-in., heat-treated axles carried in journal boxes that are bolted through both the bottom and top flanges of the Z-shape floor sheet. The wheels are fitted with American Car & Foundry Co. spring oilers for either oil or grease lubrication. Any standard roller or ball-bearing wheel may be applied. The side sill angles of the car box are flanged up over the wheels so that any wheel may be removed or replaced without the necessity of jacking the car up much and without turning it on its side. Band brakes normally are applied to two wheels only, but they can be fitted to four wheels if the purchaser so desires.

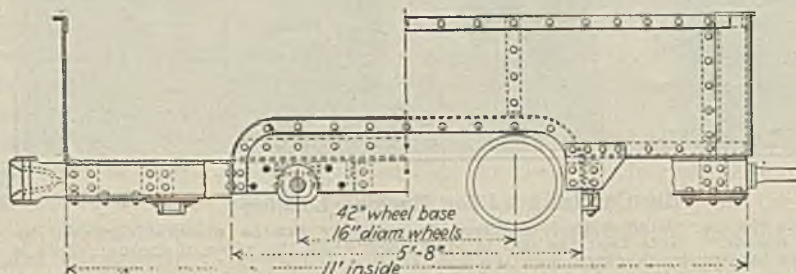
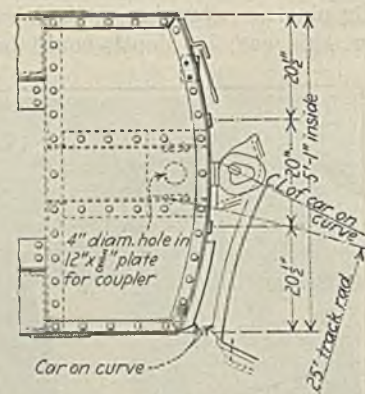
As stated, this car was designed

especially to obtain ease in repair. The removal of only eleven bolts on each side of the car will permit the repairmen to renew any or all of the floor boards. New side pieces may be replaced with equal ease.

Two small models of the type of mine car which has been adopted by the Pittsburgh Coal Co. in its modernization program were displayed in Booth 19 by the Allen & Garcia Co., Chicago, Ill. This car is constructed entirely of steel; has a capacity of four tons (10-in. topping); stands 40 in. above the rail and weighs 4,800 lb. empty. Its ends are bowed to give it greater strength and bigger capacity for a given body length. As measured on its center line, the body of the car is 11 ft. long; its sides are 10 ft. long, establishing a 6-in. bow on each end. The roller-bearing wheels are of 16-in. diameter and are mounted on 2½-in., heat-treated alloy steel axles. Lubrication of the wheels is facilitated by self-closing No. 2 grease plugs fur-

New-Type Car and Coupler

This car, designed by Allen & Garcia and adopted by the Pittsburgh Coal Co. in its modernization program, combines great strength with large capacity and is spring-suspended to reduce shock. The semi-automatic coupler requires the operative only to cock the pin over the hole. The impact does the rest.



nished by the Lincoln Steel & Forge Co., St. Louis, Mo.

The body of the car is supported by two springs on each journal box to eliminate the obvious impact which otherwise occurs between the running gear and the body of the mine car on the one hand, and the wheels and track equipment on the other. The design of this feature is such that under all conditions accurate wheel-and-axle alignment is maintained and side play is eliminated.

The floor of the car projects over and clears the wheels by the incorporation, as part of the floor, of two inverted channels. The floor is one-piece of ¾-in. steel plate, which, together with channel and angle-iron stiffeners, provide ample tension and compression strength.

One of the distinctive features of this car is the combining of a spring drawhead and a semi-automatic coupler. Its chief merits are these: It relieves the locomotive and mine cars of excessive bumping; it does away with the dangers incident to the coupling-up operation, and it provides a simple arrangement for coupled-up dumping in a rotary dump.

The female of the coupler rides in a single two-way spring. This member, of course, is always on center. The male member is provided with a trunnion in which the swivel action is centered, and on each side of which are buffetting springs. This trunnion rides in two guide plates which are engaged by two stationary cheek plates. The guide plates are further

fastened by bolts to stub channels under the floor of the car.

Self-centering is derived by an elongated convex surface on the bottom of the trunnion body and a complementary depression in the upper surface of the lower guide plate. The weight of the male member, which is counterbalanced, maintains the latter on center for coupling. All that is required of the haulage operative is to cock the coupling pin in its hole. The impact between two cars will drop the pin into place.

For places where more light is necessary than is afforded by the ordinary types of mine lamps or where open flames would be unsafe, the Concordia Electric Co. had on exhibition what might be termed a storage battery flood light. This is fitted with a reflector and four bulbs



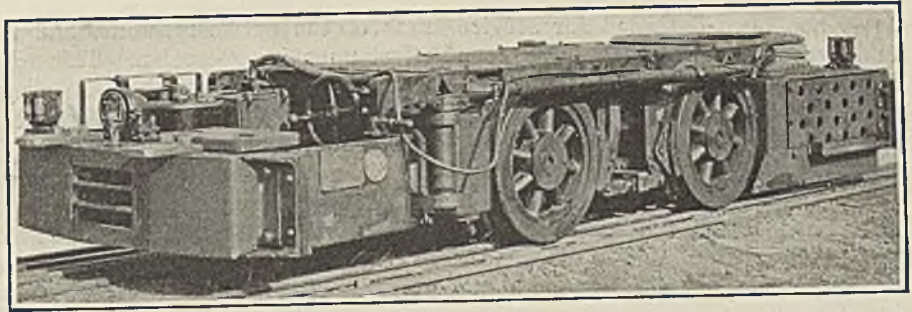
Portable Floodlight

This shows the reflector with its four light bulbs at the end of its forked swinging arm, also the front of the steel battery container.

at the end of a vertically swinging arm that may be raised and lowered, being pivoted at the opposite end near the center of the storage battery which energizes the lights. This arm may be swung through an angle of about 220 deg.

This flood light is fitted with a 4-volt, 2-cell, dry electrolite battery, weighing about 40 lb. The four bulbs are capable of giving a maximum of about 25 cp. They are connected in pairs and either pair can be turned off and on at will. The battery will furnish current for all four lamps for about 12 hr.

The battery of this outfit is protected by a rectangular, waterproof, steel casing that is magnetically locked, to prevent tampering by an unauthorized person. The locking device is similar to that employed on the hand, cap and trip lamps built by this manufacturer. The battery case is provided with a bale fitted with a swiveling, steel hook so that the outfit may be suspended from a post,



Low Trolley and Cable-Reel Locomotive

Although this locomotive weighs 6 tons and is sturdily constructed it stands only 28 in. above the rail. The machine can be built, however, with a height of only 26 in. The road clearance is only 3½ in.

mine timber or other suitable support. This lamp is suited not only to mines but also to power plants, grain elevators, oil refineries, ships, contract work and elsewhere.

A low, compact locomotive intended for gathering was on exhibition by the General Electric Co. This was a 6-ton, trolley-and-cable-reel machine fitted with type M contactor-control and overload relay. This machine has a total length of 175 in., a wheel base of 46 in., a rail clearance of 3½ in., drivers of 25-in. diameter, a gage of 42 in., and a total width of 59 in. The total height of the machine exhibited was 28 in. above the rail, but it is possible to build this machine with a minimum height of only 26 in.

The type of control employed on this locomotive will not permit current to be applied through the motors too rapidly. Another feature of this machine is oil-gun lubrication of the main journals through the driver hubs. This permits ready and easy lubrication of the main bearings which are accordingly not liable to be neglected. A general view of this locomotive is shown in one of the illustrations.

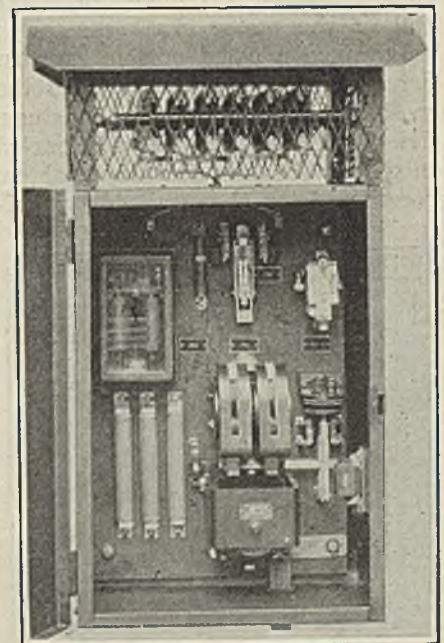
For motor applications about the mines and elsewhere requiring a constant-speed, polyphase motor of high starting torque and employing either automatic, semi-automatic or manual control this company exhibited a 15-hp. motor, type FTR. The special construction of this machine gives a starting torque equivalent to that of a slip-ring motor, but a current volume that will not exceed the N. E. L. A. requirements. The rotor which is cast is provided with two windings, one of high and the other of low resistance. When current is first applied, it passes through the higher resistance winding, but as the machine comes up to speed, the flux automatically shifts to the low resistance or running winding.

This motor has practically the

same efficiency and power factor as a standard induction machine of the same size. It may, however, be thrown directly across the line by a push-button. No centrifugal mechanical devices are employed in the control.

Another interesting piece of equipment shown by this company was an automatic switching device for sectionalizing and protecting 275-volt, direct current mining and industrial circuits. This equipment is adapted especially for sectionalizing trolley and feeder circuits supplying power to machinery at or near the working face. By proper selection and application of these units it is possible to isolate a defect in the wiring and minimize its effect on the electrical equipment. They also obviate shutdowns arising from overloads.

In case of trouble, only the section affected is disconnected. As soon as the cause of the difficulty has been removed, service is restored. This equipment may be readily installed,



Automatic Switching Equipment

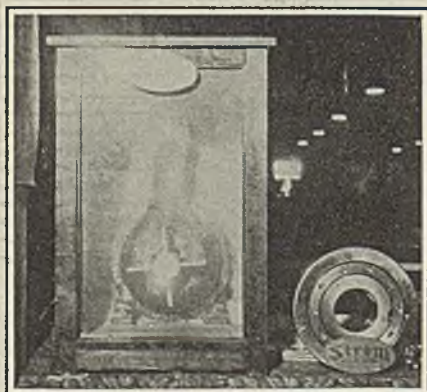
This unit is built for installation inside the mine, being provided with a drip-proof case. It is virtually a sectionalizing and reclosing unit normally built for 275 volts and in various capacities.

as it has been designed for service underground. All parts have been given corrosion-preventative treatment, and the over-current relay, line contactor and the various reclosing devices are mounted in a drip-proof steel housing. The control section may be operated from the outside, thus making it possible to disconnect the feeder without opening the housing door.

These control equipments, built for 275 volts, may be supplied in sizes ranging from 300 to 1,500 amp. By placing a demand device in a substation so arranged as to trip one or more sectionalizing equipments upon application of a pre-determined load, the total load on the system may be cut down. When demand falls off, these equipments will reclose, restoring service on the circuits controlled by them.

To demonstrate the anti-friction characteristics of ball bearings, the Strom Ball Bearing Mfg. Co. exhibited a stand from which two 200-lb. weights were suspended by cables from bearing housings. One shaft was on ball and the other on plain bearings. Cranks of equal length were attached to the ends of the shafts and people were invited to note the difference in torque necessary to turn these shafts. Needless to say this difference was appreciable.

Another exhibit of this firm consisted of a dust-proof motor mounted on ball bearings and inclosed in a tight glass case. A small fan on the end of the motor shaft constantly maintained a cloud of fine sawdust driving it through and around the motor, its bearings and housings. The motor itself was literally buried in a heap of this fine dust, which, because of the thorough dust-proof-



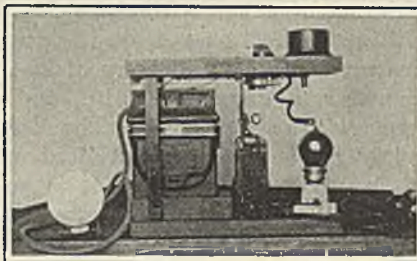
Runs Buried in Dust

This picture does not do justice to the severe conditions under which this motor operated. A heap of dust covered the machine while the little fan on the end of the motor shaft kept a cloud of it in constant circulation.

ness of the entire machine, had no effect upon its operation. This machine was built by the American Electric Motors, Inc., of Milwaukee, Wis. and was Strom-equipped.

In the booth of the Koehler Mfg. Co., of Marlboro, Mass., three interesting devices were shown. The first of these was a one-lamp charging panel. By this device a rectifier changes alternating to direct current. The arrangement is such that a single belt battery may be slipped between the contacts for charging. The battery receives its charge at about 5½ volts, and cannot be charged at a rate higher than one ampere nor lower than ½ amp. It may thus be charged in a shorter or a longer time, but never at a dangerous or destructive rate.

A new Wheat electro magnet arranged for operation on alternating current was exhibited. This device is intended to open Koehler and other



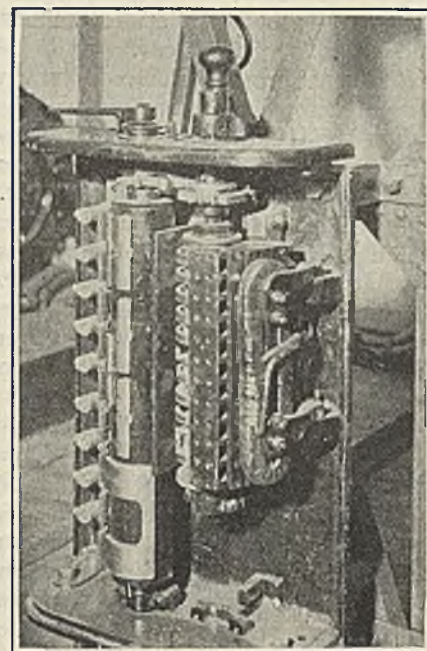
Individual Battery Charger

This device takes alternating current through a rectifier and charges one lamp battery at a time. Charging is performed at a predetermined speed—neither too fast nor too slow.

flame safety lamps. It has a vibrating magnetic action and will unfasten lamps, the locks of which may be stuck or corroded.

A 100-lamp, Wheat charging panel was also shown. This takes alternating current through a Wheat electric mine lamp rectifier, which is built especially for lamp charging and possesses high efficiency. The standard equipment of this type is made for 220 to 250-volt, 60-cycle current, but the rectifier can be supplied for other potentials and frequencies.

The Westinghouse Electric & Mfg. Co., showed its improved universal line of magnetic control for mine locomotives. As is well known, one of the chief difficulties encountered with manual control of mine locomotives is excessive maintenance. It is, therefore, being replaced by semi-magnetic control wherein the main motor connections come to the reverse drum of the controller, and the line switch and accelerating points are under the control of the accele-



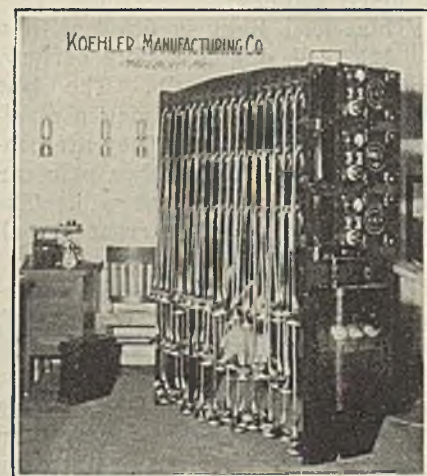
Magnetic Locomotive Controller

This shows the "guts" of the control mechanism. The use of magnetic contactors in place of contact fingers totally obviates arcing within the controller and safely limits the input of current to the motor.

rating drum. With this type of control, no load arcs are formed in the controller. Return of the control drum to the off-position de-energizes the contactors thus opening the motor connections.

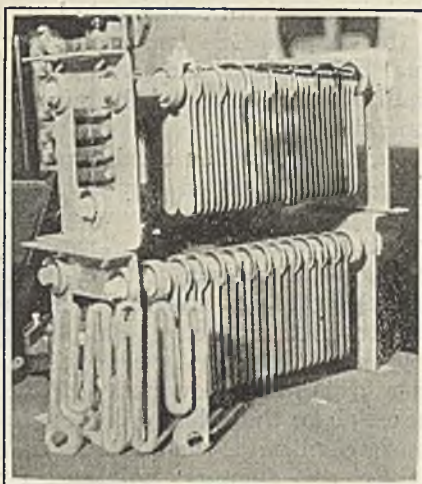
This equipment is of the same size for locomotives ranging from four to fifteen tons, and can be arranged for series, parallel or series-parallel operation either with or without dynamic braking and one, two, three or four motors.

A new, punched-steel resistance grid was also exhibited by this company. This grid is adapted to withstand excessive vibration without injury. This is a consideration of great importance in application to



Hundred Lamp Rack

This rack takes alternating current, being fitted with a rectifier. As this is designed especially for the purpose its efficiency is high.



Punched Grid Resistance

Each section of this grid is punched from a steel plate and each run is simultaneously cupped or troughed. This makes a resistance that will stand all kinds of abuse.

mine locomotives, since it eliminates excessive resistance breakage which is sometimes encountered with the cast alloy grid. Since it is punched from a steel plate and each leg of the various runs cupped or troughed, this grid will withstand high temperatures without sagging or running. It also has excellent radiating qualities. Each section possesses slightly less resistance than a similar unit of the ordinary, alloy grid, but as the thickness is less, greater resistance can be placed in a given volume. This type of grid makes a particularly strong and durable unit when properly assembled and one that is particularly applicable to mine service.

An extremely interesting type of mine post or jack was exhibited by the Lorain Steel Co. It is made up of a base, a top and a wedge section. The top and base sections are identical and consist of a rectangular footing surmounted by a cylinder,



Lorain Post Jack

Built in three sections, two of which are duplicates, this jack is intended to hold the roof behind the face in longwall operations. It practically takes the place of a leg in a 3-piece timber set.

the end of which is cut on a slant. The diameter of the cylindrical portion is about 6 in., and the total height is approximately 6 in. on the low side and 7½ in. on the high side. The beveled surfaces are each provided with a groove or cannellure into which fits a ridge or feather on the central or wedged section. Through the wedge, which is U- or horseshoe-shaped, passes a heavy bolt with a nut upon either end. The nut upon the back, or thicker, edge being countersunk. On the opposite end, this bolt passes through a heavy yoke or bar long enough to get a bearing on both top and bottom sections of the jack. A chain fastened to both top and bottom sections passes through a handhold on the wedge.

In use, these jacks are placed in pairs at or near the end of a timber laid on the mine floor. On top of this pair of jacks another timber is laid and wedged in position. The wedge pieces of the jacks are then drawn up tight. When it is desired to move the roof support ahead, the yoke is turned to a horizontal position, the wedge knocked loose and the jacks withdrawn. By this means all timber used is reclaimed for use over and over again.

It will be apparent that this device is applicable particularly to longwall mining, where the roof is allowed to come down freely into the gob, and the attempt is made to support only a small roof span immediately back of the face. This jack is tested to safely withstand 150 tons pressure.

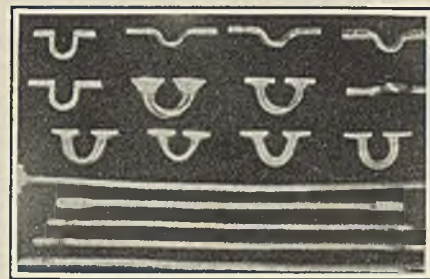
The Dravo-Doyle Co., Pittsburgh, Pa., has recently placed upon the market the Curtis automatic suction valve. At the show in Cincinnati three of these valves were in actual demonstration. A small gathering pump was so installed as to draw its water supply from three ash cans, representing three separate sumps within the mine. This pump discharged to a barrel elevated to such a height that the water drained back to the sumps through piping and ordinary spigots. Suction on each sump was made through a Curtis automatic valve. When water in any sump sinks below the suction line, this suction is shut off, and when the water rises again, the suction from this sump is renewed.

There is no limit to the number of these valves that may be used in any one installation. In practical application in the mines, twelve to fifteen have been in satisfactory operation for four months at a time. With a branched suction of this kind, the

velocity of the water is low and the efficiency comparatively high in consequence. Use of the valve enables one pump to serve a far larger area of the mine than might otherwise be possible, and does away with manual operation of suction control.

All the electrical devices were not confined to the positive side of the circuit. The Electric Railway Improvement Co., of Cleveland, Ohio, among other track devices, had on exhibition its Type ATR, arc-weld rail bonds. These may be of either single- or double-strand or laminated, and are intended for attachment to the ball of the rail.

These bonds are designed to obtain a large welding surface without the weld coming too high up on the ball of the rail. They are adapted particularly to main-line haulage. The shape of the terminal is such as to permit the welding to be done on its top and ends. The end of the weld tapers off onto the



Arc-Weld Rail Bonds

This shows several different kinds of bonds, the lower row of four intended for application to the ball of the rail being the new variety described.

ball of the rail in a manner that wedges out the false flange on the tread of the locomotive wheels and prevents them from delivering a heavy blow to the terminal proper.

These terminals are of rounded section, this shape permitting the welding to form the shortest possible average path for the electric current from the terminal to the ball of the rail. It is a terminal that is said to be exceptionally easy to apply.

Some of the equipment shown was too big to get into the Music Hall. In order to show these heavier devices, a tent was set up in rear of the building occupying about the same relation to the Exhibition Hall as does the side show to the regular three-ring circus. In this tent were shown four pieces of equipment. One exhibit was a demonstration of electric railbond welding.

A new principle in mechanical loading was shown in the exhibit of the Ace loader marketed by the Simplex Loading Machine Co., 1907

McCormick Bldg., Chicago, Ill. The design of this machine is based on the conclusion that any machine which has sufficient capacity to be of real advantage over hand loading must necessarily be too large to move to the coal. Instead the coal must be brought to the machine.

The Ace loader consists of three units, a 125-hp., double-drum, electric hoist, a coal-gathering bucket and a bucket-dumping platform. The latter, which might in itself be called a loading machine, is semi-portable and stays on the entry beside the loading track. The bucket, a rugged box 10 ft. long, 5 ft. wide and 32 in. high, carries the coal to the loader. The loader has a storage capacity of 10 to 15 tons which means that the actual loading into the mine cars is not interrupted when the bucket is returning for another load.

Ruggedness, simplicity and high daily capacity with a minimum of labor, are the features outstanding in the design.

Several loaders of this type are now in regular operation in an Indiana mine. A complete description of the results being obtained at that mine will be published in an early issue of *Coal Age*.

The third device exhibited in the tent was a Myers-Whaley shoveling machine, about which there is little that is new, but trailing this machine was a new device put out by the same company and known as "gobber." It is a four-wheel truck surmounted by a turn-table on which is mounted a conveyor. This consists of an armoured rubber belt, 18 in. wide and about 14 ft. long between centers. It has a $4\frac{1}{2}$ ft., sliding adjustment and may be swiveled on the turn-table through a complete circle. It also has a vertical adjustment at the discharge end amounting to $3\frac{1}{2}$ ft., and the overall height from the rail at the turn-table is 35 in. It is driven by one 5-hp. motor. All movements and adjustments are hand actuated. This machine was designed to be used as an accessory to the Myers-Whaley shoveling machine to which it may be attached by means of a tongue. When not in use for disposing of waste material, it may be pushed out of the way.

The weight of this machine is approximately 6,500 lb. When the conveyor is fully extended it has a reach of 11 ft. from the center of the track. This gobber carries a cable reel holding 250 ft. of cable, so that the machine may be operated as a separate unit. The conveyor travel is



Dumping Above the Trees

This shows the bucket in the act of discharge. Although the point of dumping can be pre-determined and adjusted within close limits, normally an over-travel of about 200 ft. is provided.

about 250 ft. per minute, and the machine may be used for the disposal of gob loaded upon it by hand as well as for disposing of that which is machine-produced. It may be constructed to suit any ordinary track gage.

Even disposal of mine refuse was not neglected in this exhibition of mining equipment, for the Broderick & Bascom Rope Co., of St. Louis, Mo., showed a model of a self-dumping bucket which was first put into practical operation about eighteen months ago, and has never failed to trip its load and has incurred no upkeep expense. The carrier supporting the bucket is provided with four wheels, mounted at the extremity of

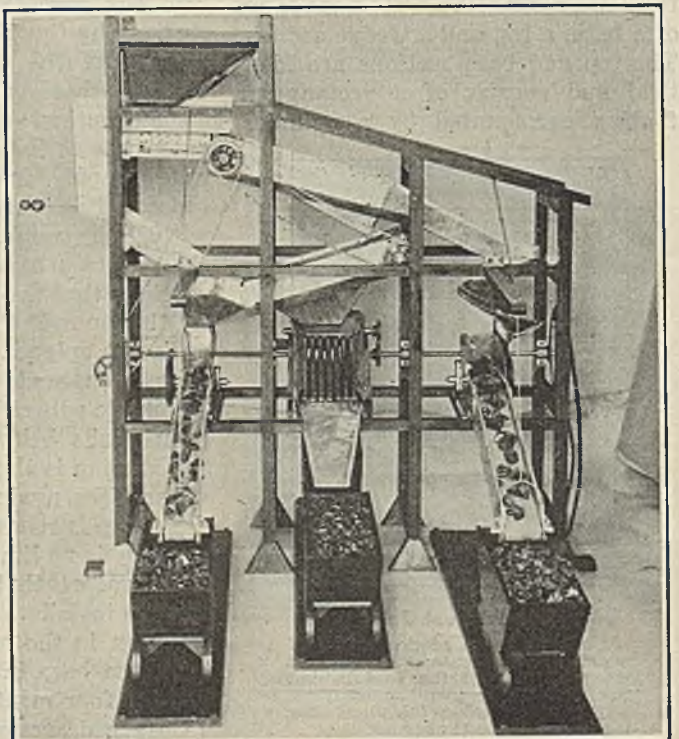
two beams, pivoted to the main beam at the center. The two beams are thus independent and will follow readily the curvature of the suspension cable.

The wheels on this carrier are of hard steel mounted on Timken roller bearings. Thus they will wear smooth without grooving. Travel of the bucket actuates a vertical screw through gears and a sprocket chain from the carrier wheels. This screw is provided with a traveler, which, after a certain movement of the bucket along the cable, operates the trip mechanism of the bucket. This enables the dumping point to be changed and adjusted at will. It will seldom vary more than 5 or 10 feet on consecutive dumpings of the bucket. Naturally, the length of the vertical screw must bear a certain relation to the total travel of the bucket from the loading point to the farthest tower. In designing the screw an over-run of approximately 200 ft. is allowed. The bucket is of the ordinary side-dumping, or rather, forward-dumping type, except for the tripping mechanism. It is free to swing in two directions.

In Booth 113 the Frederick Iron & Steel Co., Frederick, Md., exhibited a working model of a three-track tipple equipped with three "Norman patent" Frederick separators. The latter equipment serves the same purpose as do fixed and moving screens in sizing mine-run coal. It has been much used in the anthracite field and now is being introduced into the bituminous fields.

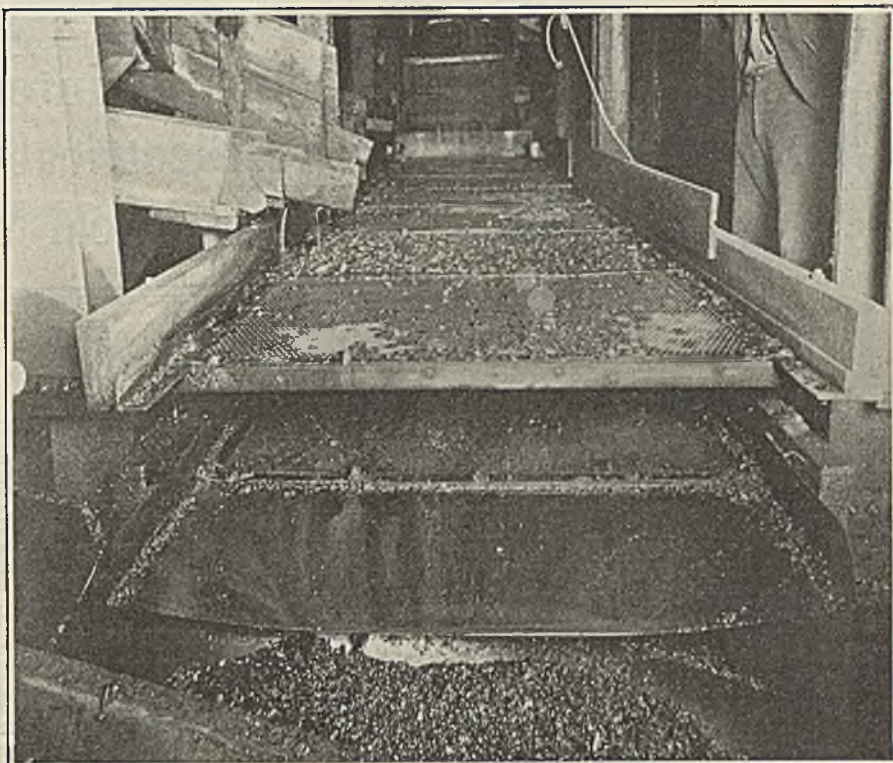
Working Model of Complete Tipple

Three coal separators are here employed. These consist of parallel rolls, all of which revolve in the same direction. They are set at an inclination down which the coal will not slide unless the rolls turn. Thus there is no shake to the equipment and the degradation is small as is also the consumption of power.



As shown in an accompanying illustration, it is made up of nine steel rolls which are placed side by side on centers adjusted to give the desired size separation. The rolls, which are 10 ft. long are inclined on a pitch of about $3\frac{1}{2}$ in 12. They revolve in a common direction at a speed of 150 r.p.m. One 5-hp. motor, through a roller chain or bevel gears, will drive all the rolls in one separator and also a reciprocating feeder; or, as arranged in the tippie model, a reciprocating feeder, three separators, two belt loading booms and one slack conveyor are driven by one 25-hp. motor.

By the reciprocating feeder, the mine-run coal is fed to the first of the three separators, which consists of 6-in. rolls. When these are adjusted to 10-in. centers, they cause the lump coal larger than 4-in. to move down the incline to a combination picking-table and loading boom. Sizes smaller than 4-in. fall between the rolls and are conducted to the egg separator which is made up of $4\frac{1}{2}$ -in. rolls on, say, $6\frac{1}{2}$ -in. centers. The egg size—less than 4-in. but more than 2-in.—passes over this separator directly to the egg picking-table loading boom. Coal less than 2-in. drops through the egg separator and is carried to the third separator, of $3\frac{1}{2}$ -in. rolls on, say, 4-in. centers, which separates $\frac{1}{2}$ -in. nut from the slack. A tippie meeting these specifications has a capacity of at least 100 tons per hour. By



Small Anthracite Screens

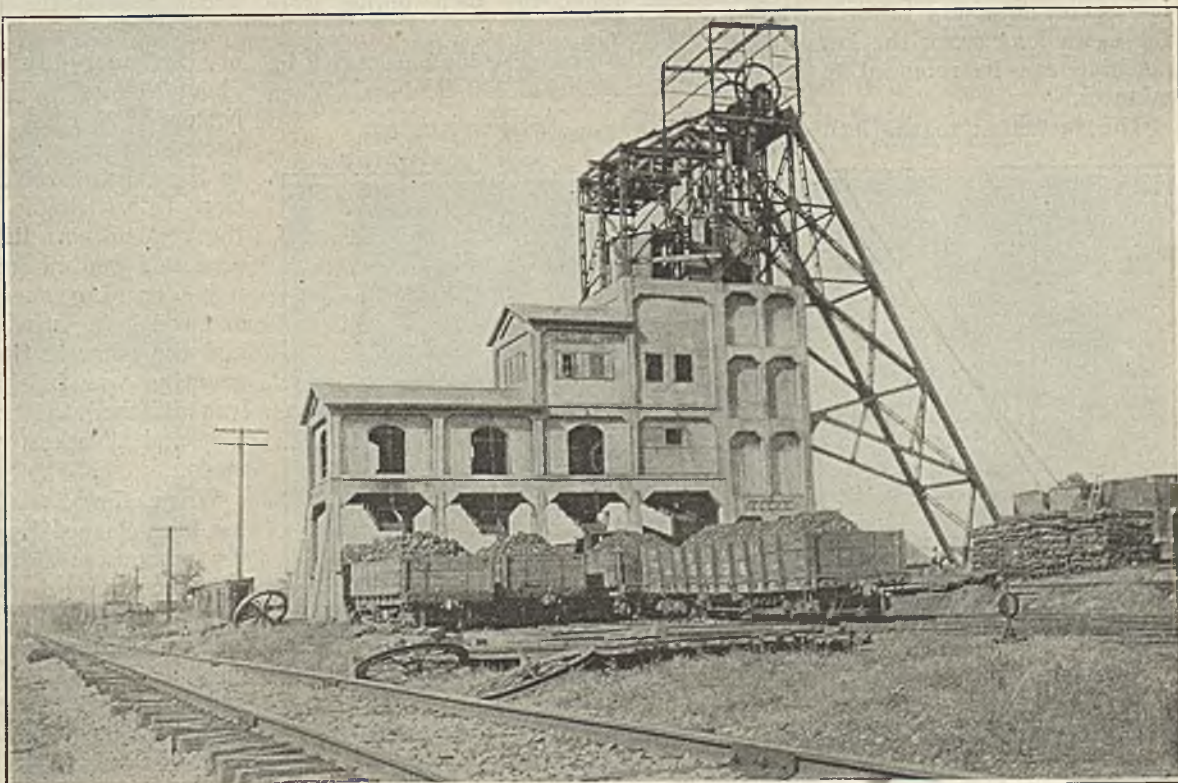
In the wet process of coal preparation the screen plates are subject not only to the abrasion of the coal but to the action of acidulous water as well. For this reason the screen plates are often made of some corrosion resisting alloy.

increasing the number of rolls in each separator, the capacity can be increased.

By reason of the fact that the coal, while being sized, moves continuously and at a uniform speed from the feeder to the railroad car, the power required by this separator is low as compared with that of screens whose oscillatory motion causes the

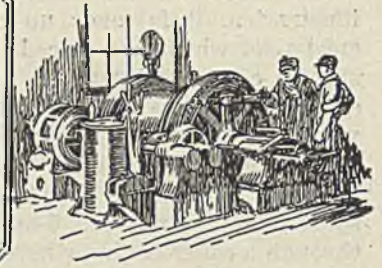
coal to start and stop with each complete cycle of the screen. Vibration thereby is eliminated almost entirely; lighter steel is required in the tippie structure; less floor space is needed and the little wear on the rolls is uniform. In that the sequence of separation is from lump to slack, degradation of the small sizes by larger sizes is minimized.

*Eden Mine
Near Sparta
in Illinois
Where a
New Tippie
Aided
an Old Mine*





Practical Pointers For Electrical And Mechanical Men



Lathe Bed Makes Suitable Stand For Portable Keyseater

Using portable keyseaters as stationary machines is no longer an entirely unusual practice. It is generally confined, however, to repair shops that have no other equipment for cutting keyseats. A neat method of mounting a No. 2 portable keyseater is that employed in the shop of the Blue Diamond Coal Co., at Blue Diamond, Ky. Here the machine is fastened to the bed of a tire lathe, the regular hand crank being replaced by a pulley, affording power drive from the shop line shaft.

What in the illustration appears to be a piece of white paper on the wall back of the machine is in reality a hole in the metal siding of the building. This aperture makes it possible to handle long shafts in the machine even though it is mounted back in a corner. The lathe bed is of such length that for all ordinary work it is not necessary to move the tailstock back to a point where it interferes with the keyseater. When it becomes necessary to use the lathe for extra long work the keyseating machine can be removed in a few minutes.

The fastening to the lathe is by

means of four bolts passing through holes drilled in the lathe bed. These bolts are the ones regularly provided for clamping the keyseater to a shaft when it is being used as a portable hand-driven machine. The keyseating machine here shown has capacity to take an 8-in. shaft and will mill seats from $\frac{1}{4}$ to $1\frac{1}{2}$ in. in width. Harry Kivett, chief electrician, states that it was purchased primarily for tipple and locomotive-axle work.

Cementing Pipe in Boreholes Requires Some Ingenuity

A short time ago I read in *Coal Age** how someone had cemented a brass sleeve or pump connection into the bottom of a borehole which was to be used as a discharge for mine drainage. Perhaps it would be interesting to recount here how two similar but more difficult jobs that came under my own notice were handled.

In the first case the hole was 8 in. in diameter and 350 ft. deep. When

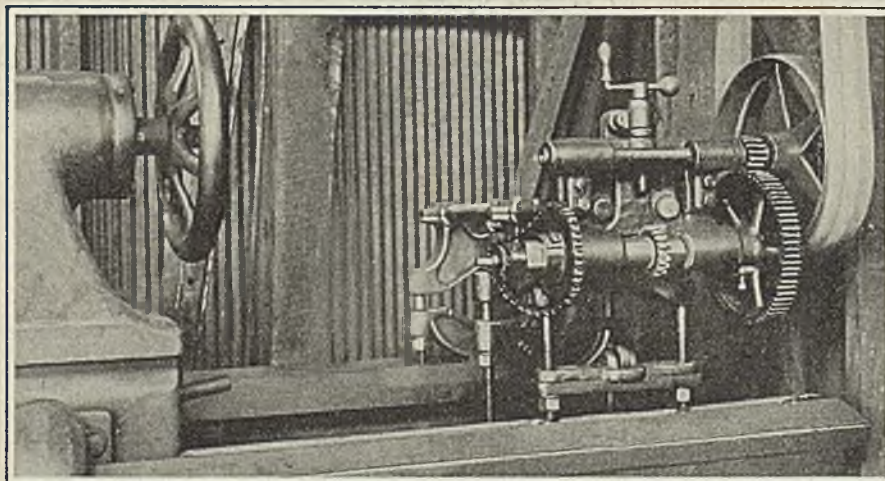
*Issue of April 23, 1925, p. 619.

about 200 ft. down a heavy feeder was struck, the water rising to the surface. This hole was put through to the coal but had to be plugged temporarily because the pumping facilities installed were not adequate to handle this extra influx of water. It was the intention to case this hole with 8-in. wood pipe which made it necessary to ream it out to a diameter of 18 in. After the reaming operation had been completed to within 10 or 12 ft. of the coal, I undertook to place the brass pump connection in the roof.

First, all loose roof rock was taken down around the borehole until a hard stratum was encountered. In this, an opening 6 in. larger in diameter than the pipe, so as to leave an annular ring 3 in. wide all around it, was cut into the roof with drills and chisels to a depth of 4 ft. which was the length of pipe to be installed. When this was finished, the 8-in. brass pipe was put in place and wedged tight around the bottom so as to hold the cement.

For the purpose of placing the grout around the pipe, we used a "skip." This consisted of a bucket or container big enough to hold about 10 lb. of this material. To the bottom of this bucket a rod was connected, another rod being attached to it near its top, both rod connections being tiltable. By this means the cement was lifted through the pipe and poured into the 3-in., annular opening surrounding it, the one rod being used to lift the skip and the other to tip it over. After grouting was finished a gate valve was attached to the bottom of the pipe and all other pump connections made.

When all was ready, the hole having been cleaned from top to bottom, the pump was started and its performance proved entirely satisfactory. The operation where this borehole was located was the Gowrie Colliery at Port Morien, Cape Breton and the work described was done back in 1895. This was one of the first instances in Nova Scotia of a



Fastened to Unused Portion of Lathe Bed

This portable No. 2 keyseater is converted to a power-driven stationary machine by mounting it rigidly on the bed of a tire lathe and replacing the crank by a pulley. It is but seldom that such long material is swung in the lathe as to demand the removal of the keyseater, which removal can be effected in a few minutes.

borehole being utilized for discharging mine water to the surface.

Another experience of a similar nature was had at Caledonia Colliery in 1905. Here, a 6-in. prospect hole passed through a working bed, more than 400 ft. below the surface. To use this as an outlet for mine drainage would save over 2,000 ft. of 6-in. pipe. As the hole made little water and it was not considered necessary to case it, a piece of 5-in., cast iron pipe 6 ft. long was employed as a roof connection. In the upper end of this pipe was placed a conical wooden plug the top of which projected slightly over the edges of the pipe.

At the edge or end of the pipe, a few holes were bored through the plug to enable one to tell when the cement had reached the top of the

pipe. The plug also was split or divided longitudinally by two saw cuts approximately at right angles to each other.

After the pipe had been wedged in place, the cement was poured from the surface. When grouting had been completed, as indicated by cement running through the holes bored in the plug, a 2-in. pipe was pushed up through the 5-in. cast iron pipe knocking out the plug which fell back through the larger pipes in four sections. This job proved to be highly satisfactory.

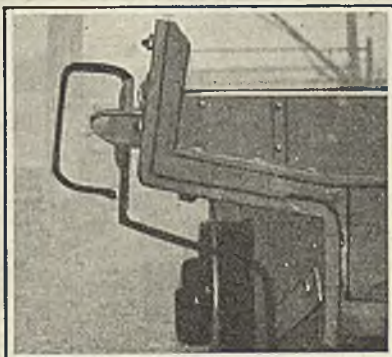
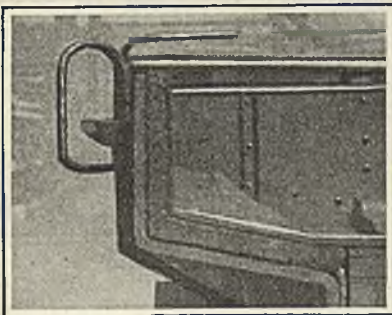
It should be added that in both cases suitable provisions were made to drain the borehole as well as to clean it out should anything become lodged in it.

(Signed) MAC.

Nova Scotia.

Changes in Mine Car Design Save Men's Hands

The Maryland division of the Consolidation Coal Co., Frostburg, Md., has changed two of the details in the construction of its low-seam mine cars in order to eliminate minor injuries to men's hands. One of the two coal measures being worked by this division of the company is the Tyson or Sewickley bed which varies from 3 to 4 ft. in thickness. A low



Unsafe and Safe Positions

At the top is shown the original position of the brake lever. Inasmuch as it projects above the car's side, a man's hand resting upon it might be caught and crushed or "barked" against the roof. Lowering this lever and its quadrant to a position below the side of the car, as shown in the lower illustration, eliminates this danger.

place in the roof or an abrupt change in the track grade greatly lessens the clearance above mine cars. This entails serious danger of crushing or skinning the hands of those who may be in the act of pushing a car or setting its brake.

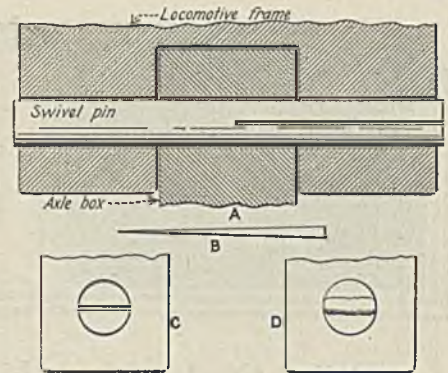
This danger was overcome by lowering the positions of the ratchet bar and brake handle equal distances so that the top of the brake lever is always 3 or 4 in. below the top of the car. The accompanying illustrations give a good idea of the appearance of the car before and after the design was changed.

The danger experienced in hand tramming was eliminated by equipping each mine car with a push bar. This is fastened in a horizontal position about 8 in. below the top of the rear end.

Locomotive Swivel Pin Tightened by Wedge

Although the pivoting movement of the axle box of a single-motor type 30 locomotive is relatively small, it will, after a number of years of service, wear the swivel-pin holes of the frame to an elliptical shape. The ideal way to repair a worn hole is either to fill it by means of the electric welder and then rebore to size, or to bush it. Either way requires the use of a special portable boring tool, or of a machine tool of a size seldom found in mine shops.

In the accompanying illustration is shown the method of repair used at mine No. 4 of the Columbus Mining Co., at Allais, Ky. Before being inserted the swivel pin is split with



Details of Locomotive Repair

In (a) the split swivel pin is shown inserted in the worn hole ready for spreading with the wedge (b). The end views, (c) and (d), show the pin before and after the wedge has been inserted and welded.

a hack saw for a distance somewhat greater than the length of the worn bearing. The pin is then put in place, as in (a), and a long slender wedge, (b), driven into the slit end. This expands the pin to an oblong shape so as to conform roughly to the outline of the worn hole. The wedge is fastened in place by arc welding to the end of the shaft. An end view of the split shaft and worn hole is shown in (c), and the expanded pin with welded wedge in (d), of the illustration.

Sawdust Plugs Pump Leaks

In spite of careful work on the part of repairmen, pumps will sometimes leak at the joints. This is especially liable to happen if the water handled is highly acidulous.

In the mine with which I am connected we have an old pump that is fairly reliable in operation but which always leaks around the valve chest cover after it has been taken apart for the renewal of valve springs. As the water handled by this pump is highly acidulous and the other conditions of operation are exacting, the springs require frequent renewal.

In order to put a stop to the annoyance occasioned by the leaky joints we hit upon the following expedient, which although not exactly "according to Hoyle," is, nevertheless, highly effective: A 2-in. valve and nipple 6 in. long have been placed on the suction of this machine. When the pump is started, after a spring renewal, this nipple is filled with sawdust. The hand is then placed over its top and the valve opened. After a few minutes' operation in this condition the valve is again closed and the hand removed. The leaks are thus stopped—until next time.

THOMAS JAMES.

Vincennes, Ind.



News Of the Industry

Fifty-Eight Men Killed in Explosion In North Carolina Mine

An explosion at 9:30 a.m. May 27 in the mine of the Carolina Coal Co., near Coal Glen, N. C., entombed fifty-eight miners, with the likelihood that none would escape. Rescuers brought eight bodies to the surface on Wednesday, and by Saturday fifty-three had been recovered, leaving five unaccounted for. The explosion took place below the 1,000 ft. lateral.

Dense clouds of yellow smoke and dangerous fumes emanating from the mouth of the mine for a time prevented attempts at rescue. Two men went into the mine equipped with gas masks, but were driven back. Howard Butler, surface foreman, with a group of aids, penetrated the slope for a short distance, but they too were driven back by fumes, which for a time made further attempts to enter the mine impossible.

Adjutant General Metts arrived late on the day of the explosion and took charge of the situation on behalf of Governor McLean, with Frank Page,

chairman of the State Highway Commission, who brought a corps of engineers at the executive's request to assist in the rescue. Employees from the mine of the Cumnock Coal Co., near by, also aided in the rescue work.

An appeal for help to the U. S. Bureau of Mines caused D. J. Parker, safety engineer, to order a rescue car from Thomas, W. Va. A mine rescue crew also was sent from the Birmingham branch of the Bureau of Mines on Wednesday night.

Smoking in the mine is believed to have been the cause of the explosion since a revelation made by Dr. John L. Scott, Sanford physician, in charge of the temporary morgue. He told government experts that he had found matches in the pockets of several negro victims.

The death list issued on Saturday contained the names of twenty-seven white men and twenty-two negroes, with four bodies unidentified.

Bidding Lively for Federal And State Fuel Contracts

Bids received on May 25 by the Bureau of Mines, Washington, D. C., for shipping bituminous coal to the Government Fuel Yards, in Washington, resulted in forty-nine companies submitting prices.

For shipping 20,400 gross tons of low-volatile nut and slack to the New Jersey Avenue yard the bids ranged from \$1.50 to \$1.68 per gross ton, or \$1.34 to \$1.50 per net ton, f.o.b. mine. For shipping 137,100 gross tons of low-volatile mine-run to the same yard the prices ranged from \$1.87 to \$3.19 per gross ton, or \$1.67 to \$2.85 net ton, f.o.b. mine. The bids received covering the entire tonnage ranged from \$1.95 to \$2.24 per gross ton, or \$1.74 to \$2.01 per net ton.

Bids received for delivering to the Capitol Power Plant 41,200 gross tons of mine-run or nut and slack ranged from \$1.12 to \$1.68 for nut and slack and from \$1.37 to \$2.52 for mine-run, or 98c. to \$1.52 and \$1.20 to \$2.23 per net ton, respectively, f.o.b. mine.

For shipping 26,000 gross tons of high- or low-volatile mine-run or nut and slack to St. Elizabeth's Hospital, Washington, the bids ranged from \$1.34 to \$1.59 for nut and slack, and \$1.34 to \$2.35 for mine-run, or \$1.20 to \$1.43 for nut and slack and \$1.20 to \$2.10 for mine-run f.o.b. mine.

There were seven bidders for shipping 2,000 gross tons of gas coal to Alexandria, Va., the prices ranging from \$1.90 to \$2.70, or \$1.69 to \$2.41 per net ton, f.o.b. mine.

Bids received by the U. S. Shipping Board on the same day for the requirements of the Fleet Corporation for 12 months—approximately 180,000 tons—resulted in prices of \$5.94 to \$6.15 per net ton for freight vessels and \$6.20 to \$6.37 per ton for passenger ships.

The Department of Purchase, State of New York, has announced the tentative low bidders for furnishing state institutions with bituminous coal from July 1, 1925, to March 31, 1925. For run of mine the low bids ranged from \$1.28 to \$1.64, net ton, f.o.b. mine; nut and slack, \$1.50 to \$1.55; 3-in. lump, \$1.50 to \$1.95, 14-in. lump, \$1.70, and smokeless, \$1.50.

For shipping to various institutions 26,000 gross tons of No. 3 buckwheat, 45,200 tons of No. 1 buckwheat, 15,105 tons of stove coal, 4,020 tons of chestnut, 3,015 tons of egg, 6,830 tons of pea and 200 tons of grate the bids ranged as follows: No. 3 buckwheat, \$1.50 per ton; No. 1 buckwheat, \$2.14 to \$2.50; stove, \$8.95 to \$9.35; chestnut, \$8.45 to \$8.85; pea coal, \$5.25 to \$5.50; egg coal, \$8.45 to \$8.75, and grate coal, \$8.50. It was specified by the company submitting the low prices on egg, stove and chestnut coals that they were subject to the increases of 10c. per ton in July, August and September.

Trade Associations Win Anti-Trust Suit

Trade associations do not violate the anti-trust laws in gathering and disseminating among members information on costs and quantity of production, stock conditions and sale prices, and cannot be prosecuted for so doing, according to two decisions by the U. S. Supreme Court June 1.

The decisions were given in the cases of the Maple Floor Manufacturers' Association and the Cement Manufacturers' Protective Association, both found guilty by lower courts of breaking the anti-trust law.

Associate Justice Stone, formerly Attorney General, who wrote the two decisions, argued that whereas a combination between manufacturers in these two trades might have come about through the methods complained of, there was nothing to show that such was the intent, and that, in fact, diligent effort was made to keep within the anti-trust laws.

Justice McReynolds entered a dissent, holding that the activities of the two organizations had been proved unlawful under the court's decisions in the hardwood lumber and linseed oil cases, and Chief Justice Taft and Justice Sanford dissented on somewhat similar grounds.

Strife in Springfield Union

John A. Walker is again president of the Springfield (Ill.) sub-district of the United Mine Workers. State President Frank Farrington reinstated Walker, who had been dismissed on a charge of delinquency in payment of union dues and assessments.

Walker was named to succeed Freeman Thompson, ousted by President Farrington on charges of irregularity at the last miners' election. When Walker took office he removed John Watt as secretary-treasurer for insubordination. Anthony Shymansky was chosen to fill Watt's job.

When the question of Walker's eligibility was raised because of alleged non-payment of dues and assessments, Tom Parry was appointed by President Farrington to serve. Parry dismissed Shymansky and reinstated Watt.

Now Parry has been removed. So has Watt. Shymansky takes Watt's place again. All this by order of the state president. Thompson, Parry and Watt object. A lively fight is on.

Wholesalers in Convention Condemn "More Government in Business"

They Adopt Resolution Endorsing Coolidge Program of
Non-Government Interference—Approve New Federal
Trade Commission Plan—Elect H. J. Heywood President

More government in business was again condemned when the closing session of the eighth annual convention of the American Wholesale Coal Association held at French Lick, Ind., June 1 and 2, unanimously adopted a resolution endorsing the Coolidge program of non-government interference with legitimate enterprise. This was held to be in consonance with demands of the coal industry to work out its own salvation in obedience to economic law. The organization also approved the proposal to write the new federal trade commission procedure into law.

Harry J. Heywood, W. A. Gosline and Co., Toledo, was elected president for 1925-1926; G. H. Merryweather, Wau-bun Coal Co., Chicago, vice-president, and Roscoe B. Starek, Shoemaker Coal Co., Chicago, secretary-treasurer. Only one change was made in the directorate, Warren Bixler, Bixler Coal and Coke Co., Pittsburgh, succeeding G. H. Snowden.

The freedom from investigations and threats of regulation enjoyed in the past year, warned President Harry K. Cortright in opening the convention, is only temporary. The issues raised by the Oddie bill must be met and other attempts at government interference combated. While praising the recent reforms in Federal Trade Commission practice, Mr. Cortright pointed out that these changes have been the result of personnel, not of law. For that reason he supported the Wadsworth-Williams bill to make mandatory the new procedure and to work further reforms.

Market Is Endangered

Inroads made by competitive fuels and increased efficiency in coal combustion, declared Mr. Cortright, have reduced the demand far more than any slowing up of industry. The entire market is endangered and every effort must be made to save and extend it. To reduce costs smaller operating units are abandoning marketing. "In a few years," he predicted, "the wholesaler will be the market channel for all coal produced except that from captive mines and from the very large consolidations now in effect and in prospect."

The report of Secretary G. H. Merryweather, tendered as a valedictory after six years' service, pled for continued loyalty to the organization and criticized the indifference manifested by so many coal companies.

The report of Commissioner Ira C. Cochran called special attention to proposed amendments to the Census Act, the coal distribution program of the Department of Commerce and the Oddie bill. "The adoption of any of these plans," asserted Mr. Cochran, "would bind the coal industry to a statistical program of comprehensive magnitude."

Discussing competition with other fuels, C. P. Hotchkiss, executive secretary, Dominion Fuel Board, stated that

coal production since the war had declined because of recession in industrial activity, chaotic international conditions, economies in consumption induced by war prices and strikes. The latter had been particularly effective in encouraging the domestic consumer to substitute liquid for solid fuel. Moreover, manufacturers of coal-burning equipment for the home had not kept pace with public demand for greater efficiency and convenience.

Coke competition also must be counted a steadily growing factor. Its growth, however, is controlled by the ability of the ovens to market their gas yields. Mr. Hotchkiss felt that present costs of house heating with manufactured gas ruled that fuel out.

William F. May, supervising engineer, Anthracite Service, however, took a more alarming view, because, he said, the gas companies were working on a combination gas and oil burner which would make oil carry the peak of the heating load and allow them to increase gas sales without enlarging their mains. With the early abandonment of water-gas manufacture he expected still more dangerous competition from the producers of coke.

Oil Man Expert on Coal

The ultimate aim of the gas companies was to sell coke direct to the consumer at approximately \$9 per ton. The development of that market would permit a reduction in gas prices. Mr. May said coal men had been handicapped in fighting oil because they knew little about it. The oil salesman is an expert on coal. In the industrial field coal is regaining lost ground solely on a price basis. Most of the plants reclaimed will revert to oil at the first favorable opportunity unless coal renders a superior sales and engineering service.

E. W. Parker, director, Anthracite Bureau of Information, criticized the lack of co-operation extended producers in marketing the smaller sizes by some retailers. Ex-president W. R. Coyle, in a speech read in his absence by Ex-president Charles L. Dering, admonished the trade, in fighting regulation, to remember that freedom carried with it the obligation to keep coal's house in order and to render greater service to the consumer. Speaking on his own behalf, Mr. Dering urged serious consideration of the economies that might be effected with fewer and better salesmen.

Ex-president E. M. Platt asked for an intensive study of all distribution costs. Francis M. Shore, assistant to the head of the coal section, Department of Commerce, asserted that the purpose of that department was to foster and develop business, not to manage it.

Commissioner Cochran pointed out that the common idea that wholesalers

Devine Says Union Tale of Herrin Massacre Is Bunk

The United Mine Workers' assertion that Communists were responsible for the Herrin massacre is "bunk" was the statement made by Dr. Edward T. Devine, former editor of the *Survey* and a member of the U. S. Coal Commission, in an address of Fairmont, W. Va., May 13. In his talk Dr. Devine took a fling at John L. Lewis, international president of the United Mine Workers, who said "the commission knew less about coal after it finished its report than before it started." Dr. Devine said "that was impossible."

could not trade mark coal because they did not produce it, was erroneous. The courts, he continued, have clearly established that "one through whose hands the goods have passed on their way to the market may apply to those goods a distinctive mark to identify them as coming from him, being marketed upon his responsibility and measuring up to his standard of excellence." The wider use of trade marks was urged and the facilities of the association in obtaining registration volunteered.

Wholesalers were urged to use their influence to discourage operators from shipping consignment coal on a falling shipping consignment coal on a falling market in an address by C. M. Moderwell, president C. M. Moderwell & Co., Chicago. "Our problem," he said, "is to serve the producer in finding a market for his production and to enable him to make a profit, while at the same time we keep one step ahead of the sheriff ourselves." Those who held that the only duty of the wholesaler was to the buyer had not, he felt, thought the problem through. The middleman must recognize and fulfill his obligations to both the man from whom he buys and the man to whom he sells.

Wholesaler Guards Producer

"One of the functions of the wholesaler is to act as guardian for the producer whose brain does not function sufficiently to show him that he is pursuing a foolish policy by shipping consigned coal. The producer trusts his product to us in the hope that we may find the best market for it. There can be no good end served, even to the wholesaler who may get a little temporary profit out of shipments," declared Mr. Moderwell, "if in the end producer and wholesaler alike are to suffer."

Mr. Moderwell's address provoked spirited discussion in which all agreed open billing should be curtailed, but that reconsignment privileges to meet legitimate merchandising requirements should not be jeopardized. Railroads permitting associated operators to dump unordered coal upon wholesalers to market it are the worst offenders, speakers contended. A motion was adopted to confer with the National Coal Association in an effort to discourage such shipments.

Central Pennsylvania Output Mostly on 1917 Scale

At the present time in central Pennsylvania, all of the coal, with the exception of that being mined on the Tyrone division of the Pennsylvania R.R., is on the lower wage basis. This is also true of the New York Central R.R. in and around Madeira, Boardman and Kelleys-town, Clearfield County.

Morrisdale is now working normally on the 1917 scale. On the Cresson division, Black Lick branch, everything on the branch with the exception of Nant-y-Glo, where a determined effort is being made to work the Weaver mines on the 1917 wage scale, is now working practically normal on the lower basis.

Production in Central Pennsylvania for the week ending May 23 was 11,024 cars and in the previous week, 11,565 cars. During the month, to and including the 23rd, the output was 36,162 carloads as compared with 32,902 for the corresponding period in April.

Main Line Mostly on Low Wages

Along the main line of the Pennsylvania R.R., there are some mines working on the union scale, but the larger operations, including those at South Fork, Beaverdale, Dunlo, Scalp Level, Windber, Cairnbrook and Central City, one of the largest producing areas in the district, are on a modified 1917 wage scale. On the main line from South Fork to Blairsville Intersection and from Blairsville up the Indiana branch to Indiana, all mines are working on the lower wage basis.

On the Cresson division everything from Bellwood to Horatio is working on the lower scale except Coalport. On the Cresson division, C. & I. branch, up to and including Coalport, everything is working on the union scale. On the Cresson division, Susquehanna extension, from Coalport to Cherry Tree, everything is working on the union wage scale. On the C. T. & D. branch, from Cherry Tree to Dixonville and Heilwood, the situation is rather mixed. A number of small mines in and around Starford that have been at work on the 1917 scale were closed down by the organized miners last week. Heilwood has been on the 1917 scale for considerably over a year. The Clymer district is on the union scale. In the Dixonville territory the situation is mixed, some operating on the 1917 scale and some on the union scale. The mines that were operating on the 1917 scale were closed down for several days by the march last week.

In the Broad Top region practically all mines except several small ones that are at work at all are on the union scale. On the Buffalo, Rochester & Pittsburgh Ry. over 80 per cent of the coal that is being mined on the whole system is being mined on the 1917 scale or less. On the Buffalo & Susquehanna a larger portion of the mines are closed down. Those that are running are operating on the union wage scale. On the Pittsburgh, Shawmut & Northern all of the mines operating and the Shawmut Mining Co. are on the union scale. All of the independent mines on this railroad are operating on the No-

Coal Far Ahead of Water As Power Producer

Industrial and domestic demands for electricity in the United States have already passed the point where they could be supplied exclusively by generating stations operated by water power even if all of the nation's available water power sites were developed with hydro-electric generating plants, according to Dr. George Otis Smith, director of the U. S. Geological Survey. Thus, Dr. Smith points out, water power and coal are not rivals in the production of electrical energy but really partners.

"When the word power is spoken many of use think only, or at least first, of water power," says Dr. Smith. "At the sessions of the world power conference in London, however, it was made plain enough that coal far outranks water power as a source of electrical energy.

"Statistics there cited for six leading countries of the world showed that coal production represented five times the energy output of water power utilized. And we know that even in the United States, with its great development of water power—about three times that of any other country—steam and internal-combustion engines, not including those of locomotives or automobiles, produce more than three times as much power as our water wheels."

vember, 1917, scale. On the Pittsburgh & Shawmut R.R., the large producing company, the Allegheny River Mining Company, closed down all of its mines on April 1. All of the coal coming off of this railroad from independent producers is being mined on the 1917 scale.

Mines on Erie Road Work Union

All of the coal being mined on the Erie R.R. and in the Tioga-Blossburg field is on the union wage scale. On the Cambria & Indiana Ry., practically all of the coal being mined on this railroad today, except two mines, is at the November, 1917, scale. On the Johnstown-Stony Creek R.R. everything is being produced on the 1917 scale.

A check-up of the situation indicates that 70 per cent of the car loadings from the district today are coming from mines on the lower wage schedules.

New York Anthracite Prices For June, 1925

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

	Broken	Egg	Stove	Chest-nut	Pea
Lehigh Valley Coal Sales Co.	\$8.25	\$8.50	\$8.95	\$8.70	\$5.00
Lehigh Coal & Navigation Co.	8.70	8.70	9.10	8.60	5.35
Phila. & Reading	8.70	8.65	9.05	8.65	5.40
Lehigh & Wilkes-Barre Coal Co.	8.10	8.45	8.95	8.45	5.00
D. L. & W. Coal Co.	8.35	8.45	8.95	8.45	5.25
Pattison & Bowns (Frie)	8.20	8.45	9.00	8.45	5.00
Hudson Coal Co.	8.45	8.45	8.95	8.45	5.70
M. A. Hanna & Co.	8.50	8.50	8.70	8.70	5.45
Steam sizes: No. 1 buckwheat, \$2.50; rice, \$2; barley, \$1.50; birdseye, \$1.60.					

To Study Explosion Factors

Dr. H. F. Coward, an expert in combustion phenomena, who studied for some time under Dr. Dixon and is now in the United States from England to assist in the U. S. Bureau of Mines research, has laid out in co-operation with that bureau and with Dr. R. V. Wheeler the following program of inquiry:

(1) The effect of inert gases on the rate of uniform movement of flame in mixtures of methane and air. He has studied in England the effects of carbon dioxide and water vapor. In America he will ascertain in particular the effect of helium.

(2) Comparison of the rate of inflammation of methane and natural gas in air. Most of the U. S. Bureau of Mines' experiments are made with the gas from the Pittsburgh mains. What effect does the ethane in that gas have in modifying explosion phenomena?

With C. M. Bouton Dr. Coward will study the effect of size of particles on the inflammability of coal dust. With M. D. Hersey he will test various types of manometers (pressure measures) and compare their lag effects and sensitivity. The British coal dust manometer will be compared with the Taffand manometer, which the U. S. Bureau of Mines is using. New types of manometer, such as the Peteval and the General Motors, also will be tested. With S. H. Katz and Dr. E. G. Meiter experiments will be made determining the chemical effect of electric arcs in igniting methane-air mixtures.

Dr. Reinhardt Thiessen will spend a year in England studying with the British Governmental investigators the paleobotany of coal.

Moffat Tunnel Open in 1926

The Moffat Tunnel, which is being bored through the Continental Divide a few miles west of Denver, will be completed a year ahead of schedule, according to information made public by R. M. Grant & Co., New York bankers, in connection with the offering May 20 of \$1,250,000 of 5½ per cent general obligation bonds representing the tunnel district. New machinery in use on the tunnel job was said to have enabled the contractors to push the work twice as rapidly as before. It is expected that the tunnel will be open to railway traffic in 1926 instead of 1927.

The project, begun several years ago, is a twin railroad and water bore tunnel 6.1 miles long directly under James Peak. It is 9,000 ft. above sea level and replaces the present crossing of Rollins Pass at an altitude of 11,600 ft. It will be the longest tunnel on the North and South American continents.

Byproduct and Beehive Coke Output In United States, 1913-1924*

(In Net Tons)			
Year	Byproduct	Beehive	Total
1913	12,714,700	33,584,830	46,299,530
1915	14,072,895	27,508,255	41,581,150
1917	22,439,280	33,167,548	55,606,828
1918	25,997,580	30,480,792	56,478,372
1919	25,137,621	19,042,936	44,180,557
1920	30,833,951	20,511,092	51,345,043
1921	19,749,580	5,538,042	25,287,622
1922	28,550,545	8,573,467	37,124,012
1923	37,597,664	19,379,870	56,977,530
1924	33,995,000	9,668,000	43,663,000

* Compiled by U. S. Geological Survey

Torch Applied in Panhandle Strike; 125 Arrested Pickets Fined \$1 Each; Non-Union Coal Production Gaining

Wholesale arrests for alleged violation of an injunction granted to the New England Fuel & Transportation Co. against union miners on strike in northern West Virginia culminated in the Marion County Circuit Court late Wednesday afternoon, May 27, when 125 union pickets were fined \$1 each and had costs imposed upon them by Judge Winfield Scott Meredith. The arrests were made on an interpretation of law handed down by Judge L. S. Schwenck, of the Marion County Criminal Court, who has held that assemblage of more than three men in a group constitutes "intimidation" and a violation of the existing injunction. Two international representatives, James L. Studdard and M. A. ("Tony") Teti, and eleven women pickets were acquitted.

As soon as the case was disposed of Van A. Bittner, chief international representative, hurried to Morgantown, where he was summoned to appear forthwith before Judge I. Grant Lazelle in the Monongalia County Circuit Court to answer a charge of violating an injunction granted to the Continental Coal Co., of Fairmont, which operates mines in the Scotts Run section. Attorney Townsend accompanied Bittner and gave bond in the sum of \$1,000 to appear before Judge Lazelle June 10 to answer a rule to show cause why he had violated the injunction.

The wooden tippie of the Sitnek Coal Mining Co. at Hero Mine, Lumberport, Harrison County, was burned down early May 29, causing a loss of \$20,000, when scales, mine cars and other equipment were destroyed. Mysterious shots at the pit mouth a block away drew the guards there, and the match was applied in their absence.

Lewis Calls Conference

John L. Lewis, international president of the United Mine Workers, has called a conference of the officers of Ohio and the northern field of West Virginia to be held in Indianapolis on Thursday, June 4, for the purpose of taking action relative to the interests of the Warner Coal Co. in Ohio, due to the action of the Brady Warner Corporation in northern West Virginia in employing armed guards and resorting to evictions without due process of law. Van A. Bittner, chief international representative, announced "unless a settlement is reached with the Brady Warner Coal Corporation in northern West Virginia in the immediate future, the mines of the Warner interests in Ohio will be closed down by the United Mine Workers."

Frank Spatora, wanted by the Taylor County authorities, was arrested in McKeesport, Pa., May 25 on a charge of being a member of the squad that dynamited the Gordie-Bailey-Fahey coal tippie at Wendel some time ago. Prosecuting Attorney Merele Watkins, of Grafton, according to press reports, says he made a complete confession,

which tallies with a confession made by John Bailey, former secretary of the Wendel local union, who says that the union miners plotted to destroy many tipples in Taylor and Barbour counties.

Due to the numerous injunction proceedings active picketing has been practically eliminated.

State police say that a fire at the scale house and tippie of the E. B. Stone Coal Co., now owned by Robert Barrackman, who purchased it at sheriff's sale, in Scotts Run May 22, caused a loss of \$2,000.

Non-union coal mines loaded 3,542 cars of coal during the first three days of last week, while union mines loaded 538 cars. In the week ended May 23 the non-union mines produced 6,197 cars of coal, or 309,850 net tons, against 5,896 cars the previous week. Union plants loaded 914 cars, or 46 cars less than the previous week. A new high mark for non-union production in one day along the Monogah division of the B. & O. was reached May 25, when 539 cars were loaded, and a peak of 381 cars was attained along the Monongahela Ry. May 26. The highest day's non-union output was reached May 26, when 1,195 cars were loaded.

Nine Union Mines Work

On the average during the first three days of last week there were 152 non-union mines at work in northern West Virginia. Nine union mines worked daily on the average.

Eleven arrests were made last week and others are expected in connection with the blowing up of two non-union miners' homes in Glendale, near Wheeling. William Roy, vice-president of District No. 6, denied that the miners' union countenanced any bombing of houses. Roy also said that there was no break in the union ranks.

John Corrish, the first of twenty persons indicted by the Marshall County grand jury in connection with the riot at Glendale, April 12, was found guilty of inciting a riot and conspiracy to do bodily harm to Robert Crow, a non-union miner, as charged in the indictment. Judge Morris sentenced Corrish to 10 years in the state penitentiary at Moundsville. Attorneys for Corrish took an appeal.

Tents for Evicted Miners

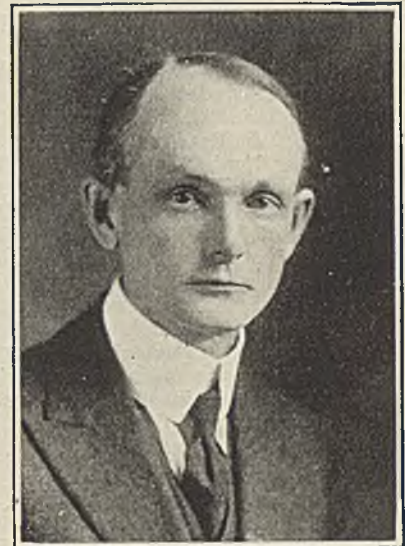
Word was received from Wheeling May 28 that 100 tents were received there and will be occupied by the miners and their families who have been evicted by coal corporations in the strike area. Strike benefits are being distributed to all miners who are not employed, it has been announced.

Ohio miners' officials say that questionnaires sent out to the men asking if they wanted to abrogate the Jacksonville scale and return to work on the 1917 wage scale, provided they are assured steady employment, are being returned and are practically unanimous for sticking for the Jacksonville scale.

Bain Leaves Mines Bureau; To Be Secretary of A.I.M.E.

Dr. H. Foster Bain, Director of the U. S. Bureau of Mines, has submitted his resignation to Dr. Hubert Work, Secretary of the Interior, to take effect July 1, when he will become secretary of the American Institute of Mining and Metallurgical Engineers. As leader of the Institute, Mr. Bain will have the services of two assistant secretaries, whom he will select. F. F. Sharpless also will devote a large part of his time to the Institute.

The American Institute of Mining and Metallurgical Engineers has a membership of 9,000. J. V. W. Reynolders of New York, a steel maker and bridge builder, is president.



©Harris & Ewing

H. Foster Bain

In announcing Dr. Bain's appointment, the Institute made the following statement:

"Dr. Bain has been director of the Bureau of Mines for several years and has placed that office of the government on the highest plane of service. In addition to being a geologist of unusual attainments, Dr. Bain has served as editor of the *Mining and Scientific Press*, of San Francisco, and the *Mining Magazine*, of London. He made an extensive examination and report on the mineral resources of China for an American financial group. Recently, at the request of the Argentine Government, he made an examination and report on the utilization of the mineral resources of Argentina and the advisability of establishing an iron and steel industry there. He comes to his new position with a singularly efficient mental equipment and a worldwide acquaintance and reputation."

O. P. Hood, in charge of the Fuel Division of the Bureau of Mines, is en route to Alaska on one of the visits to the field made periodically by one of the principal officers of the Bureau. While in Alaska he will pay particular attention to the problems of the coal user in that territory. With certain minor changes in practice it is believed that Alaska coal can be burned to greater advantage.

Pennsylvania Coal Companies To Get Huge Tax Refund

Schuylkill County, Pennsylvania, must return to coal companies operating there between \$2,000,000 and \$3,000,000 in excess taxes paid, according to a ruling of the State Supreme Court, which has caused a revision of valuations.

In 1921 the coal properties of Schuylkill County were officially valued for tax purposes at \$100,132,763. Then came the raid upon them by imported experts and by those demanding equalized assessments. The valuations were boosted to \$498,357,021. The following year the figure was \$497,801,830. It was at this point that the Supreme Court intervened and the valuation of the properties under the decision of that tribunal has dropped back this year to less than \$140,000,000.

During the years of the inflated valuations the following companies and individuals paid under protest: the Philadelphia & Reading Coal & Iron Co., Lehigh Coal & Navigation Co., Sheaffer estate, W. H. Kemble estate, Mrs. S. Maude Kaemmerling, of Philadelphia; Isaiah V. Williams estate, Calvin Pardee estate and Alliance Coal Co.

Some big interests, including the Girard estate, of which the Board of City Trusts of Philadelphia had the management, made adjustments with the county commissioners sitting as a board of revision and did not appeal to the Supreme Court.

To Frame Ventilation Code

In order to establish standards for ventilation a sectional committee has been created by the American Engineering Standards Committee, 29 West 39th St., New York City, the American Mining Congress being sponsor.

Representing the American Institute of Mining & Metallurgical Engineers are Frank Haas, consulting engineer, Consolidation Coal Co., Fairmont, W. Va.; Allen S. Richardson, ventilating engineer, Anaconda Copper Mining Co., Butte, Mont.; representing the American Mining Congress, Carl Trik, Jeffrey Manufacturing Co., Columbus, Ohio, and Charles A. Mitke, consulting engineer, Phoenix, Ariz.; representing the Society of Heating and Ventilating Engineers, Thomas Chester, consulting engineer, Pittsburgh, Pa., and representing the American Society of Mechanical Engineers, Ferry C. Houghton, secretary, American Society of Heating & Ventilating Engineers, New York City.

Other representatives have been named by the American Association for Labor Legislation, the Associated Companies, the Coal Mining Institute of America, the Mine Inspectors Institute, the Mine Safety Appliance Co., the National Association of Fan Manufacturers and the U. S. Department of Labor. The National Coal Association is represented by Ezra Van Horn, general manager of the Clarkson Mining Co., Cleveland, Ohio; the National Safety Council by Dan Harrington, Salt Lake City, and the U. S. Bureau of Mines, by J. W. Paul, Pittsburgh, Pa., and G. E. McElroy, Vincennes, Ind.

Rewards Safety Achievement

A safety trophy has been designed and executed by Begni del Piatta, a New York sculptor who designed the impressive Navy and Marine Memorial which is to be placed on the banks of the Potomac at Washington. Two replicas will be made and temporary possession of the three statuettes will be awarded, one to the coal mine, one to the metal mine and one to the quarry having the best record for safety during any one year, the U. S. Bureau of Mines deciding which companies shall be the recipients.

On May 20 one of these statuettes was unveiled at the studio of Chester W. French, in New York City. The trophy portrays a mother and child who are supposed to be greeting the father on his return in safety from his work at the mine or quarry. On the base at



Appeals for Greater Safety
In Mines and Quarries

Begni del Piatta, the sculptor, has designed this statuette as a yearly award to the three companies, coal, metal and quarrying, which have the lowest accident rate.

the front will appear the words "Sentinels of Safety, The Explosives Engineer Trophy." On the sides and rear are scenes from a coal mine, metal mine and quarry respectively.

The basis of the award will be the relation of the loss of time from all classes of accidents to the total number of hours of work performed, the calculation being based on the standard scale prepared by the International Association of Industrial Accident Boards and Commissions. The Hercules Powder Co. is the firm that donates the trophy and from N. S. Greensfelder, Wilmington, Del., further details can be obtained.

The effect of non-union mine competition, joined with general business conditions, on companies operating under union schedules in the soft-coal field, is strikingly shown in the latest report of the Davis Coal & Coke Co. This report reveals a deficit before dividends last year of \$190,530 and a deficit after such payment of \$516,195. This contrasts with a net income in 1923 of \$478,477, which was equivalent to \$8.81 a share on the \$5,429,492 capital stock outstanding. The company is now operating under a lower wage scale than that which existed up to May of 1924.

N. Y. Central May Lease P. & W. V. Ry.

The New York Central R.R. is to have almost completed negotiations for leasing the Pittsburgh & West Virginia Ry., which operates a line from near Jewett, Ohio, easterly to Pittsburgh, where valuable terminal rights are owned. This road was acquired by George J. Gould in 1904 in the hope of providing an Eastern link for the Gould system, which he planned would run from coast to coast, but which ended disastrously. It is now owned by a group of men who are said to have purchased it largely because of the road's coal properties and now that these properties have been segregated are willing to sell.

An official of the Central refused to deny or confirm the report of the proposed lease, declaring that he had "nothing to say."

It had been rumored before that the Pittsburgh & West Virginia was included in the tentative plans of L. L. Loree, president of the Delaware & Hudson, for a fifth system in the East, and Mr. Loree and other rail heads were believed to be prospective bidders.

The road has never paid dividends on the common stock. In the annual report for 1924 President Frank F. Taplin said: "Only the uncertainty of mine operation is holding back recognition of common stockholders, who have been very patient."

The Pittsburgh Terminal Coal Corporation was separated from the railroad last December. Under the plan of segregation the carrier's \$9,100,000 outstanding 6 per cent preferred stock was retired, \$3,000,000 equipment trust certificates were issued and the stockholders received an opportunity to subscribe to \$4,000,000 6 per cent preferred and \$8,000,000 common stocks of the coal subsidiary.

The coal company still supplies the road with a large portion of its business.

Indian Coal Lands to Be Sold

Sale of the remaining coal and asphalt deposits owned by the Choctaw and Chickasaw Indians in Oklahoma was authorized by the Secretary of the Interior May 16. The deposits will be sold at a public auction at McAlester, Okla., on June 29 and 30. It will be conducted by the superintendent of the Five Civilized tribes, according to regulations completed by the Bureau of Indian Affairs.

The coal and asphalt deposits belonging to the Choctaws and Chickasaws consist of approximately 300,130 acres of unleased and 69,212 acres of leased lands. The total appraised value is approximately \$9,592,524. At the auction they will be offered in different tracts and each separate tract sold to the highest bidder, no bid being considered less than the appraised value. The tracts of unleased coal deposits number 250 and leased tracts total 73.

Receipts from the sale will be credited to the tribal fund of the Choctaw and Chickasaw Indian nations. The deposits are located in LeFlore, Latimer, Pittsburg, Coal and Haskell Counties, Oklahoma.

Mechanical Loader May Go Across As Result of Competition Caused By Adoption of Jacksonville Pact

Improved Methods as Important as Opening of New Mines in
Increasing Soft-Coal Output—Cost Cutting Following Panics
Proves Strong Stimulus to More Efficient Operation

By Paul Wootton

Washington Correspondent of *Coal Age*

Potential capacity in non-union territory has increased to the point where it is equal to meeting the full coal requirements of the country, assuming, of course, that its railroad facilities were expanded so as to be able to haul away that production. Productive capacity in Pittsburgh and Ohio, by way of contrast, has remained relatively stationary, but West Virginia has forged ahead until its 1923 productive capacity exceeded 190,000,000 tons—much more coal than the bituminous mines of Pennsylvania ever produced in one year.

"Capacity," as thus used, refers to the amount the mines could produce were they to work every day in the working year at the rate they actually do produce while operating.

One of the great difficulties at the bottom of the troubles of the bituminous industry is the existence of this capacity to produce so far in excess of the market demands. There are champions of the industry who resent the statement that it is overdeveloped, but that is because they very justly resent the implication that the coal operators are responsible for the overdevelopment or could do something to check it. The operators, in their own returns to the government, show average working time but little better than 200 days.

Lesher Uses New Procedure

It is clear that the industry could turn out a vastly greater tonnage than it ever has been called upon to furnish, provided the railroads could transport it. There is no piece of statistical information that the industry needs more than a statement of its productive capacity. Unfortunately, there are no real figures on this point, but some idea may be gained by a procedure such as was first developed by C. E. Lesher in a report for the Fuel Administration. Mr. Lesher took the tonnage produced in the year, divided it by the number of days worked, as reported to the U. S. Geological Survey, and multiplied the result by the number of days in the full-time year.

Of course, this is not the physical capacity of the mine. It is not necessarily the tippable capacity, nor the haulage capacity, nor what the developed working places would be able to turn out if fully manned. Actual capacity would be limited instead by the smallest of these factors and by the number of men.

"Capacity" computed in this way is really a very practical measure of potential production, except for one factor and that is the inability of men to work for 300 days at the rate they work when employed only 200 days. It is a matter of observation that the output

per man per day at the mines which work 300 days (and there are a good many of those mines) is likely to be lower than those which run 150 days, other conditions being equal.

Subject to these qualifications figures thus computed are full of interest. They show that at the end of 1923 the capacity of the bituminous mines was fully 950,000,000 tons, or about 400,000,000 tons above the production of that year. Historically they show how fast capacity has been increasing. They show a period of arrested growth after the panic of 1893 and a period of rapid growth for a few years following 1900. There was a further retardation of growth in 1914 and 1915. The most rapid rate of growth of all was between 1917 and 1923. Not only was the absolute increase in tons greater but the percentage of growth was much greater than before.

War Prices Boosted Capacity

Growth in capacity thus is shown to have been influenced greatly by the war-time prices. One boom like that which came to the coal industry in 1917 initiated development the full effect of which may not be felt for years afterward. High prices prompt investment of capital in new mines and the expansion of old ones. The increase in capacity in 1921 was greater than any other year despite the fact that 1921 was a year of low prices and acute depression.

Figures computed in the way mentioned also show clearly where the increase in such capacity has taken place. The capacity of the non-union stronghold—that is, the fields that were non-union before the present collapse—could all but supply the country. If to that area are added the districts that since have gone open shop there could be little question that the potential capacity would be sufficient to supply the entire market.

Another interesting thing which these figures show is that the mechanical improvement in existing mines, quite as much as the opening of new mines, is an important factor in increasing capacity. In twenty years the capacity of West Virginia has increased 150,000,000 tons. Of that total 80,000,000 tons can be set down to the employment of additional men. Assuming that each man produced as much in a day as was the case in 1903 the other 70,000,000 tons has resulted from improvement in the art of mining and in the mechanical equipment of mines. Each miner now produces fully a ton more per day than he did in 1903. The most important single factor in that increase unquestionably has been the cutting

Picking On the Flivver

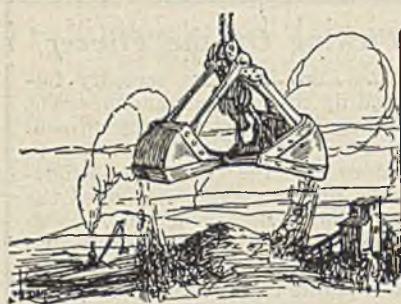
The Ford interests recently followed up the general announcement relating to the sales policy on coal off the Ford dock with a letter to dealers in the St. Paul-Minneapolis district which confirmed the statement. In the letter, it was explained that the coal brought up last season was intended for the Ford plants in St. Paul and Minneapolis. But delays in the completion of the plant in St. Paul resulted in a surplus of coal, which was offered to Ford dealers. Hereafter, however, the company is to sell coal to regular dealers, the same as is done by any other dock concern. Any Ford dealer desiring to handle coal must equip himself the same as a coal dealer.

Whether it is coincidence or not, the fact remains that as a result of the action of last year there was a general boycott of wholesale concerns that were deemed to be too friendly with Ford interests. It extended so far as to result in signs being posted in retail offices that any concern whose solicitors used Ford cars need not seek business there. Several dock concerns considered the situation sufficiently serious to dispose of their Ford car equipment for road men and replace it with other makes.

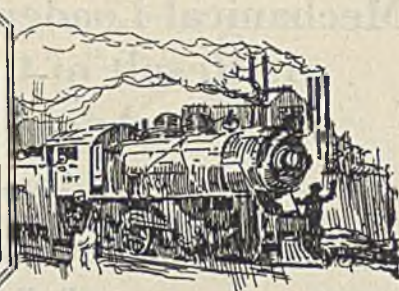
machine, which now is in very general use. Roughly, some 35,000,000 tons of the increase in capacity can be set down to that cause alone. The other 35,000,000 tons is the product of other improvements such as electric haulage, better explosives, better management and an increase in skill among mine workers.

This analysis carries a lesson for what may have happened since 1923, where the figures end. Capacity can increase without opening a single mine by improving existing mines. Nothing stimulates improvement in efficiency so much as does a desire to reduce costs. Competition after the panic of 1893 was one of the things which put across the cutting machine. Competition resulting from the Jacksonville agreement may be one of the things which will put across the mechanical loader.

After mature consideration officials of the Department of Justice are understood to be of the opinion that there is no legal reason why the Bureau of Mines may not be transferred to the Department of Commerce. The organic act of the Department of Commerce empowers the President to transfer to that department any scientific agency, outside the Department of Agriculture, that he may see fit. The Bureau of Mines was created after the Department of Commerce. For years there has been a question as to the application of the law to that particular bureau. The doubt now has been removed and it is assumed that the administration will indicate its faith in its own reorganization plan and make the transfer.



Production And the Market



Soft-Coal Market Lingers in Depths; Anthracite Continues to Ease

Though that popular barometer of business, freight-car loadings, holds at a record-breaking level for this time of year and most authorities pronounce basic conditions to be sound the bituminous coal business shows a disheartening lack of life. For one reason or another consumers turn their backs on the market, purchases being largely limited to current requirements. Contracting is slow, but distress coal is less in evidence than a few weeks ago. A touch of cold weather caused a slight pick-up in domestic trade last week, but it was only a fleeting flurry. Though the market has shown little change in the Middle West the trade is disposed to take a favorable view of the outlook this month, as stocking is expected to begin soon.

Kentucky is producing a larger volume of coal than at this time last year, eastern Kentucky having a freer movement at a fair price, but prices in the western field are still quite low. Business is flat at the head of the lakes, buyers expecting prices to break—and waiting. Little coal is moving in the West and Southwest, as buying is from hand to mouth, and working time is low.

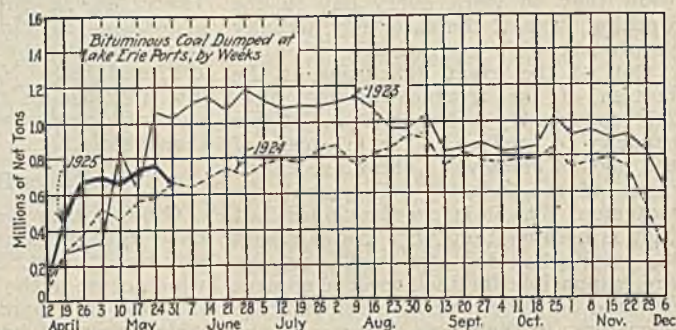
The Cincinnati market is more active than at any time in the last three months, some shippers having so much business booked ahead that they are able to turn some over to those less busy. A better tone is in evidence in southern Ohio also and production has picked up in eastern Ohio, but with little change in demand. Pittsburgh, New England and the other Eastern markets show no signs of awakening from the inactive state recently prevalent.

Anthracite Market Easier

There has been a marked let-up in the anthracite trade. Stove is strong and egg is in good demand, with plenty of coal available to fill all orders. Chestnut is in

fair request, but pea is inactive. Steam sizes are weak and large tonnages are going into storage piles. Independent prices show a tendency to weakness, but rather than reduce quotations the operators have cut down working time. The companies advanced prices on domestic sizes June 1.

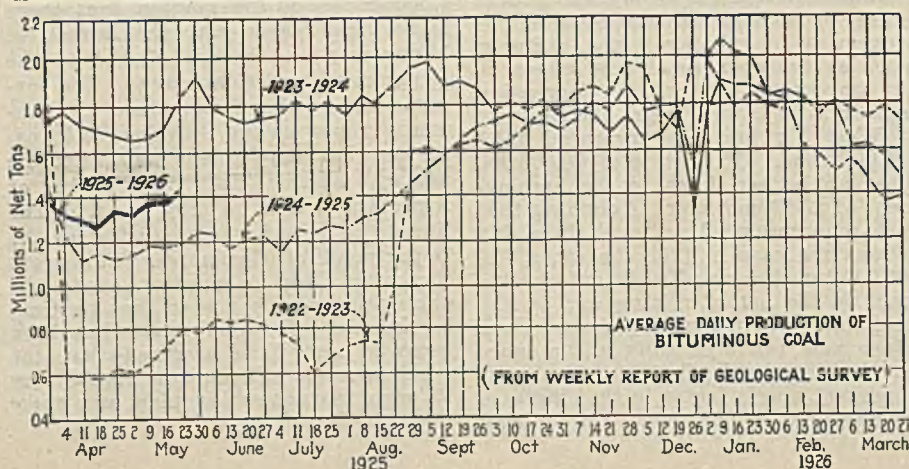
Output of bituminous coal during the week ended May 23, the Geological Survey reports, is estimated at 8,445,000 net tons, compared with 8,350,000 tons in the



preceding week, as shown by revised figures. Anthracite production in the week ended May 23 was 1,760,000 net tons, compared with 1,998,000 tons in the previous week.

Coal Age Index of spot prices of bituminous coal remained stationary during the past week, standing on June 1 at 162, the corresponding price for which is \$1.96.

Dumpings at Lake Erie ports during the week ended May 31, according to the Ore & Coal Exchange, were: Cargo, 624,706 net tons; steamship fuel, 35,455 tons—a total of 660,161 tons, compared with 734,101 tons in the preceding week. Hampton Roads dumpings in the week ended May 28 totaled 368,836 net tons, compared with 451,537 tons in the previous week.



Estimates of Production

(Net Tons)

BITUMINOUS

	1924	1925
May 9.....	7,360,000	8,277,000
May 16 (a).....	7,263,000	8,350,000
May 23 (b).....	7,397,000	8,445,000
Daily average.....	1,233,000	1,407,000
Cal. yr. to date... (c)	192,818,000	189,571,000
Daily av. to date.	1,587,000	1,556,000

ANTHRACITE

May 9.....	1,924,000	2,036,000
May 16.....	1,898,000	1,998,000
May 23.....	1,850,000	1,760,000
Cal. yr. to date... (c)	36,441,000	35,546,000

COKE

May 16 (a).....	189,000	136,000
May 23 (b).....	157,000	147,000
Cal. yr. to date... (c)	5,333,000	4,576,000

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

Better Outlook in Middle West

There was a faint revival in the Chicago retail coal trade last week, due to extremely cold weather. Stocks in the retail yards are very low, and orders for smokeless are brisk. Prices on Pocahontas and New River lump and egg have been advanced to \$3 at the mines, beginning June 1. None of the operators seems to be willing to book any business on lump, as they are still from three to four weeks oversold. Egg is quite plentiful and offered liberally at \$2.75 at the mines. Beginning June 1 the price on eastern Kentucky coal is held at \$2.30.

Demand for high-grade eastern Kentucky coal is a little better and the outlook is extremely favorable for June. It is expected that the Western States especially will come in heavily within the next few weeks. A careful survey shows that retailers have practically no stocks on hand and that they will have to put in their supply very soon. Conditions in the Indiana and Illinois fields are getting worse instead of better, and in a good many instances the western Kentucky field is to blame, as some of the leading operators in the latter field have been offering straight mine run freely at \$1 at the mines. Although the production of prepared coal, due to the lack of domestic orders, is very low, the advance in screenings does not seem to keep up.

Indiana Fifth Vein screenings are offered freely at \$1.45@1.50, and have gone begging in many instances.

Two-inch screenings from Franklin and Williamson counties are held at \$2 at the mines, but there is no difficulty in buying them if anyone has orders for them. Contracts seem to be extremely scarce this year and very few have been closed. From all appearances business in Chicago and the surrounding country towns has been improving considerably during the last week and looks indeed favorable for some time to come.

All large Chicago dealers have again made urgent requests to their customers to stock up early this year.

There is practically nothing doing in the Franklin and Williamson county fields aside from stripping operations. A few shaft mines are getting from one to three days a week and even then most of the coal that some of them produce is being crushed. There is a fairly good demand for the steam sizes but domestic sizes are practically at a standstill. A few cars go out occasionally but the mines are loaded up with "no-billed" domestic sizes. There is a little railroad coal. Strip mines are moving all sizes and are doing a lot of crushing.

In the Duquoin district a couple of mines are getting from one to two days a week and crushing most of their coal. Railroad tonnage there is nil. In the Mt. Olive field the mines seem to be working only for railroad coal and are crushing. There is no domestic business and the crushed coal goes on contracts chiefly. In the Standard field a few mines are crushing their coal and a little railroad coal

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

Low-Volatile, Eastern		Market Quoted	June 2, 1924	May 18, 1925	May 25, 1925	June 1, 1925†
Smokeless lump.....	Columbus....	\$3.50	\$2.85	\$2.85	\$2.75@3.00	
Smokeless mine run.....	Columbus....	2.30	1.85	1.85	1.75@2.00	
Smokeless screenings.....	Columbus....	1.85	1.45	1.45	1.35@1.60	
Smokeless lump.....	Chicago....	3.35	2.85	3.00	2.75@3.25	
Smokeless mine run.....	Chicago....	2.00	1.85	1.85	1.75@2.00	
Smokeless lump.....	Cincinnati..	3.60	2.85	2.85	3.00@3.25	
Smokeless mine run.....	Cincinnati..	2.10	2.00	2.00	2.00	
Smokeless screenings.....	Cincinnati..	1.60	1.35	1.30	1.25@1.35	
Smokeless mine run.....	Boston.....	4.40	4.25	4.25	4.15@4.35	
Clearfield mine run.....	Boston.....	2.00	1.85	1.85	1.65@2.00	
Cambria mine run.....	Boston.....	2.50	2.10	2.10	1.90@2.30	
Somersett mine run.....	Boston.....	2.20	1.95	1.95	1.80@2.15	
Pool 1 (Navy Standard).....	New York....	2.75	2.55	2.55	2.40@2.70	
Pool 1 (Navy Standard).....	Philadelphia..	3.00	2.60	2.60	2.45@2.75	
Pool 1 (Navy Standard).....	Baltimore....	1.95	1.85	1.80@1.95		
Pool 9 (Super. Low Vol.).....	New York....	2.20	2.00	2.00	1.85@2.15	
Pool 9 (Super. Low Vol.).....	Philadelphia..	2.20	2.00	2.00	1.85@2.20	
Pool 9 (Super. Low Vol.).....	Baltimore....	1.85	1.85	1.75	1.65@1.85	
Pool 10 (H.Gr. Low Vol.).....	New York....	1.85	1.85	1.85	1.75@2.00	
Pool 10 (H.Gr. Low Vol.).....	Philadelphia..	1.85	1.70	1.70	1.60@1.85	
Pool 10 (H.Gr. Low Vol.).....	Baltimore....	1.70	1.70	1.60	1.55@1.65	
Pool 11 (Low Vol.).....	New York....	1.65	1.50	1.55	1.45@1.65	
Pool 11 (Low Vol.).....	Philadelphia..	1.60	1.55	1.55	1.50@1.60	
Pool 11 (Low Vol.).....	Baltimore....	1.55	1.45	1.40	1.35@1.45	
High-Volatile, Eastern		Market Quoted	June 2, 1924	May 18, 1925	May 25, 1925	June 1, 1925†
Pool 54-64 (Gas and St.).....	New York....	1.50	1.50	1.55	1.45@1.65	
Pool 54-64 (Gas and St.).....	Philadelphia..	1.55	1.50	1.50	1.45@1.60	
Pool 54-64 (Gas and St.).....	Baltimore....	1.50	1.50	1.45	1.40@1.50	
Pittsburgh se'd gas.....	Pittsburgh....	2.40	2.40	2.40	2.30@2.50	
Pittsburgh gas mine run.....	Pittsburgh....	2.10	2.15	2.15	2.10@2.25	
Pittsburgh mine run (St.).....	Pittsburgh....	1.85	1.95	1.95	1.90@2.00	
Pittsburgh slack (Gas).....	Pittsburgh....	1.35	1.55	1.55	1.50@1.60	
Kanawha lump.....	Columbus....	2.10	2.10	2.00@2.25		
Kanawha mine run.....	Columbus....	1.40	1.40	1.35@1.50		
Kanawha screenings.....	Columbus....	1.10	1.10	1.00@1.25		
W. Va. lump.....	Cincinnati..	2.25	2.05	2.15	2.00@2.35	
W. Va. gas mine run.....	Cincinnati..	1.45	1.40	1.50	1.40@1.60	
W. Va. steam mine run.....	Cincinnati..	1.45	1.30	1.35	1.25@1.50	
W. Va. screenings.....	Cincinnati..	1.90	1.10	1.15	1.10@1.15	
Hooking lump.....	Columbus....	2.40	2.25	2.25	2.15@2.35	
Hooking mine run.....	Columbus....	1.70	1.40	1.50	1.40@1.65	
Hooking screenings.....	Columbus....	1.40	1.10	1.30	1.20@1.45	
Pitts. No. 8 lump.....	Cleveland....	2.40	2.25	2.25	1.90@2.60	
Pitts. No. 8 mine run.....	Cleveland....	1.85	1.90	1.90	1.85@1.95	
Pitts. No. 8 screenings.....	Cleveland....	1.15	1.40	1.45	1.35@1.45	
Midwest		Market Quoted	June 2, 1924	May 18, 1925	May 25, 1925	June 1, 1925†
Franklin, Ill. lump.....	Chicago....	\$2.85	\$2.60	\$2.60	\$2.50@2.75	
Franklin, Ill. mine run.....	Chicago....	2.35	2.35	2.35	2.25@2.50	
Franklin, Ill. screenings.....	Chicago....	2.00	2.10	2.10	2.00@2.25	
Central, Ill. lump.....	Chicago....	2.35	2.35	2.35	2.25@2.50	
Central, Ill. mine run.....	Chicago....	2.10	2.10	2.10	2.00@2.25	
Central, Ill. screenings.....	Chicago....	1.60	1.85	1.85	1.75@2.00	
Ind. 4th Vein lump.....	Chicago....	2.85	2.60	2.60	2.50@2.75	
Ind. 4th Vein mine run.....	Chicago....	2.35	2.35	2.35	2.25@2.50	
Ind. 4th Vein screenings.....	Chicago....	1.95	2.00	2.00	1.85@2.15	
Ind. 5th Vein lump.....	Chicago....	2.35	2.25	2.25	2.15@2.40	
Ind. 5th Vein mine run.....	Chicago....	2.10	1.95	1.95	1.85@2.10	
Ind. 5th Vein screenings.....	Chicago....	1.60	1.60	1.60	1.50@1.75	
Mt. Olive lump.....	St. Louis....	2.85	2.50	2.50	2.50	
Mt. Olive mine run.....	St. Louis....	2.50	2.25	2.25	2.25	
Mt. Olive screenings.....	St. Louis....	2.00	1.75	1.75	1.75	
Standard lump.....	St. Louis....	2.15	2.25	2.25	2.25	
Standard mine run.....	St. Louis....	1.80	1.80	1.80	1.75@1.90	
Standard screenings.....	St. Louis....	1.60	1.70	1.70	1.65@1.75	
West Ky. block.....	Louisville....	2.00	1.65	1.65	1.60@1.85	
West Ky. mine run.....	Louisville....	1.55	1.35	1.35	1.35@1.60	
West Ky. screenings.....	Louisville....	1.55	1.20	1.20	1.10@1.25	
West Ky. block.....	Chicago....	1.85	2.00	2.00	1.90@2.15	
West Ky. mine run.....	Chicago....	1.60	1.30	1.30	1.15@1.50	
South and Southwest		Market Quoted	June 2, 1924	May 18, 1925	May 25, 1925	June 1, 1925†
Big Seam lump.....	Birmingham..	2.80	2.30	2.30	2.25@2.55	
Big Seam mine run.....	Birmingham..	1.85	1.75	1.75	1.50@2.00	
Big Seam (washed).....	Birmingham..	2.00	1.85	1.85	1.75@2.00	
S. E. Ky. block.....	Chicago....	2.10	2.25	2.25	2.15@2.40	
S. E. Ky. mine run.....	Chicago....	1.60	1.70	1.70	1.60@1.85	
S. E. Ky. block.....	Louisville....	2.10	2.20	2.20	2.00@2.40	
S. E. Ky. mine run.....	Louisville....	1.50	1.30	1.30	1.15@1.50	
S. E. Ky. screenings.....	Louisville....	.95	1.10	1.10	.90@1.25	
S. E. Ky. block.....	Cincinnati..	2.50	2.20	2.30	2.15@2.50	
S. E. Ky. mine run.....	Cincinnati..	1.50	1.35	1.45	1.25@1.65	
S. E. Ky. screenings.....	Cincinnati..	1.00	1.10	1.15	1.00@1.15	
Kansas lump.....	Kansas City..	4.50	4.10	4.25	3.75@4.00	
Kansas mine run.....	Kansas City..	3.50	2.85	2.85	2.75@3.00	
Kansas screenings.....	Kansas City..	2.50	2.60	2.60	2.50@2.75	

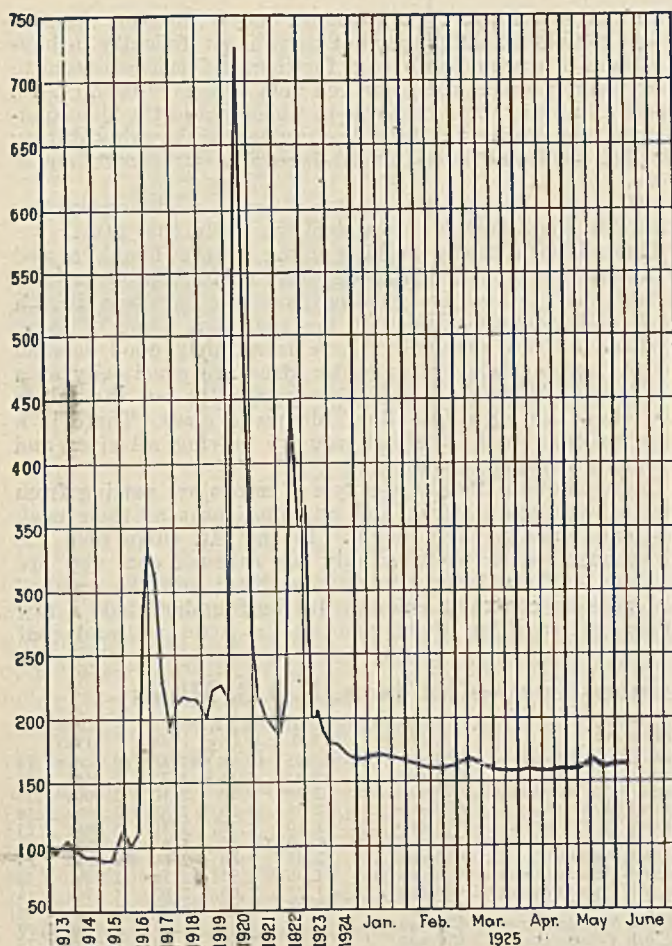
* Gross tons, f.o.b. vessel, Hampton Roads.

† Advances over previous week shown in heavy type; declines in italics.
‡ The term block is used instead of lump in order to conform to local practice, but the same coal is being quoted as heretofore.

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

		Market Quoted	Freight Rates	June 2, 1924	Company	May 25, 1925	Company	June 1, 1925†	Company
Broken.....	New York....	\$2.34			\$8.00@8.75		\$8.05@8.60		\$8.05@8.60
Broken.....	Philadelphia..	2.39			8.60@8.75		8.60		8.60
Best.....	New York....	2.34		\$9.00@9.25	8.35@8.75	\$8.40@9.25	8.35@8.60		8.35@8.60
Best.....	Philadelphia..	2.39		8.35@9.50	8.70@8.75	8.60@9.30	8.40@8.60		8.40@8.60
Egg.....	Chicago*	5.06		7.68@7.77	7.73@7.81	7.86@8.50	7.44@8.18		7.44@8.18
Egg.....	New York....	2.34		9.00@9.50	8.35@9.00	8.75@9.25	8.85@9.10		8.85@9.10
Stove.....	Philadelphia..	2.39		8.70@9.60	8.75@8.95	9.20@9.75	8.85@9.00		8.85@9.00
Stove.....	Chicago*	5.06		8.03@8.17	7.94@8.14	8.22@8.70	7.92@8.10		7.92@8.10
Stove.....	New York....	2.34		9.00@9.25	8.35@8.85	8.25@8.50	8.35@8.60		8.35@8.60
Chestnut.....	Philadelphia..	2.39		8.75@8.85	8.70@8.85	8.60@9.45	8.50@8.60		8.50@8.60
Chestnut.....	Chicago*	5.06		7.90@8.03	7.81@7.99	8.14@8.35	7.69@8.00		7.69@8.00
Chestnut.....	New York....	2.22		5.50@6.00	5.50@6.00	5.00@5.50	5.00@5.50		5.00@5.50
Pea.....	Philadelphia..	2.14		5.75@6.25	5.75@6.00	5.40@5.75	5.00@5.40		5.00@5.40
Pea.....	Chicago*	4.79		5.36	5.36@5.91	4.91@5.36	4.69@5.00		4.69@5.00
Buckwheat No. 1.....	New York....	2.22		2.25@2.75	3.00@3.15	2.00@2.50	2.00@2.50		2.00@2.50
Buckwheat No. 1.....	Philadelphia..	2.14		2.50@3.00	3.00	2.25@2.75	2.25		2.25
Rice.....	New York....	2.22		1.90@2.25	2.00@2.25	1.70@2.00	1.70@2.00		1.70@2.00
Rice.....	Philadelphia..	2.14		2.00@2.25	2.25	1.90@2.00	1.90@2.00		1.90@2.00
Barley.....	New York....	2.22		1.50@1.75	1.50	1.35@1.50	1.35@1.50		1.35@1.50
Barley.....	Philadelphia..	2.14		1.50	1.50	1.50	1.50		1.50
Birdseye.....	New York....	2.22		1.50	1.60	1.60@1.85	1.60		1.60@1.85

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



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

	1925	1924
June 1	162	161
May 25	162	169
May 18	161	169
June 2	169	169
Weighted averaged price...	\$1.96	\$1.95
	\$1.96	\$2.04

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

is going out. Mines are getting from one to two days a week and are doing well with the usual exceptions. This coal is still being sold below cost of production and there seems to be no encouragement ahead. Prices are unchanged.

At St. Louis a little cool weather last week caused a slight flurry for small quantities of cheap coal in a domestic way. A little storage was put in for apartment houses, but it is mostly cheap coal and the quality is not a factor. Country domestic is hard to find. There is an occasional car moving out on account of the cool weather. Local wagonload steam is fairly good. Carload steam appears good because there is so little to offer, but it is below normal and there is no demand for country steam at all. Dealers have a good supply of coal in their yards, but steam plants are low. No change in prices.

Output in Kentucky Ahead of Last Year

No price improvement has appeared in western Kentucky, quotations being a shade weaker than they have been, while eastern Kentucky is holding firmly except for screenings, some having been offered at 90c., the first time they have been under \$1 in weeks. This is expected to force prepared prices up a trifle before long.

Efforts of eastern Kentucky operators to advance best grade lump for June delivery to \$2.40@2.50 haven't met with much success, as plenty is being offered at \$2@2.25 for 4-in., and around \$1.75@2 for egg and lump, some egg being \$1.65.

In western Kentucky best 6-in. block is quoted as high as \$1.85 a ton, along with egg, lump and nut, but some of the same sizes is offered as low as \$1.40, including strip

coal. Mine-run is all the way from \$1.15 for strip to \$1.25@1.50 for pit mined. Screenings are \$1.10@1.25.

Cold weather last week stimulated domestic and steam business a little and should have a tendency to start stocking orders moving to the retailers.

It is reported that movement from eastern Kentucky is better, with domestic sizes moving fairly well to the lakes and North, and better than usual demand from the lakes for screenings. Kentucky undoubtedly is producing a much better volume of coal today than at this time last season. Eastern Kentucky, considering wages and production costs, is getting a fair price, but prices in western Kentucky are still quite low.

Trade Inactive in Northwest

Except for bituminous screenings and large orders from individual consumers for anthracite, the coal market at Duluth is absolutely dead. Nevertheless, thirty-six lake cargoes arrived last week, of which ten were anthracite. Fourteen cargoes are reported on the way from lower lake ports, of which two are hard coal.

The falling off in soft coal is due to the fact that buyers are waiting for an expected break in prices, because of readjustments of miners' wages.

Meantime the docks show their confidence in the situation by continuing shipments to this port, and requesting the railroads, which own much of the coal now on the docks, to remove their piles as soon as possible, in order to permit of more storage.

Anthracite is inactive, as people will not pay the price for coal now and carry it, and many are using Pocahontas and will not be in the hard-coal market at all this year unless the price of anthracite takes a tumble or smokeless goes up. Furthermore, people do not fear a shortage in hard coal.

Pocahontas lump is \$7.50; mine run, \$5.50, and screenings, \$4.50. Screenings are moving in small lots, but the total is considerable. The hard-coal price is uncertain as information here is that operators in Twin Cities are working for a \$1.66 reduction on all-rail hard coal, which would put Duluth anthracite off the market.

Unseasonably cold weather at the Twin Cities has had little effect upon the volume of coal moving to consumers. A few orders have been moving, but there is always a little buying at this time. In steam coal the situation continues to be a waiting one.

So far this season there has been a distinct improvement in prices. Prices remain steady at \$5.25 for Hocking lump at the dock and Youghioghny lump 50c. higher. All-rail coal is moving but little to this section, but the prices named are held on former figures, \$2.75 for southern Illinois lump and \$2.25 for central Illinois, with \$1.75 for western Kentucky.

At Milwaukee the coal trade is normal. The domestic demand is at low ebb, naturally, but the industries are taking their usual amounts and are unhesitatingly contracting with dock managers for future supplies. Prices are steady, with the monthly advance of 10c. a ton for anthracite in effect June 1. The flow of coal from lower lake docks is not as brisk as at the beginning of the season, but it is quite steady. Storms interfered somewhat with navigation during the past week.

Few Mines Work in West

Little or no coal is moving in Kansas except on contract and the three shaft mines open in Kansas are working less than half time. The top quotation on Kansas shaft lump coal is now \$4 and much is being offered at \$3.75, some as low as \$3.50. Those operators who heretofore had maintained their price list unchanged at \$4.50, announced a 50c. reduction May 25. Shovel lump is \$3; nut, \$2.75, and screenings and crushed mine run, \$2.50.

In Colorado the coal market is practically demoralized, consumers buying from hand to mouth. Storage orders are being held up pending the effective date on which reduced freight rates on coal will be established. Mines are operating about 35 per cent at the present time with plenty of labor and no disturbances at the mines where wages have been reduced.

Effective June 1 prices of coal were increased approximately 25c. Walsenburg and Canon City district domestic Niggerhead and square fracture lump are \$4.75; washed nut, \$4.50, and washed pea, \$3, with no fixed prices on mine-run or slack coal. Crested Butte high-grade anthracite

Nos. 1 and 2, furnace sizes, are \$6.75; Nos. 3 and 5, base burner size, \$7; Horace mine anthracite Nos. 1 and 2, furnace size, \$8.25, and Nos. 3 and 5, base burner size, \$8.25.

The coal business in Utah shows a slight improvement, but the market is still anything but active. Some coal is being sold for domestic winter storage purposes, but it is only a little so far. The metal industry continues the largest purchaser. The sugar companies will not buy so much coal this year as usual on account of fairly large supplies on hand, the result of light operation last year. Slack is none too plentiful, but in most cases enough is being produced to supply the demand. Prices remain as firm as ever, or firmer, for very little is being said regarding them now. The Independent Coal & Coke Co. is the only company that has so far attempted to reduce wages, and its men are still out. All is quiet at the mine, however, as no attempt is being made to operate.

Cincinnati Trade "Sitting Pretty"

More retailers and buyers of coal have been on the Cincinnati market in the past week or ten days than in any similar period in the past three months. Mining agents say they are now "sitting pretty," some having so much business ahead that they are turning over orders to less fortunate concerns.

Practically no high-volatile lump is to be had here lower than \$2. Some firms with good coal are asking as high as \$2.50. Egg is firm and 2-in. practically unobtainable at lower than \$1.75. Mine-run has stiffened, not so much as the pricing shows because there is still coal of a kind to be had at the low, but it would be purchasable at odd prices anyhow. Slack is the weak brother.

Smokeless dealers have different views on the June pricings. One New River representative is out with a \$3.25 price on lump for June. A large Pocahontas company has not changed its \$3 price though its sales force admits that they are right up to their bookings. Another continues the price of egg at \$2.75. Nut also is variously priced from \$2.25 to \$2.50, but mine-run is firm at \$2. Nothing has changed the situation in screenings, which are weak at \$1.25@1.35.

Retail business has shown no tendency to improve despite heavier advertising and intensive sales efforts. The householder seems to be balky in hurrying along his coal orders and a poor comparison is made for May deliveries as against recent previous years. River business continues heavy with downstream ports stocking up as well as some going on the ground here.

With a slightly better tone in steam grades, there is a distinct improvement in the coal trade as a whole in Columbus and central Ohio territory. Buying is on a better basis and inquiries for steam tonnage are better. But a large majority of the consumers are still buying on the market in preference to entering into agreements. Inquiries from railroads have brought heavy bidding, but only a few of the larger contracts have been closed. Utilities are buying mostly on the open market, although some of the big users are looking around to sign up for the remainder of the season. Reserves are getting low and this will force quite a few of the larger users into the market. There is not a great deal of demurrage coal available and this is tending to clarify the situation. Screenings are still rather firm because of the scarcity of lump production.

Domestic demand is still dull and little is expected in the immediate future. Retailers have short stocks, as a result of some price cutting earlier in the year. Some of the larger yards are taking in smokeless and splints to be ready for the summer stocking season. Ohio mined varieties are

not being bought to any extent for domestic purposes. Retail prices are somewhat weak and irregular, but the worst of the cutting is over.

Lake trade is taking a good tonnage, a little from eastern Ohio and the Pomeroy Bend field. Agitation over the adoption of the 1917 wage scale is being carried on in many Ohio fields and where mines can be operated on that scale there are chances for them to compete in the lake trade.

No change in the demand for coal is discernible in eastern Ohio. Inquiries are scarce and non-union coal is getting first call in many instances from markets ordinarily served by the union mines of eastern Ohio. Spot prices show no change as compared with those quoted a week ago. The supply of slack and screenings is adequate to meet the demand as no scarcity is reported and prices are holding firm. Apparently eastern Ohio operators are simply marking time awaiting some change in wages and freight rates to the lower Lake docks.

During the week ended May 23 the eastern Ohio No. 8 field had the largest output of any week since mid-March. Total tons produced was 238,000 or about 34 per cent of potential capacity for a week. Increase over the preceding week was 27,000 tons, but the output was 15,000 tons under the corresponding week a year ago.

Pittsburgh Trade Loses More Ground

The Pittsburgh district coal market lost a little ground in the past week, due entirely, it appears, to Fairmont coal being offered at \$1.35 for mine-run, against \$1.45 not long ago. Prices here are not quotably changed. Pittsburgh producers can concede no more in prices, and simply lose some more business.

There is more talk now that a readjustment of the union scale alone would not put the district into business again on a profitable basis, though everyone agrees that a readjustment is imperative. The latest decline in Fairmont coal is cited in point, for if that occurs without Pittsburgh competition, what would happen with it?

The situation at Buffalo has not changed materially. There are those, all through the list from consumer to operator, who look for something to stimulate business, but there is no sign of it now. Everybody here is turning to West Virginia coal. Quotations are \$1.60@1.75 for Fairmont lump, \$1.40@1.50 for mine run, \$1.25@1.40 for slack; \$2.25@2.50 for Youghiogheny gas lump, \$2@2.25 for Pittsburgh and No. 8 steam lump, \$1.40@1.60 for slack, and \$1.75@2 for Allegheny Valley mine-run.

New England Market Still Drags

In New England the market shows no improvement. There is little inquiry for steam coal, nor is there prospect of better request during June. The larger agencies are still forcing coal on consumers in different sections in order to move accumulations on rehandling wharves as well as on cars at the Hampton Roads piers. It is realized that the seat of current ills in the industry lies much deeper than artificial boosting of prices.

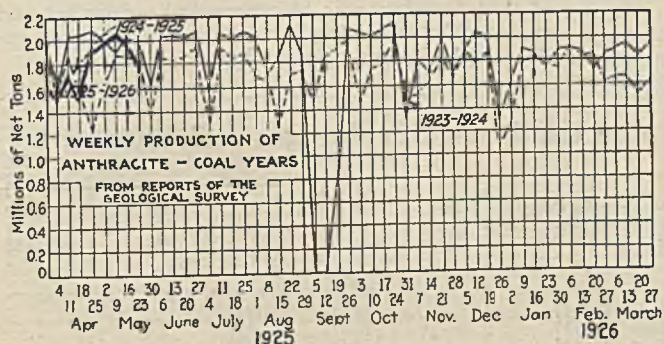
At Norfolk and Newport News the spot market is almost stagnant. Prices f.o.b. vessel per gross ton are \$4.20@4.35, depending upon the shipper's urgency to sell, while second grades of Pocahontas and New River are easily to be had at 15c.@20c. less. Nut-and-slack and straight slack are being heard from occasionally, and at bargain prices. A fair tonnage of all kinds is being dumped on contracts coastwise, but offshore shipments are extremely light.

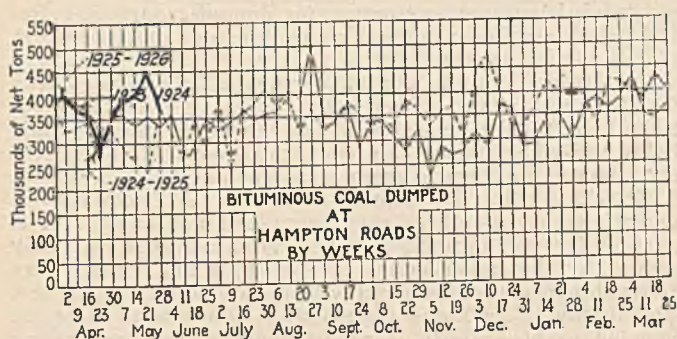
For delivery inland from Boston, Providence and Portland the range is \$5.15@5.40 per gross ton, varying with grade and the momentary tonnage that presses for disposition.

Neither all-rail nor via the Philadelphia and New York piers is there anything more than scattering business offering for coals mined in Pennsylvania. In most cases the union scale makes it impossible to compete, and whether any marked change will develop during the summer remains to be seen.

Interest Lags in New York Market

There is no indication of improvement in the bituminous coal situation at New York, despite reports that most other lines of industry are thriving. Factories along the railroads are well supplied with coal and consumers have no desire to add to their reserves. Some operators are hopeful, however, that there will be a decided change for the





better late in July or early in August, as low stocks are a favorable symptom for future business.

Contracting is almost unheard of now. Those consumers who have not renewed their agreements that have already expired are either holding off for a couple of months or believe they will be able to obtain lower prices in the spot market.

Conditions at the piers are fair. Coal is easily moved and there is no accumulation.

Only Ordinary Buying at Philadelphia

The Philadelphia market is drifting along, with the most ordinary buying in evidence. Concerns with contracts are taking fairly good proportions on their agreements, though the average manufacturer is content to go along without adding fuel to stock.

The only effect here from the strike in the Fairmont region is that slack from that district is quite scarce and is quickly moved.

The amount of non-union coal produced in Pennsylvania increases weekly and the struggle against the high wage scale has a tendency to at least keep prices firm at their present low scale.

Fuel buying by railroads continues to be a big factor in the market; their current consumption is good, and in addition they are adding quite a bit to storage stocks.

The tide market is very dull and no one seems to expect anything like a recovery there for a long time. Bunkering goes on at the usual rate of the past ten or twelve weeks.

The Baltimore market is just drifting. There has been no noticeable change in demand or prices for steam or gas coals for the past two weeks or more. Prices to the trade at the mines and at tide are about on a par, for shippers are now cautious and there is not much coal being caught on demurrage here or being sacrificed below the already low price for fuels. Oil-burning steamers continue to return to coal. The last ship to load coal here for a foreign port cleared on May 16.

While buying of all grades of coal continues slow and restricted in tonnage at Birmingham the trade is more optimistic than for some time. Inquiry for spot steam is a little more satisfactory and there is perhaps a little increase in orders booked over a week ago. Stocks in the hands of industrial plants are negligible at present and it is thought that consumers will shortly give some attention to the accumulation of reasonable reserves. There is very little contracting aside from renewals, which show 100 per cent, this class of customers evidencing no desire to quibble over prices and terms as a rule. Rail lines in this district are taxed heavily to take care of traffic and have increased their fuel consumption to some extent, along with cotton mills, cement plants, furnaces and coke plants.

June is expected to show a material improvement in the spot domestic market and also in the movement of contract coal. Practically all the high-grade lump and other sizes have been sold up through September, and beyond in many instances, which is expected soon to create a demand for Carbon Hill and other medium and lower qualities, which are now little sought. The June mine schedule on lump coal will take on the usual advance, quotation on Big Seam being \$2.55; Carbon Hill, \$2.80; Cahaba, \$3.65@4.40; Black Creek, \$3.90; Corona, \$3.05; Montevallo seam, \$4.15@4.90. Steam prices have shown no change in the past week.

Let-Up in Hard-Coal Trade

The tone of the anthracite market at New York is easier, and except for egg and stove coals there is no rush of orders. These two sizes continue to be in good demand with plenty of coal available to meet all orders. Retail

yards along the railroads dependent upon this market are filled, their owners in some instances refusing to buy even the favored sizes.

Egg coal is not moving as rapidly as last week and pea is inactive. Chestnut is in fair demand, with stove coal leading the list. Announcement made at the last minute regarding company prices for domestic coals for June provided for advances of 5c. to 10c. per ton in the popular sizes.

No. 1 buckwheat and rice are slumping. There is only a fair demand for them and considerable tonnage is going into storage. Barley and birdseye are the only small coals for which there is a waiting market.

At Philadelphia the anthracite market is weak. Dealers have cut down on their ordering so much that the collieries are losing considerable working time. Some hopes are felt that when the miners formulate their demand in June it may have some effect in stimulating trade.

Wholesale prices remain firm. Some buyers thought that with coal becoming easier the independents might cut, but these operators reduced working time rather than reduce prices. Everyone expects an advance of 10c. a ton for June, though official confirmation is lacking at present.

Stove continues in best demand, with egg next. Nut is in free supply, but pea, on account of reduced production, is short. The steam sizes are very weak and big tonnages from the companies are going into storage yards. Independents are compelled to cut considerably, and then have much standing in cars at the mines.

After absorbing increased wholesale rates of approximately 15c. per ton during May and facing an increase of about 10c. a ton for June, Baltimore retail hard-coal dealers advanced prices 25c. per ton on all sizes pea and buckwheat on June 1. The schedule is as follows: Hard white ash, No. 1 (broken), \$15.25; No. 2 (egg), \$15.50; No. 3 (stove), \$16; No. 4 (chestnut), \$15.50; pea, \$11, and buckwheat, \$8.25. Sunbury, No. 2 (egg), \$15.75; No. 3 (stove), \$16.25; No. 4 (chestnut), \$15.75. Lykens Valley, No. 2 (egg), \$16.50; No. 3 (broken), \$17. Local demand is quite poor and all sizes are on easy supply.

At Buffalo the anthracite trade is much duller than it was a year ago, but it is not quite agreed as to the reason. The report is that fuel oil is gaining ground pretty fast in the city, in spite of the fact that some householders have tried it and thrown it out after spending big money on it. The coke trade is quiet and will remain so through the open season, though it can hardly be called the warm season yet.

The lake trade remains quiet. Shipments for the week were only 25,100 tons, of which 10,000 tons cleared for Milwaukee, 8,900 tons for Superior and 6,200 tons for Sheboygan. Freight rates are unchanged at 50c. to Milwaukee and 40c. to Superior.

Connellsville Coke Market Stagnant

The spot furnace coke market at Connellsville has been stagnant in the past week. There has been no inquiry, as the furnaces are under contract and deliveries are easy to make. Nothing has occurred to disturb the \$3 price which is considered the market.

Negotiations are on for several second-half contracts. Furnaces prefer to contract for the half year rather than the third quarter if they do not have to pay much premium, but operators prefer to contract only for third quarter, hoping that something may turn in their favor for fourth quarter, but they are pretty much in the hands of the furnaces in this matter. There is little talk of prices, but there is room to suspect that third quarter might be brought down nearly if not quite to \$3, with, say, 25c. additional for fourth quarter.

Buying of spot foundry coke has increased somewhat and there is considerably more inquiry. The spot market remains at \$3.75@4.25, according to brand.

Car Loadings, Surplusages and Shortages

	Cars Loaded	
	All Cars	Coal Cars
Week ended May 16, 1925.....	984,916	155,630
Previous week.....	981,370	154,214
Week ended May 17, 1925.....	913,201	135,650

	Surplus Cars		Car Shortage—
	All Cars	Coal Cars	
May 14, 1925.....	330,433	141,258
May 8, 1925.....	329,844	149,992
May 14, 1924.....	319,106	167,102

Foreign Market And Export News

Foreign Trade Is More Active In British Coal Market

The better tendency lately in evidence in the Welsh steam coal trade is well maintained. There is an improved volume of business for South America, Egypt, and coal depots generally, and lately both French and Italian importers have also shown a little more interest in the Welsh market. Foreign buyers probably are influenced by persistent threats of a national strike of miners. The added volume of trade still leaves exports much below normal, and there is still no sign of the export level of a year ago being regained. There is also no sign of the reopening of Welsh collieries closed down as unremunerative.

The Newcastle market, on the whole, shows a steadier tone, chiefly owing to improved inquiry for best steams. In some cases demand has outrun the supply owing to so many pits being closed. In addition, a short output is anticipated for June, when the Whitsun and race week stoppages take place; consequently, numerous forward inquiries are circulating, and prices are firmer. In the contract market the Bordeaux Gas Works order has been placed through Newcastle firms for two cargoes of good grade Durham gas coals for June shipment. The Swedish State Ry. authorities have asked offers on 200,000 tons of British or German steam coals, to be shipped to the usual named ports during June to September and the Finnish State Ry. authorities want prompt offers on 15,000 tons of best Northumberland or Durham steams.

The miners' federation on May 20 heard the results of a joint conference with mine owners and seems agreed that no wage program can be started or present agreement terminated until trade improves, but it is quite likely that owners will be asked to economize in organization and distribution.

Output by British mines in the week ended May 16, a cable to *Coal Age* states, totaled 5,030,000 tons, compared with 5,075,000 tons the week before.

Low Consumption Hits Foreign Fuels in French Market

The general situation in the French coal market is unchanged. The collieries' output is still large, but there

is no undue stockage as movement is satisfactory. Reduced consumption is affecting import coals most.

Demand in the Sarre from Germany and Belgium no doubt is smaller, but shipments to France are at the old level.

The freight rate, Bethune-Paris, has been increased 2 fr. to 25 fr., due to the stoppage on the waterways.

By reason of the new contract uniting the adherents of the Kohlensyndikat, commercial liberty has been restored to the Stinnes, Karcher and Roehling firms. The sales organization of the Kohlensyndikat in France has been modified and an official representative named. German agents show much activity in the effort to move industrial and household fuels, but price is a deterrent.

In April the Office des Houillères Sinistrées received from the Ruhr 223,600 tons of coal, 329,600 tons of coke and 30,300 tons of lignite briquets, a total of 583,500 tons. For the first thirteen days of May the coke arrivals were 120,129 tons, amounting to a daily average of a little more than 9,240 tons.

Destination of Fuel Exports from United States in April

	(In Gross Tons)	1924	1925
Anthracite.....		245,076	229,588
Bituminous.....		962,323	886,484
Exported to:			
France.....		78,551	8,682
Italy.....		109,433	73,155
Other Europe.....		501	1,403
Canada.....		542,358	585,359
Panama.....		19,278	19,305
Mexico.....		9,496	15,791
Br. W. Indies.....		18,557	17,899
Cuba.....		28,020	56,700
Other W. Indies.....		26,922	12,435
Argentina.....		25,881	11,276
Brazil.....		73,508	54,656
Chile.....		5	7,076
French Africa.....		17,298	13,259
Other countries.....		12,515	9,488
Coke.....		38,186	52,819

U. S. Fuel Imports in April

	(In Gross Tons)	1924	1925
Anthracite.....		669	4,845
Bituminous.....		22,186	26,706
Imported from:			
Canada.....		20,070	26,306
Japan.....		2,116	400
United Kingdom.....		3,742	13,816
Other countries.....			
Coke.....			

Light Demand Marks Dull Trade At Hampton Roads

Very little change was seen at Hampton Roads last week, prices being practically the same as the previous week and demand negligible except for cargoes bound for Canadian ports.

Bunker and coastwise movement generally were holding their own. A few foreign cargoes and part cargoes were reported, but demand was light. The tone of the market was dull.

Export Clearances, Week Ended May 30, 1925

FROM HAMPTON ROADS		Tons
For British West Indies:		
Nor. Str. Fram, for Port of Spain..		4,011
Nor. Str. Bessengen, for St. Lucia..		4,436
For Cuba:		
Nor. Str. Recto, for Manzanillo....		1,107
Dan. Str. Nordstjernen, for Santiago		6,106
Br. Str. Berwindmoor, for Havana..		9,699
Nor. Str. Hunnar Helberg, for Havana.....		3,777
For Spain:		
Ital. Str. Adige, for Gibraltar.....		9,627
For Bermuda:		
Amer. Schr. Ruth Martin, for Hamilton.....		1,013
For Brazil:		
Grk. Str. Atlanticos, for Rio de Janeiro.....		7,030
Br. Str. Siam City, for Rio de Janeiro.....		7,226
For West Africa:		
Ital. Str. Fortunato, for Dakar....		6,106
For Canada:		
Br. Str. Hochelaga, for Sydney....		7,000
Br. Str. Watsoness, for Montreal...		4,416
Br. Str. Kamouraska, for Quebec..		7,052
Nor. Str. Bjornsterne Bjornson, for Quebec.....		8,245
For Miquelon:		
Nor. Str. Facto, for St. Pierre.....		2,220
FROM PHILADELPHIA		
For Brazil:		
Br. Str. Hartside, for Rio Janiero.....		—
For Newfoundland:		
Am. Schr. Orleans, for St. John.....		—

Hampton Roads Pier Situation

N. & W. Piers, Lamberts Pt.:	May 21	May 28
Cars on hand.....	1,338	1,306
Tons on hand.....	82,497	74,321
Tons dumped for week.....	147,369	106,305
Tonnage waiting.....	12,000	5,000
Virginian Piers, Sewalls Pt.:		
Cars on hand.....	1,096	1,437
Tons on hand.....	78,300	100,400
Tons dumped for week.....	73,530	82,498
Tonnage waiting.....	24,473	—
C. & O. Piers, Newport News:		
Cars on hand.....	1,869	2,228
Tons on hand.....	93,450	110,745
Tons dumped for week.....	182,259	140,515
Tonnage waiting.....	3,785	8,435

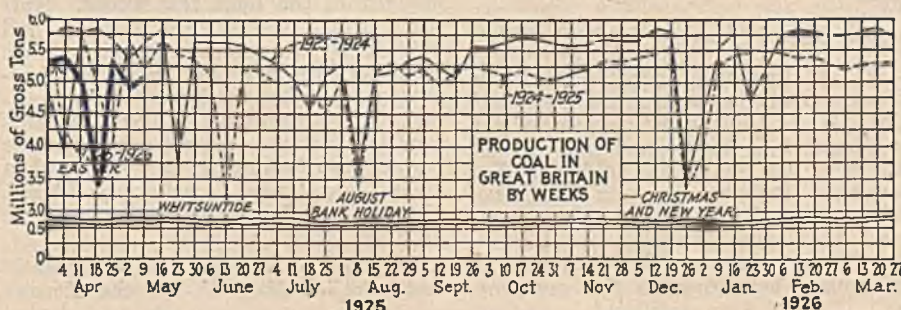
Pier and Bunker Prices, Gross Tons

PIERS		May 23	May 30†
Pool 9, New York....	\$4.70@	\$4.85	\$4.70@ \$4.85
Pool 10, New York....	4.50@	4.65	4.50@ 4.65
Pool 11, New York....	4.25@	4.50	4.25@ 4.50
Pool 9, Philadelphia..	4.65@	4.90	4.65@ 4.90
Pool 10, Philadelphia..	4.35@	4.55	4.35@ 4.55
Pool 11, Philadelphia..	4.25@	4.30	4.25@ 4.30
Pool 1, Hamp. Roads..	4.25	4.25	4.25
Pool 2, Hamp. Roads..	4.15	4.10	4.10
Pools 5-6-7, Hamp. Rds.	4.00	4.00	4.00
BUNKERS			
Pool 9, New York....	\$4.95@	\$5.10	\$4.95@ \$5.10
Pool 10, New York....	4.75@	4.90	4.75@ 4.90
Pool 11, New York....	4.50@	4.75	4.50@ 4.75
Pool 9, Philadelphia..	4.80@	5.05	4.80@ 5.05
Pool 10, Philadelphia..	4.60@	4.80	4.60@ 4.80
Pool 11, Philadelphia..	4.45@	4.65	4.45@ 4.65
Pool 1, Hamp. Roads..	4.35	4.35	4.35
Pool 2, Hamp. Roads..	4.25	4.20	4.20
Pools 5-6-7, Hamp. Rds.	4.00	4.10	4.10

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

Quotations by Cable to Coal Age		May 23	May 30†
Cardiff:			
Admiralty, large....	26s. 3d. @	26s. 9d.	26s. @ 26s. 6d
Steam smalls.....	15s. 6d.	15s. 6d.	15s. 6d.
Newcastle:			
Best steams.....	17s. 3d. @	17s. 6d.	16s. 6d. @ 17s.
Best eas.....	18s. 9d. @	19s.	18s. 6d. @ 19s.
Best bunkers.....	17s. 6d. @	18s.	16s. 3d. @ 17s.

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





News Items From Field and Trade



ALABAMA

The Woodward Iron Co. is opening a new mine, to be known as the Crockard shaft, near the Muga and Dolomite mines and not far from the blast furnaces and byproduct coke oven plant at Woodward. The new shaft, which will have a capacity of upward of 5,000 tons daily, is named for the president of the company, Frank Crockard.

ARKANSAS

The East Coal Co., located on the Missouri Pacific belt line on the northeast rim of the Paris field, was sold about the middle of May to the Liberty Coal Co. Mines owned by the two companies are co-operative enterprises.

COLORADO

Six more coal companies in the northern Colorado field filed notice May 22 with the State Industrial Commission of reduction of wages for all employees to the 1917 scale. The companies were the Grand Junction Mining & Fuel Co., Dacona; Clayton Coal Co., Erie; Boulder Valley Coal Co., Weld County; Big Four Coal & Coke Co., Louisville; S. Domenico & Sons Co., Louisville; and the Matchless Fuel Co., Marshall. The commission on May 23 received notice from the Crown Fuel Co. that the wages of men at the Marshall mine would be reduced to the 1917 scale. The Crown company is the last of the northern field operators, comprising Boulder and Weld counties, to make such notice with the exception of the National Fuel Co. and the Rocky Mountain Fuel Co. The latter is now negotiating with its men on a proposed reduction.

Secretary Work has authorized the sale of a coal mining lease on 42 acres of public land in La Plata County. An investment of \$5,000 during the first three years and a minimum production of 275 tons of coal annually, commencing with the fourth year of the lease will be required. A royalty of 15c. per ton on coal mined on the lease must be paid to the government.

Colorado coal output in April was 563,964 tons, compared with 722,424 tons in the same month a year ago. This is the lowest production for the month of April in the history of the Colorado coal industry. From Jan. 1 to May 1 of the current year, output is 386,000 tons behind the same period a year ago. The mines worked on an average of 55.3 days per mine thus far this year compared with 65.2 in the same period a year ago. The number

of men employed in the mines in April, 1925, was 9,101 contrasted with 10,737 in April a year ago. All of the mines are practically on the 1917 scale.

ILLINOIS

The United Electric Coal Co., Lewis-town, has made a new record for loading coal on the Burlington tracks at the tippie. On one day recently fifty-six railroad cars were loaded, fifty-three cars another day and fifty cars on a third day. The company some time ago installed a crusher, which is used to crush the coal taken by the Santa Fe R.R. at Galesburg. The company recently installed its fourth large shovel.

Peabody mine, No. 8, at Tovey, has been reopened, after having been closed since last February. The mine usually employs about eight hundred men. A number of minor repairs have been made at the mine.

Thomas J. Scott, of St. Louis, Mo., has been named president of the Scott-Smith Coal Co., which operates a strip mine near Duquoin. He succeeds his brother, E. F. Scott, also of St. Louis, who died a few weeks ago.

The Toluca Coal Co. of Toluca, has dismantled its property. The steel tower was sold to a company at Springfield, and the large turbine was shipped to Panama, where it will be installed by a coal company. The mine will be sealed. It was at one time one of the largest in the northern Illinois mining field.

INDIANA

The strike at Glenco mine, Glen Ayr, which started eight months ago, has been settled, according to Tyler Lawton, president of District 11, United Mine Workers, and Secretary-Treasurer Phil Penna of the Indiana Bituminous Coal Operators' association. The mine employs 225 men when working at full blast. President Lawton said that it was understood the Glenco would resume operation within a short time.

The Cass Coal Co., at Sullivan, has filed a final certificate of dissolution.

H. M. Ferguson, president of the Clinton Coal Co., and of the Ferguson Coal Co., of Clinton, has purchased the holdings of C. Stutz, and now is sole owner of the company's holdings. The purchase includes the six Crownhill mines, more than 4,000 acres of mineral land, the large Crownhill stock farm, the Clinton coliseum and a large number of houses belonging to the company.

Mr. Ferguson, as soon as possible will consolidate his coal and other interests into one company. Mr. Stutz expects to devote his time to his personal farming property in Vermillion and Parke counties, to his insurance business and to his automobile business.

IOWA

The Liberty Coal Co., Des Moines, has been purchased by the Flint Brick Co., for approximately \$50,000. The Liberty mine, located at the end of North Twentieth street, resumed operations May 20 after a lapse of a number of weeks. The mine which will be run in conjunction with the Flint Brick plant, will produce approximately 100 tons of coal daily.

KANSAS

District 14, United Mine Workers, paraded its strength the length of Crawford county, Kansas, Sunday, May 24, in a demonstration designed to combat the sentiment toward lower wages, which is growing in the district. At its termination at a picnic ground near Croweburg, after being augmented by cars along the way, the motor caravan was more than two miles long. At the picnic ground, 4,000 miners listened to speeches by labor leaders, exhorting them to resist efforts to lower wages. Matt Walters, district president, in introducing John Cochran, international board member from Iowa, said, "We have gathered to show by our solidarity that we are not going to stand for non-unionism in Kansas." Even Alexander Howat, one-time president of the district and later expelled from the international for calling an outlaw strike, openly declared his allegiance to the present district officers, and exhorted his followers to support them.

No. 6 mine of the Mayer Coal Co., the last big mine near Mineral in Cherokee County, the scene of the first substantial development in the Kansas coal field, will be completely worked out within the next few weeks. This mine, which was opened in 1911, had 560 acres of excellent coal. At its peak it employed 450 men. Experiments are being made as to the feasibility of working the top vein on this land by electric mining machines. The possibility of working this vein with a steam shovel also is being considered. Negotiations for leases are reported to be under way.

Eighteen teams with 108 contestants, had enrolled May 25 for the Kansas

state first-aid and mine-rescue meet to be held at Brandenburg Field, State Teachers' College, Pittsburg, June 13. Others are expected to enter. Thirteen of the eighteen teams are from mines of the Western Coal & Mining Co. These five firms are represented in the early list by one team each: Central Coal & Coke Co., Dittman-Wachter Coal Co., Jackson-Walker Coal & Mining Co., Hamilton Coal & Mercantile Co. and the Knott Coal Co. Twenty-seven judges have been selected for the events, eight representatives of the U. S. Bureau of Mines, three from the Pittsburg chapter of the Red Cross, twelve physicians and four mine experts.

KENTUCKY

The High View Mining Co., Prentice, of which Clarence James, Cromwell, is secretary, has 700 acres of coal land, with nine seams to be developed, and plans installing a fully electrified plant the first part of next year.

Coal operators of Letcher County have further cause for complaint about taxes, the State Board of Equalization having advised County Judge Fitzpatrick of an increase of 5 per cent in assessments on coal rights, 10 per cent on coal leases, 25 per cent on tangible property and coal mine equipment, 25 per cent on livestock, 15 per cent on land, timber and improvements. A committee is being formed to go to Frankfort in an effort to obtain a reduction. All over the state assessments are being ordered increased. While tax rates can't be increased, assessments are, and in spite of the fact that the coal industry is in a ticklish position, with many mines in receivership.

Amended articles have been filed by the Golden Rule Coal Co., Covington, increasing capital stock from \$10,000 to \$25,000.

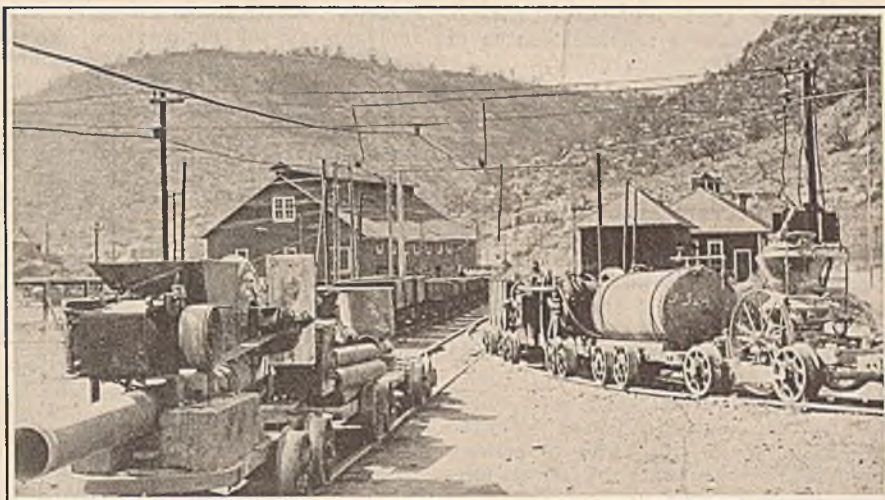
MASSACHUSETTS

The Carbon Coke & Coal Co. has been located since June 1 in the new Boston Chamber of Commerce Bldg., 80 Federal Street, Boston.

MICHIGAN

A jury in Judge Arthur Webster's court, in Detroit, on May 26, after deliberating an hour, returned a verdict of \$115,167.40 against the Ford Motor Co. in favor of the Mancourt-Winters Coal Co. Breach of contract was the basis of the suit. James O. Murfin, attorney for the coal company, showed that the Mancourt-Winters company had a contract with the Ford Motor Co. to deliver 25,000 tons of coal at \$7.70 to the River Rouge plant during the year from Aug. 1, 1920, to July 31, 1921. The testimony showed that the Ford company refused to take any more coal after it had received 5,000 tons.

The new coal dock under construction at Escanaba by the Chicago & Northwestern R.R. for the C. Reiss Coal Co. will be ready for use by July 15, company officials believe. The dock, which was wrecked in a fire that de-



Underground "Fire Fighters" of a Coal Camp

At Dawson, N. M., the mines of the Phelps Dodge Corp. are guarded against the spread of explosions by the low-pressure dust blower at the left, which applies either fine adobe or concentrator mill tailings. The outfit at the right is a cement projector mounted on trucks and attached to its compressor, water tank and dust car. Rock dust at Dawson is thus applied both dry and wet.

stroyed No. 3 and No. 4 ore docks last fall, is being rebuilt. It has been shortened to 900 ft. in length, and an additional 85 ft. in width has been built on the north side of the old dock. The north wall of the rebuilt structure has been constructed entirely of concrete. The large electrically operated unloading hoist is being installed now. The hoist will be one of the most modern at the head of the lakes, including a clamshell bucket that will pick up six tons of coal at a trip.

MINNESOTA

The Northern Coal & Dock Co. has retired from the retail coal business in St. Paul, selling its yard to the Hertl Coal Co., 649 Rice St. The same company disposed of its Minneapolis yard last season.

MISSOURI

Following the objection of retail coal dealers in Kansas City, Mo., April 25 to a proposal to increase their license fee to \$250 a year, the City Council on May 25 passed a modified ordinance establishing the fee at \$100. The fee had been \$25. The license must be paid for a full year, regardless of how small a part of the year the dealer may sell. Industries which have followed the practice of ordering several cars of coal a year for distribution among employees, relatives and friends are classed as retailers under the new ordinance, and will be required to pay the \$100 license fee. The ordinance further specifies that a retail dealer must have a coal yard, a place for storage, an office, and scales that will weigh at least a 5-ton load. Penalty for violation of the ordinance is a fine of not less than \$25 nor more than \$100 for each offense.

NEW YORK

Edward H. Read, sales agent of the Delaware, Lackawanna & Western Coal

Co. and head of the company's business in Buffalo territory since the resignation of Vice-president D. E. Russell, has been made general northern sales agent of the company, with headquarters at Buffalo, as formerly, and territory covering the Syracuse and Utica agencies and northern New York, but not Canada, which had been given to the Elias Rogers Coal Co., of Toronto. H. W. Marshall is continued as assistant sales agent at Syracuse and J. C. Waldron succeeds the late John J. Town at Utica.

On petition of William A. Stetson, of Batavia, and Ida M. Tibbetts, of Stafford, near Batavia, the Consumers' Collieries Corporation has been thrown into involuntary bankruptcy. Debts enumerated amount to about \$12,000, mostly to the petitioners. The president is J. E. Tibbetts and the company formerly maintained an office in the White Building, Buffalo. The company was organized in Batavia during the war to produce coal and has a mine in Clarion County, Pa.

OHIO

Although the Columbus Board of Education opened bids May 13 for 15,000 tons, more or less, of bituminous mine-run or lump and 2,000 tons of bituminous nut, pea and slack coal to be delivered to the various public schools in the city, the board has not made any awards and is still making investigations as to price. The Burns Coal Co., Columbus, was low on lump with a bid of \$3.84; mine run, \$3.61, and nut, pea and slack, \$3.21. The Reliable Coal & Supply Co. followed with a bid of \$3.84 on lump and \$3.64 on mine-run.

Ohio Collieries Mine No. 210, between Athens and Nelsonville, closed May 23 indefinitely. Between 400 and 500 men had been having good work in this operation.

The West Virginia & Ohio Coal & Coke Co., Cleveland, of which C. L. Cassingham is president, will hereafter

be known as the Cassingham Coal Co. The personnel and financial status of the company is unchanged.

James Wiley, formerly engineer with the Cambria Collieries, Bellaire, is now superintendent of maintenance at the Rail & River Coal Co.'s No. 4 mine, also at Bellaire.

The Euga Coal Co., operating huge strip mines near New Lexington, was enjoined from continuing work until the Lancaster Coal & Sand Co., which has the same land leased, strips the sand from the top. Faulty leases of the first company brought the adverse decision.

The Redfield Coal Co.'s mine, near Crooksville, has been leased by Fred Myers' of Zanesville, who is making preparations to operate it after an idleness of about two years. The mine formerly was leased by the Youngstown Sheet & Tube Co. and used for fuel purposes for that plant.

The Sunday Creek Coal Co., of Columbus, has taken over several mines of the Mid-Hocking Coal Co., at Burr Oak, which will mean that the mines will be placed in operation some time in the future. The property, which consists of about 500 acres, adjoins holdings of the Sunday Creek Co.

PENNSYLVANIA

Ninety men and women are named in an injunction issued by Judge J. N. Langham, of Indiana County, restraining them, their associates, aiders, abettors, and agents, from in anywise interfering with the operation of the Lucerne mine of the Jefferson & Indiana Coal Co., of Punxsutawney. The mines of the coal company are being operated on a non-union basis and the workmen are said to have experienced difficulty in getting to and from their work.

Seven bituminous mine inspectors have been reappointed by Governor Pinchot in accordance with the continuance-in-office provisions of the act of June 1, 1915, which provides that inspectors who have passed two con-

secutive examinations and have served continuously for eight years shall be continued in office. The reappointed inspectors are Charles H. Crocker, Johnstown; Patrick S. King, Pittsburgh; John J. McDonald, Greensburg; Richard Maize, Uniontown; Harry Phythyon, Belle Vernon; James J. Stoker, Irwin, and Thomas H. Thompson, Kittanning. In addition, the Governor later appointed, but not under the act of 1915, J. A. Saxe, Ellsworth, and William Lamont, Elmora, as members of the Mine Inspectors' Examining Board for the Bituminous Coal Mines of Pennsylvania.

The Pennsylvania Coal & Coke Corporation reports a net loss of \$62,648 for April, after all expenses and charges, against a loss of \$40,332 reported in the same month last year. For the first four months of 1925, the company reports a net loss of \$221,333 against \$36,973 in the corresponding period last year.

A special examination for firebosses, assistant mine foremen and mine foremen will be held at Carnegie Institute of Technology, in Pittsburgh, by the Pennsylvania Department of Mines on July 15, 16 and 17, according to an announcement. Any coal miner who feels qualified may take the tests.

So far blame has not been fixed for a fatal gas explosion which occurred in the Woodward mine of the Glen Alden Coal Co. at Edwardsville, causing six workers to lose their lives. State mine inspectors have been making an investigation of the disaster. One theory is that the gas was ignited by a spark from an electric motor.

The Cambria County Fair Association, headed by Chas. Schwab will hold a fair at Ebensburg July 1-5. Many large manufacturers of mining equipment will take an active part.

Legal proceedings have been started in court in Northumberland County to prevent the erection of a new \$500,000 breaker by the Shamokin Coal Co. on the site of the old Nelson mine shaft. A silk mill is now located near the plot and it is alleged that if the breaker operates the factory will have to sus-

pend due to smoke and dust. The court has decided to hear arguments on the matter within the next few weeks.

Eight hundred thousand trees have been planted in the village of Natalie and vicinity. The trees are being obtained from the state, and coal companies in that region are giving their help to the reforestation campaign.

Government inspectors are reported to have arrived in Pottsville and to have ordered all obstructions removed from the Schuylkill River that impede the free flow of water. The chief obstructions are placed in the stream by hard coal washeries which annually dump thousands of tons of coal into the river. It is said the river has become filled up to such an extent by culm, etc., that many towns along it are now in danger of floods. Some coal companies have already agreed to co-operate in cleaning out the river.

The annual mine foreman and fireboss examinations for the Sixth, Tenth, Thirteenth, Eighteenth, Twenty-fourth and Thirtieth bituminous districts will be held in Johnstown on June 15, 16 and 17. The examinations are conducted by the State Bureau of Mines, and will be held under the direction of Nicholas Evans, state mine inspector, who also is a member of the board of examiners. Other members of the board are: George W. Wilkes, representing the operators, and Robert Jobes, representing the miners. T. D. Williams, state mine inspector, will be in charge of the examinations in the Fifteenth district and examinations will be held on the same dates in Barnesboro.

The Jermyn mine, in Old Forge, an independent with a normal daily output of 1,000 tons of coal, resumed operations last week for the first time in four months. About 600 men are employed. Recently officials of the company arranged with the mine workers to resume operations at lower wages than the scale calls for, but this agreement was rescinded by the workers following the activities of union officials at the colliery. It is understood the men are being paid the regular rates.

The Sherman Coal Corporation has cut a new vein, the Holmes vein, at Pottsville. It was cut at the end of what is known as No. 2 rock tunnel, is about 2 ft. thick, but is widening as it runs west. The Holmes is considered to contain some of the hardest coal in the anthracite region and has an excellent burning quality. The average thickness in Sharp mountain is 4 ft., running to the extremity of the company's leasehold at Indian Run Gap.

The District Attorney of Schuylkill County has issued warrants for the arrest of several officials and employees of the Buck Mountain colliery for alleged violation of the act of 1891 relative to the safety and health of coal miners. The defendants are charged with allowing mining operations to approach a body of water without proper precautions by boring ahead the required number of feet. As a result three men lost their lives when the



Kingston-Pocahontas Coal Co.'s Club House Near Welch, W. Va.

Note how to use all the level space available a culvert has been built to take the small stream under one end of the house.

water broke through. The defendants are John Price, superintendent of the Buck Mountain mine; Conrad Dresch, foreman; Hugh Williams, assistant foreman, and Robert Price, a miner. State Mine Inspector Brennan has asked the prosecutor to launch the legal proceedings.

Practically every large coal operation in Derry township, Westmoreland County, is running again following shutdowns of several months. The outlook for business is said to be considerably brighter. Mines now in operation are the Derry No. 1 mine at Bradenville, the Ridge Coal Co. Atlantic mine, the Millwood shaft mine, Peanut mine, Seger mines and the Brenizer mine.

UTAH

An injunction was filed in the federal court on May 20 to prohibit John H. Tonkin from exercising an alleged unauthorized option on the property of the Independent Coal & Coke Co., in Carbon County, which is said to have been granted him and other members of the company's board of directors last December. William G. Roberts, trustee for an estate, and six others are parties to the suit. The complaint sets forth that by virtue of the option Tonkin is to receive the total assets of the company amounting to \$2,000,000 or more and the property of the Royal Coal Co., amounting to \$1,000,000, for \$1,000,000 cash and preferred stock in a company which he was to organize for the purpose of taking over the assets of the Independent Coal & Coke Co. It is claimed that the option was not binding because the approval of the entire board was not first obtained.

J. T. Hill, general manager of the Lion Coal Co., of Ogden, has addressed a letter to William Spry, registrar of the Land Office in Washington, suggesting that the government could accomplish much good for the coal industry and the nation at large by giving the Land Office power to restrict the development of the federal coal lands for some years. A copy of the letter was sent to the Utah delegation in Congress, all of whom expressed sympathy with the proposal. Senator Smoot said that he had to confess he did not know just how they would go about it, but he was in hearty accord with what Mr. Hill had said.

On May 23 the Industrial Commission of Utah in a lengthy decision ruled that a man unloading coal by the car was not an independent contractor within the meaning of the Utah Workmen's Compensation law. A man named Tullgren died from injuries received while unloading coal for a Salt Lake City retailer and the insurance carrier resisted compensation on the ground that the deceased was an independent contractor. The commission said the employer could not evade liability in this way. An independent contractor was a man who by the employment of a little capital and the use of other workers employed under him hoped to make more than ordinary wages, but such could not be the case with a man unloading coal alone, although he might

be paid by the car. He was paid by the car, it was declared, more for convenience sake than anything else.

The completion of the new tippie at Storrs, Carbon County, by the Spring Canyon Coal Co. is expected by July 1. Tearing out of the old tippie is already under way, and the work will be rushed. This will give the Storrs mine one of the best tipples in the state.

WEST VIRGINIA

The conference of Coal River Collieries Co. and the United Mine Workers representatives which was to have been held at Huntington May 22, has been indefinitely postponed. Inability of J. T. Dunigan, president of the company, which is controlled by the brotherhood of locomotive engineers, to return from Washington in time for the meeting was given as the reason for the postponement.

J. C. McKinley, president of the Richland Coal Co. applied for a receivership for the company in Circuit Court at Wheeling May 23. Assets were listed at \$4,000,000 and liabilities \$1,500,000. The Dollar Savings & Trust Co. was appointed to take charge of the company's accounts. President McKinley expressed confidence that the company would resume operations soon and that creditors would be paid in full. Present difficulties were laid to coal market conditions and to frozen assets.

The West Virginia Coal & Coke Co. is to expend over \$1,000,000 for additional shipping facilities at the company's mines in the Logan district. Plans call for the purchase of a large interest in the Philadelphia & Cleveland Coal Co.'s river shipping plant at Huntington so as to provide an outlet for the company's output by water down the Ohio River. It is also proposed to purchase a new steel hull towboat and thirty-six steel barges, to be delivered within ninety days. The river equipment alone will cost in the neighborhood of \$1,000,000 and the interest in the river tippie and other river shipping facilities about \$100,000. The West Virginia Coal & Coke Co. represents a merger of several companies having a capital of \$30,000,000 with C. E. Hutchinson, of Fairmont, as president.

The E. L. & W. Coal Co., of Fairmont, has leased its mine at Almina, Monongalia County, to the Almina Coal Co. for 12 years on a royalty basis. The mine is said to be one of the best equipped middle-sized plants in the region; 150 acres of Sewickley coal land and 20 houses are included in the lease.

Fred G. Hatton, head of Hatton Brown & Co., Inc., Columbus, Ohio, has been appointed receiver for the Himler Coal Co., of Himlerville, W. Va., by Federal Judge Hough in the suit of the Buck Creek Land & Development Co., Kentucky. In its petition the land company says the coal company has obligations aggregating \$200,000 and is without funds and \$5,761 is owing to the land company for non-payment of royalty. The receiver will operate the property of the Himler company, which

consists of one large mine at Himlerville with a capacity of about 1,500 tons daily. The company is capitalized at \$2,000,000, less than half of which has been issued. The company is solvent, but the petition alleges that had a receiver not been appointed at this time it would have become insolvent.

CANADA

The results of the examinations in first aid work at the collieries in British Columbia have been announced and show that the Nanaimo A team won the Provincial Shield, with Nanaimo B team second, and Chemainus third. The Lieutenant-Governor's Trophy, for women's first-aid and home-nursing work, was won by Nanaimo B team, with Nanaimo A team second and Cumberland third.

Output of coke by Canadian plants in March totaled 138,783 tons, compared with 102,686 tons in February and 101,132 tons in January. For the first three months of the year the cumulative production was 342,601 tons. Imports of coke advanced slightly and exports were higher than in February. The apparent consumption of coke in Canada reached a total of 200,364 tons, compared with 164,673 tons made available for use in the preceding month.

The International Coal Corporation, with main office in Montreal, will handle large importations of British and American coal during 1925. British coal will be loaded at Swansea for Montreal every two weeks as long as navigation remains open. Officers of the International Coal Corporation are as follows: President, D. Harry Friedman, Jr.; vice-president and treasurer, Hall E. Shepherd; secretary, George A. McHattie; directors, D. H. Friedman, Owen Shepherd, Hall E. Shepherd, D. H. Friedman, Jr., and George A. McHattie.

Traffic

Lake Rate Decision May Not Be Made for a Month

A decision by the Interstate Commerce Commission in the lake cargo case is not expected for another three or four weeks. The record in the hearing held recently on the examiner's tentative report is voluminous and it will be necessary for each member of the Commission to examine this record before the decision can be written. The only formal action in the case by the Commission since the hearing has been its order declining to grant the motion of the Southern operators to reopen the case for new evidence.

Much importance is attached to this case, in which Ohio and Pennsylvania bituminous operators are seeking a widening of the differential between rates to lake ports from shipping points in their territory and from Virginia, West Virginia and eastern Kentucky fields. The examiner recommended a substantial widening of the differentials by slightly reducing the rates from Ohio and Pennsylvania and increasing the rates from the southern points.

Coming Meetings

Illinois & Wisconsin Retail Coal Dealers' Association. Annual meeting, June 9-11, at Lake Delavan, Wis. Secretary, I. L. Runyan, Great Northern Bldg., Chicago, Ill.

Mid-West Retail Coal Association. Annual meeting at Kansas City, Mo., June 9-10, Baltimore Hotel.

Pennsylvania Retail Coal Merchants' Association. Annual convention, June 11 and 12, Hotel Bethlehem, Bethlehem, Pa. Secretary, W. M. Bertolet, Reading, Pa.

Retail Coal Dealers Association of Texas. Annual convention June 15 and 16 at Houston, Texas. Secretary, C. R. Goldman, Dallas, Texas.

The Colorado and New Mexico Coal Operators' Association. Annual meeting, June 17, Boston Building, Denver, Colo. Secretary, F. O. Sandstrom, Boston Building, Denver, Colo.

National Coal Association. Annual meeting, June 17-19, Edgewater Beach Hotel, Chicago, Ill. Executive Secretary, Harry L. Gandy, Washington, D. C.

West Virginia Coal Association. Annual meeting, June 17-19, at Edgewater Beach Hotel, Chicago, Ill. Assistant secretary, James E. Hart, Huntington, W. Va.

Illinois Mining Institute. Annual meeting, June 18-20, on board boat leaving St. Louis, Mo. Secretary, Martin Bolt, Springfield, Ill.

International Chamber of Commerce. Third general conference, Brussels, Belgium, June 21-27.

American Society for Testing Materials. Twenty-eighth annual meeting, week of June 22, Chalfonte-Haddon Hall, Atlantic City, N. J. Secretary-treasurer, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

American Institute of Electrical Engineers. Annual convention, Saratoga Springs, N. Y., June 22-26. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

Chemical Equipment Exposition. June 22-27, Providence, R. I. Association of Chemical Equipment Manufacturers, 1328 Broadway, New York City.

Twelfth National Foreign Trade Convention. Seattle Wash., June 24-26. Chairman, James A. Farrell, National Foreign Trade Council, Hanover Square, New York City.

Tenth Exposition of Chemical Industries. Sept. 28 to Oct. 3, at Grand Central Palace, New York City.

Fourth National Exposition of Power and Mechanical Engineering. Nov. 30 to Dec. 5, at Grand Central Palace, New York City.

New Companies

The Achuff Railway Supply Co., St. Louis, has been incorporated with a capital of \$10,000 to manufacture, buy, sell and generally deal in mine and mill supplies at wholesale and retail. The incorporators are W. D. Achuff, E. M. E. Achuff and Jas. B. Black.

The American Coal & Mining Co., Pleasanton, Kan., has been incorporated with \$10,000 capital.

The Commodore-Jellico Coal Co., Knoxville, Tenn., capital \$10,000, has been incorporated by J. T. Bradley and F. F. McCoy.

The Cherokee Coal Corporation, Chattanooga, Ga., capitalized at \$25,000, has been incorporated by F. A. Loveland, B. C. Grayson, J. J. Desmond, Samuel B. Smith and Val Johnson.

The Barney Mining Co., Ashland, Ky., capital \$50,000, has been chartered by John D. Barney, E. W. Smith and Minna Barney. The company will operate in the Big Sandy district of eastern Kentucky.

The Rice-Elkhorn Coal Co., Pikeville, Ky., capital \$100,000, has been chartered by W. P. Rice, C. C. Rice and J. W. Rice.

The Blue Star Coal Co., Pineville, Ky., capital \$75,000, has been chartered by W. L. Hammond, J. R. Carnes and M. M. Cook, to operate in the southeastern Kentucky territory.

The Delmore Coal Co., Leetonia, Ohio, has been incorporated, with \$12,000 capital, by Fred Weikart, William L. Weikart, Morris T. Reese, V. E. Hendershot and Frank Harrison to mine coal and sell coal and coke.

La Voy-Jennings-Wickham, Inc., of Salina, Onondaga County, N. Y., was chartered May 22, with \$15,000 capital, to mine coal. E. R. La Voy, M. E. Jennings, of Salina, and F. S. Wickham, of Cicero, are directors and subscribers. Nash, Britcher & Eckel, 941 Onondaga Bank Building, Syracuse, are attorneys for the corporation. Inquiry at the State Geological Bureau reveals the intelligence that there is no coal deposit in Onondaga County. Wholesale coal dealers in Albany do not know any of the incorporators. It is presumed they have an option on coal in another state, as all of the stock is subscribed.

Obituary

James T. McCreery, 81 years of age and long prominent in the coal industry of southern West Virginia, died at his home at Hinton on May 17. Not only was he prominent in the coal industry but as a hotel man, real estate dealer and banker. He had been confined to his home for more than a month and had been in failing health for some time. Death was caused by arteriosclerosis. At the time of his death Mr. McCreery was president of the National Bank of Summers, Piney Coal Land Co., McCreery Central Pocahontas Coal Land Co. and the James T. McCreery Co. He was a veteran of the Confederate Army.

Industrial Notes

The Morgan-Gardner Electric Co., Chicago, has sold its present manufacturing building and a larger and more suitable plant is being sought. The Morgan-Gardner company will continue in the old plant under lease from the buyer until next March.

The Webster Mfg. Co., Chicago, announces the opening of a branch sales office at 811 Magee Building, Pittsburgh, Pa., in charge of E. E. Landahl, who has been associated with the company for the past thirteen years. Mr. Landahl will be glad to confer on and plan material-handling problems.

G. H. Webb has been appointed Philadelphia sales manager of the Central Steel Co., of Massillon, Ohio. He succeeds A. B. Cooper, who died suddenly at his home in Philadelphia, May 3.

George A. Muir, who has been connected with the Denver office of the Allis-Chalmers Mfg. Co. for the past five years and for ten years previous to that was with the machinery department of the Mine & Smelter Supply Co., Denver, has been elected president and manager of the Advance Machinery & Supply Co., Denver, Colo., manufacturers of steam and electrical specialties; mine, mill and power-plant supplies, and jobbers' and manufacturer's agents.

The Stephens-Adamson Mfg. Co., manufacturers of conveying, transmission and screening machinery, and S-A belt conveyors, has established a sales-engineering office in San Francisco under the management of Chas. E. Bruff, formerly of the mining engineering firm of Bradley, Bruff & LaBarthe.

Harold P. Tompkins, president of the Tompkins Fuel Co., Charleston, W. Va., has concluded arrangements whereby the Midland Steel Products Co., which now owns the Otis Steel Co., both of Cleveland, Ohio, will manufacture and market Tompkins extension rails.

The Sullivan Machinery Co. announces the appointment of Earl E. Miller as manager at its El Paso (Texas) branch office, succeeding R. S. Weiner, who is transferred to the general office in Chicago.

Jenkins Bros., 30 White St., New York, and with offices in Boston, Philadelphia and Chicago, have purchased the stock and good will of H. A. Rogers Co., 37 Walker St., New York, dealers in railway, mill, mining and contractors' supplies. The sole agency in the United States of the Monierleft Scotch gage glasses also has been taken over.

An arrangement was recently perfected between Carls Brothers, of Ghent, Belgium, and the Ingersoll-Rand Co., of New York City, by which the Belgian concern will have the right to manufacture the well-known Ingersoll-Rand solid-injection type of oil engine.

Cram's Services, Inc., Industrial specialists, have removed their executive offices from the Penobscott Building to 412-417 Buhl Building, Detroit, Mich.

Publications Received

The Effect of Acidity and Oxidation Capacity on Corrosion of Metals and Alloys in Acid Mine Water, by Ralph E. Hall and William W. Teague. Coal mining investigations under auspices of Carnegie Institute of Technology, U. S. Bureau of Mines and Advisory Board of Coal-Mine Operators and Engineers. Bulletin 15. Pp. 62; 6 x 9 in.; illustrated. Price, 40c. Carnegie Institute of Technology, Pittsburgh, Pa. Bulletin 4 of this series gave the results of long-time immersion tests conducted in three mines and indicated the type of metals and alloys that suffered the least corrosion. Bulletin 5 was a study of the microstructural aspects of metals and alloys corroded by acid mine water. Bulletin 6 described a proposed accelerated method for conducting similar tests in the laboratory in one or two days. Bulletin 15 includes a further study of the value and limitations of the accelerated electrolytic test for corrosion, and in particular the effect of acidity and oxygen on corrosion in acid mine waters.

Coal-Mining Problems in the State of Washington, by George Watkin Evans. Bureau of Mines, Washington, D. C. Bulletin 190. Pp. 79; 8 x 9 in.; illustrated. Describes methods employed at some of the mines in the state where difficulties are encountered on account of extensive folding and faulting of the coal measures.

Coke as a Household Fuel in Central Canada, by J. L. Landt. The Dominion Fuel Board in co-operation with the Mines Branch, Department of Mines, Ottawa, Ont., Canada. Pp. 140; 6 1/2 x 9 1/2 in.; illustrated. Results of investigations by Mr. Landt for the use of byproduct coke in place of anthracite in the Province of Ontario and the western part of Quebec.

Statistical Report of Lake Commerce Passing Through Canals at Sault Ste. Marie, Michigan and Ontario, During Season of 1924, with Supplementary Report of Commerce Passing Through the Detroit River. Prepared under direction of Col. E. M. Markham, Corps of Engineers, U. S. Army. Pp. 24; 6 x 9 in.; illustrated.

History of the League for Industrial Rights, by Walter G. Merritt. Pp. 132; 5 x 7 in.; League for Industrial Rights, 165 Broadway, New York City.

Saward's Annual, 1925, by Frederick W. Saward. Pp. 256; 6 x 8 in.; tables. Price \$2.50. Saward's Journal, 15 Park Row, New York City.

Structural Reconnaissance of the Mississippi Valley Area from Old Monroe, Mo., to Nauvoo, Ill., by Frank Krey. Bulletin 45. Pp. 86; 6 x 9 in.; illustrated. Department of Registration and Education, Division of the State Geological Survey, in co-operation with Missouri Bureau of Geology and Mines, Urbana, Ill.

Trade Literature

Industrial Storage-Battery Locomotives. Jeffrey Mfg. Co., Columbus, Ohio. Catalog 231-A. Pp. 24; 6x9 in.; illustrated.

Universal Blowers for Coal and Metal Mines. Jeffrey Mfg. Co., Columbus, Ohio. Bulletin No. 408. Pp. 8; 7 1/2 x 10 1/2 in.; illustrated. Describes the changes in these small blowers, the more important being ball-bearing motors, completed welded wheel and housing, aluminum expansion discharge, aluminum inlet cone and pipe connection, universal angle of discharge and greater volumetric capacity.

Sullivan Machinery Co., Chicago, Ill., recently issued the following bulletins: **Rotator Hammer Drills.** Bulletin No. 81-F. Pp. 31; 6x9 in.; illustrated. These one-man drills are made in seven styles, including an auger drill, a steam drill, a water tube rotator and a light-weight rotator weighing only 29 lb. **"DW-64" Hammer Drill for Channelling or Line Drilling.** Bulletin 81-EA. Pp. 4; 6x9 in.; illustrated. Describes special fixtures for adapting the DW-64 drill. **"DW-64" Water Hammer Drill.** Bulletin No. 81-E. Pp. 16; 6x8 in.; illustrated. This drill, intended for tunneling, drifting and all the heavier kinds of underground drilling work, is shown in operation in different parts of the world. **Air Feed Stoper Drills.** Bulletin No. 81-G. Pp. 19; 6x9 in.; illustrated. Describes two general types, the automatic rotation water stopper and the hand rotation light stopper.

Truscon Steel Co., Youngstown, Ohio, has issued a 15-page catalog, 8 1/2 x 11 in., illustrating and describing its "Standard" steel buildings, building products, steel joists, steel poles, etc.