

COAL AGE

McGraw-Hill
Publishing Company, Inc.
James H. McGraw, *President*
E. J. Mehren, *Vice-President*

Devoted to the Operating, Technical and Business
Problems of the Coal-Mining Industry

R. Dawson Hall
Engineering Editor

Volume 31

NEW YORK, JANUARY 20, 1927

Number 3

Pays for What He Fails to Get

WHEN AN OPERATOR fails to buy something that would return its cost in profits in one or two years he is, in effect, paying just so often for something which after all he does not get. He expends the cost in repairs, in low efficiency, in decreased output, in accidents, in delays—enough to pay for a new machine but he does not get it after all. It's a trying situation, if he had only acumen enough to realize it. Many a man has paid for a piece of equipment many times over before he laid out his money for it in a way that brought him the equipment and gave him an opportunity thereafter to repay the cost again and again. A wise manager it is who can make a true distinction between spending and saving, for much spending is saving and much saving is spending.

No Time for Disarmament

FEDERAL REGULATION of the coal industry received a decided setback last Thursday when the House committee on interstate and foreign commerce, dividing 16 to 6, refused to report out the bill framed by Chairman Parker. From the time the proposal first came before the committee in the preceding session, Representative Wyant of Pennsylvania has been outspokenly active in his opposition to the extension of federal powers over coal, and much of the credit for so effectively crystallizing committee sentiment against the measure is his. Mr. Wyant, however, was first to acknowledge that without the support of the National Coal Association his labors would have been futile.

Nevertheless the elation which this victory naturally brings to those who believe that government supervision, even under the most innocent and innocuous disguises, is unwise and unwarranted should not blind them to the dangers which still exist. Defeat has not been accepted by the proponents of regulation in any spirit of surrender. There are many members of Congress who still cling to the idea that advocacy of coal control is good politics and there are others who sincerely hold such an expansion of government activity sound economic policy. Proponents of regulation have been checked, not vanquished.

If the industry is to enjoy the fruits of its present victory, it must as an organized entity extend its campaign along at least three fronts. The work of education undertaken by the National Coal Association in making the public acquainted with what now is being done in the way of voluntary co-operative fact-finding must be continued. The statistical program outlined by that organization must be pressed to an early conclusion. One of the indictments of the past has been that the industry has been long on promises in the face of threats and short on performance when the menace had disappeared. For this there have been extenuating

circumstances, but no industry can hope to retain public respect by pursuing a policy of apologies.

Finally, if guerrilla political warfare against industry is to be blotted out, there must be a greater spirit of unity in business so that all the component parts of industry come to realize that an attack upon any one part is an attack upon the whole. The disposition upon the part of industry as a whole to treat the problems of an individual unit—such as coal mining—as something apart has been the bureaucrat's golden opportunity. When industry presents a united front against the whittling away of the independence of any of its parts, Congress will lose its taste for experiments in encroachment of government upon business.

The individual coal producer, of course, has the responsibility of squaring his own conduct with the accepted standards of fair practice. It is a responsibility which he cannot shift. At the same time the larger work of education can be carried on only through associated effort. The burdens of that work should not be cast upon the shoulders of a few.

"Pollution" That Protects

NO ONE CAN DENY that the Sanitary Water Board of the State of Pennsylvania takes a sane view of the water-pollution problem in its report to the Governor. The pollution of streams by the coal mines of Pennsylvania takes an unusual form as compared with that of other industries. It makes the waters germicidal and therefore more safely potable. It also continues long after mining ceases. In fact the "sulphur water" does not come so much from the coal that is extracted but from the coal that is not mined or is mined and thrown on one side. The pollution is intrinsically a part of the coal, always existing potentially but not made active till the coal is mined.

The best cure is a more complete extraction of the coal. The reason why old mines have such acid water is because the pyrite in the piles of slack and boney coal and in the crushed pillars leaches out and forms acid. The tendency of the future is toward complete extraction of coal and this can be justified by even more cogent reasons than pollution. A well-drained mine with roadways well cleaned of fallen coal, where none of the product is left in the workings and where the extraction is high should not give off much sulphur water. Bad times in the industry that cause mines to close down and flood must have an unfortunate influence, for all the dry coal piles underground are likely to be submerged and the acid in them ultimately conveyed to the surface.

When the water rises it appropriates promptly all the acid that years have accumulated. It does not generate it. It is there ready for solution, for pyrite will oxidize in the moist air of the mine. In some old dry mines the crystals of iron sulphate can be observed.

Some day perhaps these mines will be closed by falls and flooded. Should that time come the stores of sulphate within the mine will be speedily dissolved with unfortunate results. Perhaps those who advocate sealing mines should change their tune and rejoice when they are left open.

Some industries are only partly or not at all indigenous. They draw their supplies from long distances. The rejects of some industries are germ-laden and make water non-potable. The waste of many industries is compounded of materials partly indigenous and partly foreign or all wholly foreign. These materials in many cases if not thus mixed and treated would be harmless to the water supply. Such industries stand on rather a different footing from coal mining, which is strictly indigenous, makes an effluent that when mixed with water, whether pure or germ-laden, may make the mixture potable.

The industry cannot be moved from the coal bed. The coal must be abandoned if the waters are not to be polluted, for, as the Sanitary Water Board of Pennsylvania says, the cure is excessively costly and elaborate. To quote its statement: "The Department of Health several years ago spent a large sum of money in elaborate research investigation in hopes of finding a reasonable and practicable means of treating acid water-drainage to remove simultaneously both acidity and excessive hardness resulting from neutralization. A process was found but deemed impracticable on account of excessive cost and elaborateness."

Industrial Co-operation

MANY of the industrial troubles that confront the coal-mining industry are common to every producing company. And the technical and marketing problems of one operator are apt to constitute the difficulties of several of his competitors. Working as individuals, it is doubtful if more than a small fraction of these difficulties can be satisfactorily overcome by the producers. But by the adoption of a liberal policy of experience sharing, with the realization that the industry as a whole cannot prosper to the fullest extent if any component parts—no matter how small—are excluded, the majority of these various problems can be solved.

In many cases the advantages resulting from membership in various professional, scientific, engineering, mutual-benefit and trade societies are not fully appreciated. Yet such associations are admittedly of service not only to their members but to the public. But the value of membership in such societies varies widely, depending upon the spirit which the various members bring to them. Unless each individual is not only willing but anxious to give to all other members the benefits of his experiences and the results of his experiments, the association will sooner or later either degenerate into a mere social gathering, a meeting place where meaningless verbiage is rampant, or they will cease to exist altogether.

So-called plant or process secrets should have no place in such an organization. If what one man or company has evolved or developed is of real or apparent value to the entire industry, the selfish idea that it should be jealously guarded hinders, and often prevents, further advances in that particular field. And in most cases such retardation entails financial losses to the individual or corporation responsible for such obstruction, as well as to the whole industry.

Fortunately, the number of men or companies who maintain a policy of strict industrial secrecy, and who believe that they are sufficient unto themselves, is rapidly decreasing. This has been particularly true since the World War, during which the value and necessity of complete co-operation was everywhere manifested. Examples of the benefits to everyone that accrue from unity of purpose are everywhere apparent. Were it not for co-operation, the automotive industry would be in a state of utter confusion; standardization therein would be unknown; profits to the manufacturers would be meager, and costs to the purchasers would be much higher than they are today. Without a free interchange of ideas, the radio industry could not have developed with the phenomenal rapidity that has marked its rise to prominence. This is also true of the railroad, the telephone, telegraph, and electrical industries, to mention only a few.

Each industry must solve the problem of marketing its product, and in most cases this can be better handled co-operatively than individually. The various citrus fruit-growers' associations furnish but one of many examples of the advantages of this form of co-operation. It would be practically impossible for a man who raises only a few hundred crates of oranges to market his product unaided, but by contributing a few cents per crate to a common fund, the association of which he is a member makes the entire world his market.

For the reasons already mentioned, it is practically the duty of all men and corporations to be members of the society or association representing their particular business or interest. If no such organization exists, those who are affected by its absence should endeavor to organize one. And to its membership they should give unselfishly of their experience and the results of their research.

An Unrecognized Necessity

THE STORAGE-BATTERY type of locomotive will function when and where those of other types cannot. There are times when need for a means of rapid transportation is pressing and not otherwise obtainable, as when the power is off. Perhaps at such time the immediate inspection of far-away working places is urgent, or it may be that materials must be hustled to a remote section of the mine. The availability of a storage-battery locomotive is then truly appreciated.

Consider the occurrence of a fire in a mine generating considerable gas, and take for example the experience last winter in the Horning mine. Some time was lost in moving materials used in sealing the fire and an explosion followed. This probably was a direct result of this delay. Speedy transportation at that stage of operations might have averted loss of life; a storage-battery locomotive would have furnished the necessary speed. As it was, mules and hand-tramming had to be resorted to, as no electricity was allowed in the section in which the fire was located.

Another specific application of this kind of locomotive, to which no other type lends itself, is to mining operations in a squeeze section. True, squeezes are not supposed to occur, but they do nevertheless—in the best of mines. To transmit power into a squeeze section is dangerous and without power the cable-reel type of locomotive may be counted out. Where conditions are suitable animals might be employed, but not wisely if locomotives are used elsewhere for gathering.



River Tipple Handles 8,000 Tons Daily

New System Is Entirely Different from the Old — Car Dumper Is First Of Its Kind to Be Built—Belt Conveyor Boom 145 ft. Long Loads at Any Practical Water Stage—1,000 Tons Have Been Loaded in One Hour

By J. H. Edwards

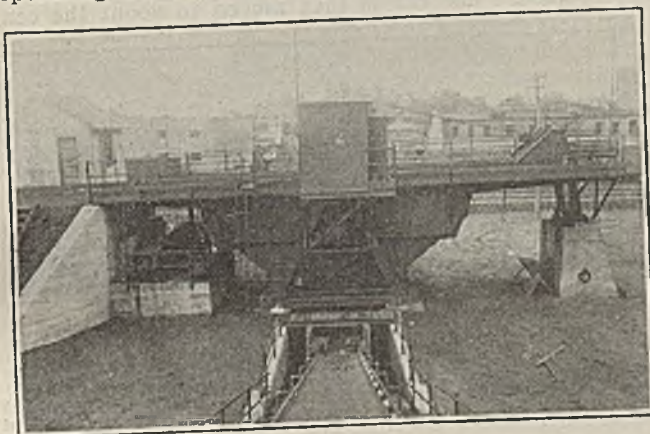
Associate Editor, *Coal Age*, Huntington, W. Va.

AS A RULE the operating department has finished its job when coal has been loaded into the railroad car. This is not the case, however, with the operating department of the Island Creek Coal Co., of

The old plant consisted of a wooden trestle and a dump house from which the coal was lowered into the barges in gravity baskets. The maximum capacity was approximately 5,000 tons in 10 hr. and considerable labor was required to clear the coal from certain of the cars.

The new plant has a maximum capacity of 8,000 tons in 10 hr. and much less labor is involved. There is no fire risk, and a lesser chance of damage from floods and ice. Furthermore there is no wooden trestle to maintain, the dump being served by a fill with a maximum grade of 2½ per cent, and a belt being employed to carry the coal from the dump to the barge loading station.

The railroad yard, which is level, has space for 150 loads and 70 empties. One 62½-ton steam locomotive is



Car Dump Locked in Normal Position

The tilting motor and air compressor are located on the concrete platform under the left-hand end of the dump. The car spotter block is draw back against the bumper which is its normal position before a car is coupled to it. Coal is fed onto the 48-in. belt by a reciprocating pan feeder. In its normal position the dump track has an inclination of 2½ per cent so that the cars leave it by gravity.

West Virginia. After a haul of 77 miles to Huntington, 15 to 20 per cent of the six-million-ton annual output again comes into the hands of the operating department for transfer into barges, a tow of 150 miles down the Ohio River to Cincinnati, and re-transference at that place.

About a year ago the old river loading plant at Huntington was replaced by an entirely new installation which presents a marked contrast to the old one. It utilizes a cradle dump of unique design. Several of the accompanying photographs, taken early last spring while the old plant was still standing, show the relative locations and sizes of the two river structures.

The headpiece accompanying this article shows more than an acre of coal being moved by 600 hp. Ten barges, each carrying 1,000 tons, are being towed or pushed down the Ohio River from Huntington, W. Va., to Cincinnati, Ohio. A round trip for the tow boat usually requires about five days.

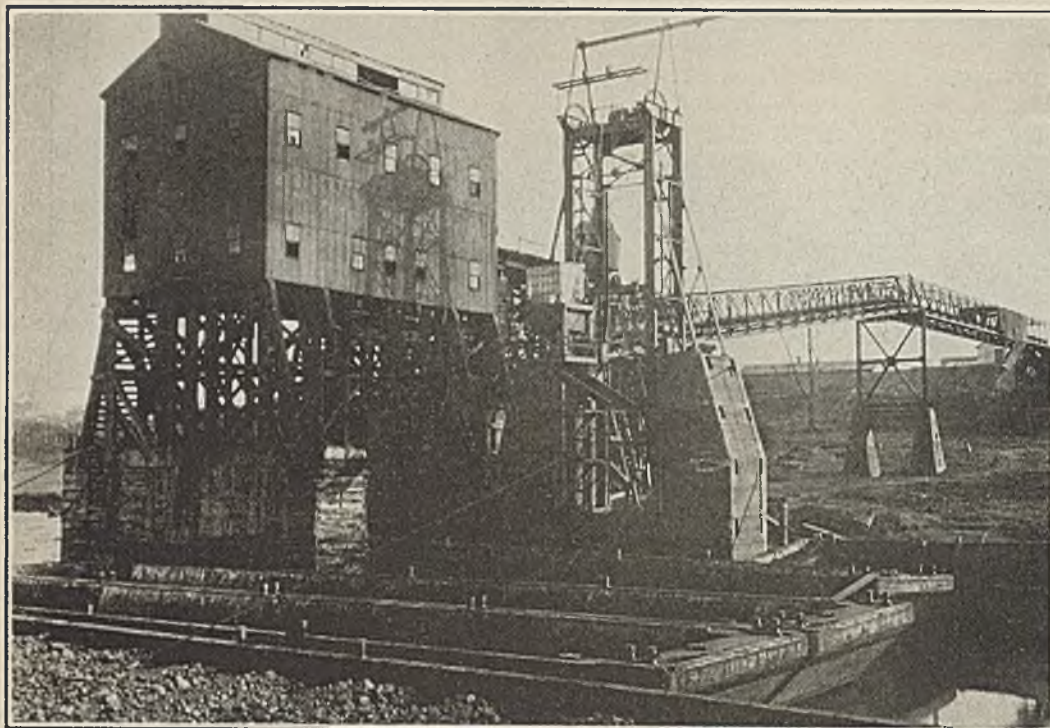


Before the Old Plant was Torn Down

With the new arrangement the car dump is located in the railroad yard and a belt conveyor extends out over the water to the loading point. The maximum capacity of the new plant is 8,000 tons in 10 hr. This is 60 per cent greater than that of the old plant.

employed in switching. This brings the loads, one at a time, up to the dump. The track is here on a 2½ per cent grade, the same as the maximum inclination on the fill, so that the cars when unloaded run by gravity to the empty storage track.

Self-clearing hopper cars are the only type handled, but to facilitate the complete emptying of certain of those cars which do not live up to their name, that is, which are not truly self-discharging, a special end-tilt-



River End

At the left is the old tippie which has been torn down since this picture was taken. When it was in use the coal was lowered into barges by means of ordinary gravity baskets. Naturally this process was slow. The new plant delivers the coal to the barges by the aid of a loading boom which forms a part of the main belt conveyor. Inasmuch as the new plant is built throughout of incombustible materials practically all fire risk is obviated. The upkeep also is much less on the newer equipment.

ing dump was built. The idea for this device originated with certain of the Island Creek officials, and the details of the design were worked out by the manufacturer, Heyl & Patterson, Inc., of Pittsburgh.

The dump track is pivoted at the center on a heavy shaft supported at each side by an A-frame. Under one end is a motor-driven slow-speed pinion, engaging a rack, the upper end of which is attached to the dump. By means of this rack and pinion, the whole dump car and all can be tilted either way to an angle of $8\frac{1}{2}$ deg. with the horizontal. This is sufficient to make the coal slide out of the cars.

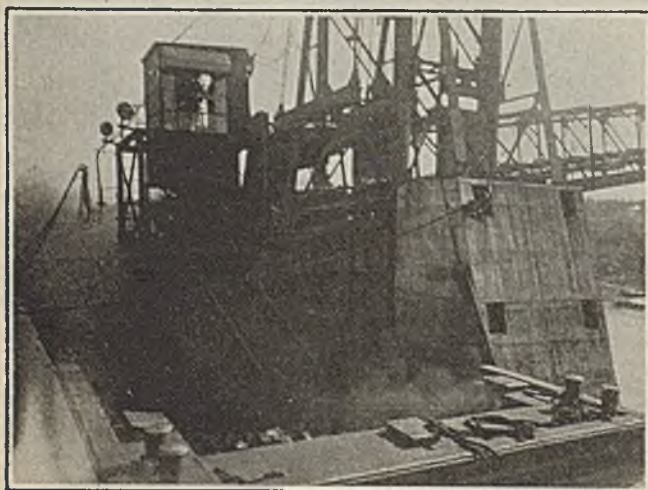
At the bumper end of the dump is a moveable block fitted with a standard drawhead. This car-spotter block can be moved back and forth by a thread-bar or screw, driven by a 5-hp. motor. An air piston is arranged for pulling the coupling pin to release the car from the spotter after the car has been emptied. To prevent

damage to the thread-bar, the spotter block is always moved back against the bumper when a car is to be coupled. The car is then moved to about the cen-



After the Old Tippie Was Removed

Compared with the old loading equipment the new installation looks trim and neat indeed. It has demonstrated its utility by handling 8,000 tons in 10 hr. At the right in this picture may be seen the piers that guard the harbor which has a capacity of 30 barges. In the foreground is the pump boat and farther out in the stream the 600 hp. tow boat "Sam P. Suit."



Loading a 1,000-Ton Barge

The loading boom end of the conveyor discharges to a short trimming chute that may be swung to any desired position by a small electric motor. The operator's cab surmounts the end of the boom so that he has a clear view of the entire loading operation. He controls all movements of the conveyor belt, the chute and the barge.

ter of the dump, the position depending somewhat upon its door arrangement. It is so placed that the large pivot shaft will not interfere with the flow of coal. The spotter is used also to move the car so as to distribute the coal, in case the bin is nearly full.

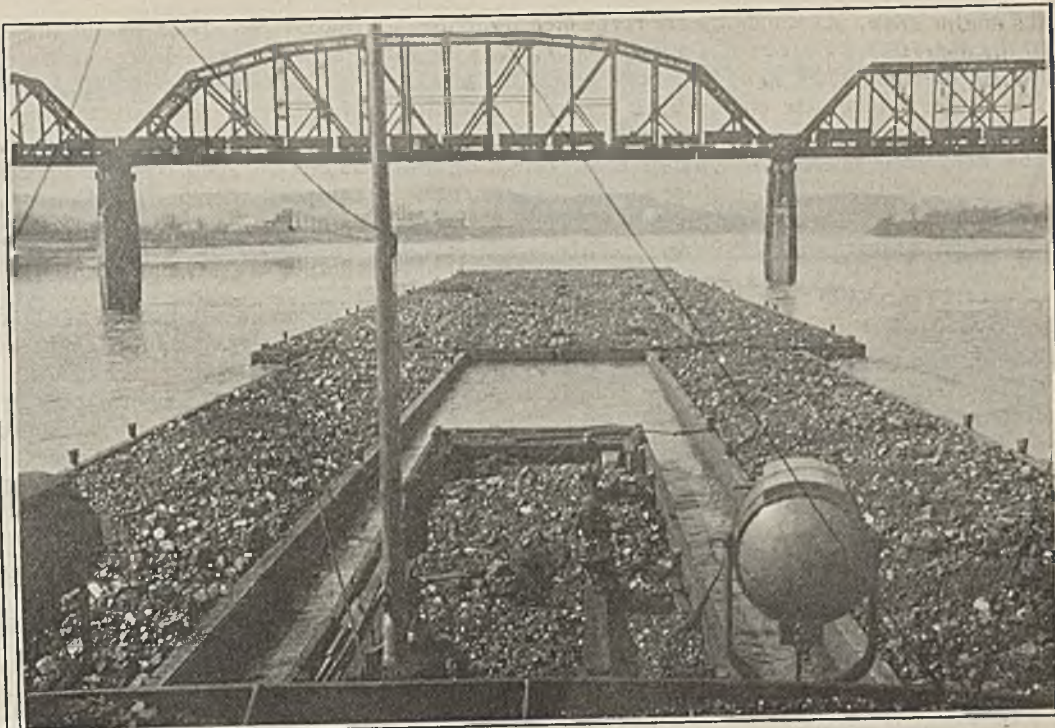
The dogs which lock the dump in normal position are operated by compressed air. The pressure for this duty and for pulling the coupling pin is maintained by a 2-hp. motor-driven compressor located under one end of the dump and alongside of the 25-hp. car-tilter motor.

Coal is fed from the dump onto the belt conveyor by a reciprocating pan feeder driven by a 5-hp. motor. The electrical and air controls for the dump, and the main and distribution switches for both this device and the river-end of the conveyor are located in an operator's cab mounted on a level with the dump.

The conveyor belt which is $\frac{1}{2}$ -in. thick and 6 ply, is driven by a 50-hp. motor located out above the water on the end of the loading boom. The flat bearers of the return strand of the belt and the troughing idlers of the upper strand are fitted with spiral roller bearings and with connections for pressure-gun greasing.

"Westward Ho!"

Tow of ten barges as seen from the pilot house of the tow boat. The small barge in the center carries coal for the steamer, and two men are hauling this fuel aboard in wheelbarrows. The bridge is that of the Norfolk & Western R.R. at Kenova, W. Va. Three states may be seen in this picture. The low land at the right is Ohio, that at the left is West Virginia and the hills in the background are in Kentucky.



Surmounting the end of the 145-ft. boom is an operating cab. This is kept in a vertical position, regardless of the boom angle, by being pivoted at the bottom to the lower corner of the boom, while the top is anchored by long wire ropes to the top of the conveyor bridge at the pier where the loading boom is hinged. The long loading boom is necessary because of the wide fluctuations in river level. Loading can be done at any stage between 10 ft. (which is pool stage) and 52 ft. which is maximum high water.

The operator in the boom cab is directly above the center of the barge being loaded. He controls the starting and stopping of the belt conveyor, the raising and lowering of the boom, the swinging of the discharge chute, and the movement of the barge. He receives signals from the dump operator whenever conditions at the dump end call for stopping the belt, also when conditions are right for starting.

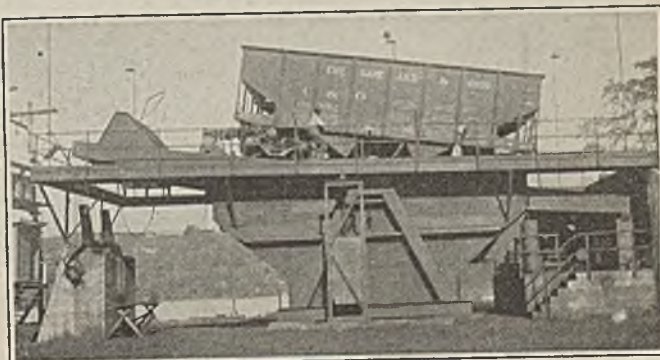
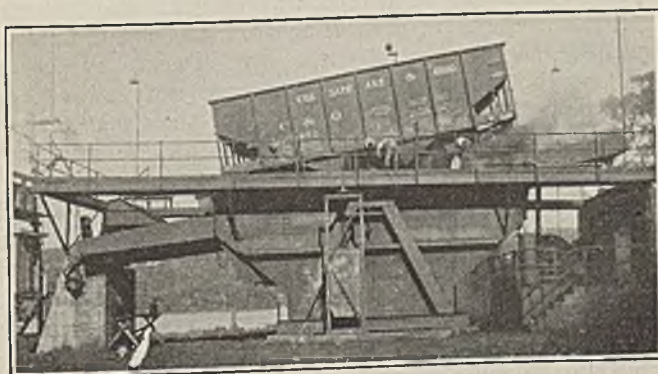
When a barge is being loaded it is moved by a 25-hp. double-drum friction hoist located on a boat anchored alongside. The clutches of this motor-driven hoist are operated by compressed air. Power and control cables as well as air hose connect this boat with the operator's cab on the end of the loading boom.

Island Creek's river equipment consists of 32 steel barges each having a capacity of 1,000 tons when loaded to its normal 8-ft. draft. These barges are 200 ft. long, 26 ft. wide and 10 ft. deep. The loading is done in three "steaks" or layers, that is, the barge is moved its full length under the loading chute, three times. At the beginning of the loading operation when one end of the barge is much lower than the other, a small steam-operated pump boat ties to that end and pumps the hold dry with a steam syphon.

This small pump boat, which is fitted with a 40-hp. boiler, is the only steam equipment regularly used at the plant. The barge-pulling boat on which is located the double-drum electric hoist, also has a 40-hp. boiler, and a steam-driven capstan, but these are only for emergency use.

All of the eight electric motors which drive the plant are of the 440-volt, 3-phase, 60-cycle type. The total connected horsepower is 120. The current consumption amounts to approximately 0.05 kw.-hr. per ton of coal handled; the corresponding money cost is 0.15 cents.

Eleven men, in addition to the superintendent G. V. Hite, are regularly employed at the Huntington plant. Three, an engineer, fireman, and switchman, make up

**"Rocked in the Cradle of the" Dump**

The dump is first tipped to its maximum position in one direction and then in the other thus clearing the car of coal. The concrete counterweight near the cen-

ter of the A-frame keeps the conveyor belt tight but not unduly stressed. Spotting of the car is accomplished by a small motor acting through a thread bar. When the

car is tipped to its maximum inclination it stands at an angle of 8½ deg. to the horizontal, which experience has shown to be sufficient to empty the car.

the engine crew. At the dump are three men in addition to the operative. Four men, the boom operator, a barge loader, and two fleet men, take care of the river end. The barge loader acts chiefly as a trimmer, directing the boom operator where to place the coal in the barge. The fleet men operate the pump boat, bring up the empties from the harbor, and tie up the loads.

The artificial harbor, which is protected by three piers, can accommodate 30 barges. This is equivalent to three tows for the larger of the Island Creek boats, the "Sam. P. Suit." The smaller boat, the "Catherine Davis," tows six loaded barges. This boat is rated at 350 hp., and the larger one at 600 hp.

The average time of a tow from Huntington to Cincinnati is 24 hr. and the best time 17 hr. The return trip up stream with empties usually takes 72 hr., but has been made in 48 hr. Five days is the usual time of a round trip.

Not all of the coal loaded at the Huntington plant goes to Cincinnati. Occasionally an Island Creek boat will take a tow to Louisville, and some coal is towed from the point by industrial purchasers.

Up to Oct. 15 more than 860,000 tons had been dumped at the new plant since it was put into use in November, 1925. Recently 7,673 tons were handled in 10 hr., and on that day there were certain car and barge delays which limited the tonnage.

Considering its large capacity, the plant stands as a model of simplicity.

Advantages of Improved Mine Cars

Many noteworthy improvements have been made in mine-car construction during the past few years. Among these may be mentioned the adoption of improved brake-rigging, lower centers of gravity, more secure types of couplers, cast-steel wheels and antifriction bearings. Cast-steel wheels are stronger and lighter than those made of cast iron and this fact, together with the lower resistance of antifriction bearings, better couplers and the like, permits a mine locomotive to haul longer trips with the same tractive effort. Lower centers of gravity and improved braking facilities mean safe operation at higher speeds. All of which increases the tonnage of coal produced without requiring the purchase of additional equipment.

Mine cars of the type shown in the accompanying



A Modernized Mine Car

Equipped with cast-steel wheels and antifriction bearings, cars of this type permit a mine locomotive to haul a greater tonnage of coal with the same drawbar pull than would be possible with cars of the old style. The sides and ends of the car illustrated are built of copper-alloy steel which is more resistant to rust than ordinary mild steel. Note that the car is strengthened by riveted belts and that the top edges of the plates are rolled, instead of being "angled," to afford stiffness.

illustration are in use in the Stag Canon branch of the Phelps Dodge Corp. at Dawson, N. M. These cars have an inside length of 9 ft., are 48½ in. wide and 44 in. high above the rails. They weigh 3,000 lb., carry 5,500 lb. of coal and when level full have a capacity of 93 cu.ft. The cast-steel wheels, 16 in. in diameter, are equipped with antifriction bearings. As may be seen from the illustration steel strap-brakes are used.

WOOD BOTTOM IS RETAINED

Although the bottom of the car is of wood, the sides and ends are made of copper-alloy steel which insures long life despite rough usage. Steel containing a small percentage of copper is further advantageous in that it does not rust or corrode on exposure to the elements as readily as does mild steel. Attention is also called to the steel flange above the wheels which, with a similar one on the opposite side, serves to hold the car securely in the rotary dump.

Bituminous Coal Industry Has Responded To Demands Made Upon It

During the five decades from 1870 to 1920 the United States passed from a primarily agricultural to an industrial nation. As measures of the increased importance of industry, the growth of transportation and manufacturing are the most significant factors. In 1870 the railroad mileage of the country amounted to 52,922 miles; in 1923 that mileage had grown to 258,084 miles, an increase of 387 per cent. That railroad mileage does not afford an adequate index of the growth of transportation may be seen from the fact that between 1890 and 1925 while mileage increased only about 50 per cent, revenue freight ton miles increased no less than 448 per cent, or more than eight times as fast, according to Walter Barnum, president of the National Coal Association.

The enormous expansion of our manufacturing industry during that period is shown in Census Bureau reports, which place the value added to products by manufacturing processes in 1869 at \$1,395,000,000; and in 1923, the last year for which figures are available, at \$25,850,000,000, or an increase of 1,760 per cent.

GREAT ADVANCES MADE DURING HALF CENTURY

Even this evidence of industrial growth is surpassed by the record of bituminous coal, which during the same fifty years, comparing the average for the first ten years of the period with the average for the last ten years, increased in production from 20,303,000 tons to 507,803,000 tons, or 2,400 per cent. Decade by decade during that period the increases were as follows: For the second decade, 152 per cent; for the third, 82 per cent; for the fourth, 118 per cent; and for the last decade of the period, 56 per cent.

The last ten years referred to includes the world war, and I call particular attention to the creditable way in which the industry responded to the demand of the nation for fuel during that critical time. The heatless Mondays of the winter of 1917-18 were made necessary by transportation difficulties and not by mine disability. Although the development of new mines is not ordinarily a matter of days or weeks, but of months and even years, yet the bituminous output of the country for 1918 reached a total never equalled before or since.

Anthracite Labor Organizations Won and Lost In Fights on Speculative Fringe*

Increase in Shoestring Operations in Civil War Period, with Drive Against Wages During Lean Years, Gave Forerunners of United Mine Workers Rallying Ground—Violence and Bloodshed Blot Controversy

By Myron D. Edmonds

THE NECESSITY for general stabilization in the anthracite region became increasingly apparent as labor unrest showed no decline in the years immediately preceding the outbreak of the Civil War. Before the end of March, 1856, the militant *Miners' Journal* remarked that "all the coal required can be mined, but it cannot be transported to market. While millions of dollars are squandered in opening coal mines, in many instances for speculative purposes, the product of which is not wanted, the increased facilities for transporting to market is most shamefully neglected."

The *Journal*, which was always a grumbler about transportation, was probably a little biased in the above remarks. The real meat of its notice lies in its recognition of the speculative tendency of operators and would-be operators. Money which should have been used to strengthen and improve existing mines went into speculative enterprises instead, and when the speculation proved unlucky there was a big chance that relief would be sought in wage cuts. It was this craze for speculation which led directly to the abuses that caused strikes, and fostered the union movement in the anthracite fields.

The evil wrought fifty to seventy-five years ago by men who should never have been in the coal business set up a train of consequences which even today plague operators who had no part in the original transactions. A body of tradition has been built up and carefully nurtured, picturing the coal operator as being but few degrees removed from hoof and horn. A heritage of hatred, originally directed at the men who ran things in the "good old days," is now only too often directed at men whose work, like that of their immediate predecessors, has been a constant endeavor to correct and abolish ancient abuses. No doubt this sort of feeling is decreasing, but it would be folly to say that it has entirely passed away.

By the middle of 1856 the speculators were hard hit. In July, with trade dull and prices low, operators in the Mahanoy Valley posted notices of wage cuts and there were prompt strikes. Conditions gave grave concern to everybody, but especially to transportation interests.

*Third of a series of articles describing the early history of the labor movement in the anthracite region. Preceding articles appeared in *Coal Age*, issues of Jan. 6 and 13, 1927.

THROUGHOUT the Civil War the Schuylkill Region was a hotbed of trouble. The capture of six spies with plans covering every mine operation in the county apparently had little deterrent effect upon the disorders that kept occurring there. It may be possible that the effort there expended by the Confederacy may have paved the way for the long and bloody trail of arson and murder extending over several years which characterized the reign of terror instigated by the Molly Maguires.

The Philadelphia & Reading R.R., for example, had a larger actual capital investment than all the Schuylkill operators put together, and this investment was imperiled by the chaos which prevailed in the operating end of the anthracite industry. The railroad did not see much chance to prosper unless the industry counted

on to supply tonnage also prospered, or at least ran on an even keel. There is no question but that this problem received serious consideration from the responsible men in the railroad organization, and especially from its president, John Tucker.

Late in 1856 Tucker resigned the railroad presidency and began to hold conferences with Schuylkill coal operators. On Dec. 20 the *Miners' Journal* somewhat cryptically remarked that there was a plan contemplated to organize the Schuylkill operators, systematize the

business, and effect savings of 10 to 15c. a ton without advancing prices. In short, what the Schuylkill coal business was supposed to do was what organized baseball and the moving picture business have actually done within the last few years—to appoint a sort of super-general manager with sweeping powers. Tucker opened offices in Philadelphia and got to work. The general plan was that he should try to reach agreements with the Lehigh and Wyoming operators with respect to tonnages shipped, and that in pursuance of this he was to have more or less authority to contract or expand Schuylkill output as conditions warranted, and to advise the Schuylkill operators on prices.

The coal year 1857 opened with sundry strikes for higher pay, but Tucker stuck to his task. His work was in vain. Apparently nothing could make the Schuylkill operators stick together as a unit, and the well-considered scheme worked out by Tucker was abandoned. In 1858 another year of depression began. Miners at Ashland struck for more pay, and went on a march. They forced the suspension of the Wadesville and St. Clair collieries, near Pottsville, but a regiment of militia was sent to St. Clair and the mob was scattered after five were arrested.

Times were undoubtedly hard, as the *Miners' Journal* admitted, but it added that "miners can make \$7 and \$8 a week." The men at Wadesville and St. Clair soon returned to work, but those at Ashland remained out. They not only wanted more money, but they complained

of the store order system in use there. There were complaints that contract miners had been making only 6 or 8 hr. a day, instead of the full 10 hr., and it was said that men who worked full time ran from \$12 or \$15 to as much as \$20 a week. But the contract miners rejoined that 10 hr. was too long to remain in badly



Pennsylvania Hall

A building was constructed on the site of this hotel by Colonel George Shoemaker who as early as 1812 hauled Schuylkill coal to Philadelphia by wagon. For fifty years Pennsylvania Hall served as a headquarters for coal men and coal meetings. Even to this day it is the customary place for holding public sales of coal lands.

ventilated workings. So the weary year wore on, with a lot of friction. The same might be said of 1859, when there were troubles with miners and canal boatmen over wages, and of 1860, when there were sporadic strikes for more money.

There was a strike in 1861, which centered at Tamaqua. It was somewhat obscure in its causes, and was comparatively short. The Civil War then beginning seemed to fill men's minds to the exclusion of other matters. But by 1862 the novelty of the war had subsided, and the industrial troubles of that and succeeding years of the war were of an uglier character, and were accompanied by circumstances which led the federal government to station troops in Schuylkill County and ultimately to take over the Philadelphia & Reading R.R. under war powers.

A corporation known as the Forest Improvement Co. owned a considerable tract of land in and around the Heckscherville Valley, which it improved with mining properties which were leased to individuals and firms for operation. Men employed at these mines seem to have organized more or less loosely after the model of Bates's union as early as 1860. In 1862 they began to make trouble, and in a strike at Heckscherville they tried to stop the pumps and flood the mine. Governor Curtin promptly put troops into that neighborhood, but there was another strike before long at the Vorhies mine, and this time the pumps were stopped. It was intimated that sinister motives were behind these activities, and public warnings were given that there would be short shrift for strikes, and for strikers, animated by politicians for political purposes.

But in 1863 such activities were multiplied. Not only were there numerous and almost continuous strikes centering in the Forest company's lands, but the strike movement showed an almost suspicious degree of organization. Nor was the public mind eased by the

capture of six strangers in Schuylkill County in June, 1863. They had sketches which included drawings of every mine in the region, and they were hustled to Philadelphia under accusation as spies.

But the strikes continued in 1864, especially in the Minersville neighborhood. Six union committeemen were arrested and taken to Reading, where the military authorities looked after them. This had little effect, and certain operators were insolently warned not to work their mines. Then the War Department sent gallant old Franz Sigel and General Couch to look into the lawlessness. Soldiers home on furlough were formed into an "Invalid Corps." They picked up a number of agitators, while others decamped. A breaker or two went up in flames, warning notices were sent to mine owners and mine employees who preferred to work, and there was a good deal of sneaking violence, but the 10th New Jersey regiment was sent up to help the Invalid Corps, and things gradually simmered down.

The general commercial and industrial let-down following the end of the war in 1865 was responsible for wage reductions, and there were strikes all the way from Scranton to Pottsville. The year 1866 opened in an atmosphere of violence and bloodshed. David Muir was killed on his own doorstep. A few days later Henry Hawthorne Dunne, a young operator who had been insistent on his own rights and vigorous in their defense during Civil War times, was murdered early in January while driving from Heckscherville to Pottsville. There was no question about the murder. At least four persons saw the murderers but were not in position to arrest them or give the alarm. A reward of \$5,000 was offered, but there were no convictions. Shortly after this, two strangers visited the mine of George W. Cole in Mahanoy Township. They met inside foreman T. Lewis, the outside foreman, and a son of Mr. Cole. After a short parley one shot Lewis, the bullet going through both cheeks. Mine employees took a hand, and one assailant was shot and killed. The other was caught, and a hatchet was found carefully concealed under his vest.

Early in July another strike was staged, covering a number of the smaller mines. It continued, more or less intermittently into the spring of 1867, when there were sundry outrages and threatening notices which culminated in the murder of William H. Littlehales, superintendent of the Glen Carbon mine in Cass Township. He was ostensibly murdered partly with the view to getting the \$3,000 payroll he was supposed to be carrying. A reward of \$5,000 offered by the county brought no information. The *Miners' Journal*, on March 30, 1867, printed a detailed list with names, dates and circumstances, showing 50 murders in the Schuylkill coal field from the beginning of 1863 to March 30, 1867, with virtually no convictions.

Oxy-Acetylene Torch Saves Money

Recently at a mine in West Virginia one of the cages fell from the top of the shaft to the bottom. The result was a twisted and tangled mass of steel. The attempt to cut this wreckage apart by sledges and chisels so as to facilitate its removal would have required several days. However, an oxy-acetylene torch "blew" the rivets out in a few hours, which resulted in a great saving over hand labor.

Making Refuse From Colliery Pay Its Way

Ideal Disposal Makes Refuse a Source of Revenue—Bricks, Acid, Gas, Fertilizer, Briquets and Powdered Fuel Are Some of the Possibilities Involved—England Has Gone Farther than America

By E. T. Ellis
Sheffield, England

AT MANY COAL plants the disposal of mine refuse has always been a problem that has entailed a definite expense. Naturally an ideal disposition would be commercial exploitation, that is, a method that converts such waste material into a valuable byproduct representing a source of income. In England more thought has been given to this subject than in this country and the economic exploitation of mine waste has been carried to a finer point. Some of the results that have been there secured are, therefore, worthy of careful consideration, if not even emulation, by American mine owners.

One of the common waste materials accompanying the coal in the mines of both England and this country is what is known as bind or batt. An examination of samples of representative refuse from many collieries shows considerable quantities of blue or black bind. This material, being argillaceous in character, can be advantageously used in the manufacture of building brick. The process of making bricks from this material is similar to that followed when ordinary clay is used. The bind is first ground, mixed with a small amount of water, and formed into the desired shape. After being seasoned for a suitable length of time, the bricks are placed in kilns and baked in the usual manner. They are then removed from the kiln, culled and placed upon the market.

REFRACTORIES MAY ALSO BE MADE

In addition to the manufacture of building brick, this blue bind may also be used for making fire brick. For this purpose it is usually mixed with silica or other refractory material in varying proportions and after moistening and molding in the usual way, the bricks are fired at a high temperature so that some of the silica begins to sinter.

Again, blue bind without preliminary treatment may be fired at a low temperature or roasted. When treated in this manner it usually crumbles into a powder that may be spread on agricultural land, the potash contained being in a form available for plant absorption. This process, therefore, represents another way of utilizing this waste material.

Pyrites and carbonaceous material in general should be removed from blue bind so far as possible before it is employed in any of the above-mentioned ways. In most instances this can be readily accomplished by passing it over picking tables.

Some forms of colliery refuse contain large quantities of iron pyrites. This is a valuable material and every effort should be made to exploit it. After it has been separated from the rest of the mine refuse and has been freed from clay and stony material, the lumps of pyrite may be utilized in several different ways. One of the simplest of these is to heat this material and pass steam over it. By this means the pyrite is more

or less completely decomposed, as is also much of the water vapor. Sulphuretted hydrogen is the chief product of this reaction. If this gas is absorbed in cold water it can be sold as a laboratory reagent. If, on the other hand, it is passed into a dilute solution of ammonia, the main product derived is ammonium sulphide, which also finds use in the chemical laboratory.

It is highly desirable in some cases to carry this process even further, extracting sulphur itself, which after being purified, may be sold for use in manufacturing. In one process of this kind, the sulphuretted hydrogen made as has been described is burned in the presence of a limited amount of air. This oxidizes only the hydrogen, the elemental sulphur being deposited.

PYRITES YIELDS ACIDS

Many types of colliery refuse, on account of their high content of pyrites, are valuable sources of both sulphurous and sulphuric acid. In the production of the first, the refuse should be sorted and cleaned as thoroughly as possible to free it from carbonaceous, stony, or clayey materials. It is then roasted in contact with air, this operation being repeated two or three times if necessary, the material being raked meanwhile in order to expose all surfaces. By this means the pyrite is more or less completely decomposed, its sulphur content being converted to sulphur dioxide. The residue or iron oxide which remains need not be wasted as it can be advantageously used in the purification of illuminating gas.

If sulphurous acid is the product desired, the sulphur dioxide is merely pumped into water until no more of it will dissolve. The aqueous solution may then be sold as a chemical reagent or as a disinfectant. To produce sulphuric acid, however, further treatment is necessary as the sulphur dioxide resulting from the roasting of the pyrites must be made to combine with more oxygen. This is usually accomplished by means of the lead chamber and contact processes, but another method of procedure is available. In this advantage is taken of what is known as the iodic acid reaction. This consists in pumping sulphur dioxide into iodic acid until no further separation of iodine takes place. After filtering off this element in the usual way, the dilute solution of sulphuric acid can be concentrated by evaporation or other means until the desired strength is obtained.

Still another outlet for colliery refuse of certain types is the manufacture of illuminating or fuel gas. A highly carbonaceous refuse is desirable for this purpose and this should be as free as possible from pyrites, clay, stones or other impurities. When such a refuse is distilled in the absence of air, a mixture of inflammable gases is obtained. From these the carbon and sulphur dioxides may be removed by passing the

mixture over the usual purifying agents. The combustible gas may then be enriched in any one of several ways if its heat content or candlepower is low.

Distillation of this type of refuse leaves a coke-like mass in the retort. This may be employed as a further source of commercial gas. The temperature of the retort must be raised so that the refuse glows a bright red when either carbon dioxide or water vapor should be passed over it. If carbon dioxide is utilized in this process, it is decomposed with the production of carbon monoxide, while some of the coke is oxidized yielding the same gas. If, on the other hand, water vapor or steam is used, it too is decomposed with the liberation of free hydrogen, while its oxygen combines with the carbon of the colliery refuse to form carbon monoxide.

The passage of carbon dioxide or steam through this coke-like mass can be continued, preferably intermittently, until practically all of the carbon content of the refuse has been removed. The residue in the retort is said to be "dead burnt" but it need not be wasted.

Gas prepared from colliery refuse in any of the above ways burns readily and forms a valuable commercial product. If it is to be employed as an illuminant, enrichment is desirable in order to increase its rather low candlepower.

MANY USES MADE OF BURNT REFUSE

Dead-burnt refuse prepared as above described may form a valuable raw material for still further manufacture. If it is heated until it sinters, the clinker can be ground and sold as a cement, but it will ordinarily be found more economical to crush it and sell it for use in the preparation of porous filter beds for sewage disposal and like purposes.

If, on the other hand, heating is stopped before the material sinters, it may, after being ground to a fine powder, be employed as a diluent for various powerful chemicals used as insecticides. One part of crude naphthalene mixed with ten or even twenty parts of the pulverized dead-burnt refuse, may be employed as a germ killer. Such a mixture could be further compounded by the addition of small quantities of flue dust, superphosphate of lime, or the like, so that it would possess fertilizing as well as pest-destroying qualities.

Combustible colliery refuse reasonably free from pyrites, stone and clay may also be made into "bar fuel" and briquets. In case it is desired to produce fuel bars, it might be well to point out that these may be reinforced most advantageously by the insertion of a rod of soft wood near the center of the mass while it is in a plastic state. When a bar of this nature dries it tends to crack, but if it contains a rod of this kind it seldom falls to pieces. Aside from reinforcing in this way, the manufacture of bars and briquets may be accomplished in a manner similar to that employed in making these fuels from fine coal, coke breeze or like material. Various substances may be employed as binders and each colliery must select the one most suitable or most readily available for its own particular use. Pitch, weak glue, common clay, marl, chalk, and many others, are some of the substances that might be mentioned. Under normal circumstances, from five to ten per cent of binding material is ample for briquet making.

If it is desired to increase the combustible content of fuel bars or briquets made from colliery refuse, varying proportions of sawdust, wood shavings, coke

breeze, coal dust, spent tan, waste paper and the like may be added to them. Coal dust or coke breeze may be added up to 50 per cent of the refuse, but sawdust or waste paper should not exceed about 25 per cent of the whole.

Unless pitch or weak glue is available, the briquets may not hold together well regardless of how thoroughly they may have been compressed. Moistening the mixture with salt water is often recommended and if the briquets are slightly baked in the absence of air at a temperature sufficiently low to avoid distilling off any of their volatile hydrocarbons, the various ingredients frequently coalesce, consequently simplifying the problem of transportation.

REFUSE MAY FORM A VALUABLE FUEL

Colliery refuse may also be used as a steam raiser. For this purpose the higher its carbon content the better. Much more attention might well be paid to this subject than it has received in the past. Chain grates, induced draft and similar modern furnace appliances facilitate the complete and efficient combustion of this material without the necessity of making it up into briquets. In not a few instances, also, refuse of this kind may be pulverized and burned in suspension.

In many instances, however, before attempting to use colliery refuse as a steam raiser, it will be necessary to clean it thoroughly. Naturally stone and clay are detrimental ingredients, but iron pyrites, if present in sufficient quantities to render its recovery commercially feasible, is too valuable to be burned as a fuel. These materials should therefore be removed. The stones if sufficiently hard and durable may be crushed and used in making concrete, or employed in road building. The clay may be made into bricks and the pyrites utilized in acid manufacture.

A few years ago some interesting examples of mine refuse disposal of the types here mentioned might have been seen at various mines in the vicinity of Danville, Illinois. At one plant in this region, the overburden was being stripped from a bed of coal by hydraulicking. The mixture of clay and soil thus removed was pressed into bricks which were burned by the coal. A few miles away, at Missionfield, iron pyrites was frequently encountered in lenses ranging in size up to a foot or more in diameter. These were carefully sorted out from the coal and when a sufficient quantity had accumulated to fill a car, they were sold to acid manufacturers.

VARIOUS SYSTEMS are used to prepare and burn powdered fuel. In some places powdered fuel is delivered in air-tight containers to small consumers, who are thus able to eliminate large storage capacity and the space and care required for the proper preparation of such a fuel. Although this method is not economical for large plants, it has proved an economy for hotels and relatively small boiler plants situated in the heart of a city. Provision is usually made for frequent deliveries of the prepared fuel. Detailed description of the various means of preparing and burning powdered fuel, and the cost under varying conditions, is given in U. S. Bureau of Mines Bulletin No. 217.

COAL AGE INDEX READY

The Index to Vol. XXX of COAL AGE is now ready for distribution. A postcard addressed to the subscription department will bring you your copy.

Many Schemes Tried in Concentrated Mining

Concentration Means Elimination—As a Rule, Ordinary Room-and-Pillar Methods Are Ill Adapted to Mechanization—Machine Loading Gives High Degree of Concentration—Ninety per Cent of Success Is in Management

By G. B. Norris

Jeffrey Mfg. Co., Columbus, Ohio

THE PRINCIPLE that makes "two blades of grass grow where one grew before" is the one which as a rule underlies the concentrated mining system. In other words, the attempt is made to produce two tons of coal where one was produced before. This ability is largely a mental attitude. Until a fairly recent date operators were satisfied with getting out coal by the same method that has been followed for decades. Then they began to do a little thinking, and, because "as a man thinketh, so is he" they began to make discoveries. Consequently there came machine undercutting in place of bearing under by hand; also locomotives for hauling and gathering the coal instead of animal power. These were both conducive to intensity of operation with its consequent benefits.

In a meeting of the Illinois Mining Institute last year,

duced in the best and cheapest manner. The master minds of the country are now at work on the problem. Some are trying to solve it to best suit their own particular needs, while others seek its solution in the broadest sense.

Two facts are self-evident: (1) At the present time a large proportion of the coal annually mined is under-

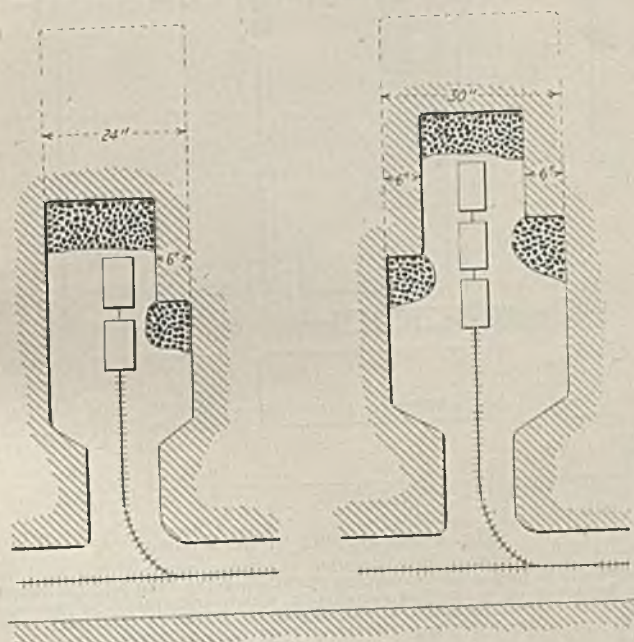
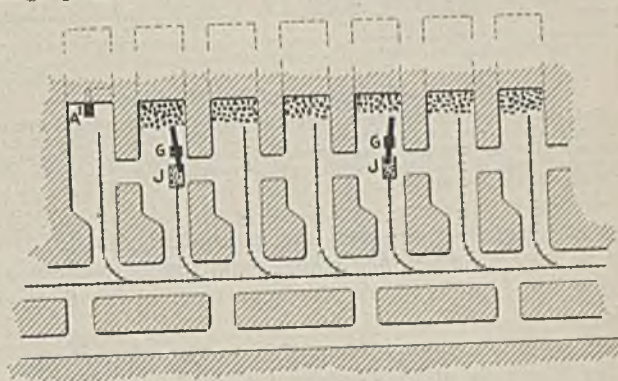


Fig. 1—Increasing Room Output, Hand Loading

It is evident from this drawing that rooms may be driven up for a few cuts 6 to 12 ft. narrower than the finished dimensions. The wing or wings are then undercut and shot at the same time as the face. By this means two to three cars may be placed loaded and pulled simultaneously.

the expression "concentration means elimination" was brought forward and emphasized. This, I believe, is the specific principle back of the whole matter.

Those interested in mining in its various phases began to put their minds to work seriously, and not haphazardly, in an attempt to solve this problem. If you concentrate you must eliminate, so the question has been and is being studied from all angles in order to determine those methods by which coal can be pro-



LEGEND

- | | |
|---|-------------------------------|
| A ¹ —Shortwall Cutting Machine | F—Mechanical Loader |
| A ² —Longwall Cutting Machine | G—Pit Car Loader, Hand Loaded |
| B ¹ —Entry Driver (with shooting) | H—Belt Conveyor, Hand Loaded |
| B ² —Entry Driver (no shooting) | I—Drag Scraper |
| C ¹ —Sectional Conveyor, Hand Loaded | J—Coal Car |
| C ² —Sectional Conveyor, Plain Carrier | K—Locomotive |
| D—Conveyor Loader, Picks up coal | L—Booster Fan |
| E—Transfer Conveyor | |

Fig. 2—Using a Pit Car Loader

This shows a panel of rooms similar to those used with hand mining but employing pit-car loaders to elevate the coal into the car. The machines thus do the heavy work and it has been found that a man can load several times as much coal onto their low conveyors as he can into a mine car. The legend applies to this and all succeeding figures accompanying this article.

cut efficiently by machines, and at a small percentage of the total cost of getting it out of the ground. (2) Coal is gathered and hauled by modern locomotives at a low cost.

The most fertile field then, for reducing the cost of coal delivered on the railroad car lies in the process of loading it into the pit cars.

Since the greater portion of the coal produced in this country is won by some form of "room and pillar" mining, it is thought advisable to present a few typical installations using that system. In order to facilitate reference to different kinds of apparatus used in the illustrations accompanying this article a common legend has been employed. This is attached to and forms a part of Fig. 2, although all of the equipment mentioned does not appear in this particular drawing.

First, I wish to call attention to a scheme recently used in a Kentucky mine, for eliminating part of the delay entailed in shifting cars. This is shown in Fig. 1. The arrangement here depicted allows two or three cars to be loaded before shifting.

Fig. 2 shows the first advance made from hand loading into cars. Here the coal is hand loaded into small,

*From a paper entitled "Concentrated Mining," presented before a meeting of the Coal Mining Institute of America in Pittsburgh, Pa., Dec. 9, 1926.

low, portable conveyors that elevate and discharge it into the car. Rooms are arranged in groups best suited for efficient working. It has been found that a man can load about twice as much coal in this way as he can by shoveling directly into the car, and accomplishes this result with less physical labor. Such pit car load-

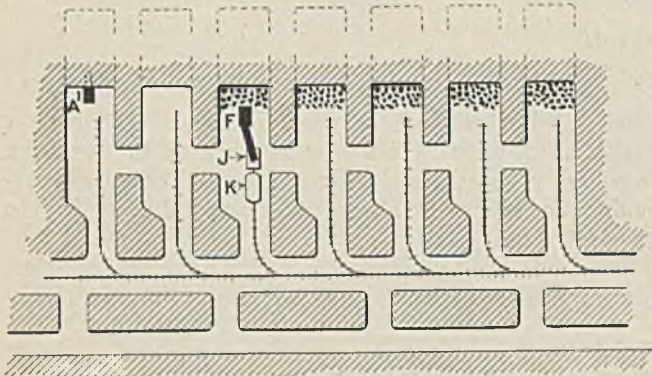


Fig. 3—Loading Out by Machine

This is a case of where a machine supplants a miner without appreciable variation in the mine layout. This plan is being used successfully by several coal producers, although it is generally conceded that a loading machine gives best results when the plan of mining is adapted to it.

ers attended by three men have consistently loaded from 60 to 90 tons in mines where numbers of loaders are being used, and where the coal runs about 6 ft. in height.

It is an easy step from this to the plan shown in Fig. 3, which utilizes mechanical loaders and pit cars attended by a locomotive at all times. Even this plan will not prove particularly successful unless proper supervision is given it, and unless all phases of the work are properly co-ordinated. The results obtained have been either good, or bad, depending upon the kind of machine used, the degree of co-operation given, and the suitability of the mine for such a plan of operation. Tonnages of 75 to 300 and even more, have been secured per shift.

It should be here stated that no plan of machine loading is automatic in operation, as success will largely

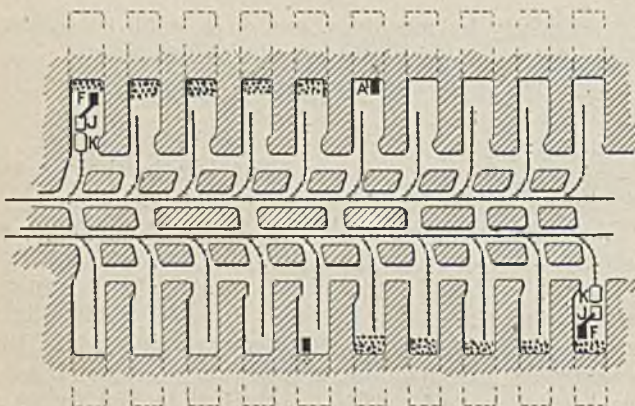


Fig. 4—Mechanical Loaders in Opposite Entry Panels

The plan or layout here shown strongly resembles that employed with hand operation. In order to cut down unproductive time as much as possible, the loading machine should be kept busy throughout the greatest possible proportion of the working shift.

depend upon the care and attention bestowed upon it. At the Mining Congress in Cincinnati, the statement was made by a high authority, that 90 per cent of success rested with the management.

One of the most successful plans for mechanically

working the room and pillar system is shown in Fig. 4. This fully sustains the statement made above about proper management, for the operators employing this scheme thoroughly believe in such supervision.

Each panel contains 20 rooms, 10 on each side of a pair of entries. Coal is cut, sheared, drilled and shot. The two mechanical loaders each attended by a locomotive, pick up the coal and discharge it into large pit cars. These loaders have caterpillar trucks facilitating quick movement from room to room, through break-throughs. Note that the first break-through is placed close to the entry.

The reason for driving these break-throughs close to the entry is to provide a road for the machines as

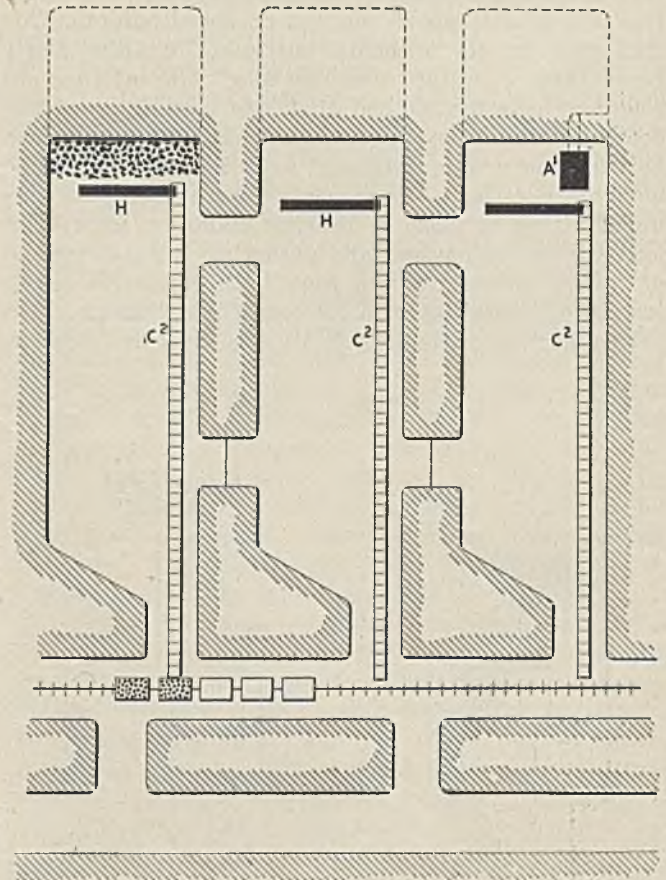


Fig. 5—Conveyors in the Rooms

This plan is becoming popular in many mines. The coal is loaded onto low cross conveyors paralleling the face and delivered to sectional or extensible conveyors, which transfer it to cars on the heading. One great advantage of this plan is that cars in a trip can be loaded consecutively as they pass a fixed point.

soon as possible. The loaders can be quickly moved from one room to another through the break-throughs, and by this means congestion arising from the loading machines traversing the entry is eliminated.

To show to what extent mechanization will facilitate concentrated production, it might be stated that in this particular mine, in October, 1925, there were 329 rooms in operation; on April 1, 1926, 279 rooms were being worked. At that time the number of loading machines was substantially increased and, in consequence, on April 30, 1926, 126 rooms were in operation. This is a remarkable concentration in the short space of one month, yet the output from 126 rooms equalled that formerly obtained from 279 rooms. In April, 1925, about 6 per cent of the coal was mechanically loaded; at the present time, at least 93 per cent is loaded in this manner.

It is at present impossible to give figures showing how this mechanization and consequent concentration has affected the cost, but it is evident that the expense of keeping up a mine having a few rooms as compared with that of maintaining the same operation having a great number of rooms, will show a considerable saving in material, labor, ventilation, supervision, etc. This is all aside and entirely distinct from the actual difference in the cost of undercutting, bring down and loading out the coal.

Fig. 5 shows a plan that has proved eminently satisfactory in a thin-bed mine. By proper co-operation the same crew cuts and loads out 3 to 4 rooms per shift. No cars are brought into the room. The conveyor "C"

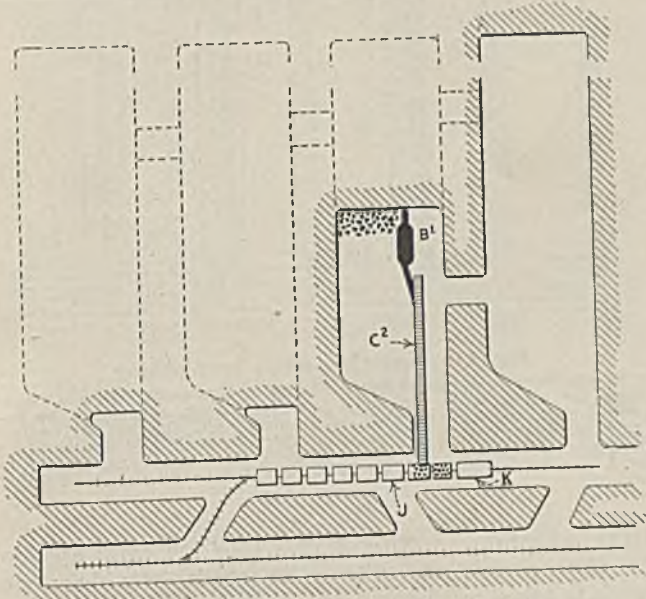


Fig. 6—Mechanical Loading to Delivery Conveyor

This plan strongly resembles that shown in Fig. 5 except that coal is picked up from the floor and delivered to the extensible conveyor by means of a machine. If shooting is permitted at any time during the shift, rapid progress can be made with this outfit.

is quickly lengthened as the room is advanced. The cutting machine is dragged from room to room through break-throughs.

It will be realized that a certain amount of time is lost in changing cutting machines and loaders from room to room. To eliminate this delay is the object of the arrangement shown in Fig. 6. Here a machine that undercuts and loads out the coal after shooting is employed. It is a combination of a shortwall cutting machine and a mechanical loader. This device is called a "shortwaloader" and remains in the room until it is driven up its full length. Coal is delivered by the shortwaloader to a conveyor which in turn delivers it to cars on the entry. The conveyor is easily extended by adding 6-ft. lengths to its inner end. No cars or track are placed in the room.

Some operators where mining conditions permit have combined two rooms into one, making the face two or three times as long as usual. (See Fig. 7.) This eliminates the individually changed car, and allows of four or five cars being brought in and loaded in one trip. A crew of five men is required to cut, shoot and load coal, and put it on the parting. Each man averages from 20 to 25 tons per shift.

In several mines, the coal is 100 per cent mechanically loaded, and the output per man when all employees are considered is brought up to over 10 tons per shift. This

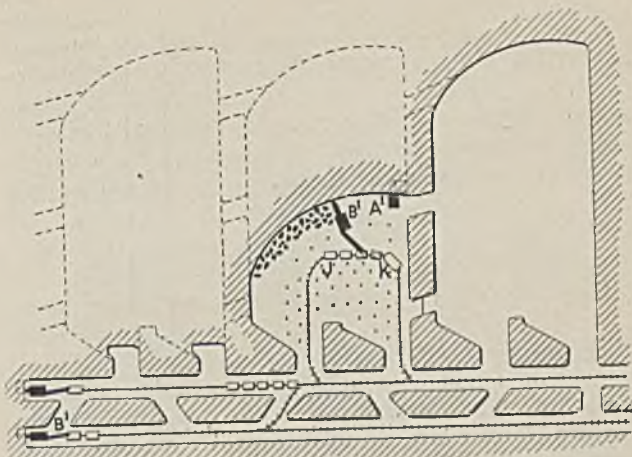


Fig. 7—Loading Cars from a Curved Face

The rooms here shown are practically of double width and the track forms a kind of loop, one side of which roughly parallels the face. An undercutter and a loader chase each other across the width of the room, and then start over again. Like the preceding plan, this one is particularly efficacious in those operations wherein shooting may be done at any time.

is in 5-ft. coal, and contrasts with a 5-ton output as ordinarily secured by hand loading. In this case the shortwaloader is being used as a loading machine only, while the cutting is done by an ordinary shortwall machine. A still further saving in time can be made by the use of a conveyor inside the room in place of cars and track.

The road to the "concentrated mining system" seems to lead to the complete mechanization of the mine. Many are of the opinion that the present room and pillar systems must be substantially modified and some system adopted that affords longer working faces and more economical recovery of all the coal.

A few diagrams will illustrate this change. The plans here shown are proving more or less successful as the local conditions permit. The length of the face has been subjected to much experimentation. The extremely long face appealed to many for a trial, but I believe the "1927 model" working face is being shortened. The shorter face seems to offer less difficulty in the way of roof control and proves itself a safer proposition for both men and machinery.

A word of caution, unnecessary to many operators,

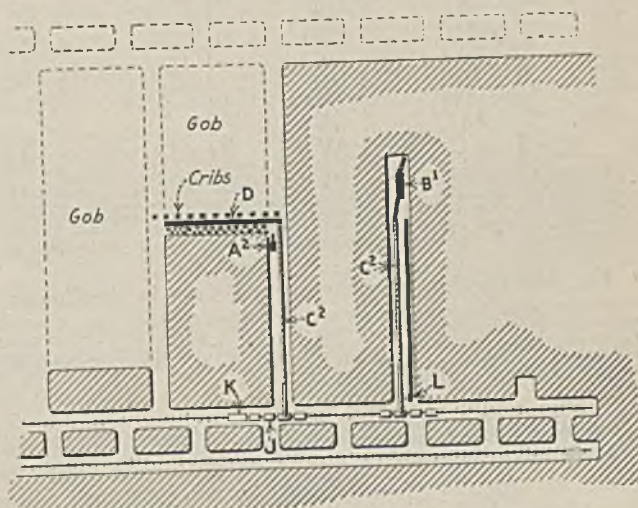


Fig. 8—Taking All Coal but the Chain Pillar

Rooms are here driven up narrow and immediately brought back. A loading machine drives the rooms but a conveyor loader robs back the pillar. Cribs are set to hold the roof in rear of this machine.

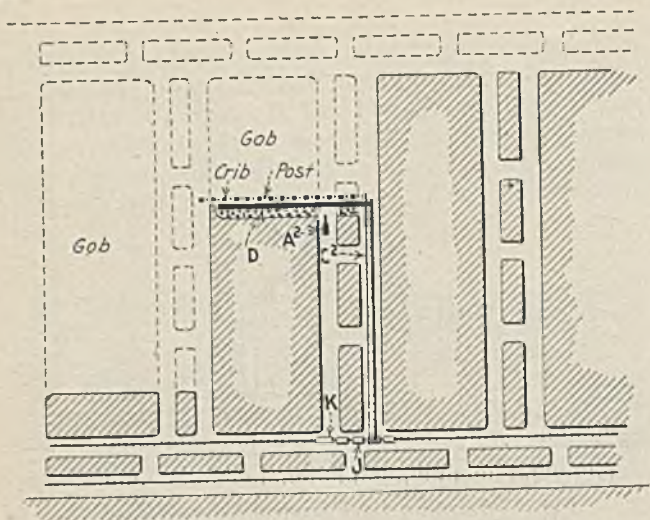


Fig. 9—Drawing Wide Pillars by Conveyor

Here the passages driven from entry to entry can hardly be called rooms as they are driven narrow and in pairs like entries. The rib and pillars between these entries are brought back together by means of a conveyor loader and a sectional conveyor. In this particular instance the cover immediately above the coal breaks readily and it is necessary to set posts alternately with the cribs to prevent the broken material from "flowing" into the face.

might well be here presented. It is this: because a plan has proved successful in a certain mine, is no guarantee that it will work successfully in another, although conditions may appear similar. "What is one man's meat is another man's poison," is especially apt in coal mining.

Fig. 8 represents the result of a great amount of experimentation, and has proven workable. A crew of 8 men cut, shoot and load, do the timbering, and put

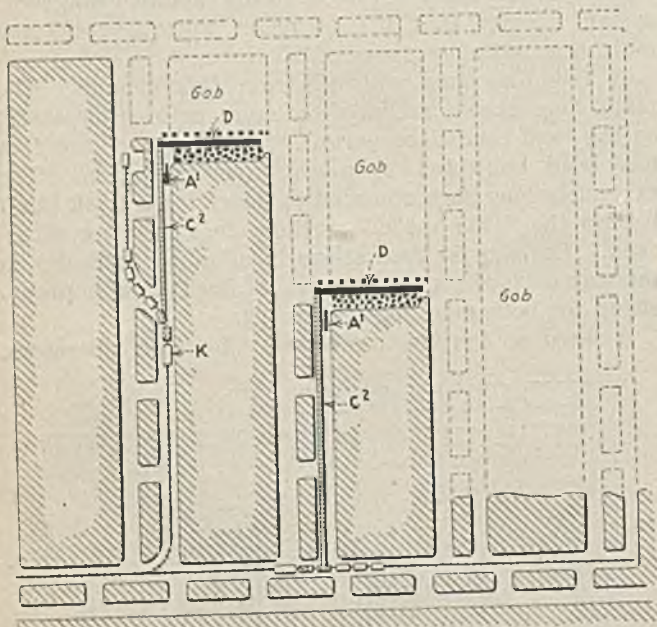


Fig. 10—Loading by Conveyors to Cars in the Rooms

The general layout here much resembles that of Fig. 9 except that the rib is drawn back mechanically while the chain pillar between cross-entries is loaded out by hand. About half the rib is loaded to cars in one of the cross-entries while the balance may be loaded on the main haulage way.

the coal on the parting. Usually a place is loaded out twice and occasionally three times per shift. The coal runs from 3½ to 4 ft. in height. In several mines where this plan is being used, 10 blocks are worked in panel. The single narrow rooms are driven between the pairs of entries. The roof has 2 ft. of draw slate immediately over the coal, above which lies a rather firm rock. The

slate comes down fairly close to the cribs but the rock only breaks after a rather wide space is left.

Fig. 9 shows a quite similar arrangement, except that a pair of rooms or entries is driven between entries in place of a single one as in Fig. 8.

In one place working this plan, the roof is a friable draw slate. This comes down readily and runs into every space available. A post is set between each crib to prevent the slate from flowing into the working space. A crew of five men takes care of all the opera-

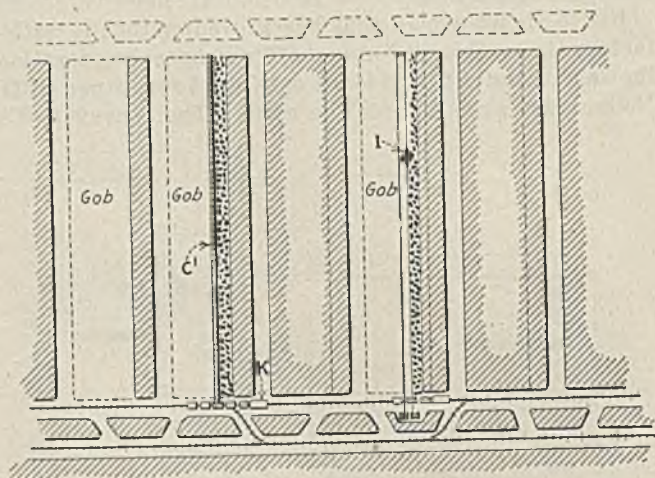


Fig. 11—Removing a Rib by Slabbing

Single narrow passages are first driven between entries. A sectional or other conveyor, or a scraper loader, may then be installed. If the conveyor is used coal from the cut extending entirely across the long face is shoveled upon it and delivered to cars on the entry. If, on the other hand, the scraper loader is used, the coal is brought by it direct to the car. Pillar stumps are left.

tions necessary to putting coal into the cars, and do the timbering in one shift. The coal is 7 ft. high; one block is taken out before the next one is begun.

Fig. 10 represents a plan in which the individual blocks are longer and wider than in the two previous plans. Also more than one block is being mined at a time. This plan presents a different arrangement as regards the loading of coal into cars. The position of cars and locomotive where the upper half of the block is being worked should be noted. The coal is 6½ ft. high and a crew of eight men is used. A cut is loaded out in one shift and cribbing is done during the next.

We now come to a few representative diagrams, somewhat similar to the last three, yet embodying certain modifications. In Fig. 11 is shown a plan wherein coal is loaded from faces 200 to 300 ft. long, but because of local conditions all of it is not removed. Narrow rooms are driven first from 60 to 100 ft. apart. They are then widened by slabbing from one side. The coal is loaded by hand into a conveyor parallel with the rib.

A thin pillar is left standing, and the roof above the worked-out area is allowed to come down. Coal has been taken out quite economically by this plan. In at least two of the mines working 300 ft. faces, where the hand labor rate was low, each shoveler daily loaded about 30 tons into the low type of carrying conveyor employed. Mechanical loaders fitted with caterpillar traction, or drag scrapers can be used in place of hand loading. A drag scraper is shown on the 4th block.

In some mines employing this method all the coal is removed. Fig. 12 shows the general layout in such a case. The method of loading is by hand shoveling onto conveyor or by drag scraper delivering to cars on the entry.

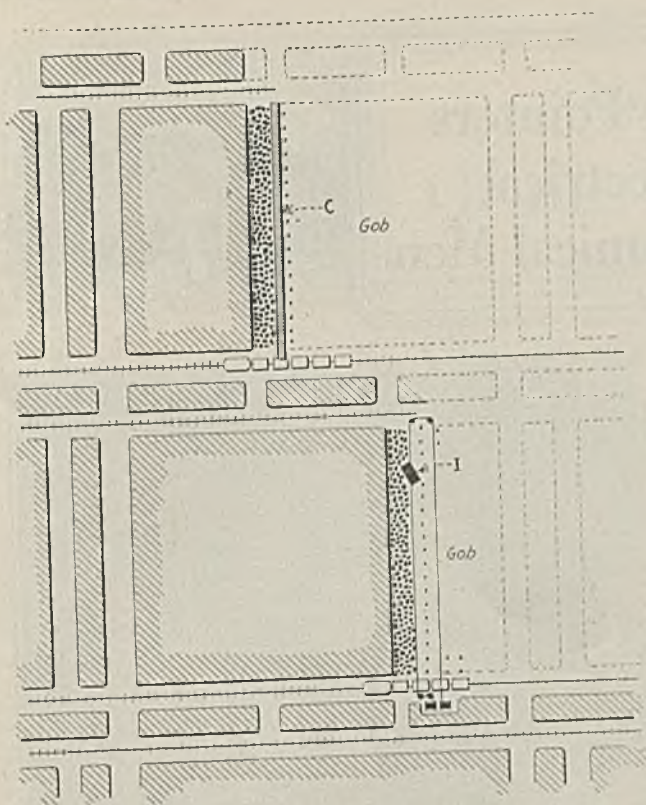


Fig. 12—Recovering all Coal from a Long Face

The plan here shown is quite similar to that of Fig. 11 except that no stumps are left, otherwise the method of operation is practically identical. It should be noted in both cases that the hoist driving the scraper loader is set in a pocket in the chain pillar between entries.

Mention should be made that a number of plans or mine layouts have been tried in which the working face is on an angle, usually of 45 deg., to the direction of room or entry driving. This allows a longer working face than would ordinarily be secured with the same roof span. Other advantages, such as safety, are claimed. The success of most of these schemes has been questioned, to some extent, however.

In these various systems of concentrated mining, the development of the plan into workable shape should be carried out as quickly as possible. Formerly this constituted quite a serious handicap; more recently, however, development is being prosecuted not only rapidly, but economically as well. Where shooting at any time

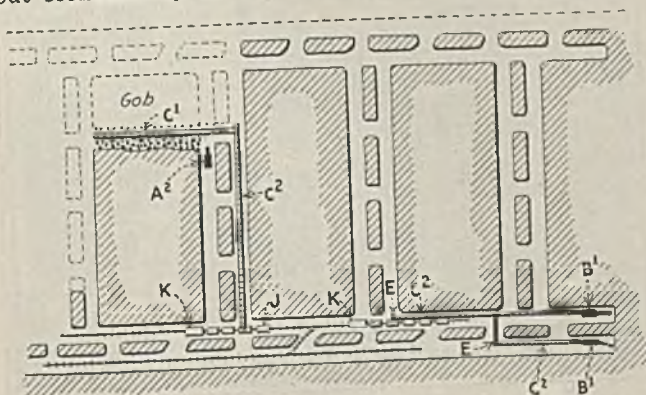


Fig. 13—Development by Machine, Recovery by Hand

In this layout, which is practically identical with the two that have immediately preceded it, entries are driven by machines and the coal made by them delivered to a single point in one of these passages, by means of conveyors. Coal from the rib face, however, is loaded by hand onto a sectional conveyor which discharges to another machine of the same type delivering to a second loading point on the main entry.

during a shift is permissible, but little difficulty is experienced in advancing an entry from 12 to 40 or even 50 ft. per day, depending upon the kind of machines employed.

With a pit car loader, employing hand shoveling, entries are advanced three times per shift. A mechanical loader may increase this speed somewhat, but narrow space may handicap its operation.

With a machine that remains in the entry and cuts and loads continuously, the forward movement is much more rapid. A general average of five advances per shift is obtained, equivalent to about 30 ft.

Fig. 13 shows a typical place as developed by one company in several of its mines. Shooting is permitted at all times, consequently the development work can be carried on in the quickest manner. Entry drivers with sectional conveyors following, put the coal into pit cars. These are shifted by means of small hoists that are easily moved when necessary. Small auxiliary fans are used to assist in keeping air at the face.

Owing to low cost of labor in this territory, coal is shoveled onto face conveyors by hand. With a higher labor rate, some kind of mechanical loader could be profitably used. Cutting on long faces is done with shortwall machines.

Rope Lubrication Is Necessary

The cores of practically all good brands of wire rope, both of the preformed and non-preformed types, are thoroughly impregnated with a commercial chemically-neutral rope oil. The core retains a liberal supply of this lubricant but this gradually oozes out as the rope is used. As a result frequent applications of a good oil during service is necessary to prevent the core from becoming dry. A dry core will both wear and crush more quickly than one that is thoroughly lubricated. It will also absorb moisture readily with the result that it will deteriorate rapidly and allow the inner wires to corrode.

The smaller the sheaves or the heavier the tension on the rope, the oftener should it be lubricated so as to prevent too rapid wearing of the core in the first case and excessive crushing in the latter case.

LUBRICANT CONSISTENCY IS IMPORTANT

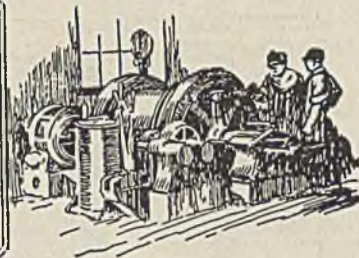
A good lubricant will retard corrosion of the wires, impede deterioration of the core, reduce internal friction and decrease external wear. The lubricant should be thin enough to penetrate the strands and the core but not so thin as to run off the rope. Ordinarily, a thick, semi-plastic compound applied hot and in a thinned condition is most suitable for this purpose. It will penetrate while hot, then cool and become plastic, thereby preventing the entrance of water. In this way the inner wires and the core are both preserved and lubricated.

To properly lubricate with a heated lubricant, it is necessary to have the rope run slowly through the tank of heated oil. In this way proper penetration is effected. Where this is not possible, an application of a thinner, unheated, lubricant will give better and more practical results.

It is well to lubricate a rope just after installation and before running in service, particularly if it has been kept in storage for some time.—Walter Voigtlander, American Cable Co.

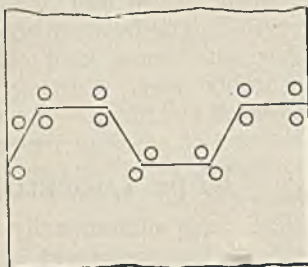
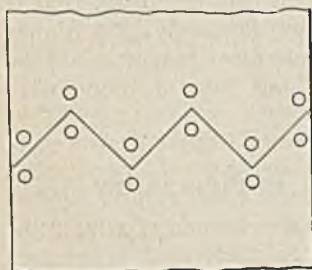


Practical Pointers For Electrical And Mechanical Men



Lagging a Slippery Pulley

According to Charles Labbe in *Engineering and Mining Journal*, slow-speed cast-iron pulleys subject to work of a heavy nature are often found to slip their belts too much for the load intended. At times the belt will slip off, or at least to one side, diminishing the bearing surface and aggravating the trouble. The



Ends Staggered to Prevent Buckling

When using a straight line joint there is a tendency for the lining to buckle. The illustration shows alternate methods for joining rubber belt pulley lagging in such manner as to prevent this.

lining or lagging of the pulley by means of a piece of rubber belting which covers the entire rim is better than an excess of belt dressing.

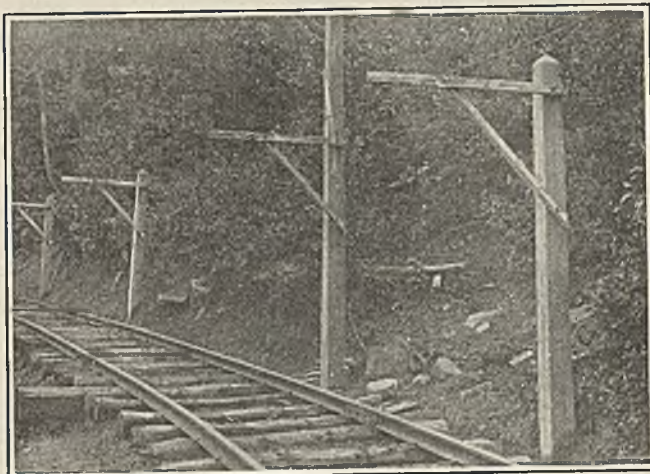
The best practice is assured by fitting the ends of the lining along a zigzag line as indicated in the accompanying illustration. A straight line joint will cause one end to roll back a trifle under the strain and make a ridge across the pulley rim, which is not wanted. To prevent the buckling up of the lining and to assure a snug fit, elevator bolts must be placed every 6 or 8 in. in each direction.

Concrete Posts Cut Trolley Costs

Not long ago it was a common practice to use cheap wooden trolley posts on outside hauls so that the cost of replacements after wrecks would be small. Now, however, at most mines wrecks are classified where they belong—with the things that must not happen—and hence more permanent trolley posts are used.

On an outside haul of approximately one mile at the No. 2 mine of the Pruden Coal & Coke Co., Pruden, Tenn., reinforced-concrete trolley posts are being installed. These are made at the mine as an intermittent "fill-in" job. Wooden forms are used and each post is reinforced throughout its full length by three pieces of 1-in. scrap wire rope. Bolt holes for attaching the arms and braces are made by casting pieces of 1-in. pipe into the posts. Two lengths are made: 17 ft. and 13 ft.

The 17-ft. posts are intended for supporting a telephone line as well as the trolley. Every fifth post is one of this type. On straight track the post spacing is 30 ft., and on curves 15 ft. Where one rail is elevated the posts are not set plumb, but at right angles to a

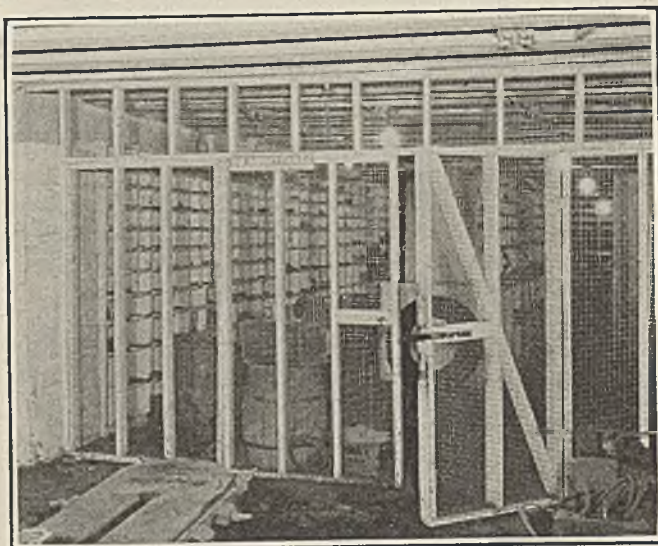


Concrete Trolley Posts Along the Tramroad

The reinforcement of the posts consists of three lengths of 1-in. scrap wire rope. Every fifth post is a tall one intended for supporting a telephone line in addition to the trolley. Galvanized angle-iron arms and braces will obviate the usual need of paint.

straight edge across the rails. This allows the use of a standard arm and bracket, at the same time keeping the trolley wire in proper position with respect to the track.

Another feature which adds permanence, is the use of galvanized metal for the arms and braces. Barring accidents, the maintenance of this trolley line should be practically nothing for perhaps the entire life of the mine.



Wire Fence Makes Pedestrian Watch His Step

Where locomotives or automobiles pass along the side of a building, men, if allowed to walk close by the end of it, are likely to pass in front of the traffic without looking, especially where a grade makes them disposed to run. An open wire fence, as shown in this illustration—in the film presented by J. J. Forbes at the recent National Safety Congress—prevents such accidents. This scene is at a mine of the Consolidation Coal Co., of West Virginia.



News Of the Industry



Coal Legislation at This Session Of Congress Gets Serious Setback When Parker Bill Is Sidetracked

By Paul Wootton

Washington Correspondent of Coal Age

Coal legislation at this session of Congress received its death blow Jan. 13, when the Committee on Interstate and Foreign Commerce of the House of Representatives voted, 16 to 6, against reporting the Parker bill favorably. For so many members of the committee to vote against the measure after having on the day previous approved an amendment which expanded the bill so as to include all mineral fuels, came as a distinct surprise.

Representative Wyant, of Greensburg, Pa., comments as follows on the committee's action:

"The tide of governmental interference with private business received a definite, decisive setback today when the House Interstate and Foreign Commerce Committee, by a vote of 16 to 6, one member absent, defeated a motion to report out the Parker coal-control bill. Reason triumphed over sectional prejudice in this action.

"Of all the efforts to throttle industry by the hampering influence of bureaucratic control, the agitation which has been raging since the inception of the anthracite strike in 1925 to regulate the coal industry has been not only the most nonsensical but also the most vicious. Had the advocates of legislation for this industry been successful it would surely have proved an entering wedge for the regulation of all business.

No Warrant for Regulation

"There was no warrant for attempt to burden the coal industry with the proposed regulations. This industry is the foundation of our industrial prosperity, and if it continues to function under the right of private initiative and control there is no danger of a fuel shortage. Doubtless there will be recurring efforts to make coal a political football and in the public interests I hope such efforts will always be as successfully countered as was the case today. It has been the hardest fight of my legislative career, and I have acted solely on the principle that that government governs best which governs least. If we were to be told from Washington when to sow and when to reap, I would have grave fears of a famine."

Chairman Parker, the author of the bill, made no attempt to conceal his

astonishment at the size of the majority against him. In discussing the matter with this writer he said:

"Without questioning in any way the good faith of the members of the committee who voted against the coal bill, I suspect they have been misled by the representations of the interested groups of coal operators and middlemen and perhaps by the less articulate opposition by the leaders of the miners' union.

"These interested groups are defending what they consider to be their rights. This is perfectly natural and perfectly proper, but they represent only 2 per cent of the population. I have to consider the welfare of the other 98 per cent.

No Chance to Revive Issue

"In my state and in most of the country the mass of the people are heartily sick of the treatment they have received from the coal industry. They now will demand to know why the recommendations of the President for emergency measures of relief have been ignored by Congress. As a result the country plunges into a coal crisis without the protective steps proposed in the interest of the public. The legislative situation is such that there is no chance to revive the issue at this the short session.

"My fear is that the coal operators will be encouraged by the action of the committee to undertake to break the union, plunge the country into a disastrous strike and to charge exorbitant prices for such coal as is produced. I want to say to them in all friendliness that the vote of the committee is not the final verdict of the country and that the way they conduct their industry in the next few months will be the thing which really will decide whether or not this undercurrent of public feeling rises to a point where it will overwhelm their opposition and force some kind of legislation."

The six members of the committee who voted for the bill are Chairman Parker, of New York; Carl E. Mapes, of Michigan; Walter H. Newton, of Minnesota; Ashton C. Shallenberger, of Nebraska; Parker Corning, of New York; and John E. Nelson, of Maine. Representative Huddleston, of Alabama, was absent when the vote was taken. The other members of the committee



Photo Harris & Ewing

Representative Adam M. Wyant

Prominently identified with the fight against the proposal to subject the coal industry to government regulation. He represents the Greensburg (Pa.) district in Congress.

voted against the bill. They are John G. Cooper, of Ohio; Edward E. Denison, of Illinois; Schuyler Merritt, of Connecticut; Homer Hoch, of Kansas; Adam M. Wyant, of Pennsylvania; Olger B. Burtness, of North Dakota; John D. Fredericks, of California; Thomas J. B. Robinson, of Iowa; Thomas W. Phillips, Jr., of Pennsylvania; Milton C. Garber, of Oklahoma; Alben W. Barkley, of Kentucky; Sam Rayburn, of Texas; Clarence F. Lea, of California; Tilman B. Parks, of Arkansas; Robert Crosser, of Ohio, and Jacob L. Milligan, of Missouri.

No comment on the action of the committee was forthcoming at the White House. There has been no evidence, however, that the administration was eager to have the bill passed. The President now will be in the enviable position, when April 1 comes, of having laid the responsibility on Congress, which has not seen fit to make legislative provision for an emergency. This leaves the President in a position to continue his policy of non-intervention which he employed successfully during the anthracite strike. The President unquestionably is sincere in his belief that legislation should be written before an emergency arises. To legislate during an emergency, he doubtless believes, results in radical and ill-considered laws which do more harm than good, but he probably regards it as a stroke of his characteristic luck that he is not saddled with inflexible requirements in the handling of the approaching muddle in bituminous coal.

Massachusetts Law Fixes Hard-Coal Sizes

Francis Meredith, Director of Standards of Massachusetts, has established legal standard sizes for anthracite sold in that state, effective Jan. 1. This action was authorized by a law enacted in May, 1926. The size range is as follows:

Standard Size	Through (Round Mesh)	Over (Round Mesh)	Maximum Undersize Per Cent
Broken.....	4 $\frac{1}{4}$ in.	3 $\frac{1}{4}$ in.	15
Egg.....	3 $\frac{1}{4}$ in.	2 $\frac{1}{4}$ in.	15
Stove.....	2 $\frac{1}{4}$ in.	1 $\frac{1}{4}$ in.	15
Chestnut.....	1 $\frac{1}{4}$ in.	$\frac{1}{4}$ in.	15
Pea.....	$\frac{1}{4}$ in.	$\frac{1}{8}$ in.	15

The aggregate of all undersize in broken, egg and stove sizes must not exceed 15 per cent. In the case of chestnut, however, the 15 per cent of undersize is limited to pea coal, the next smaller size, but there may be in addition not more than 5 per cent of sizes smaller than pea, which may result from unavoidable breakage.

Anthracite which, on examination after delivery to consumer, contains additional undersize not exceeding 2.5 per cent, or 50 lb. per net ton, shall not be considered as below the standard sizes prescribed herein when it can be traceable to unavoidable breakage occurring in the course of delivery.

In announcing the establishment of these standards Mr. Meredith said:

"From investigation it appears that the use of the following sizes of square mesh by retailers in loading coal for delivery would retain such undersize as might reasonably be included in coal when received from the mines, while eliminating any extra fine sizes and dirt: Broken, 2 $\frac{1}{4}$ in.; egg, 1 $\frac{1}{4}$ in.; stove, $\frac{1}{4}$ in.; chestnut, $\frac{1}{8}$ in.

"When the use of such screens indicates the presence of undersize in greater amount than the maximum specified in the operators' standards, the retailer may report at once to the director, so that it may be officially determined whether the size of coal shipped conforms with that which was purchased by the dealer, and appropriate action taken after such determination."

N. C. A. Coal Statistics Get Hoover Sanction

The statistical program of the National Coal Association on behalf of the bituminous coal industry was endorsed by Secretary Herbert Hoover, of the Department of Commerce, at a conference which the Secretary had with four members of the House of Representatives concerning legislative proposals for the coal industry. The Congressmen were Messrs. Kendall, Phillips and Swope, of Pennsylvania, and Strother, of West Virginia.

According to Representative Kendall, Secretary Hoover said that government commissions were inclined to demand nonsensical reports from coal operators but that there are important facts concerning the industry which should be available, and in this connection he complimented the National Coal Association on its statistical program and also on the co-operation which the bituminous operators were giving on a voluntary basis to the U. S. Bureau of Mines respecting statistics.

Praises Use of Rock Dust In Pennsylvania Mines

Governor Pinchot in his final message to the Pennsylvania Legislature, presented Jan. 4, gave high praise to the State Department of Mines as conducted by Joseph J. Walsh, Secretary of Mines. The part of his message he read was but a fraction of his entire report of the activities of his four-year administration.

The complete message has been published and following the executive's summary of the work of the departments comes a statistical review of the departments. Speaking of the Department of Mines, the Governor says its activities have been greatly increased during his régime and that it took an active part in the settlement of the anthracite strike of 1923.

"Following the leadership of the Governor, it has had an active part in the settlement of one strike in the anthracite fields and the attempted settlement of another walkout on terms that finally were substantially adopted.

"However, the work of the department in bettering the conditions under which the miners of Pennsylvania work has by no means been confined to the hard-coal fields. Discovery of the rock-dusting methods of preventing disastrous explosions in the bituminous mines has resulted in greatly lessening the hazard to the soft-coal miners from this type of disaster.

"Rock-dusting has generally been adopted in the soft-coal fields of Pennsylvania and undoubtedly has been effective in keeping down the loss of life and injury from this class of accident."

Gallagher Chosen to Head Five Erie Coal Boards

Michael Gallagher, whose appointment as head of the board of directors of the coal properties of the Erie R.R. was announced in *Coal Age* last week, has been named chairman of these Erie subsidiaries: Pennsylvania Coal Co., Hillside Coal & Iron Co., New York, Susquehanna & Western Coal Co., Northwestern Mining & Exchange Co. and Blossburg Coal Co.

The Pennsylvania Coal Co., which is the largest of these concerns, owns and operates the anthracite mines which were formerly owned directly by the Erie. The other companies own in the aggregate 12,400 acres of anthracite, 53,000 acres of soft coal held in fee and 14,000 acres of soft coal held under mineral rights.

Mr. Gallagher succeeds the late G. A. Richardson in these chairmanships. He expects to maintain an office in the Marshall Building, Cleveland, but will spend considerable time in the office of the Pennsylvania Coal Co., 30 Church St., New York City.

Mining Gets Meager Share Of Bureau Funds

With the prospects favoring the voting of a large sum for the helium program of the Army and Navy, it seems likely that the appropriations for the Bureau of Mines for the next fiscal year will be around \$5,000,000. In the helium work however, the Bureau of Mines simply acts as the manufacturing agent for the War and Navy departments. This raises the question whether the Bureau's activities on behalf of the mining industry are likely to be overshadowed by these service functions.

In addition to the helium work the Bureau of Mines is operating the Government Fuel Yards. It is analyzing all of the coal purchased by the government. Its oil-shale work is largely service for the Navy. The fear is expressed that the tendency to unload service jobs on the Bureau of Mines may create the impression that the Bureau's total appropriation is to be applied for work in behalf of the mining industry. As a matter of fact the mining industry is treated more shabbily in this budget than ever before has been the case. While Senator Oddie, assisted by other Western Senators, is doing his utmost to provide for the beginning of certain activities which would be very beneficial to the industry, there still is no assurance that approval for these additions can be obtained.

At Berkeley the Bureau is carrying forward a program of research work entirely apart from any interference from the service functions. Included in this work is certain fundamental research of the type which Secretary Hoover regards as so essential. For instance, tables are being prepared to show the specific heats of the oxides of the metals. Despite the fact that these tables are very necessary in the calculation of thermal reactions, they never have been worked out to completion elsewhere.

In addition the Berkeley station is working out and plotting entropy tables. Apparently no criticism can be leveled against the Berkeley station for not doing its bit for pure science, as indicated by the dictionary definition of entropy, which is: "A conventional thermodynamic element relating to the property or condition of a substance of undeterminable total amount, but arbitrarily reckoned from any convenient starting point (usually 32 deg. F.), the change of which element for a given change of temperature of the substance is the integral sum of the quotients obtained by dividing each of the added or rejected amounts of heat producing this temperature change by the absolute temperature at which such heat was added or rejected."

Explosibility of Semi-anthracite.—Tests are being conducted at the Pittsburgh experiment station of the Bureau of Mines to determine the explosibility of Virginia semi-anthracite. This is at the instance of the State Mine Inspector and several operators of that district.

Big Output Favors Safety? Engineering Council Gets Report on Recent Inquiry

Whether large production is the outcome of speeding up the workman and results in accident or is the fruit of careful engineering such as reduces hazard is the problem which the American Engineering Council has set itself to solve. A committee has been appointed to study the subject, and on Jan. 13 it reported to the Council in broad outlines what its findings were. The meeting was held in the Mayflower Hotel, Washington, D. C. A. W. Beresford, vice-president, Nizel Corporation, and past president of the American Institute of Electrical Engineers, who is chairman of the committee, presided.

L. W. Wallace, executive secretary, A. E. C., outlined the origin of the inquiry. Dr. A. W. Whitney, National Bureau of Casualty Underwriters, had concluded, he said, that such an investigation was desirable and obtained from the underwriters an appropriation of \$25,000 for that purpose. Obviously the problem could have been attacked from many angles. The committee chose two: (1) To ascertain the trends of production and accident frequency and severity from the records of companies the country over, and (2) to make an intensive study in the months of July and August of last year to ascertain the real costs of an accident to a company, over and above those which were paid in compensation to the victim.

Canvass Nearly 14,000 Companies

Mr. Wallace said that 18 basic industries were canvassed, including in all 13,985 companies, operating 122,028 company-years, having 2,464,418 employees who worked in all 18,413,564 man-years. The committee collected this information partly by having fifteen experienced field engineers stationed at large manufacturing centers to collect data. It had 42 local committees with over 200 engineers participating.

J. B. Hannum, director of field work, described that phase of the subject, and L. P. Alford presented broadly the results obtained. Some of the figures had to be based on fatality rates, some on value rather than on quantity of product; some reports were defective. Where these defects existed no attempt would be made to group figures having so divergent a basis. Many of the charts, Mr. Alford showed, bore testimony to the possibility of decreasing frequency and severity rates with increase in the production rate. No figures were given for the construction industry because of the obvious difficulty of determining its output. Particularly bad were the records of the textile, furniture and brass-working industries.

In the bituminous coal industry for 9 years ending 1924 there had been an increase in production per man of 17 per cent and an increase in the fatality rate of 28 per cent. In the anthracite industry both production per man and fatality had slightly decreased.



Herbert Hoover
Secretary of Commerce

Attention was drawn to the fact that by arbitrarily taking some one year as a base—a year that might have a frequency or severity rate unduly high—the meaning of the figures was in a manner lost. In between the figures for the first and last years taken were often peaks showing that had another year been made the base, the results would have been entirely different from those given. Mr. Alford said that the men-hours lost to the victim of a minor injury might represent only one-fourth of the financial loss to the company by reason of the accident.

Adoption of a definite legislative program covering public works was one of the chief events of the two-day meeting of the Council.

A. W. Beresford of Detroit, who is chairman of the safety and production committee, and O. H. Koch, representing the Dallas Technical Club, were re-elected vice-presidents of the Council. Harrison E. Howe, of Washington, representative of the American Institute of Chemical Engineers, was again named treasurer. L. W. Wallace continues as executive secretary and James T. Grady, Columbia University, publicity director. J. H. Finney, of Washington, heads the finance committee for 1927.

Society Secretaries to Meet

The administrative board voted to call a conference of engineering society secretaries at Cleveland, June 16 and 17. The conference is being arranged by a committee consisting of C. R. Sabin, of the Cleveland Engineering Society; Ernest Hartford, of the American Society of Mechanical Engineers; E. F. Treschow, of the Engineering Society of Western Pennsylvania; G. C. Dent, of the Society of Industrial Engineers, and E. G. Nethercut, of the Western Society of Engineers.

The administrative board voted to refer to the president of the Council with power to appoint a study committee a resolution authorizing the Council "to investigate the feasibility of developing in some way a program of presentation to the attention of young men of proper aptitude the need for engineering recruits and the opportunities that lie in the engineering profession."

Engineering Council Plans Future Work of Profession

Leadership sociologically and politically had been claimed in the past by the learned professions—medicine, law and the ministry—said Dean Dexter S. Kimball, introducing Charles M. Schwab and Secretary of Commerce Herbert C. Hoover at the annual banquet of the American Engineering Council, held at Washington, Jan. 14. However, with Dean Inge, he was disposed to believe that the future leaders would come from the engineering and business professions. The English Dean, said Dr. Kimball, was disposed to give the preference to the business man as the future sociological and political leader, but Dr. Kimball believed that the engineer and the financier would in time be one. Charles M. Schwab, now president of the American Society of Mechanical Engineers, originally an engineer but now a business man, and Herbert Hoover, formerly a mining engineer, now Secretary of Commerce, well illustrated this trend.

Mr. Schwab declared that the day when success in business consisted in buying at a low figure and selling at a high figure was at an end. The mere "higgler" for low buying prices and high selling prices never today succeeded in business. The profit now goes to those who manage their business economically. He had offered to give a certificate to any man in his employ who could run his shop so well that he (Mr. Schwab) could not find some way to attain a further economy. There was always a goal beyond, if we would seek. He believed in engineering, but would add loyalty and sentiment in business as desiderata in any business enterprise.

Mr. Hoover said that the word "efficiency," like "co-ordination" and "co-operation," was shopworn, so the Department of Commerce had looked around for words less hackneyed and more specific. From this inquiry had come "waste elimination," "standardization" and "simplification," which marked out specific territories in "efficiency." As a result have arisen precise standards for materials and performance. This spirit for standardization and simplification must spread from the engineers to the administrators. He believed that the American Engineering Council should continue in close touch with the authorities at Washington and thought it would be well for it to establish headquarters in that city. The standardization movement, the progress of which had been somewhat sporadic, needed to be broadened so as to cover all lines of industry.

Wages Reduced 25 per Cent In 5 Paisley Mines

Wages were reduced 25 per cent effective Jan. 17 in five mines in the Panhandle district of West Virginia controlled by the J. A. Paisley interests, of Cleveland. Eighteen hundred men are employed in the mines. The reduction was prompted by a slackening of demand, according to a statement by Joseph Arkwright, general manager.

Industrial Standardization Movement Gains

Notable developments in the industrial standardization movement, including important progress in the mechanical and mining industries, in industrial safety, its further extension through managerial and trade-association activities, and forward steps in international co-operation, have been achieved during 1926, according to an announcement of the American Engineering Standards Committee, which states that standardization was the subject of a special report at the recent conference of the Premiers of the British Empire.

Instead of leaving their standardization work as a more or less incidental function of the engineering and production departments, industrial executives are more and more providing a definite organization for their standardization work. This was well illustrated during "management week" when scores of meetings of industrialists and Chambers of Commerce, held all over the country, were devoted to the consideration of the standardization and simplification problems which are met by the works manager and his associates.

The systematic organization of company standardization work is leading to a much larger degree of co-operation between companies.

In April there were held in New York the most important group of international conferences on standardization ever assembled. Of these the two principal features were the meeting of the International Electrotechnical Commission with its group of technical committees, and the Third Conference of the National Standardizing Bodies, in connection with which there were international technical conferences on screw threads, ball bearings, gages, and preferred numbers. In each of these technical conferences real progress was made toward bringing about international uniformity in industrial practice in the different countries. Twenty countries of Europe, Asia and South America were officially represented.

During the conferences a basis was laid for what it is hoped will soon become a unified international standardizing body covering the general field of industrial standardization. In September, committees of the two groups met in London, at which time further steps were taken. Final agreement upon a unified plan has not yet been consummated, there naturally being difficulties inherent in a problem involving a group of national as well as international organizations. The relation of the International Electrotechnical Commission, a specialized organization, to a general standardizing body, into which work from the national industrial standardizing bodies shall feed, is of special importance in this country.

The fifth year of Mr. Hoover's Division of Simplified Practice shows steady development. About 50 simplifications have been carried through. These include a wide range of commodities from bed springs to shotgun shells, and from milk bottles to range boilers. In a survey of 19 of these com-



Smoke Eaters Meet and Partake of Solids

The third annual dinner and business meeting of the Smoke Eaters' Association was held recently at the plant of the Mine Safety Appliances Co., Pittsburgh, Pa. Membership in the Smoke Eaters' Association is limited to persons who have worn gas masks or oxygen breathing apparatus in connection with underground fire fighting and mine rescue work. The officers of the association are: President, F. B. Dunbar, of the Hill-rescue work. The officers of the association are: President, D. J. Parker, of the U. S. Bureau of Mines, Pittsburgh, Pa.; Vice-President, D. J. Parker, of the U. S. Bureau of Mines, Pittsburgh, Pa.; and Secretary-Treasurer, C. O. Roberts, of the Vesta Coal Co., California, Pa. Following the dinner, interesting addresses were made by D. J. Parker, J. J. Forbes and G. S. McCaa, of the U. S. Bureau of Mines, Pittsburgh.

modities it is stated that from 51 per cent to 99 per cent of the sales are in accordance with the simplified practice recommendations, the average of the 19 being 79 per cent.

The Bureau of Standards has proposed an interesting plan of certification under which any manufacturer who is willing to supply goods made to comply with a given government specification, may file with the Bureau a statement to that effect. Consumers upon request will be given a list of such manufacturers. This plan has been widely discussed in a large number of organized industrial groups, since this proposal in some form may ultimately have far-reaching effects upon sales policies and upon our present method of distribution.

The work of the Bureau of Mines, the American Mining Congress, and of other organizations, on safety rules for installing and using electrical equipment in coal mines, has been unified under the procedure of the American Engineering Standards Committee and formally approved as an American standard. The work of the sectional committees on drainage of coal mines, outside coal-handling equipment, and wire rope for mines has all been practically completed, and it is expected will be formally submitted for the approval of the A.E.S.C. in the near future.

A particularly important piece of work, which is being considered as the result of a representative conference of interested groups held in Pittsburgh, is the classification of coal as a basis of industrial commercial transactions. The work will cover all grades of coal from lignite to anthracite.

Twenty of the fifty codes on the national safety code program have now been approved by the A.E.S.C. Among those receiving approval during 1926 were a group of codes for the prevention of dust explosions, and new editions of the codes for abrasive wheels and punch presses.

Roads Order Open Tops

The Tennessee Coal, Iron & Railroad Co., subsidiary of U. S. Steel Corporation, has received a contract for 200 gondola and 150 hopper cars from the Mobile & Ohio R.R.

The Baltimore & Ohio is reported to have reinstated its inquiry for 3,000 miscellaneous freight cars. This inquiry was withdrawn several weeks ago. The Northern Pacific is inquiring for 300 gondolas.

The Missouri Pacific has placed an additional order with the Mount Vernon Car & Manufacturing Co. for 100 50-ton composite gondola coal cars. This order follows others for 3,000 freight cars, placed near the close of December.

French Production Gains

During the first ten months of 1926 the production of the French collieries reached 43,184,756 metric tons, indicating an estimated annual production of nearly 52,000,000 tons, compared with 48,000,000 in 1925 and 45,000,000 in 1924.

In October, 1926, the output totaled 4,568,687 tons, the largest monthly total yet reached by the French mines. The daily average production for October was 175,719 tons, compared with 170,048 tons per day in January, 1926. Preceding years show a gradually increasing daily output, that for January, 1923, being 121,064 tons, slightly less than the 1913 average of 136,147 tons, but 1924 and succeeding years have all shown averages in excess of that.

In recent months the mines situated within the old frontiers have furnished an output considerably in advance of that recorded for prewar months, and in addition the Lorraine coal mines have contributed to the country's total.

The production of metallurgical coke in the cokeries of the French collieries reached 335,386 tons in October, 1926, exceeding the monthly production of 1913 by more than 90,000 tons.

Issue Electrical Safety Rules For Coal Mines

Safety rules for installing and using electrical equipment in coal mines have just been made public by the U. S. Bureau of Mines. In preparing the rules five basic measures for safeguarding the use of electricity in mines have been followed, viz:

Removing the contributory causes of accidents or danger.

Removing from the vicinity of electrical apparatus all elements susceptible to the influence of electricity.

Keeping the electric current where it belongs, if possible; if not, limiting the area of its activity by protective devices.

Using a large factor of safety in the selection, installation and inspection of equipment.

Having full control of the operation of electrically driven machines.

The new safety rules have been published in Technical Paper 402, copies of which may be obtained from the Bureau of Mines, Washington, D. C.

Metric System to Be Adopted In 1927, Say Advocates

That the United States during the present year will take final legislative action to place its merchandising on the decimal metric basis in weights and measures was the declaration made at the annual executive conference of the All-American Standards Council, held in San Francisco, Jan. 6.

"Metric legislation is now prominent before both houses of Congress," stated Aubrey Drury, director of the Council, "and when a vote is called, victory appears assured for the metric standards, which are on the convenient decimal ratio, like our dollars-and-cents currency. A recent canvass of the U. S. Senate has indicated an almost certain majority for metric adoption."

Advocates of decimal metric weights and measures for the United States have organized for an energetic campaign in 1927. At its recent annual convention in Philadelphia, the Metric Association outlined plans for greatly increased activity.

The All-American Standards Council, with headquarters in San Francisco and Washington, D. C., is urging prompt legislative action by Congress, establishing the decimal metric units for general use in merchandising throughout the United States after 1935. Its executives announce that metric standardization is urged by Thomas A. Edison, John Hays Hammond, Samuel Vauclain, John J. Pershing, Theodore Roosevelt, Franklin D. Roosevelt, Arthur Capper, E. N. Hurley, William G. McAdoo, Roger Babson and many others eminent in national affairs.

Led by such influential groups as the New Orleans Association of Commerce and the Washington Manufacturers Association, more than 300 important chambers of commerce and industrial organizations are urging liberal metric legislation.

More than 100,000 petitions urging metric legislation have been placed before Congress, and as many of these

Gambling in Commodities Condemned

Inventory gambling in 1919 and 1920 wrecked one industry and paralyzed a score of others.

Business learned the bitter lesson that inventory speculation does not pay.

Purchasing agents are against the practice of gambling in commodities.

The average trend of wholesale commodity prices in the next few years will be downward. A rapid revision of selling prices will meet these dips.

Sales and purchasing departments must closely co-operate to insure against inventory losses due to change in the pace of sales.

Slackening in demand for a company's product would mean rapid piling up of unfinished inventory stocks with resultant losses.

Competition will reach knife-edge keenness in 1927, with gradually diminishing profit margins.

Demand for volume production to lower unit costs must be watched closely. The present healthy condition of industry will endure as long as inventories of stocks and raw materials are conservatively handled.

The key to continued prosperity is in the hand of the buyer.—*The Purchaser*, January, 1927.

are from large organizations, altogether they represent several million voters. The States of Illinois, California, Tennessee, North Dakota and Utah are among those which through their legislatures have petitioned Congress to adopt the metric standards for all the people.

The Pan-American Standardization Conference, to be held in the United States during 1927, is expected to emphasize the need for the world-uniform decimal metric measures in commerce. All the American republics except the United States are already on the metric basis in merchandising.

Rail Merger Hearings On

The question of railroad consolidation legislation came to the front in Washington Jan. 12 when the Senate Interstate Commerce Committee began hearings on two bills embodying plans for unification of the nation's carriers into several major systems.

R. C. Fullbright, of the National Industrial Traffic League, told the committee his organization, composed entirely of shippers, indorsed the Fess bill and opposed the principle of compulsory consolidation, he said, because "experience has shown that neither the Interstate Commerce Commission nor any other body can have sufficient wisdom to formulate a hard and fast policy for the future in such matters." He also said that shippers, carriers and representatives of the Interstate Commerce Commission had counseled in the drafting of the Fess bill.

Coke Production Declines In December

Although there were 31 days in December, the output of byproduct coke in the United States in the month fell from a total of 3,706,000 net tons in November to 3,706,000 net tons in December. The daily rate of production at the High Street plant in St. Louis fell to 119,555 tons, a loss of 4.2 per cent per day. There were 76 active plants, the same number as in November and October, and these plants produced about 88 per cent of their capacity.

Production of beehive coke in December continued to decline, the total being estimated at 780,000 tons, a decrease of 9 per cent when compared with November.

Production of all coke amounted to 4,486,000 tons, of which byproduct plants contributed 83 per cent and the beehive plants 17 per cent.

Indications are that the total production of byproduct coke during the calendar year 1926 amounted to 44,500,000 net tons, and that of beehive coke to 11,500,000 tons.

Output of Byproduct and Beehive Coke In the United States*

	(In thousands of net tons)		
	Byproduct Coke	Beehive Coke	Total
1924 Monthly average	2,833	806	3,639
1925 Monthly average	3,326	946	4,272
1926 Monthly average†	3,712	957	4,669
September, 1926....	3,654	820	4,474
October, 1926....	3,814	867	4,681
November, 1926....	3,743	860	4,603
December, 1926....	3,706	780	4,486

* Excludes screenings and breeze. † Preliminary figures. ‡ Revised since last report.

The total amount of coal consumed at coke plants in December was 6,555,000 tons, of which 5,325,000 tons were consumed in byproduct ovens and 1,230,000 tons in beehive ovens.

Estimated Coal Consumed Monthly In Manufacture of Coke

	(In thousands of net tons)		
	Consumed in Byproduct Ovens	Consumed in Beehive Ovens	Total Coal Consumed
1924 Monthly average	4,060	1,272	5,332
1925 Monthly average	4,759	1,452	6,211
1926 Monthly average*	5,334	1,309	6,643
September, 1926....	5,250	1,193	6,443
October, 1926....	5,480	1,367	6,847
November, 1926....	5,379	1,356	6,735
December, 1926....	5,325	1,230	6,555

* Preliminary figures. † Revised since last report.

Of the total production of byproduct coke during December, 3,032,000 tons, or 81.8 per cent, was made in plants associated with iron furnaces, and 674,000 tons, or 18.2 per cent, was made at merchant or other plants.

May Name Arkansas Judge To Trade Board

Chief Justice E. A. McCullough of the Arkansas Supreme Court is reported to be a probable appointee to the Federal Trade Commission and present indications point to his nomination at an early date. Only one vacancy exists on the Commission and many recommendations for the appointment have been received at the White House. The Arkansas jurist is strongly supported by Southern Democratic Senators and Representatives.

al sta-
g import-
l and mining
ety, its further
nagerial and trade-ass
s. and forward steps
tion, have been ac-

News Items From Field and Trade



ALABAMA

Tests for Foremen and Firebosses.—The state board of examiners will hold a meeting Jan. 24-27 for the examination of applicants for certificates of competency to act as mine foremen and firebosses in Alabama coal mines. The examinations will be conducted under the direction of Charles H. Nesbitt, chief mine inspector, and his board in his offices in the Lincoln Life Building, Birmingham.

Mechanization Meeting Announced.—A meeting will be held in the auditorium of the Alabama Power Building, Birmingham, Jan. 21 to promote the mechanization of mines in the Alabama field. These meetings are being held at different central points in the country under the auspices of the American Institute of Mining and Metallurgical Engineers and the National Coal Association. The committee in charge of the above meeting is composed of Frank Crockard, president, Woodward Iron Co., and Paul Wright, representing the Institute, and S. L. Yerkes, representing the National Coal Association.

Anti-Convict Mine Bills Pending.—Bills are now pending in the State Legislature which provide for the removal of all convicts from coal mines of the state and prohibiting further leasing of these wards. It is planned to work them on the highways and in cotton factories and other industries operated by the state for the employment of convicts. Several of the largest mines in the district now employ convict labor exclusively under contracts by which the coal is delivered at a fixed rate per ton, the daily output by such labor being approximately 6,500 tons. It is stated that the removal of the men from the mines will be gradual in order that their places may be filled by free labor without seriously crippling production at the operations affected.

ILLINOIS

County Drops Lawsuits.—Upon payment of \$1,000 in settlement of a civil suit filed by St. Clair County, against Paul Whitescarver and Julius Miller, operators of the Signal Hill Coal Co., near Signal Hill, St. Clair County, on Jan. 7 the county dropped its civil claims while State's Attorney Lindauer dismissed two criminal charges returned by the St. Clair County Grand Jury against Whitescarver and Miller. The controversy grew out of the alleged unlawful mining of coal deposits under the St. Clair County Detention Home

near Edgemont and adjoining the coal company's mine. A county mine inspector reported that an investigation had revealed that 44,000 tons of coal had been mined under the public property since 1923. The value of this coal was set at \$8,000. Later the civil suit was filed while the grand jury returned indictments charging the defendants with unlawfully driving a mine and larceny in removing the coal from public property.

Old Ben No. 9 Closes.—Old Ben mine No. 9 at West Frankfort, posted notices last week ordering the men to "square up" their places and remove their tools preparatory to the suspension of operations for an indefinite period on Jan. 15. The mine, which employs 835 men and has produced 5,000 tons daily, is the first of the large southern Illinois shafts to quit following the recent break in the coal market. Old Ben No. 9 resumed work last October after being shut down for nine months.

Slogo Mine Comes to Life.—Slogo mine, two miles southeast of Johnston City, has resumed work after having been closed down for two years. The mine employs about 100 men and this number will be doubled in the course of a few weeks. There are twenty-six mines working full time within a radius of eight miles of Johnston City. It is said that the present favorable outlook for coal mining will insure the sinking of two new mines by the Madison Coal Co. on 15,000 acres of untouched coal lands just east of Johnston City. These lands extend from Johnston City to the new Illinois Central line, known as the "cut-off," which is being built through southern Illinois.

The Forsythe Coal Co.'s strip mine, south of Duquoin, attained a high production record of slightly more than 2,000 tons in one day recently. The mine is served by the main line of the Illinois Central R.R.

A. R. O'Dell has been appointed sales manager of the Atlas Coal & Coke Co., Chicago. He formerly was with the Sterling-Midland Coal Co. and the J. K. Dering Coal Co.

INDIANA

Trees for Barren Strip Land.—Acres of land in southern Indiana which have been skinned of their trees and vegetation by strip mining will be reclaimed if the plans of the state forestry division are carried out. This department has arranged to plant trees on the barren wastes. White pine, American

red pine, Australian pine, yellow poplar and numerous species of hardwoods will be set out. The trees will come from the state nursery operated in connection with the Clarke County State Forest Reserve and Experiment Station.

Electric Coal Capacity Climbs.—The Electric Coal Co., Chicago and Danville, Ill., has opened another strip operation West Clinton, in Vermillion County. It has a capacity of 2,500 tons a day and steps up the tonnage of the company in Indiana to approximately 75,000 tons a month. The new operation is in the No. 6 seam. The coal is prepared at a four-track steel tippie.

Mines to Hold Second Election.—William Mitch, as secretary-treasurer, was the only major officer put through at the biennial election of District No. 11, United Mine Workers, official tabulation of returns showed Jan. 10. A second election will be necessary to choose other officials. Harvey Cartwright, Bicknell, district vice-president, and William Stinson, Oakland City, led in balloting for president and will be candidates at the second election. For international board member, W. D. Van Horn, Terre Haute, had a slight edge over C. C. Webster, Terre Haute. Michael Ferguson, Terre Haute, likewise earned a slight lead over James H. Terry, Dugger, for district vice-president. None of the board members from the four sub-districts was elected.

The mine of the Square Deal Coal Co., located one mile north of Boonville, has been sold by Zach Turpin to Philip Lutz, Jr., and Dr. G. W. Barr, both of Boonville, and the new owners are operating the mine on full time.

IOWA

William Flynn has purchased the Rexfield mine No. 5, Albia, from the Rex Fuel Co., Oskaloosa. This mine has been closed for several months, but was able to hoist 1,200 tons per day when it suspended operations. With some improvement it can be made to yield 2,000 tons or more per day. The mine is electrically operated and has excellent equipment. Mr. Flynn expects to start operation of the mine at once and to keep his output upon as large a scale as business will warrant.

The Seymour Coal Co., Seymour, has resumed production of coal at its mine served by the Rock Island R.R.

P. O. Grieve, Clarinda, has purchased the Gravity mine and will operate it.

KANSAS

Spurs to New Fields Under Way.—Two new extensions into recently opened coal developments are being completed by the Joplin & Pittsburg Electric Ry. One is a spur from Mulberry into the Kelly-Carter field, north of Mulberry. This field is expected to be one of the best in the Kansas district. A second spur, 8,000 ft. in length, is almost ready at Turck, where the Carbon Coal Co. soon will begin operation of a large steam-shovel mine.

Inc., Columbus, one of the receivers. Owing to breakdowns the equipment will be rebuilt and will be given another test in the mine in May or June of this year.

The new \$25,000 rescreening plant at the North Diamond coal mine, at Earlington, has been placed in operation. The mine will now load seven grades of coal where formerly it was able to load but four grades.

The plant of the Phoenix Mining Co., Nonnel, just out from Drakesboro,

Wilson, of Richmond, and A. B. Lemaster, of Kansas City.

OHIO

High Shaft Tipple Burns.—Fire of undetermined origin on Jan. 13 partly destroyed the tippie of the High Shaft mine of the Steubenville Coal & Mining Co. The damage to the tippie was to the extent of \$10,000. The miners, 54 in number, left the mine through another shaft. The fire was the third in the Wheeling-Steubenville district in a week, as the tippie at the mine of the Elm Grove Mining Co. was burned recently and the Richland mine at Wheeling was damaged slightly more than a week ago to the extent of \$25,000.

Cincinnati Coal Traffic Mounts.—The growth of the Cincinnati coal gateway is shown by official figures of John A. Morris, chairman of the Cincinnati Railroad Operating Committee. Loaded cars of coal received at Cincinnati and interchanged on the roads the last five years were as follows: In 1922, 438,960 cars; in 1923, 523,089 cars; in 1924, 524,640 cars; in 1925, 638,701 cars; in 1926, 670,653 cars. To this latter figure must be added 30,000 cars which were not interchanged but were handled directly from the road on which they came. Nearly all of this coal came in over the Cheapeake & Ohio, Norfolk & Western and Louisville & Nashville. It was mostly from West Virginia and eastern Kentucky coal fields.

Receiver for Thomas Coal Co.—Upon the application of David S. Thomas, a creditor of the David S. Thomas Coal Co., of Columbus, S. L. Dean, president of the company, has been named receiver by an order of the Court of Common Pleas. Mr. Thomas alleged that he holds notes to the amount of \$24,975 against the company. The receiver gave bond and immediately took charge of the company's affairs. The concern has a mine in West Virginia.

PENNSYLVANIA

Hudson Starts New Development.—Work has been started on a mammoth reservoir at Tamaqua by the Hudson Coal Co., to impound two billion gallons of water. This will be used in connection with a steel and concrete coal breaker to handle output from a new rich coal basin near Middleport.

Quality Coal Land Sold.—Green Hill, Cambria County's 100 per cent coal field, was sold last week to M. R. Brennan and several associates, of Johnstown. Green Hill is reached by No. 1 Penelec mine and was owned and operated by the Penn Public Service Corporation, a subsidiary of the Associated Gas & Electric Co. The deal involves 161 acres of C prime or Upper Kittanning coal with a tippie in Dale (a suburb of Johnstown). It is modernly equipped for an electrically operated mine. The mine has a daily capacity of 400 tons, which can easily be increased. About fifteen years ago Cambria County undertook a survey and



Middlesboro, Ky., from Pinnacle Mountain

Middlesboro is showing new life after years of dormancy. It has an interesting history. It was laid out in 1889 for a city of 80,000 by the American Association, an English owned corporation, which still holds title to most of the surrounding coal lands. The town has exceptionally broad streets and lies in a fairly level basin about 5 miles in diameter.

New Shovel Operation Started.—A new shovel mine, one of the largest in the Kansas field, has been opened by the Carbon Coal Co. on a 750-acre lease south of Scammon. Instead of working from the bottom of the pit, as do other shovels used there, the new machine has its tracks laid on the bank above and operates from the top of the pit, using an electric hoist to bring out the coal. About 50 men are employed.

KENTUCKY

Double-Track Line in Sight.—A double-track line from the Harlan coal fields to Covington is almost an accomplished fact, lacking only a gap of thirteen miles from Roundhouse to Conway, in Madison County. This link is now under construction by the Louisville & Nashville system and will be completed within another year and a half. These improvements will greatly facilitate the north-bound movement of coal from the southeastern Kentucky fields, and if the proposed extension from Bourbonville to Beattyville or vicinity is built, still another northern outlet will be added.

Himler Experiments to Be Tried Again.—The experiment tried at the mine of the Himler Coal Co., at Himlerville, now in the hands of receivers, of using machinery to convey the coal from the rooms into the mine cars by what is styled the panel system is being held in abeyance, according to Fred G. Hatton, of Hatton, Brown & Co.,

which was flooded on Dec. 23 from surface water breaking in, is still flooded, but plans are being made to install a battery of larger pumps. The Belcher Coal Co. plant also is reported to be waterbound.

MINNESOTA

An interesting window display devised by the Brand Coal Co. is shown by the Northern States Power Co. in St. Paul. It is a miniature coal mine, built at a cost of \$7,500 and showing the mining, handling, grading and distribution of the various sizes of coal at each step from the pit to the railroad car.

The Reeves Coal Co., Minneapolis, which maintained its offices for several years at 100 North Seventh Street, has moved to a new location in the loop district on the second floor of the Plymouth Building.

MISSOURI

Resume Work on Adair Shaft.—The work of sinking a shaft at the coal mine north of Kirksville owned by the Adair Coal Co. has been resumed. The mine was flooded with water for several weeks but all of this has been taken out and the shaft cleaned.

Fire of unknown origin recently completely destroyed the tippie of the City Coal Co.'s mine, east of Richmond. The mine is owned by R. D. Farris, Joseph

valuation of coal lands for assessment purposes. The engineers in charge made Green Hill their 100 per cent area because of the quality of the coal, its accessibility and its proximity to consumers and to shipping facilities. The consideration was not made public.

The Reading Company transported 2,300,506 gross tons of bituminous coal (revenue) during November, 1926, compared with 2,126,428 tons in the corresponding month of the preceding year.

VIRGINIA

Twenty-Nine Years Young.—E. T. Long, president of the E. T. Long Corporation, has just completed twenty-nine years in the coal business in Richmond. He began operations with a wheelbarrow and hacksaw in October, 1897, when he purchased one-fourth of a cord of wood from a Hanover County wagon. Mr. Long did not have an office at that time, but opened for business in a shoe shop. Today the E. T. Long Corporation handles a general line of coal and other fuels with yards and terminals on the Seaboard Air Line covering more than two city blocks.

Ask Federal Receivership.—Creditors of the Empire Collieries Co. have filed a petition for involuntary bankruptcy against the company in the U. S. District Court for western Virginia, asking the appointment of a receiver by the federal court. The company was recently placed in the hands of a receiver by a decree entered by the Circuit Court of Pulaski County, in vacation. W. B. Kegley, of Wytheville, has been appointed special master, to report on the property, assets and liabilities of the corporation before Judge McDowell will pass on the latest petition.

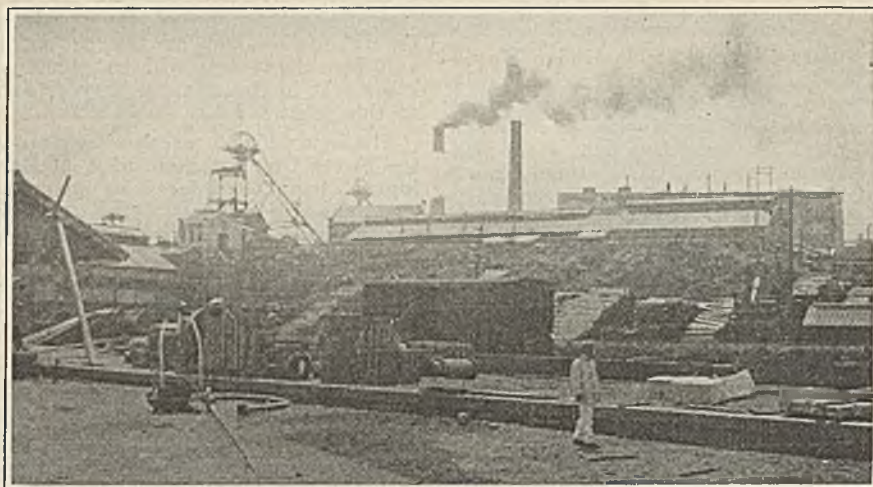
WEST VIRGINIA

An amendment to its charter filed with the Virginia state corporation commission changes the name of the Harrah Coal Land Co. to the Prater Coal Land Co.

At a meeting during the first week of January at Welch of directors of the Crystal Block Mining Co., Crystal Block Coal & Coke Co. and the Crystal Supply Co. dividends were declared. The annual meeting of the directors will be held in February, at which time officers will be elected.

Van A. Bittner, international representative of the United Mine Workers in northern West Virginia, returned to Fairmont soon after the holidays. His reappearance is believed to foreshadow a renewal of the battle on wages April 1 by the union.

A fire which partly destroyed the tippie of the Richland Coal Co. at Warwood, near Wheeling, on Jan. 6, entailed damage of about \$50,000. The heavy damage was due to the motors being partly destroyed. It required a four-hour fight to extinguish the blaze. It is announced that work of rebuilding the tippie has been started and it is expected that the 150 miners who were thrown out of employment by the blaze will be back at work within a week or so.



Keystone View Co.

Largest Coal Mine in Eastern Island Empire

Outside view of the operation of the Mitsubishi Co. in Kinshin, Japan, where many modern methods are employed.

Fire Renders 500 Idle.—Fire which destroyed the tippie of the Elm Grove Mining Co.'s No. 2 mine, in Ohio County, Jan. 12, threw about five hundred men out of work temporarily. The loss is estimated at \$75,000.

American Coal Company of Allegany County has declared a regular quarterly dividend of \$1, payable Feb. 1 to stock of record Jan. 11.

New Corona Tippie Nearly Ready.—The new all-steel tippie being built by the Corona Coal Co. at its No. 2 mine, at Hepzibah, is nearing completion and will be ready for use soon. The old wooden tippie at this plant burned down, with considerable damage to the interior of the mine when fire communicated to the coal, several months ago.

CANADA

New Alberta Rate Appeal.—A new appeal for a hearing by the Dominion Railway Board of the Alberta-to-Ontario coal rate question will be launched at once. Premier J. E. Brownlee of Alberta conferred with Premier Ferguson at Toronto Jan. 10, and the result is that Mr. Brownlee goes on to Ottawa assured by Mr. Ferguson of Ontario's undivided support in a fresh effort to have the coal-rate inquiry brought to a head. Mr. Ferguson said he hoped the Railway Board would see fit to grant an inquiry at the conclusion of the present general rate investigation. Much, he said, depended on immediate action by the board. Mr. Ferguson pointed out that it was the hope of his government to get a satisfactory rate set sufficiently early to permit the hauling of coal with the opening up of spring and the release of adequate rolling stock.

Nova Scotia Mines Come Back.—For the twelve months ending Sept. 30, 1926, coal production in Nova Scotia was 5,600,000 tons as against 3,200,000 for the preceding twelve months. The great disparity was due mainly to the cessation of work during a part of the 1925 period. It was pointed out, how-

ever, in a statement made by G. S. Harrington, Minister of Works and Mines, that the actual output per man day was higher in 1926 than in the previous year. In 1926 Nova Scotia coal industries also manufactured 1,300,000 imperial gallons of motor fuel as a by-product of coking.

William Maxwell, general manager of the Drummond Colliery, Pictou County, N. S., having promised his workmen a bonus based on a percentage on all production over 20,000 tons per month, and the December output having exceeded this amount, 600 men divided a bonus of \$3,000. The steady employment of this season which made it possible further enhanced the earnings of the Drummond Colliery men at Westville.

An order was granted by the Court at Toronto on Jan. 11 permitting the Consolidated Coal Co. of St. Louis, Mo., to attach any assets belonging to T. W. Payne in Ontario in satisfaction of a judgment for \$100,000 secured against him in Chicago. Payne is stated to have been a resident of Toronto prior to Dec. 11, 1926, on which date he is alleged to have gone to Havana, Cuba, with the intent to defraud his creditors and avoid being served with process.

Estimates by the Dominion Bureau of Statistics of the mineral production in Canada during 1926 show a notable increase in the output of coal, which amounted to 16,105,000 tons valued at \$58,164,000, as compared with 13,134,968 tons valued at \$49,261,951 for 1925.

During the last week but one of December twenty large steamers carrying cargoes of coal left Sydney, N. S., and nearly as many departed during the last week of the month. At last accounts Sydney Port was free of ice and navigation unimpeded.

The steamer Beothic arrived in Halifax recently from Port Talbot, Wales, with 2,053 tons of anthracite. This is believed to be the first cargo of Welsh coal received since the British coal strike.

Among the Coal Men

Nolan Mahan was re-elected president of the Cincinnati Coal Exchange at the meeting of the old and new directors held Dec. 31. Only once before in the fifteen years' existence of the exchange has a president held office for two successive years. Mr. Mahan is Western sales manager for the General Coal Co. Other offices filled were: Vice-President, Fred Heitzman, Old Ben Coal Corporation; Treasurer, Elmer Wierhake, Castner, Curran & Bullitt, and Secretary, Robert A. Dickson, Raleigh Coal & Coke Co.

Carol Robinson, of the Rockhouse Coal Co., Rockhouse, Ky., passed through Cincinnati, Jan. 4 en route to the East, where he intends to complete negotiations with Russian interests which will carry him to the Ural basin and elsewhere in coal producing sections. He told his friends that he had been engaged to inspect and recommend some of the Soviet properties with the idea of modernizing them both by machinery and in economy in the use of labor.

Edward Johnson, chairman of the board of directors of the Lorain Coal & Dock Co., of Columbus, Ohio, accompanied by his wife and two daughters, one of whom is Mrs. R. L. Wildemuth, wife of the vice-president of the company, will leave soon for an extended trip to the Mediterranean and Egypt.

K. U. Meguire, Harlan Coal Co., Louisville, Ky., has been elected chairman of the board of directors of the Morris Plan Industrial Bank of Louisville, after having been acting president of the institution for a short time. Mr. Meguire was one of the principals in the organization of the bank.

Hiram Blauvelt, vice-president of the Comfort Coal-Lumber Co., Hackensack, N. J., sailed on the Str. Duilio on Jan. 8 for a trip into the Mediterranean, stopping at Madeira, Gibraltar, Algiers and Naples. He will join Col. E. Alexander Powell, the well-known writer on travels, at Naples, after which they plan to visit many little-known and seldom visited islands, ports and bays of the Mediterranean. Colonel Powell is writing a travel book on these regions and the expedition is one largely to gather material for this. Mr. Blauvelt also is understood to be in search of unusual material for a book. They plan to take numerous motion pictures.

C. Reginald Ryley, vice-president of the C. L. Ryley Coal Co., Lexington, Ky., is reported to be improving after an operation which he underwent at St. Joseph's Hospital. He expects to be back at his office soon.

D. D. Hull, Jr., vice-president of the Virginia Iron, Coal & Coke Co., Roanoke, Va., and former president of the Roanoke Chamber of Commerce, has been elected a member of the committee on power and development of the Virginia State Chamber of Commerce, charged with making an

economic survey of factors controlling the development of Virginia's basic industries and the formulation of a definite program for the state, and to further industrial power development in Virginia in accordance with the "five-five" program of the Virginia State Chamber of Commerce.

John Ellison, of Winslow, Ind., for the last four years assistant mine inspector of Indiana, resigned Jan. 1. The power of appointing his successor rests with A. C. Dally, chief mine inspector, subject to approval by the Governor. Ellison succeeded William Green, of Winslow, and it is reported now that Green may succeed Ellison. Ellison has represented the First district and has had charge of mines in Pike, Daviess, Dubois, Perry, Spencer, Warrick, Vanderburg, Gibson and Posey counties.

Captain Theron B. Matthews, commander of the Portsmouth (Ohio) national guard unit known as Battery B, and a son of George E. Matthews, vice-president of the Carrs Fork Coal Co., has accepted a position as safety and welfare director of the company and will be located at the mines in Kentucky.

George Campbell, for sixteen years in active charge of the operations of the Old Ben Coal Co.'s mines in southern Illinois, has been promoted to assistant to President W. D. Buchanan with offices in Chicago. He had held the position of general outside superintendent. In 1913 Mr. Campbell sank the first of the Old Ben mines in Franklin County. The company now has twelve mines in the southern Illinois fields. A. W. Spaht, of Christopher, Ill., general electrical engineer, has been promoted to fill the vacancy caused by Mr. Campbell's advancement.

Obituaries

John J. Roche, president and general manager of the Rocky Mountain Fuel Co., Denver, Colo., died at his home in that city Jan. 13, following a long period of ill-health. Mr. Roche had been a resident of Denver since 1907. He was born on a Wisconsin farm and was graduated from the State Teachers College of that state. He became a school teacher, but later took up law and served as prosecuting attorney in his home county, Lafayette. He resigned that post to establish the First National Bank of Neligh, Neb. He had been a member of both branches of the Nebraska Legislature. In 1893 he became president of the London and Sioux City Finance Co., and in 1898 helped organize the Omaha Cattle Loan Co. Surviving him are his widow and a daughter.

John W. Yopp, publisher of the *Southern Coal Journal* and one of the

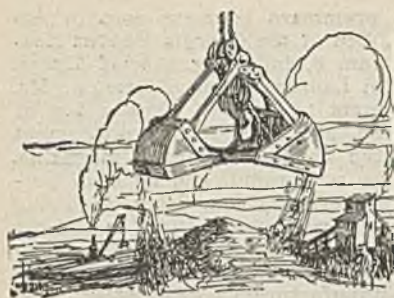
most prominent business men in Atlanta, died at the Georgia Baptist Hospital Jan. 8, following a brief illness. Born in Laurens County, Georgia, Mr. Yopp went to Atlanta when a boy of fourteen, and later found employment with the *Southern Banker* magazine. His rise was rapid, and he soon purchased *Refrigeration*, later acquiring the *Southern Funeral Director* and the *Southern Periodical Press*. For many years he was secretary of the Georgia Manufacturers' Association, and through his efforts many progressive industries were induced to locate in the South. He resigned his position with the manufacturers' association a number of years ago to devote his entire time to the publishing business.

Hiram M. Young, vice-president in charge of mines and mining of the Peabody Coal Co., Chicago, with which company he had been connected for twenty-three years, died at his home in Chicago Jan. 11. Although he had been in poor health for a little more than a year, the end came about suddenly through two paralytic strokes. Mr. Young was fifty-eight years of age and spent practically his whole life in the coal industry. His father operated mines at Girard, Ill., where Mr. Young went to work in his father's mine while yet a boy. Later he was connected with the Victor Coal Co., which operated a mine at Pawnee, Ill., and he rose to the position of mine superintendent. When that property was purchased by the Peabody Coal Co. twenty-three years ago, Mr. Young joined the Peabody staff. He steadily advanced until he reached the position that he occupied at the time of his death. He is survived by his wife, four sons and three daughters. The funeral and interment took place at Springfield, Ill., Jan. 14 with Masonic services.

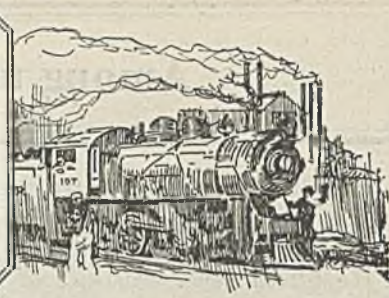
Association Activities

The West Kentucky Coal Bureau, at its annual meeting, held at the Seelbach Hotel, Louisville, Jan. 11, elected Brent Hart, of the Hart Coal Corporation, Morton's Gap, Ky., as president of the organization; A. W. Duncan, of W. G. Duncan & Sons Coal Co., Greenville, vice-president, and C. E. Reed, of Louisville, was re-elected secretary and manager. New members of the executive committee, added to the holdover members, are: C. M. Martin, Greenville Coal Co., Greenville; C. F. Richardson, West Kentucky Coal Co., Sturgis; A. P. Barnard, Beaver Dam Coal Co., Beaver Dam; G. S. Miles, Gibraltar Coal Mining Co., Central City, and Percy D. Berry, Providence Mining Co., Providence. A review was heard of the various pending rate matters as affecting members of the organization, which is a traffic body primarily.

The Philadelphia Coal Exchange, at its recent annual meeting, re-elected President Maurice J. Crean, Vice-President Samuel B. Crowell and Secretary-Treasurer Charles K. Scull. Six new directors were chosen, nine holding over. Thirteen new members were admitted during the year, two died and two resigned.



Production And the Market



Coal Trade Reacts to Weather and Storage Buying; Stockpile Building a Growing Factor

Weather and storage buying were the determinative factors in shaping the course of the bituminous trade throughout the United States during the second week in January. Wherever and whenever the mercury flirted with the zero mark or snow and sleet gave visual evidence to man that winter still reigned, buying—particularly of the larger sizes suitable for household consumption—picked up. Conversely, every change in temperature suggestive of spring was followed by an evaporation of consumer interest.

Storage buying, however, was the more important factor. Accumulation of reserve stocks as insurance against any suspension in production on April 1 was in evidence in varying degree in every market east of the Mississippi River. It is this buying which undoubtedly is responsible for lifting the production figures over the 13,000,000-ton mark the first week in the new year. This same class of buying promises to grow in intensity as the time for the expiration of the Jacksonville agreement draws nearer.

Prices Again Weaken

Coal Age Index of spot bituminous prices on Jan. 17 was 192 and the corresponding weighted average price was \$2.33. Compared with the figures on Jan. 10 this was a decline of 2 points and 1c. Decreases in spot realizations on central Pennsylvania coals and on the high-volatiles of southern West Virginia and eastern Kentucky were re-

sponsible for the reduction. Slight recessions also were reported in the averages on Hocking and Pittsburgh No. 8 coals.

Although these decreases were in no case unusually large, they more than offset the gains made in the low-volatile coals of southern West Virginia, Indiana lump and western Kentucky block. The manner in which the smokeless shippers have been able to maintain prices in the face of general predictions that spot quotations would sink far below the January circulars has been disconcerting to those consumers who had planned a "buyers' strike" to force further reductions. In the Middle Western fields price maintenance also has been fairly successful.

Production on Upgrade

Bituminous output made a quick recovery from the holiday decline. For the week ended Jan. 8 the U. S. Bureau of Mines estimated the total production as 13,215,000 net tons. Although this was much below the weekly levels of November and early December, 1926, it was close to the maximum ever reached in any year prior to the one just closed. Output during the week ended last Saturday, according to preliminary loading figures covering operations for Jan. 10 and 11, was at a still higher rate.

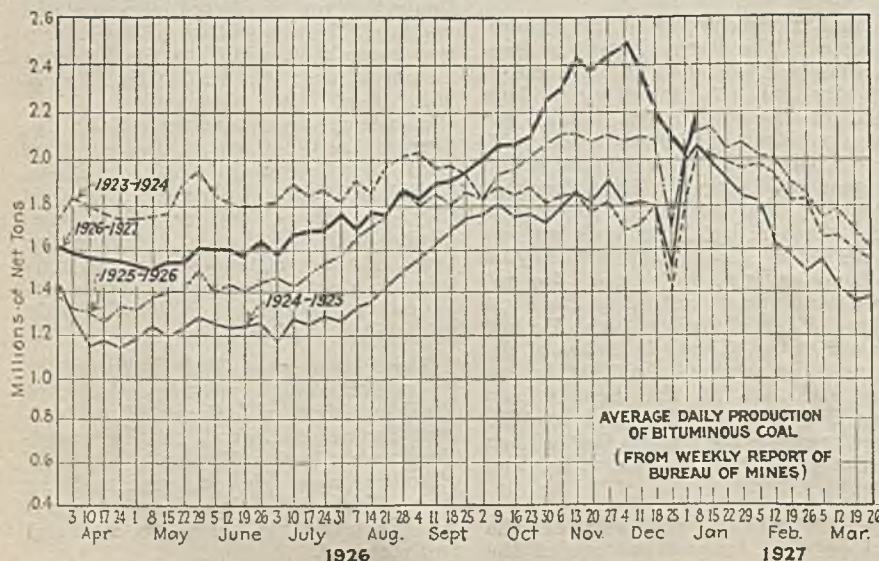
Developments in the labor situation which is back of this heavy production are complicated. It is strongly hinted that Ohio and western Pennsylvania

operators will meet the union with a demand for a reduction to the 1917 scale. From other quarters comes advocacy for a sliding wage scale. Union operators are meeting in Toledo this week in an effort to arrive at some understanding of a common position to be taken in negotiations with the United Mine Workers next month. In the meantime the uncertainty as to non-union policies continues.

More Life to Anthracite

Domestic anthracite, which has been in the doldrums for several weeks, showed some signs of reviving interest last week. The interest, however, was by no means intense and complaint is still made that a large number of unbilled loads are carried in the mining fields. Nevertheless one large producer thought enough of the outlook for pea to increase the circular price to \$6.50. But the real feature of the market is No. 1 buckwheat. Independent tonnage sold up to \$4.25 in the New York market last week and \$1 less at Philadelphia. Birdseye was practically out of the market and the other steam sizes were firm.

Fresh complications have arisen in the Connellsville beehive coke situation as the result of the action of some of the smaller operators in reverting to the wage scales in effect prior to Nov. 1, 1926. These ovens are now offering spot furnace coke at \$3.40@3.65, while the ovens paying the Frick scale are demanding \$4. The interests cutting



Estimates of Production

(Net Tons)

BITUMINOUS

	1925-1926	1926-1927
Dec. 25.....	8,384,000	10,486,000
Jan. 1 (a).....	10,704,000	10,711,000
Jan. 8 (b).....	13,031,000	13,215,000
Daily average.....	2,172,000	2,203,000
Total for cal. year.....	406,467,000	445,766,000
Daily average.....	1,712,000	1,876,000

ANTHRACITE

Dec. 25.....	33,000	1,503,000
Jan. 1.....	28,000	1,128,000
Jan. 8.....	47,000	1,368,000
Coal year to date.....	40,455,000	75,344,000

BEEHIVE COKE

Dec. 25.....	261,000	146,000
Jan. 1.....	299,000	172,000
Jan. 8.....	289,000	168,000
Cal. year to date.....	338,000	197,000

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

the price have little, if any, tonnage under contract. For the time being at least, furnaces who contracted are more interested in seeing labor contented than in forcing a reduction.

Weather Helps Midwest

Heavy snows and a falling thermometer have come to the rescue of the coal trade in the Middle West. The stimulation in domestic demand which followed has enabled some of the Illinois and Indiana producers to cut into their accumulations of "no bills." Further strength was given to the Chicago market by the withdrawal of all prices by one of the largest units in the smokeless producing field. On the other hand, high-volatile coals from both West Virginia and Kentucky are unstable.

Prices on screenings are stiff because the weather demand for prepared coal has been absorbing unbilled tonnage rather than compelling an increase in production. Outside of the Fourth Vein

Indiana field, however, there has been little price cutting on domestic sizes by Illinois and Indiana mines. Quotations on western Kentucky coal are proving attractive to many buyers who have heretofore favored southern Illinois with their orders.

Reports from the mining areas of southern Illinois indicate that the slowest moving size at the present time is No. 1 nut. Mines are averaging four to five days per week. Prices are well maintained except in Saline County, where some operators seem willing to make open concessions to move tonnage. Stripping mines are fighting hard for business, stressing price in their solicitation for orders. Railroads are buying liberally from the shaft mines.

Conditions Show Improvement

Conditions are better in the Jackson County-Duquoin section. Running time has improved and the market has broadened although most mines still

have unbilled loads on their tracks. Railroad storage orders and a fair run of general steam business are the principal factors in keeping up production in the Mt. Olive district. There also has been some improvement in the Standard field, but mine tracks are congested with No. 1 nut and 2 x 6 steam egg. Railroads are good buyers at the present time and one or two mines have contracted their output for the rest of the coal year.

Weather has had a stimulating effect upon the St. Louis domestic market, with medium- and low-priced coals leading in demand. Country domestic buyers also are favoring the cheaper grades in forward buying. Both wagon and carload steam trade are fairly active in the St. Louis local market. Many industries, taking their cue from the railroads, have started to build up storage reserves.

Louisville was another city which enjoyed a brisker domestic demand because of colder weather last week. In

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

Low-Volatile, Eastern		Market Quoted	Jan. 18 1926	Jan. 3 1927	Jan. 10 1927	Jan. 17 1927†
Smokeless lump.....	Columbus...	\$4.10	\$3.85	\$3.85	\$3.50@3.75	
Smokeless mine run.....	Columbus...	2.75	2.50	2.50	2.25@2.50	
Smokeless screenings.....	Columbus...	2.00	1.85	1.85	1.65@1.90	
Smokeless lump.....	Chicago...	3.85	3.50	3.60	3.50@3.75	
Smokeless mine run.....	Chicago...	2.10	2.75	2.50	2.50@3.00	
Smokeless lump.....	Cincinnati...	4.50	3.35	3.75	3.50@3.75	
Smokeless mine run.....	Cincinnati...	2.50	2.75	3.00	3.00	
Smokeless screenings.....	Cincinnati...	1.60	2.25	2.35	2.25@2.50	
*Smokeless mine run.....	Boston...	4.90	5.10	5.25	5.25@5.40	
Clackamish mine run.....	Boston...	1.95	2.30	2.45	2.15@2.70	
Cambria mine run.....	Boston...	2.40	2.60	2.80	2.60@3.00	
Bomerset mine run.....	Boston...	2.10	2.45	2.55	2.30@2.85	
Pool 1 (Navy Standard)...	New York...	3.05	3.60	3.25	3.00@3.50	
Pool 1 (Navy Standard)...	Philadelphia...	3.15	3.20	3.15	3.00@3.25	
Pool 1 (Navy Standard)...	Baltimore...	2.30	2.60	2.60	2.50@2.75	
Pool 9 (Super. Low Vol.)...	New York...	2.40	2.60	2.60	2.45@2.65	
Pool 9 (Super. Low Vol.)...	Philadelphia...	2.50	2.95	2.70	2.45@2.65	
Pool 9 (Super. Low Vol.)...	Baltimore...	2.15	2.10	2.15	2.05@2.25	
Pool 10 (H.Gr.Low Vol.)...	New York...	2.15	2.35	2.30	2.15@2.50	
Pool 10 (H.Gr.Low Vol.)...	Philadelphia...	2.25	2.65	2.40	2.25@2.45	
Pool 10 (H.Gr.Low Vol.)...	Baltimore...	1.95	1.85	1.90	1.85@2.00	
Pool 11 (Low Vol.)...	New York...	1.85	2.05	2.05	1.85@2.30	
Pool 11 (Low Vol.)...	Philadelphia...	2.05	2.50	2.20	2.00@2.20	
Pool 11 (Low Vol.)...	Baltimore...	1.70	1.75	1.75	1.75@1.80	
High-Volatile, Eastern		Market Quoted	Jan. 18 1926	Jan. 3 1927	Jan. 10 1927	Jan. 17 1927†
Pool 54-64 (Gas and St.)...	New York...	1.60	1.75	1.60	1.50@1.75	
Pool 54-64 (Gas and St.)...	Philadelphia...	1.65	1.85	1.60	1.50@1.70	
Pool 54-64 (Gas and St.)...	Baltimore...	1.65	1.50	1.55	1.50@1.60	
Pittsburgh sc'd gas.....	Pittsburgh...	2.65	2.60	2.60	2.50@2.75	
Pittsburgh gas mine run.....	Pittsburgh...	2.10	2.20	2.20	2.15@2.30	
Pittsburgh mine run (St.)...	Pittsburgh...	2.05	2.10	2.10	2.00@2.25	
Pittsburgh slack (Gas)...	Pittsburgh...	1.50	1.65	1.65	1.60@1.70	
Kanawha lump.....	Columbus...	2.25	2.50	2.50	2.25@2.65	
Kanawha mine run.....	Columbus...	1.70	1.85	1.85	1.75@2.00	
Kanawha screenings.....	Columbus...	.90	1.35	1.35	1.10@1.40	
W. Va. lump.....	Cincinnati...	2.75	2.75	2.60	2.50@3.00	
W. Va. gas mine run.....	Cincinnati...	1.55	1.85	1.85	1.60@1.75	
W. Va. steam mine run.....	Cincinnati...	1.60	1.65	1.65	1.35@1.60	
W. Va. screenings.....	Cincinnati...	1.10	1.40	1.35	1.25@1.55	
Hooking lump.....	Columbus...	2.35	2.50	2.55	2.25@2.75	
Hooking mine run.....	Columbus...	1.85	1.85	1.85	1.75@2.00	
Hooking screenings.....	Columbus...	1.20	1.40	1.40	1.25@1.40	
Pitts. No. 8 lump.....	Cleveland...	2.30	2.35	2.35	2.00@2.75	
Pitts. No. 8 mine run.....	Cleveland...	1.80	1.90	1.90	1.90@1.95	
Pitts. No. 8 screenings.....	Cleveland...	1.40	1.65	1.65	1.50@1.60	
Midwest		Market Quoted	Jan. 18 1926	Jan. 3 1927	Jan. 10 1927	Jan. 17 1927†
Franklin, Ill. lump.....	Chicago...	\$3.50	\$4.00	\$4.00	\$4.00	
Franklin, Ill. mine run.....	Chicago...	2.50	2.60	2.60	2.50@2.75	
Franklin, Ill. screenings.....	Chicago...	1.85	1.85	1.85	1.75@2.00	
Central, Ill. lump.....	Chicago...	3.10	2.75	2.75	2.50@3.00	
Central, Ill. mine run.....	Chicago...	2.30	2.10	2.10	2.00@2.25	
Central, Ill. screenings.....	Chicago...	1.40	1.40	1.40	1.35@1.50	
Ind. 4th Vein lump.....	Chicago...	3.00	3.35	3.25	3.25@3.50	
Ind. 4th Vein mine run.....	Chicago...	2.30	2.35	2.35	2.25@2.50	
Ind. 4th Vein screenings.....	Chicago...	1.85	2.00	2.00	2.00	
Ind. 5th Vein lump.....	Chicago...	2.50	2.75	2.50	2.40@2.65	
Ind. 5th Vein mine run.....	Chicago...	1.95	2.10	2.10	2.00@2.25	
Ind. 5th Vein screenings.....	Chicago...	1.50	1.50	1.50	1.40@1.60	
Mt. Olive lump.....	St. Louis...	2.85	2.85	2.85	2.75@3.00	
Mt. Olive mine run.....	St. Louis...	2.00	2.50	2.50	2.50	
Mt. Olive screenings.....	St. Louis...	1.75	1.50	1.50	1.50	
Standard lump.....	St. Louis...	2.40	2.35	2.35	2.25@2.50	
Standard mine run.....	St. Louis...	1.80	1.80	1.80	1.75@1.90	
Standard screenings.....	St. Louis...	.85	1.20	1.20	1.15@1.25	
West Ky. block.....	Louisville...	2.05	2.60	2.60	2.50@2.75	
West Ky. mine run.....	Louisville...	1.35	1.55	1.55	1.25@1.60	
West Ky. screenings.....	Louisville...	.30	1.25	1.25	1.10@1.35	
West Ky. block.....	Chicago...	2.25	2.50	2.10	2.25@2.50	
West Ky. mine run.....	Chicago...	1.50	1.85	1.85	1.75@2.00	
South and Southwest		Market Quoted	Jan. 18 1926	Jan. 3 1927	Jan. 10 1927	Jan. 17 1927†
Big Seam lump.....	Birmingham...	2.75	2.85	2.60	2.50@2.75	
Big Seam mine run.....	Birmingham...	2.10	1.85	1.85	1.75@2.25	
Big Seam (washed).....	Birmingham...	2.30	2.10	2.00	1.50@2.00	
S. E. Ky. block.....	Chicago...	3.10	2.85	2.85	2.25@3.00	
S. E. Ky. mine run.....	Chicago...	1.85	1.95	1.95	1.80@2.00	
S. E. Ky. block.....	Louisville...	3.00	2.75	2.60	2.50@2.75	
S. E. Ky. mine run.....	Louisville...	1.55	1.85	1.85	1.75@2.00	
S. E. Ky. screenings.....	Louisville...	1.00	1.80	1.55	1.25@1.60	
S. E. Ky. block.....	Cincinnati...	3.25	3.00	2.75	2.50@2.75	
S. E. Ky. mine run.....	Cincinnati...	1.60	1.60	1.80	1.25@1.85	
S. E. Ky. screenings.....	Cincinnati...	1.05	1.50	1.30	1.15@1.40	
Kansas lump.....	Kansas City...	4.85	4.60	4.60	4.50@4.75	
Kansas mine run.....	Kansas City...	3.10	3.00	3.00	3.00	
Kansas screenings.....	Kansas City...	2.30	2.35	2.35	2.35	

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

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

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

	Market Quoted	Freight Rates	January 18, 1926		January 10, 1927		January 17, 1927†	
			Independent	Company	Independent	Company	Independent	Company
Broken.....	New York.....	\$2.34			\$8.50@9.25	\$8.50@9.25	\$9.25	\$8.50@9.15
Broken.....	Philadelphia.....	2.39			8.50@9.15	8.50@9.15	8.50@9.15	8.50@9.15
Egg.....	New York.....	2.34			8.75@9.25	8.75@9.25	8.40@9.50	8.75@9.25
Egg.....	Philadelphia.....	2.39			8.40@9.50	9.00@9.15	8.40@9.50	9.00@9.15
Store.....	Chicago*.....	5.06	\$9.50@10.00	\$8.03@8.25	8.26	8.13	8.26	8.13
Store.....	New York.....	2.34			9.00@9.50	9.25@9.50	9.00@9.50	9.25@9.50
Store.....	Philadelphia.....	2.39			9.35@9.75	9.25@9.50	9.35@9.75	9.25@9.50
Chestnut.....	Chicago*.....	5.06	10.00@11.00	8.40@8.80	8.71	8.58	8.71	8.58
Chestnut.....	New York.....	2.34			8.75@9.25	8.75@9.15	8.75@9.25	8.75@9.15
Chestnut.....	Philadelphia.....	2.39			8.75@9.40	9.00@9.15	8.75@9.40	9.00@9.15
Chestnut.....	Chicago*.....	5.06	10.00@11.00	8.50@8.75	8.48	8.53	8.48	8.53
Pea.....	New York.....	2.22			5.75@6.50	6.00@6.50	6.00@6.50	6.00@6.50
Pea.....	Philadelphia.....	2.14			6.00@6.75	6.50	6.00@6.75	6.50
Pea.....	Chicago*.....	4.79	5.50@6.00	5.50@6.00	6.03	6.10	6.03	6.10
Buckwheat No. 1.....	New York.....	2.22			2.75@3.15	2.50@3.50	3.75@4.25	2.50@3.50
Buckwheat No. 1.....	Philadelphia.....	2.14			2.75@3.00	2.50@3.00	2.75@3.25	2.50@3.00
Rice.....	New York.....	2.22			1.85@2.25	2.00@2.25	1.90@2.30	2.00@2.25
Rice.....	Philadelphia.....	2.14			1.90@2.00	1.75@2.25	1.90@2.00	1.75@2.25
Barley.....	New York.....	2.22			1.40@1.50	1.50@1.75	1.50@1.75	1.50@1.75
Barley.....	Philadelphia.....	2.14			1.25@1.50	1.50@1.75	1.25@1.50	1.50@1.75
Birdeye.....	New York.....	2.22			1.35@1.65	2.00	1.35@1.65	2.00

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

† Quotations withdrawn because of strike which started Sept. 1, 1925.

many cases, however, retailers were content to reduce yard stocks and made no move toward replenishment. Steam coal demand is fairly stiff—largely because production is down. Operators, however, are looking forward to a pronounced storage buying movement early next month and a number of mines plan to reopen at that time.

Steam Sizes Easier

Despite the weak demand, Kentucky prices on the larger sizes of coal have remained fairly steady. Block from both eastern and western Kentucky is selling at \$2.50@2.75, with an occasional sale of specialty coal at \$3. On the other hand, slack from both fields and western Kentucky mine-run dropped. The minimum on fine coal—\$1.10—was, however, slightly above the average for January, 1926.

Shipments from the docks at the Head of the Lakes are continuing at such a rate that it now is predicted that the January total will closely approximate the December loadings of 32,087 cars. Industrial buying is on a broad basis. Semi-industrial business also shows a healthy growth, while straight domestic demand is active, particularly in smokeless. The call for anthracite, however, is not as strong as was expected in view of the limited supplies of acceptable substitutes available.

As of Jan. 1 supplies of coal on the docks were estimated at 450,000 tons of anthracite and 3,500,000 tons of bituminous. Because of the uncertain outlook after April 1, dock men are regretting that their soft-coal reserves are not larger. They also complain that the shift of so many large steam consumers to screenings is creating new problems of supply and transportation. The situation at the Milwaukee docks is unchanged.

Weather Man Unkind to Southwest

Too much sunshine has held domestic demand in the Kansas City market at a low level. Fairly liberal storage orders from the railroads, however, have kept down the number of "no bills" at the mines. The free tonnage of screenings is inadequate for current spot demands. Steam coal prices are firm, but show no tendency to rise above the \$2.35 mean in Kansas and the \$1.75@2 range on slack in Arkansas, Oklahoma and Missouri. There has been no change in prepared quotations.

Colorado's taste of weather demand for domestic sizes proved short-lived. Many of the orders placed a fortnight ago have since been cancelled and there has been a sharp increase in "no bills" in both the northern and southern fields. Steam demand, however, continues strong. Prices are unchanged. Utah trade is on the downgrade at the present time. Pacific Coast demand is falling off and buyers east of the mines are apathetic. The slack situation grows increasingly easier.

On the whole the Cincinnati market is in a stronger position, with the greatest firmness apparent in the smokeless coals. Increased orders for low-volatile coal have been flowing in from all points of the compass. Most of the producers are holding to a \$3.75 cir-

lar on lump, although some scattered tonnage is going at \$3.50. Mine-run is steady at \$3 and slack is sold freely at \$2.25@2.50, with now and then a car at \$2.75.

Spread in Prices Narrows

In the high-volatile side of the market, the spreads in quotations have been contracting. Prepared sizes, if anything, have advanced slightly. In mine-run and slack the tendency is to work toward lower levels, although good grades of slack bring as much as, or more than, cheaper grades of mine-run. The weakness is most marked in the straight steam coals. Gas and by-product tonnage find a readier market. In the domestic division egg is the softest.

The interchange of coal loads through the Cincinnati gateway last week totaled 12,976 cars—an increase of 2,597 cars over the preceding week. Nearly 40 per cent of this gain was in Louisville & Nashville loadings; over 55 per cent on the Chesapeake & Ohio. The number of empties en route to the mines increased from 9,465 to 10,114 cars.

Irregularity characterized the trade in central Ohio last week. Columbus observers attributed this to lack of

wintry weather, industrial indifference to storage buying and large production in the Appalachian Region. It was admitted, however, that railroads and public utilities have been quietly accumulating stocks in anticipation of a union suspension next April. Steam business as a whole, however, is spotty and prices are weaker. Southern Ohio is working at 35 per cent of capacity.

Slack Weakens in Northern Ohio

Weakening in spot quotations on slack in the face of a declining demand for the larger sizes also featured the course of trade in the northern Ohio market. Retail buying at Cleveland has been active the past fortnight, but the orders have been mostly for smokeless. Production in the No. 8 field during the week ended Jan. 8 was 362,000 tons, or approximately 52 per cent of capacity. Steam inquiries are increasing and a heavier buying movement is anticipated.

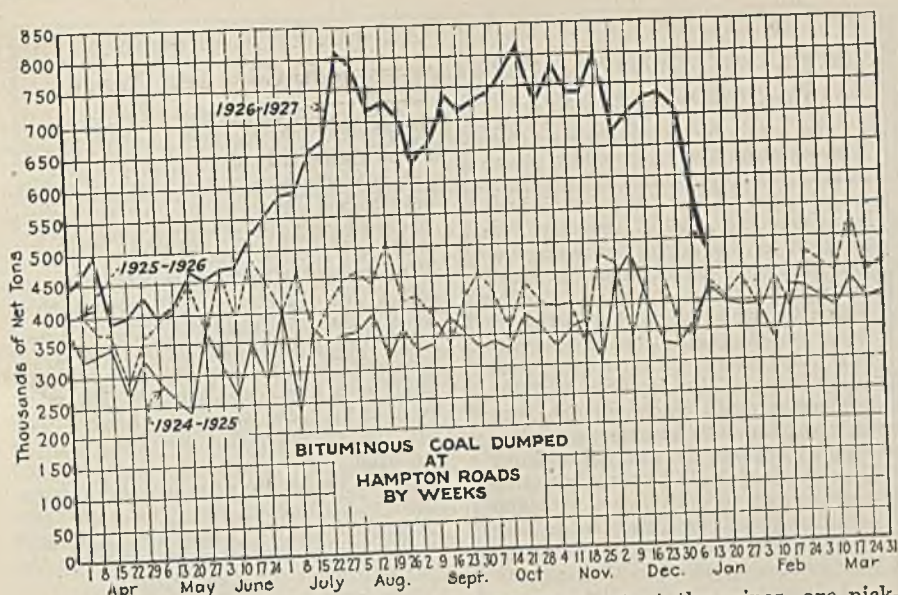
There has been no further improvement in demand for Pittsburgh district coal the past week, but current production is readily absorbed at the existing scale of prices. Many of the smaller mines are down. As an offset to this most of the mines which are running are operating full time. On the whole,



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

	1927			1926		1925
	Jan. 17	Jan. 10	Jan. 3	Dec. 27	Jan. 18	Jan. 19
Index	192	194	193	198	181	174
Weighted average price.....	\$2.33	\$2.34	\$2.33	\$2.40	\$2.20	\$2.11

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



industrial activity is less than it was a year ago. There has been little storage buying.

Central Pennsylvania production is well maintained. During the week ended Jan. 8 shipments were 19,054 cars. Quiet buying for storage is an important factor in present output. Spot quotations show little change, but levels have worked slightly lower. Pool 1 is \$2.55@2.75; pool 71, \$2.45@2.50; pool 9, \$2.35@2.45; pool 10, \$2.25@2.30; pool 11, \$2.10@2.20; pool 18, \$2.

No Life to Buffalo Trade

Dullness is still the ruling fashion in the Buffalo market. Prices, however, are being held close to the levels established at the close of the holiday season. Fairmont lump is \$2@2.25; mine-run, \$1.75@2; slack, \$1.35@1.50; Youghiogheny gas lump, \$2.75@3; slack, \$1.75@2; Pittsburgh and No. 8 steam lump, \$2.25@2.50; slack, \$1.50@1.65; Allegheny Valley mine-run, \$2@2.25. Low-volatile mine-run still ranges \$2@3.25.

The steam-coal price situation in the New England market has been reasonably steady the past fortnight. A slight increase in the volume of buying and a drop in free tonnage available following the holiday mine suspensions have been important contributing factors to this stability. Storage buying in anticipation of labor troubles and export loadings at the Southern piers also have played a part.

Spot Navy Standard Pocahontas and New River coals command \$5.25@5.40 per gross ton at Hampton Roads. In some cases transshippers refuse to accept additional spot orders and also decline to quote prices for February deliveries. Shipments under contract are normal for this season of the year, but it is not always easy to arrange for bottoms to meet loading requirements. Vessel rates are firm. On cars at Boston and Providence, \$7 is now the minimum for inland delivery.

Pennsylvania Fights for Business

Central Pennsylvania shippers are making a vigorous canvass for New England business, but the volume of tonnage sold in tidewater territory is disappointing. A few Clearfield operators, who will accept considerably less

than \$2.50 net at the mines, are picking up some scattered orders. There is little Pennsylvania coal moving in via water. Boston retail prices on bituminous coal have been cut from \$10.50 to \$9.75.

Some betterment is discernible in the New York bituminous market. Increased inquiries have been followed by actual orders, and there is a better feeling in the trade. Spot quotations, however, do not reflect this change. As a matter of fact, prices on pools 9 and 11 were slightly weaker and the other pools registered no advance. Coal at the piers moved freely last week although receipts continued heavy.

Philadelphia also reported a slowly rising demand, accompanied, however, by easier quotations in all the low-volatile pools. These declines are explained by reductions in contract prices following the restoration of lower wage rates at various mines. Most of the forward buying is by the larger industrial consumers. Small plants seem determined to wait for further breaks in prices and the railroads, too, stand aloof. A number of contracts where the relationship between buyer and seller is of long standing have been closed.

"Good Bye" to Exports!

Mopping up the last of the British strike created exports engaged the major attention of the Baltimore trade the first ten days of the month. Ships

Car Loadings and Supply

	Cars Loaded		Car Shortages	
	All Cars	Coal Cars	All Cars	Coal Cars
Week ended Jan. 6, 1927.....	940,800	214,176		
Week ended Jan. 1, 1927.....	740,348	171,573		
Week ended Jan. 9, 1926.....	907,119	193,294		
Week ended Jan. 2, 1926.....	741,239	158,944		
<hr/>				
	Surplus Cars		Car Shortages	
	All Cars	Coal Cars	All Cars	Coal Cars
Dec. 31, 1926.	275,260	61,181		
Dec. 22, 1926.	197,754	27,651		
Dec. 31, 1925.	267,739	95,295		

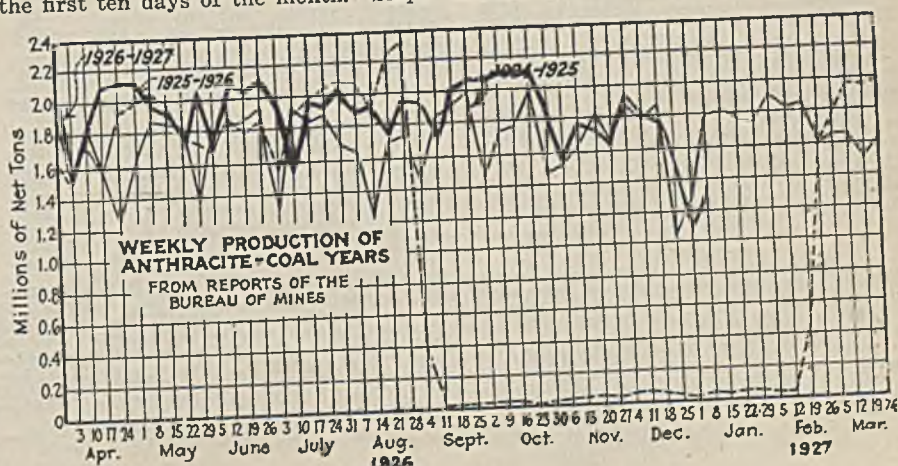
which were unable to obtain the release of cargoes loaded out on old contracts. With this business out of the way, the trade is speculating on what April 1 will bring the domestic buyer. Buying at the present time, however, is mostly in small lots. Pool quotations were unchanged last week.

A short cold snap enlivened domestic demand in the Birmingham district last week and brought a sprinkling of orders sufficient to enable the mines to rid themselves of some troublesome accumulations of "no bills." Lump is the slowest moving of the domestic sizes. The spot steam market is marking time, with a surplus of low-grade mine-run to worry producers. Movement of coal under contract is proceeding at a normal rate.

Increased demand and curtailed mining resulted in a shortage of No. 1 buckwheat in the New York hard-coal market, which shot independent quotations up to a maximum of \$4.25. Rice and barley bask in the reflected glory of the unusual buckwheat demand, and birdseye is practically out of the spot market. Domestic sizes still lag, although there has been some increase in the demand for egg after a protracted period of sluggishness. Pea is firm; another one of the large shippers advanced its price to \$6.50 last week.

Better Tone to Anthracite

Moderate improvement in the demand for domestic sizes of anthracite came to the Philadelphia market last week. The volume of buying, however, was not big enough to support full-time operation although one large producer succeeded in reducing the number of unbilled loads from 1,000 to 800 cars. The fact that most of the local retailers entered the new year with capacity stocks on hand lessened the benefits which the producers received from the increased consumer buying.



As at New York, the steam sizes were in a strong position. Prices on No. 1 buckwheat, however, were \$1 under the maximum reached in the Manhattan tidewater trade. Rice and barley were strong. The stocks of steam coals in the storage yards of the company shippers have been nearly depleted. No. 1 is particularly scarce at this time. There were no unusual developments in the Baltimore market.

Upsets marked the Connellsville coke situation last week. For some time the larger independent operators have been insisting upon the maintenance of the Frick wage scale and have closed considerable contract business on that basis. In the last few days some of the smaller ovens with no backlog of contract tonnage have reduced wages and now are offering spot tonnage at lower prices. Some good furnace coke is to be had at \$3.40@ \$3.65, as compared with the nominal price of \$4. Spot foundry has eased off to \$4@ \$5.

No Fight on Contracts—Yet

Contract prices for first-quarter delivery average approximately \$4.25. A reduction in wages would be followed automatically by a reduction in the prices on coke charged contract buyers. Although the furnace men are selling little pig iron at the present time, they do not seem to be exerting any pressure upon the operators to reduce wages, preferring that the region be free from the danger of labor dissatisfaction this spring.

Production of beehive coke in the Connellsville and Lower Connellsville region during the week ended Jan. 3 was 126,300 net tons, according to the Connellsville *Courier*. Furnace-oven output was 52,400 tons, the same tonnage as produced in the preceding week. Merchant-oven output rose to 73,900 tons, an increase of 9,600 tons over the preceding week.

Sales of foundry coke are holding up well in the Birmingham district. There has been no change in quotations, which

Large Coal Mergers Urged To Stabilize Market

The coal industry needs large consolidations as a market stabilizer, in the opinion of Glenn Griswold editor of the *Chicago Journal of Commerce*, who recently addressed a noonday gathering of the Chicago Coal Merchants' Association.

Mr. Griswold warned of ultimate government regulation unless the coal operators themselves took early steps to destroy the need for federal control. He said the fear of government interference has been overdone. It was pointed out that the railroads bitterly assailed government meddling prior to the establishment of the Interstate Commerce Commission. Now the carriers support the Commission and recognize it as a necessary regulatory body in the successful operation of the railroads. The petroleum industry is less severe in its objection to government regulation and some of the leading oil men of the country are actually advocating federal control.

Government meddling in coal was not favored. The recommendation was one of prodding the operators into some action that will do away with the odium of government interference.

Mr. Griswold predicted a continuation of the present prosperity throughout 1927.

are \$5.50 for first-half contracts and \$6 for spot and first-quarter business. Domestic sizes have been moving a little stronger because of colder weather, but prices have not been increased. Egg size is \$5.25; stove, \$4.75; nut, \$4.25, f.o.b. ovens.

Adopt New Method in Buying Soft Coal for Army

The Quartermaster General has adopted a new method in the purchase of bituminous coal in that the analytical requirements of a station will be determined prior to issuing the advertisement and therefore prospective bidders will be advised of the grade of bituminous coal required when bids are asked for. Bidders will be informed as to the requirements in maximum allowable percentage of moisture "as received," volatile matter, ash and sulphur on a dry coal basis and the minimum B.t.u. also on a dry basis which will be considered. Bidders will be required to state the guaranteed analysis as heretofore, but the government will check up the guarantee from information from sources independent of the bidder to determine whether the coal will meet the specification.

Bids will be rejected if the government has information which indicates that the analytical guarantee probably cannot be maintained; if any analytical factor guaranteed is not within the limit specified in the advertisement; if coal is offered regarding which the government has information that it is unsatisfactory because of physical characteristics, ash content, or excessive clinking; if coal is offered from a mine or mines concerning which the government has insufficient information from a source independent of the bidder to determine whether the coal will meet the specification; or for other causes which would indicate that the coal is not suitable for the government's requirements.

Awards will be made for the cheapest coal, within the analytical limits, based on the cost to the government at destination. Furthermore, awards will be made on a f.o.b. mine basis or f.o.b. destination basis, which ever is cheaper to the government ultimately.

Coal Produced in Texas and Wyoming in 1925*

(Exclusive of product of wagon mines)

State and County:	Loaded at Mines for Shipment	Net Tons Sold to Local Trade and Used by Employees	Used at Mines for Steam and Heat	Total Quantity	Value		Number of Employees					Average Number of Days Worked	Average Tons per Man per Day
					Total	Average per Ton	Miners, Loaders and Shot- firers	Haulage and Track	Alls Other	Surface	Total		
TEXAS													
Bituminous ¹	171,612	4,580	6,488	182,680	\$673,000	\$3.68	516	61	69	102	748	143	1.71
Lignite ²	810,517	3,330	11,848	825,695	893,000	1.08	890	133	124	213	1,360	153	3.96
	982,129	7,910	18,336	1,008,375	1,566,000	1.55	1,406	194	193	315	2,108	150	3.19
WYOMING													
Big Horn and Park.....		1,899	200	2,099	\$6,500	\$3.10	3	...	1	3	7	86	3.49
Campbell, Johnson and Weston.....	125,407	11,492	17,576	154,475	395,000	2.56	59	11	22	35	127	272	4.48
Carbon.....	441,010	8,875	15,791	465,676	1,330,500	2.86	195	44	57	72	368	182	6.96
Fremont, Hot Springs and Uinta.....	487,467	15,837	45,702	549,006	1,858,000	3.38	406	86	85	139	716	149	5.16
Lincoln.....	1,284,660	10,693	54,742	1,350,095	3,954,000	2.93	879	162	167	235	1,443	213	4.38
Sheridan.....	790,837	36,555	2,161	829,553	1,923,000	2.32	455	88	24	115	682	137	8.90
Sweetwater.....	3,116,566	30,406	55,356	3,202,328	8,808,000	2.75	1,937	385	245	328	2,895	173	6.38
	6,245,947	115,757	191,528	6,553,232	18,275,000	2.79	3,934	776	601	927	6,238	178	5.90

* The figures relate only to active mines of commercial size that produced coal in 1925. The number of such mines in Texas was 37 in 1925 and 44 in 1924 and 1928; in Wyoming, 61 in 1925 and 62 in 1924 and 1923.

Methods of mining in Texas in 1925: The tonnage undercut by hand was 531,755; shot off the solid, 211,202; cut by machines, 133,772; and mined by stripping, 129,646. Size classes of commercial mines in 1925: There was 1 mine in Class 2 (100,000 to 200,000 tons), producing 12.9 per cent of the tonnage; 1 in Class 3 (50,000 to 100,000 tons), with 5.1 per cent; 32 in Class 4 (10,000 to 50,000 tons), with 80.1 per cent, and 3 in Class 5 (less than 10,000 tons), producing 1.9 per cent.

¹ Anderson, Bastrop, Bexar, Henderson, Hopkins, Houston, Lee, Leon, Milam, Nacagdoches, Shelby, Titus and Wood Counties.

² Erath, Maverick, Palo Pinto, Webb and Wise Counties.

Methods of mining in Wyoming in 1925: The tonnage undercut by hand was 794,612; shot off the solid, 1,676,618; cut by machines, 4,043,537; mined by stripping, 33,579; not specified, 4,886. Size classes of commercial mines in 1925: There were 9 mines in Class 1B (200,000 to 500,000 tons), producing 37 per cent of the tonnage; 21 in Class 2 (100,000 to 200,000 tons), with 47.2 per cent; 11 in Class 3 (50,000 to 100,000 tons), with 13.3 per cent; 6 in Class 4 (10,000 to 50,000 tons), with 1.9 per cent, and 14 in Class 5 (less than 10,000 tons), producing 0.6 per cent.

Compiled by U. S. Bureau of Mines.

Foreign Market And Export News

French Take Hopeful View Of Coal Demand

Paris, France, Dec. 30.—No serious setback to the French coal market is expected before the invisible stocks have been rebuilt. What is already noticeable, however, is that the market has lost the feverish tone that was in evidence during the British strike. As soon as the first cargo of British coal was discharged on the French coast, the coast region cut off orders from the French collieries—much to the latter's relief.

Despite the slowing down in industry, steam coal demand still is sufficiently strong to absorb the output of our own mines. For this reason the operators feel it possible to keep up their prices, yielding only where they come into direct competition with British coal. Demand for house coals is weak.

It is understood that there is an agreement between the Belgian and French handlers of screened coal to unify selling terms in the Paris area. No changes in prices have been announced for Jan. 1, but negotiations are under way between Belgian producers and French distributors to fix future conditions.

According to latest reports, French metallurgical interests refused to exercise their option to sign thirteen-month contracts for German coke at 19.75 mks. at the ovens. Most consumers are pessimistic over the industrial outlook and seem to prefer paying 21 mks. on a month-to-month basis. Coke from the Nord and Pas de Calais ovens will be cut 8.5 fr. on Jan. 1, making the prices on that coke 197.5 for furnace and 217.5 fr. for foundry grades.

The Belgian situation, says a report from Brussels, is unchanged.

British Market Weak

London, England, Jan. 7.—The tone of the British coal market is weak and buying is decidedly slow. The Christmas holidays have served to decrease the surplus stocks, but have had no influence on prices, which still tend downward. Domestic and foreign buyers expect prices to work still lower this month and are purchasing only the minimum quantities necessary to cover current requirements. Some overseas users are prepared to place contracts over the year at 25/—for best large steam, against an average of 27/—asked by the operators.

Business with France is slow, due to the appreciation of the franc, which counteracts the recent reduction in pit-head prices. Some business passes with Italy, but that market is unstable. Chief export business is with the coaling depots and South America. The volume in these directions, however, is subnormal.

Prices continue to fall. Best Ad-

miralty large is 28/—to 29/—, and in some cases offers of 27/6 are made. Small steams are 18/—to 20/—; best bunkers are down to 14/—. Some Welsh bituminous coal is selling inland at 33/—to 34/—.

Cardiff, South Wales, Jan. 15.—It was reported yesterday that Messrs. Gwilym, Owen & Co., coal exporters, London, had secured from the Egyptian State Rys. an order for the supply of 50,000 tons of Welsh locomotive coal for delivery during February, March and April. The price was stated to be 36/—per ton c.i.f. Alexandria.

Strike a Boon to Germany

Absorption of large surplus stocks of German coal, employment of large numbers of miners who had been confronting the possibility of unemployment and a considerable gain in German coal production are three of the outstanding effects of the British coal strike on German industry, according to U. S. Trade Commissioner W. T. Daugherty, stationed at Berlin.

It is now known in Germany that Ruhr dumps, stocked at the beginning of the strike with approximately 8,000,000 tons of coal and 2,000,000 of coke, with a combined value of about 150,000,000 mks., have been virtually cleaned. About 367,000 Ruhr miners, 20,000 of whom were facing loss of employment or part-time employment, were fully employed during the strike and another 35,000 were added to their number before the British stoppage was terminated. Total German coal production, which amounted to 10,000,000 tons in April, increased to 13,500,000 tons in October, the latest month for which official figures are available. Daily production in the Ruhr district exceeded even pre-war records with a figure of 403,283 tons in October, 1926, against a peak of 389,493 tons in January, 1913.

Coal exports from Germany, amounting to about 1,000,000 tons monthly from January to April of last year, inclusive, had risen to 3,700,000 tons in October. On the other hand, imports, averaging more than 400,000 tons in the first four months of 1926, had dropped to a low level of 116,000 tons in that month.

The outlook for the future, since the resumption of work by the British miners, is believed in Germany to be more promising than before the strike. Export orders have been booked that will require months to fill and the activity during the strike provided assistance to the operators affected by the pre-strike depression. Nevertheless, it is generally admitted in Germany that German production will decline gradually, that its oversaturated labor market will require dismissal of miners and that producers will be forced to accept lower prices for their exports.

Saar Production Smaller

During the first nine months of 1926 the total output of the Saar coal mines amounted to 10,155,252 metric tons, of which 9,889,946 tons came from government operations and 265,306 tons from leased mines. Most of the output—8,907,723 tons—was sold, but close to 800,000 tons were used in and about the mines, and smaller amounts went to the manufacture of coke and briquets or for other purposes.

Export Clearances, Week Ended Jan. 13

FROM HAMPTON ROADS	
For United Kingdom:	Tons
Swed. Str. Lulea.....	7,450
Br. Str. Trevilley.....	6,926
For Mexico:	
Nor. Str. Dea, for Puerto.....	1,992
For Nova Scotia:	
Br. Schr. Susan Cameron, for Halifax	187
For Brazil:	
Fr. Str. Salon, for Rio Janeiro....	6,211
Br. Str. Trevider, for Rio Janeiro...	6,101
Br. Str. Bradburn, for Rio Janeiro..	6,540
Br. Str. Trewidden, for Rio Janeiro..	6,092
For Venezuela:	
Nor. Str. Stelnstad, for Maracaibo..	1,081
For Italy:	
Ital. Str. Equatore, for Naples.....	6,337
For Argentine:	
Br. Str. Ullesmere, for Buenos Aires	5,069
Span. Str. Guadlara, for Rosario....	4,760
Fr. Str. Pisca, for Bahia Blanca....	13,620
For Uruguay:	
Br. Str. Fydingdale, for Montevideo..	5,494
For Cuba:	
Nor. Str. Sagoland, for Antilles.....	3,928
Er. Str. Majestic, for Havana.....	4,337
For Chile:	
Br. Str. Chilcap, for Arica.....	377

FROM BALTIMORE	
For Italy:	
Span. Str. Uribitarte, for Leghorn..	5,415
Ital. Str. Ansaldo Primo, for Civita-	
vecchia	6,559
Ital. Str. Ansaldo Quinto, for Genoa..	6,583
For Egypt:	
Grk. Str. Emmanuel Stavroudis, for	
Alexandria	6,313
For Algeria:	
Br. Str. Roseden, for Algiers.....	6,553
For Cuba:	
Br. Str. Berwindmoor, for Havana..	9,301

FROM PHILADELPHIA	
For Newfoundland:	
Nor. Str. Aslaug, for St. Johns.....	—
For Gibraltar:	
Du. Str. Hilversum.....	—
For Brazil:	
Br. Str. Rounton Range, for Santos..	—
Br. Str. Baxtergate, for Rio Janeiro..	—
For Cuba:	
Br. Str. Downahill, for Havana.....	—

Hampton Road Coal Dumpings*

	(In Gross Tons)	Jan. 6	Jan. 13
N. & W. Piers, Lamberts Pt.:			
Tons dumped for week.....	195,120	187,093	
Virginian Piers, Sewalls Pt.:			
Tons dumped for week.....	125,420	108,753	
C. & O. Piers, Newport News:			
Tons dumped for week.....	199,802	135,113	

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

Pier and Bunker Prices, Gross Tons

PIERS		Jan. 6	Jan. 13†
Pool 1, New York....	\$5.75@	\$6.15	\$6.75@
Pool 9, New York....	5.25@	5.50	5.25@
Pool 10, New York....	5.00@	5.25	5.00@
Pool 11, New York....	4.50@	5.00	4.50@
Pool 9, Philadelphia..	5.40@	5.90	6.25@
Pool 10, Philadelphia..	5.15@	5.25	6.05@
Pool 11, Philadelphia..	4.65@	4.90	4.60@
Pool 1, Hamp. Roads.		5.00	5.00
Pool 2, Hamp. Roads.		4.85	4.85
Pool 3, Hamp. Roads.		4.85@	4.95
Pools 5-6-7, Hamp. Rds.		4.75@	4.85

BUNKERS		Jan. 6	Jan. 13†
Pool 1, New York....	\$6.00@	\$6.40	\$6.00@
Pool 9, New York....	5.50@	5.75	5.50@
Pool 10, New York....	5.25@	5.50	5.25@
Pool 11, New York....	4.75@	5.25	4.75@
Pool 9, Philadelphia..	5.65@	6.15	6.60@
Pool 10, Philadelphia..	5.40@	5.50	6.30@
Pool 11, Philadelphia..	4.90@	5.15	4.75@
Pool 1, Hamp. Roads.		5.15	6.10
Pool 2, Hamp. Roads.		5.00	4.95
Pools 5-6-7, Hamp. Rds.		4.85	4.85

†Advance over previous week shown in heavy type, declines in italics.



Current Prices of Mining Supplies

Electrical prices are to the mine by jobbers in the larger buying centers east of the Mississippi. Elsewhere the prices will be modified by increased freight charges and by local conditions.

SINCE LAST MONTH

WITH the exception of recent advances in lead covered and other armored feeder cable, most of the price changes of the last month were in a downward direction. Prominent among the declines were those occurring in c.-i. pipe; rivets, colored cotton waste; iron, steel and non-ferrous metal scrap; copper wire; trolley wire; and mining machine cable. Indications are that the price of bare copper wire will swing around in the opposite direction, although buying has not increased to a degree commensurate with the firmness in quotations.

STEEL RAILS—The following quotations are per ton f.o.b. in carload or larger lots:

	Pittsburgh			
	Current	One Year Ago	Birmingham	Chicago
Standard Bessemer rails.....	\$43.00	\$43.00	\$43.00	\$43.00
Standard openhearth rails.....	43.00	43.00	43.00	43.00
Light rails, 25 to 45 lb.....	36.00	36@38	34@36	1.80@1.90*

*Per 100 lb.

TRACK SUPPLIES—The following prices are base per 100 lb. f.o.b. Pittsburgh mill for carload lots, together with warehouse prices at the places named:

	Pittsburgh			
	Current	One Year Ago	Chicago	Birmingham
Standard spikes, 1/4-in. and larger.....	\$2.80@2.90	\$2.80	\$3.55	\$3.00
Track bolts.....	3.90@4.25	3.90@4.15	4.55	3.90
Standard section angle bars, splice bars or fish plates.....	2.85	2.75	3.40	4.15

WROUGHT PIPE—The following discounts are to jobbers for carload lots at Pittsburgh mill:

BUTT WELD					
Inches	Steel Black	Galv.	Inches	Iron Black	Galv.
1 to 3.....	62	50 1/2	1 to 1 1/2.....	30	12
2.....	55	43 1/2	2.....	23	7
LAP WELD					
BUTT WELD, EXTRA STRONG, PLAIN ENDS					
1 to 1 1/2.....	60	49 1/2	1 to 1 1/2.....	30	14
LAP WELD, EXTRA STRONG, PLAIN ENDS					
2.....	53	42 1/2	2.....	23	9

STEEL PIPE—From warehouses at the places named the following discounts hold for welded steel pipe:

	Black			
	New York	Chicago	Birmingham	St. Louis
1 to 3 in. butt welded.....	53%	54%	62%	49%
2 1/2 to 6 in. lap welded.....	48%	51%	59%	46%
	Galvanized			
	New York	Chicago	Birmingham	St. Louis
1 to 3 in. butt welded.....	39%	41%	50 1/2%	36%
2 1/2 to 6 in. lap welded.....	35%	38%	47 1/2%	33%

Malleable fittings, Classes B and C, banded, from New York stock sell at list plus 4% less 5%. Cast iron, standard sizes, 36—5% off.

CAST-IRON PIPE—The following are prices per net ton for carload lots:

	New York			
	Birmingham	Burlington, N. J.	Current	One Year Ago
4 in.....	\$42.00	\$50.00	\$52.60	\$55.60@56.60
6 in. and over.....	38.00	46.00	48.60	51.60@52.60
	Pittsburgh	Chicago	St. Louis	San Francisco
4 in.....	\$50.60	\$50.20	\$48.60	\$52.00
6 in. and over.....	46.60	46.20	44.60	48.00

Gas pipe and Class "A," \$4 per ton extra.

MACHINE BOLTS—Size 1/4x1 1/2-in., per 100, \$1.70. Discount at New York warehouses on all sizes up to 1x30-in., 40%; 1 1/2 and 1 3/4-in. up to 12-in., 15%; with cold punched hex. nuts up to 1-in. dia. (plus std. extra of 10%) 30%; with hot pressed hex. nuts up to 1x30-in. (plus std. extra of 10%) 35%.

CARRIAGE BOLTS—Size 1/4x1 1/2-in., per 100, \$1.00. Discount on all sizes up to 1x30-in., 30%.

NUTS—Semi-finished, 1/4-in., 2c. each. Discount 70% for 1/4-in. and smaller and 65% for 1/2-in. and larger. Case hardened 1/4-in., 6c. each, less 50%.

STEEL PLATES—Following are base prices per 100 lb. in carload lots, f.o.b., for 1/2-in. thick and heavier:

Pittsburgh.....	\$1.90	Birmingham.....	\$2.00
-----------------	--------	-----------------	--------

STRUCTURAL RIVETS—The following quotations are per 100 lb., in carload lots, f.o.b. mill, for 1/2-in.:

Pittsburgh...\$2.60	Cleveland...\$2.30@2.60	Chicago...\$2.60@2.75
---------------------	-------------------------	-----------------------

WIRE ROPE—Discounts from list price on regular grades of bright and galvanized, in New York and territory east of Missouri River:

	Per Cent
Plow steel round strand rope.....	35
Special steel round strand rope.....	30
Cast steel round strand rope.....	20
Round strand iron and iron tiller.....	5
Galvanized steel rigging and guy rope.....	7 1/2
Galvanized iron rigging and guy rope.....	+12 1/2

RAIL BONDS—30-in., 0000, stranded copper, welded, expanded terminals, f.o.b. Chicago, per 100, \$78.54 @ \$94.24.

RAILWAY TIES—For fair-sized orders, the following prices per tie hold:

	6 in. x 8 in. by 8 ft.	7 in. x 9 in. by 8 1/2 ft.
Chicago, white oak, plain.....	\$1.45	\$1.83
Chicago, empty cell crosscut.....	1.85	2.45
Chicago, zinc treated.....	1.65	2.15
St. Louis, white oak, plain.....	1.20	1.45
St. Louis, zinc treated.....	1.60	1.85
St. Louis, red oak, plain.....	1.10	1.35
St. Louis, sap pine-cypress.....	.95	1.20
Birmingham, white oak.....	1.25	1.45

STEEL MINE TIES—Wood wedge, for room use only, f.o.b. Fairmont, W. Va., per tie:

30-in.....\$0.29	36-in.....\$0.30	42-in.....\$0.32	48-in.....\$0.35
------------------	------------------	------------------	------------------

CALCIUM CARBIDE—In drums, f.o.b. producing point, per lb., \$0.05 1/2 @ \$0.06.

BRATTICE CLOTH—Jute, per sq. yd., \$0.14 to \$0.20, in Charleston, W. Va., St. Louis, Mo. and Pittsburgh, Pa., districts.

COTTON WASTE—The following prices are in cents per lb.:

	New York	Cleveland	Chicago
White.....	13.00@17.50	16.00	15.00@20.00
Colored.....	9.00@13.00	13.00	12.00@17.00

DRILL ROD—Discounts from list:

New York.....60%	Cleveland.....55%	Chicago.....50%
------------------	-------------------	-----------------

MACHINE AND ENGINE LUBRICANT—Medium bodied, in 55 gal. metal barrels, per gal., as follows:

New York.....\$0.35	Cleveland.....\$0.35	Chicago.....\$0.29
---------------------	----------------------	--------------------

SCRAP IRON AND STEEL—The prices following are f.o.b. per net ton paid by dealers:

	New York*	Chicago	Birmingham
No. 1 railroad wrought.....	\$13.00@14.00	\$12.00@12.50	\$12.00@13.00
Stove plate.....	9.25@11.25	13.50@14.00	14.00@14.50
No. 1 machinery cast.....	16.00@17.00	16.00@16.50	17.00@17.50
Machine shop turnings.....	9.25@9.75	6.00@6.50	8.00@8.50
Cast borings.....	9.25@13.50	8.75@9.25	8.00@9.00
Railroad malleable.....	15.50@16.00	14.25@14.75	16.00@17.00
Re-rolling rails.....	12.50@13.00	14.25@14.75	15.00@16.00
Re-laying rails.....	23.00@24.00	21.00@22.00
Heavy melting steel.....	9.25@12.75	11.50@12.00	13.00@14.00

* Gross ton.

SCRAP COPPER AND BRASS—Dealers' purchasing prices in cents per lb.:

	New York	Cleveland	Chicago
Crucible heavy copper.....	11.25 @ 11.50	11.00	10.50 @ 11.00
Copper, heavy, and wire.....	10.50 @ 11.00	11.25	10.00 @ 10.50
Copper, light, and bottoms.....	9.00 @ 9.50	9.50	8.75 @ 9.25
Brass, heavy, yellow.....	6.75 @ 7.00	7.25	6.50 @ 7.00
Brass, heavy, red.....	9.00 @ 9.25	9.25	8.50 @ 9.00
Brass, light.....	5.25 @ 5.75	6.00	6.00 @ 6.50
No. 1 yellow rod turnings.....	7.50 @ 7.75	7.50	7.25 @ 7.75

COPPER WIRE—Prices of bare wire, base, at warehouse, in cents per lb. are as follows:

New York.....18.75	Cleveland.....18.75	Chicago.....15.62 1/2
--------------------	---------------------	-----------------------

FRICTION TAPE—Size 1/2-in. in 100 lb. lots in Eastern territory, per lb., \$0.33.

TROLLEY WIRE—In carload lots, f.o.b., producing point, all sizes, round, 15c. per lb.; grooved, 15c.; Fig. 8, 16c.

TROLLEY WHEELS—F.o.b. Jersey City, N. J., 4-in., 95c. each; 6-in., \$1.50 each.

MINING MACHINE CABLE—F.o.b. producing point, parallel lay patterns, single conductor, per M. ft.:

	Braided	All Rubber Covered
Size 2.....	\$105.80	Size 2.....\$208.00
Size 3.....	74.50	Size 3.....188.70
Size 4.....	65.70	Size 4.....174.00

LOCOMOTIVE CABLE—F.o.b. producing point, braided, Size 3, \$83.00 per M. ft.; Size 4, \$71.00 per M. ft.

FEEDER CABLE—Price per M. ft. in larger buying centers east of the Mississippi B. & S. Size

	Two Conductor	Three Conductor
No. 14 solid.....	\$32.00 (net)	\$51.00 (net)
No. 12 solid.....	136.00	180.00
No. 10 solid.....	185.00	235.00
No. 8 stranded.....	205.00	305.00
No. 6 stranded.....	440.00	530.00

From the above lists discounts are: Less than coil lots, 50%; Coils to 1,000 ft., 60%; 1,000 to 5,000 ft., 60-5%; 5,000 ft. and over, 60-10%.

EXPLOSIVES—F.o.b. in carload lots:

	West Virginia	Districts Pennsylvania	Missouri
Black Powder, FF, NaNO ₃ base, 800 kegs per car, per 25 lb. keg.....	\$1.70@1.80	\$1.70	\$1.75
Ammonium permissible, 1 1/2 x 8 in. sticks, 20,000 lb. per car, per 100 lb.....	14.50@15.50	14.25	14.50

Coming Meetings

American Society of Civil Engineers. Annual meeting, Jan. 19-21, 1927, at Engineering Societies Bldg., New York City. Secretary, George T. Seabury, 29 West 39th St., New York City.

American Wood Preservers' Association. Annual meeting, Jan. 25-27, 1927, at Nashville, Tenn. Secretary, E. J. Stocking, 111 W. Washington St., Chicago, Ill.

Philadelphia Coal Club. Annual meeting, Jan. 27, 1927, at the Bellevue-Stratford Hotel, Philadelphia, Pa. Secretary, Charles K. Scull, Philadelphia, Pa.

Northeast Kentucky Coal Association. Annual meeting, Jan. 27, 1927, at Ventura Hotel, Ashland, Ky., Secretary, C. J. Neekamp, Ashland, Ky.

American Institute of Electrical Engineers. Midwinter convention, Feb. 7-10, Engineering Societies Bldg., New York. Secretary, F. L. Hutchinson, 33 W. 39th St., New York City.

American Institute of Mining and Metallurgical Engineers. Annual meeting, Feb. 14-17, 1927, Engineering Societies Bldg., New York City. Secretary, H. Foster Bain, 29 West 39th St., New York City.

Rocky Mountain Coal Mining Institute. Winter meeting Feb. 23 to 25, at the Cosmopolitan Hotel, Denver, Colo. Secretary, Benedict Shubart, 521 Boston Bldg., Denver, Colo.

New Companies

The Monongahela Fuel Co., Fairmont, W. Va., has just been organized, with a capital stock of 1,000 shares divided into three classes, with relation to preference and voting power, the company being organized for the purpose of engaging in the mining and shipping of coal. Among those interested in the new company are Watson B. Williams, Louis C. Tetard, Vernon K. Gould, Jackson Stanford and H. M. Hassell, all of New York.

Articles of incorporation have been filed by the **Domestic Coal & Mining Co.,** of Washington, Ind. The company has an initial capital stock of \$10,000 and will do a general coal-mining business. The incorporators are John Mandabach, Samuel H. Smith and Joseph Mandabach.

The Guernsey Coal Co., Blair, W. Va., with a capital of \$10,000, has been incorporated by J. B. Campbell and W. H. Truslow.

The Blue Ribbon Coal Co., Paris, Ark., with a capital of \$15,000, has been incorporated by C. A. Gaither and Lyle J. Gaither.

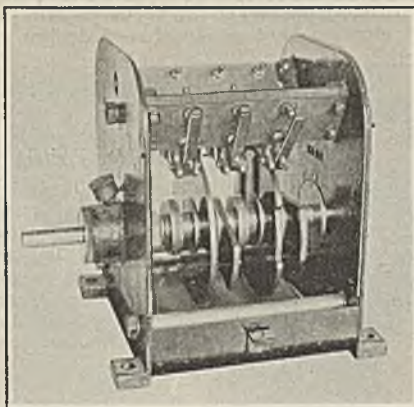
The Zimmerman-Marlowe Coal Co., Whitesburg, Ky., with a capital stock of \$40,000, has been incorporated by M. K. Marlowe, G. H. Zimmerman and P. E. Marlowe.

The Edmon Coal Co., Middlesboro, Ky., capital \$10,000, has been chartered by C. G. Covey, J. E. Evans and Charles A. Wood.

New Equipment

Controls Automatic Machinery

Rotating-cam limit switches to be used with magnetic controllers for the automatic regulation of machines having such fixed sequence of operation as slowing down, stopping and reversing, have been announced by the Electric Control-



Governs the Sequence of Operations

This device governs the retardation, stopping and reversing of automatic machines according to a fixed sequence of operation as determined by the instrument when in operation is totally inclosed.

ler & Manufacturing Co., Cleveland, Ohio.

This cam-type of limit switch is totally inclosed, is equipped with tapered roller bearings and is designed to carry up to six sets of contacts. The cams which operate the opening and closing of the contacts are each adjusted independently of the others and can be fixed at an infinite number of positions, thus giving extreme flexibility to the machine with which it is used.

Approve Another Locomotive For Gaseous Mines

Government approval No. 1513 has recently been granted by the Bureau of Mines to the General Electric Co., Schenectady, N. Y., covering a permissible storage-battery locomotive for use in gaseous mines. This machine has a rated weight of six tons and is intended for gathering service. It is of the outside frame construction, having the weight supported from the journal boxes on heavy semi-elliptical equalized springs. The motors are of the box-frame type, the springs suspended from the



Approved for Gaseous Mines

This six-ton storage battery locomotive is equipped with master controller for magnetic contactor operation. Overload protection is provided and the machine has the approval of the U. S. Bureau of Mines.

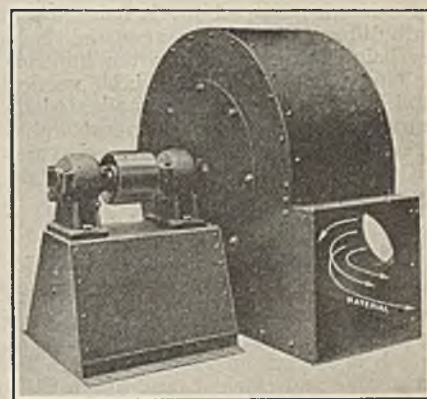
locomotive frame, and drive the axles through single-reduction spur gearing.

Of particular interest is the control equipment which is of the progressive series parallel magnetic contactor type. This consists of three units; namely, master controller, contactor group and protective relays and a resistor. The master controller is small, compact and easily operated; it is of the drum type and handles control current only on the main cylinder and full motor current on the reverse cylinder. Six solenoid-operated contactors are used to make or break connections in all power circuits when current is on. Overload protection is provided by two overload relays, one placed in each side of the line, these relays being reset by a switch built into the master controller which also contains a switch for controlling the headlight circuits. The resistor is made up of cast grids inclosed in a permissible compartment.

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

Long Life for This Fan

In the accompanying illustration is shown an exhaust fan that has a projected inlet adjacent to the discharge outlet, instead of a center inlet, as contained in ordinary fans. The mate-



Design Insures Long Life

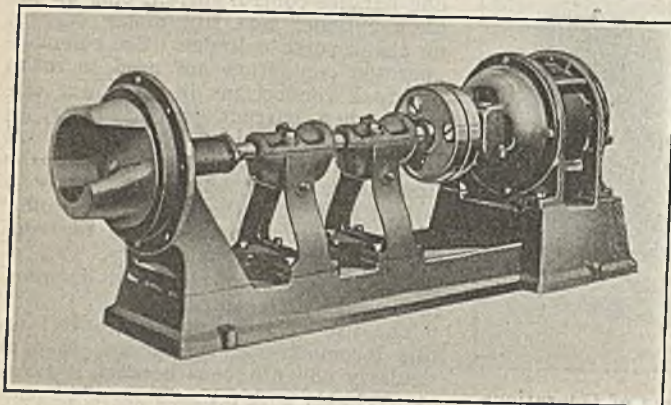
The wheel of this fan does not handle the material passing through it, the wheel therefore being in balance at all times and, it is claimed, never becoming clogged.

Material is immediately discharged without passing through the wheel or around the housing, the wheel therefore being in balance at all times, never becoming clogged. These fans, it is claimed, will handle every kind of material that can be conveyed by air. Suction is created by centrifugal pressure, the air being forced centrifugally to the side of the housing opposite the wheel, and the pressure of the air passing the projected inlet creates a high suction. Pressures up to 12 in. are obtainable.

The fans are adjustable and reversible. Each machine is adjustable to over thirty different combinations. The machines, which are known as the Everlasting exhaust fans, are constructed almost entirely of steel, including the housing, bearing standard and wheel. Ball-bearing pillow blocks are used on the drive shaft. The MacLeod Co., Cincinnati, Ohio, is the manufacturer.

A New Non-Clogging Pump

A non-clogging centrifugal pump has just been placed on the market by the American Well Works, of Aurora, Ill. The design of this pump marks a new departure in construction and obviates



Handles Debris

The single blade impeller in the pump does not separate the stream lines, but instead keeps the stream in one mass and carries it through the pump without subdividing it.

the necessity of screens and their expensive maintenance.

The single blade impeller in the pump is so designed that the stream lines are not separated, but instead the stream of fluid is kept in one mass and carried through the pump without being subdivided. By compelling all the liquid and debris to be discharged through a single peripheral passage, the possibility is avoided of different portions of a single piece of debris being swept into different outlet passages and thereby being hung up within the impeller.

This pump is made in both vertical and horizontal types and is adapted for municipal sewage and general industrial use. Engineering information may be obtained from the engineering department of the company.

Wire Goggles Replace Glass

Another development in mine safety is the use of screen goggles for eye protection of miners. These goggles, which are made in two styles, are inexpensive and efficient, and are rapidly being specified for mine use.

One type of screen goggle is made entirely of 24 mesh screening, gun-metalized. It is bound at the edges and shaped to fit over the eyes. The extremely low cost of this type is offset, in part, by its limited period of use, repeated blows damaging it to some extent.

The second type resembles ordinary cup goggles, and is made of aluminum, with 24 mesh nicked screen in place of a glass eye piece. If a flying object damages the screen it is easy to replace with a new piece of screening, making practically a new pair of goggles.

Screen goggles are used in industries where the ordinary flying particle is not small. When used in mines, it is said that visibility is impaired slightly in

daylight, but not at a underground. Both types of screen goggles are being distributed by the E. D. Bullard Co., 565 Howard St., San Francisco, and 802 West 11th St., Los Angeles, Cal.

Rail Bonds Facilitate Welding

Two new rail bonds for application to the base of the rail by arc welding have been developed by the American Steel & Wire Co., Chicago, Ill. They are known as type AF-5 and Arcon "F" rail bonds. The AF-5 rail bond consists of a single copper strand welded into a drop-forged steel terminal. It is claimed that an improved design of

terminal sleeve construction considerably lengthens the life of the bond.

A heavy steel hook which is integral with the steel in the terminal, provides a means of holding and positioning the bond during welding. This hook is so designed as to easily fit between the rail and tie. The wide welding angle of the bond terminal is well suited for metallic-arc welding and a homogeneous steel to steel weld is easily accomplished even by an inexperienced operator. This new design of bond affords a low-resistance connection, with a minimum amount of time and welding material.

The Arcon "F" is a long flexible rail bond for application to the rail base around the splice bar. The steel terminal is designed to co-act with the top of the rail flange to retain the welding metal. Complete fusion between the strand ends and the rail base is accomplished it is claimed with a minimum expenditure of welding electrode. All unnecessary retaining walls have been eliminated so as to permit easy penetration by the welding arc, at a current of approximately 165 amp. A heavy hook is provided to hold the bond in place preparatory to welding.

Trade Literature

C. L. Berger & Sons, Inc., Boston, Mass., has published two bulletins, one describing its Engineers' Monitor Dumpy Levels, the other its "L" and "R" Monitor Transits.

General Electric Co., Schenectady, N. Y., has issued the following bulletins: The MT Control System for Direct-Current Motors; GEA-451; Pp. 12. Pedestal Bases for Vertical Motors; GEA-548. Automatic Welding Head and Control; GEA-556.

Industrial Notes

Al W. Scarratt has been appointed assistant chief engineer of the Hyatt Roller Bearing Co., Newark, N. J. Prior to joining the Hyatt organization Mr. Scarratt spent 13½ years with the Minneapolis Steel & Machinery Co., Minneapolis. For eight years, prior to his association with the steel company, Mr. Scarratt served the Twin City Rapid Transit Co.—five years in the mechanical department and three in power-house and electrical development work.

The Elliott-Fisher Co. has acquired the business of the Sundstrand Corporation, manufacturer of the 10-key Sundstrand adding, bookkeeping and calculating machines, with factories and general offices at Rockford, Ill. The Elliott-Fisher Co. manufactures accounting-writing machines utilizing the flat writing principle and has factories at Harrisburg, Pa., and general offices in New York. The latter company desired to supplement its line with equipment for the adding-bookkeeping field, and for that reason acquired the Sundstrand organization. The products of the two constituent organizations will be marketed by the General Office Equipment Corporation, a subsidiary of the Elliott-Fisher Co. The same officers of the General Office Equipment Corporation continue in the management of the organization, with executive and general sales offices at 342 Madison Ave., New York.

Elliott Company, Jeannette, Pa., which recently acquired the Ridgway Dynamo & Engine Co., announces the consolidation of the district sales and service offices of the two companies, the Ridgway men joining forces with the Elliott personnel. In some cases the former Elliott offices have been retained in the old location. In other cases new and larger quarters have been found necessary. R. H. Carter has joined the company's Detroit district office. Mr. Carter is an experienced construction and operating engineer, both marine and stationary.

James L. Mayer and Frederick E. Oswald announce the opening of a sales office for industrial engineering equipment at 332 So. LaSalle St., Chicago, Ill. They are now representing the Dings Magnetic Separator Co. and the Saginaw Stamping & Tool Co., manufacturers of pressed steel overhead conveyor wheels, trolleys and casters.

H. J. Forsythe, president of Hyatt Roller Bearing Co., Newark, N. J., announces the appointment of B. H. Lytle as manager central sales division, with headquarters at 806 Fulton Building, Pittsburgh, Pa. The new manager is a native of Pittsburgh. Shortly after his graduation from Carnegie Tech, he joined the Westinghouse organization, remaining with the company for 17 years.

The Mine Safety Appliances Co., Pittsburgh, Pa., announces the appointment of Thomas Segrave as Boston representative with headquarters at 30 Huntington Avenue. Harry Segrave, his brother, is New York representative.