COAL AGE

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Now, Mining Is Something Else Again

MANUFACTURING and mining have little in common. In one case the material to be wrought is brought to the worker, sometimes hundreds of miles; in the other the worker goes to the material. In the one case, therefore, the material is movable and the worker is stationary, and in the other the worker is transferred from place to place and attacks material in place. However, the working face changes, and there again is the rub. If it stayed where it was, the worker and his tools would not have to be moved.

This is what makes mining a difficult industry for mechanicalization. It is making marvelous progress wherever it can adopt mechanical methods. Compare it with the construction industry, one just as old and having similar difficulties and one which has progressed marvelously but nevertheless selectively. It still uses trowel, hod, bar, chisel, wheelbarrow, hammer and other like elementary tools. The equivalent of the hod is the basket. Some hundreds of years ago that adjunct of primitive transportation was discarded in mining. The wheelbarrow is rarely used in the coal mines beyond the first 25 ft. from the surface. Despite its advantages on a short run such as this, it has been quite generally discarded for the mine car even there.

Ask a manufacturer to move his tools from shop to shop several times daily; deny him the use of an overhead crane; demand that no tool shall be more than 6 ft. above the floor; give him a floor of clay instead of firm foundations and he will wonder if he can meet such difficult conditions. Yet the manufacturer of mining equipment is confronted with them, and he is preparing to meet conditions even more onerous with no small degree of probable success.

Worthy of Support

CREATED BY THE exigencies of war, the National Coal Association has quietly grown into an effective instrument of peace. The transitional days of costly floundering, during which the organization was trying to adjust itself to post-war conditions, are history. Despite the drawbacks of inadequate financial and numerical membership support, the association has succeeded in establishing a definite program responsive alike to present-day needs of the industry and flexible and forward-looking enough to meet the demands of the future.

Whether all the possibilities of this program will be fully realized rests with the industry itself. The officers and directors of the association give freely of their time, their judgment and their energies to the formulation and execution of constructive policies. But they can travel no farther than the financial resources of the organization will carry them. They can make the insignificant mill per ton paid by each member do its utmost—but no more. If more is to be done—and more should be done—there must be more mills per ton and more members to share the financial load.

Even the most implacable critic of the association must admit that organization is necessary in the contacts between the industry, the public at large and the federal government. The National Coal Association is that point of contact, which must be preserved. There is too much at stake, and individual operators are too big to let petty jealousies, old wounds, past mistakes or present grievances stand in the way of active affiliation with the constructive work of the association.

Goggles Lessen Eye Injuries

SAFETY IN MINES includes protection to both life and limb. In other words, it embraces not alone immunity from accidental death but also immunity from accidental injury as well. By far the greater part of the injuries sustained within the mines are of what might be termed a minor character—not really dangerous but truly inconvenient and frequently painful.

Of all his senses man depends most upon sight. Unfortunately the eye is one of the most delicate organs of the entire body, and because of this delicacy and its exposed position it is readily liable to injury if not protected by some artificial means. The more progressive companies have long made their employees wear goggles when performing certain kinds of operations, notably chipping and grinding on brittle or abrasive substances. Usually glass goggles either with or without wire reinforcement have been used. Non-breakable transparent substances, such as celluloid, have also been adopted to some extent.

Any goggle has its obvious shortcomings; all require the wearer to look through something which at best is not entirely transparent, and thus obstructs sight more or less. They put an added strain upon the eyes they protect. If made of glass they are frequently broken or shattered by pieces of flying material.

A somewhat recent type of goggle is one that employs no glass or other transparent substance that the vision of the wearer must penetrate. It consists simply of a netting of spring-steel wire of suitable mesh, formed to fit the face. This is held in place by a strap around the head. This netting effectively protects the eyes from flying particles of any appreciable size or those large enough to do harm. The netting is, of course, "out of focus" and has the effect of obscuring the object viewed to only a slight degree.

Some mining companies have made the wearing of goggles compulsory for all underground workers. At one group of operations a certain type of goggles has been adopted as standard, and no man allowed to go to work underground until he has procured a pair and

BIBL. POLITECHN. ŚLĄSKIEJ

knows how to wear them. The safety inspector at these works states emphatically that the number of eye injuries reported to him since the wearing of goggles has been made compulsory has been greatly reduced.

Test the Latch

ONE DIFFICULTY that purchasers of coal and other bulk materials sometimes encounter is the receipt of cars of the usual hopper-bottom type, the gates of which often are opened with difficulty. In such instances the ordinary wrench will not operate the ratchet, and only by a sledge and bar can it be released. When the door finally opens under such treatment, the ratchet spins and is liable to catch the bar with disastrous results to those nearby. Severe bruises, broken bones or fractured skulls sometimes result.

It would seem that no campaign for safety is adequate that is limited to putting safeguards around the placing of the mine product upon the car. Of course, cars should be in proper condition when placed on the mine sidetrack, but that this care is not always taken is eloquently attested by the piles of extra doors and the bales of excelsior that may be seen at many mines. A few minutes spent in putting the gate-latching mechanism of a car in workable condition before loading may be the means of averting a severe accident at destination. Next to protecting its own employees every coal producer should endeavor to protect those of its customers.

Preparation for Winter

WHAT OUR patient submission to the rigors of winter costs us we may never know. Some have thought it a preposterous notion to heat city streets and sidewalks, yet meantime the Illinois Central R.R. has been actually endeavoring to melt the snow on its railroad tracks. Three methods are used: Steam pipes laid *on* the ties, laid *between* them at switches and laid in melting pits between the tracks. The first method is new; the other two have been used on parts of the company's terminal lines.

A large development of the practice is being installed in Chicago. In one place where there are inclined tracks on a 3-per cent grade to pass under a right of way the incline is protected for 365 ft. by a steam radiator system with ample drains to carry off the melted snow in addition to ordinary surface drainage. The main steam pipe and its headers will remain in position permanently, but the radiator pipes and return headers will be placed early in the winter and removed in the spring.

It is needless to refer further to the pipes between ties at switches but something should be said as to snow-melting pits. Snow could be shoveled into cars by hand shovels, but frequently that is not practicable because traffic would be blocked while the snow was being removed. Only too often the snow has to be carried in shovels by hand and dumped at some convenient point. That practice is both dangerous and expensive.

Snow-melting pits, 3 x 6½ ft. wide and long respectively and 20 in. deep are placed between some of the tracks at intervals of 95 ft. In these are laid pipes with small holes drilled in them so that jets of live steam aid in melting the snow. The various pieces of heating equipment described receive steam from the boiler of a locomotive which is run onto a side track for that express purpose, whenever conditions demand it.

The large number of people traveling on urban and suburban roads justifies the taking of expensive means to assure that the tracks will be available at all times. Heating is timorously moving outside of buildings into the open air. It will involve too large an expenditure, however, if care be not taken to keep the convection and radiation from heating the air instead of the snow.

The heating of the air entering the shaft at Glen Rogers to prevent the freezing of the shaft is another example of this use of steam. In these days when skyscrapers are many times as high as the streets are wide, and when the people in the high buildings are so numerous that if there were a fire they could not all congregate on the sidewalks in front of the building, something must be done, and will be done, to make possible the elimination of snow. Some day a snowfall in a crowded city will be unthinkable.

On Probation

THE SEVEN-THIRTY morning whistle at the New Orient mine, Illinois, heralded, on the first day of this month, the resumption of operation at a plant which had been idle for several months previous. Old employees were notified of this even in advance, so that on the reopening day a nearly complete complement of men was available. News that the great operation had resumed, spread far and wide, and each day brought scores of men to the plant in search of work.

At noon on the fourth day the rush for jobs attained its greatest impetus. The New Orient shafts are sunk on the outskirts of West Frankfort on a hard road which makes easy travel to and from Benton (six miles away) and other nearby towns. The surface buildings and yards at the plant are fenced in and admission to the inclosure is through a gate on the road. Immediately within the gate is an employment office.

Scores of miners travel to work in automobiles. On the day noted the road-end of the inclosure was crowded with automobiles to the number of 198, by actual count, exclusive of those belonging to the employed miners who park their machines further within the gate. Many other machines were parked on the outside along the road. The owners of these automobiles and their companions formed in a line which extended through the gate and backed on to the highway. There were probably more than three hundred of them. These men represented one day's crop of idle miners of southern Illinois in search of work.

Unless the local chapter can enforce discipline within its ranks to the extent of securing an honest day's work from each of its members, in addition to those now idle, about eleven hundred more men, the approximate number now employed at New Orient mine, may also find themselves jobless. The daymen must earn their wages and the contract miners must load easily merchantable coal, if New Orient or any other mine under the Jacksonville scale is to compete successfuly with non-union mines.

These men are on probation and from now until the termination of the present contract will demonstrate to the point of finality the possibility of operating under the union system. Only by producing a larger tonnage per man than the non-union miners who receive less pay, and by meeting competitive conditions, can they show that their demands for a high-wage rate are reasonable.

Pre-Heat Air at Glen Rogers Mine Chiefly to Prevent Ice Formation in Wet Shaft

Exhaust Steam from Fan Engine Passes Through Radiators and Is Then Discharged Into Intake—Pre-Heating Saves Concrete Lining by Eliminating Frost

By Alphonse F. Brosky
Assistant Editor, *Coal Age*,
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The headpiece shows the collar of the shaft at Glen Rogers mine with some of the heating pipes which warm the air in winter thus preventing the formation of ice and the injurious effect of frost on the shaft lining.

AS A MEANS of humidification, the pre-heating of air by radiators and the introduction of the heated air and steam together into the mine after the steam has lost much of its heat, is an old scheme. But at the Glen Rogers mine in Wyoming County, W. Va., the practice was primarily adopted not for humidification but to prevent the formation of ice in the intake compartment of the hoisting shaft which is exceedingly wet and, concurrently, to avoid deterioration of the concrete lining in cold weather. Steam radiators were installed at the head of this shaft for this purpose last year when the mine was owned by the Raleigh-Wyoming Coal Co. Reports declare that by virtue of a recent deal this plant became the property of the Old Ben Coal Corporation, of Chicago, Ill.

The seam being worked at this mine is the Beckley, which lies at a depth of 640 ft. as measured in the hoisting shaft. The latter is of three compartments, two of which are equipped with skips. The third serves as an upcast to the fan. The lining is of concrete of a 1:2:3 mix, the inside measurements of which over-all are 14x28 ft. The skip compartments which measure in aggregate 14x18 ft., serve as a downcast.

From the surface to solid rock is 300 ft., this interval bearing water in such quantity and of such pressure that about 100 gal. per minute seep through the lining, though the latter is of rich concrete and has back of it drains of generous proportions which handle about 400 gal. per minute. Below the 300-ft. level the strata are devoid of water. Incidentally, it may be said that the water which is caught by the drainage at the back of the lining is pumped to the surface for domestic use and for power-plant purposes.

THE SCHEME WORKS

AT Glen Rogers it has been proved as a fact that exhaust steam can be used not only to humidify the air which passes into a mine during the winter months but also effectively to heat that air to the degree at which no ice will form on the sides of the shaft and other intake passages. The installation greatly increases the relative humidity of the air, and by eliminating the ice it also preserves the concrete lining and assures uniform ventilation by maintaining an intake of constant area on warm and cold days alike. The plan is successful even though a number of experts predicted that it would fail of its purpose.

The afore-mentioned shaft, though used at the present time as the main hoistway, is intended eventually to serve as the second opening. A 10x20-ft. shaft has been sunk and lined, which eventually will serve as the sole hoistway for coal. Both shafts made much water during the sinking operations and were extensively grouted before the linings were placed. The grouting in the shaft which will serve for hoisting in the final plan thus far is holding back the water; but that in the shaft now being utilized for hoisting has not acted so effectively. It served its purpose for a while, but gradually leaked under the hydrostatic pressure behind it to the extent already stated. The idle shaft is now serving as a downcast, assisting in this capacity the two skip compartments of the present hoisting shaft.

Glen Rogers lies high in the mountains of Wyoming County where in the winter months the thermometer registers many degrees lower than it does at places which are not far distant but lie at lower levels. The temperature often hovers around 10 deg. below zero for days at a time. Occasionally the mercury drops to —20 deg. Last winter the weather at this place was unusually severe. Prior to 1925 much difficulty was experienced in hoisting coal on very cold days, because some of the water which leaked through the lining into the downcast skip compartments froze on meeting the cold intake air. In consequence, much time was lost in ridding the shaft of ice, and in extremely cold weather the mine sometimes remained idle throughout the day so rapidly did the ice form in this shaft.

As a result not only was hoisting at a standstill part of the time, but, as might be expected, ventilation was impaired to the degree to which the intake was constricted by ice. Furthermore, the freezing action caused deterioration of the lining, particularly as the

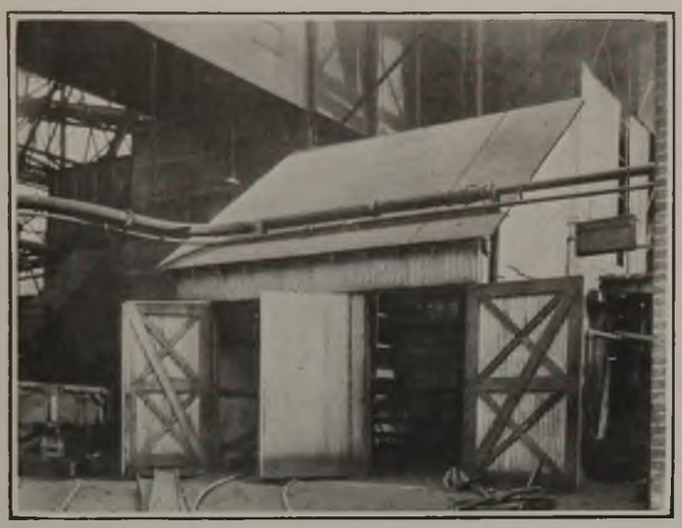


Fig. 1—Shelter in Which Air Is Pre-Heated

The sheet-iron structure and the box-like annex on the left inclose about 25,000 cu.ft. of space in which is installed the radiators or heaters. Air is drawn over these heaters through the skip opening in the roof of this housing. In the winter time the doors shown are kept closed. The chute over the contractors' side-dump car seen on the left is for rock. It is inclosed and heated so as to keep from freezing any water which might accompany the rock.

weather has proved to be changeable at this place. A cold day is frequently followed by comparatively warm weather.

These are the primary factors which compelled the management to install a combination system by which the intake air is both pre-heated and humidified before entering the hoisting shaft.

To this end a series of radiators are located in a housing over the mouth of the skip-hoisting shaft, and through them exhaust steam from the fan engine is conducted. After passing through these radiators this steam is exhausted into the shaft where it further assists in raising the temperature and also humidifies the intake air.

Sheet-Metal Housing Protects Shaft

As indicated in Fig. 1, a sheet-metal housing has been constructed over and around the mouth of the skip compartments of the shaft. This structure shelters about 15,000 cu.ft. of air and is provided with an opening at the top through which the skips travel, and with doors on the front through which men, cars and supplies are admitted.

A somewhat similarly inclosed shelter lies on one side of the shaft and connects with the main housing. It is covered by canvas and roofing paper in such a way as to shelter a rock chute leading from the tipple. This chute must be thus protected to render it operative on cold days because much of the rock which is deposited in the chute is wet. In addition to sheltering the rock chute, this wing or annex incloses 10,000 cu.ft. of space in which pipes can be installed clear of the shaft and its approach. The present covering of canvas and roofing paper is to be replaced with sheet iron.

In these two connecting shelters are installed the radiators which pre-heat the air as it enters through the top opening for the skips. The fan engine (see Fig. 2) which furnishes the exhaust steam is a 14x14-in. reciprocating unit which drives a 14x6-ft. fan. It has a speed of 120 strokes per minute and a working pressure of 170 lb. per square inch.

The exhaust steam from this engine is conducted through a 6-in. pipe which is run around three sides of the shaft. From this pipe is tapped a tier of eight 3-in. pipes, each 14 ft. long, on each of two sides and a tier of six 3-in. pipes, each 28 ft. long, on the third side. The general arrangement of these is shown in the headpiece.

On each side of the main housing, between the exit doors and the safety gates of the shaft, is a radiator which is made up of seven 2-in. pipes, each 10 ft. long. One of these tiers of radiators is shown in Fig. 3. In the annex housing which incloses the rock chute are three sets of heaters, each of which is composed of seven 1½-in. pipes, each 16 ft. long.

Pipes Go Down Into Shaft

These pipes are in a continuous circuit, from which the steam is exhausted through twenty 1-in. pipes which project vertically into the shaft in the manner shown in Fig. 4. The lines are connected so that live steam from the boilers may be turned into them on extremely cold days to assist the exhaust steam from the fan engine in heating and humidifying the air which enters the mine. As now arranged the heating system consists approximately of 56 ft. of 6-in. pipe, 392 ft. of 3-in. pipe, 336 ft. of 2-in. pipe and 140 ft. of 1½-in. pipe.

At the time of my visit the mine management expressed its intention of increasing the size of this heating plant to two to three times its present capacity. The additional heaters would be installed in the annex which incloses the rock chute. The proposed plans call for a 6-ft. slow-speed fan which would be installed in

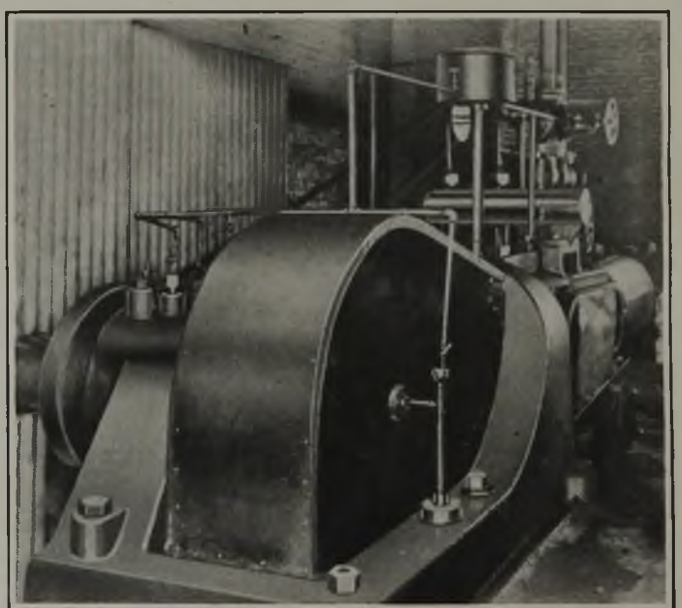


Fig. 2—This Fan Engine Supplies Exhaust Steam

This is a 14x14-in. reciprocating engine which operates at 120 strokes per minute under 170 lb. of steam. In extremely cold weather live steam is introduced with the exhaust from this engine into the radiators.

the far wall of this annex so as to draw air from the outside and blow it over the heaters and at the same time minimize the quantity of air which would find its way directly into the shaft through the skip openings in the roof of the main housing.

Each heater or radiator would be controlled by a valve so that any of them could be cut out should a leak occur. All of the exhaust from this enlarged unit would be discharged into the shaft where it would mix with, and be absorbed by, the warm air of low relative humidity which would enter the mine.

It is believed that some advantage would be derived by inclosing the headframe legs to a greater height.

Fig. 3—One of the Radiators for Pre-Heating Air

This is one of two heaters which are installed on each side of the housing in the approach to the mouth of the shaft. The management expects to alter and enlarge this heating system. When this is done each of the radiators will be controlled by a valve so that any one of them can be cut out from the steam circuit should a pipe or fitting leak.

The proposed changes would be made more to increase the radiation surface and thereby boost the temperature of the intake air with a minimum discharge of steam into the shaft. The present heating system was found of sufficient size during the past winter to prevent the formation of ice in the shaft and to maintain a fairly comfortable temperature at the shaft bottom even when the outside temperature falls as low as 20 deg. below zero.

Glen Rogers is extremely gassy, and though rock dust is being applied to attenuate the coal dust, the maintaining of a high relative humidity in its atmosphere by this conditioning plant gives a further assurance of safety to the management and men. The plan not only keeps ice out of the shaft and preserves the concrete lining, but also tends to keep down the dust. It is said that when the thermometer registered 20 deg. below zero a relative humidity of 90 to 100 per cent was maintained in this mine.

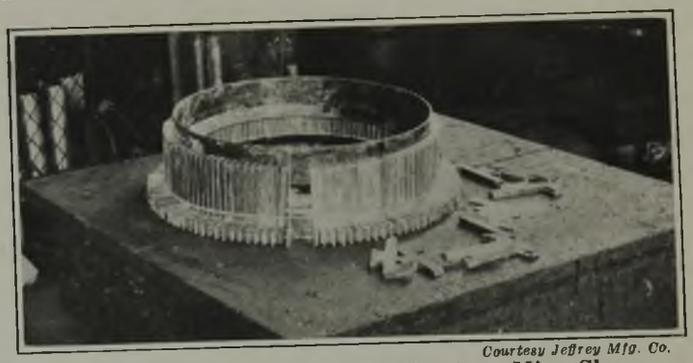
This practice has not caused any noticeable slacking of the roof at the shaft bottom, as it is said to do in other like cases. The introduction of much steam into a shaft will cause a fog unless the air is sufficiently heated to maintain a fairly uniform and high temperature within comparatively wide limits as measured from the shaft bottom. The management at Glen Rogers expects to maintain this condition after the heating plant is increased in size.

Fig. 4—Exhaust Steam Discharging Into Shaft

After passing through the radiators in a continuous circuit, the exhaust steam from the fan engine is discharged into the shaft. By this means, it is said, the relative humidity in this mine has been maintained between 90 and 100 per cent in the coldest weather. The heating system by eliminating ice in this extremely wet shaft is preserving the concrete lining. Note the deterioration of the lining which was caused by freezing prior to the installation of the heating plant.

Commutator Refilling Is Not a Mine Shop Job

Among the factors that have been responsible for reducing the maintenance cost of direct-current motors, "better commutators" holds an important place. No doubt the manufacturers of electrical equipment are largely responsible for this improvement. Nevertheless, the tendency of the users to do less commutator repairing or rather, "patching," has resulted in a marked decrease in armature failures.



Courtesy Jeffrey Mfg. Co.

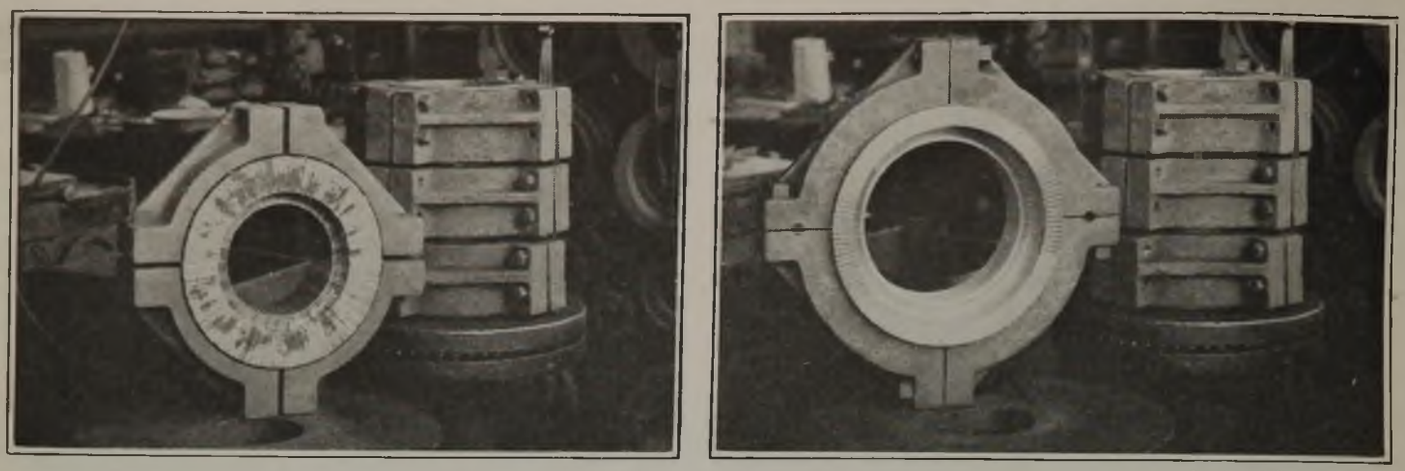
Fig. 1—Refilling with New Mica in a Mine Shop

Ten to fifteen years ago work of this kind was common in mine repair shops. Commutators rebuilt in this way seldom give service comparable to that afforded by a factory job.

The commutator is more than simply "a link in the chain of parts," making up the complete motor. For example, a short circuit between two adjacent bars has a more serious effect than to cause a shutdown of the motor for the purpose of removing the short. Usually such trouble is not detected until one or more armature coils are damaged or completely burned out. Because of the difficulty encountered in raising coils in windings that have been dipped and baked, any attempt to repair or renew one or two coils is likely to end in a complete rewinding of the entire armature.

It is significant that many of the large coal producers do their own rewinding but a number have practically abandoned all commutator repairs. They may in an emergency renew a few insulating segments or a mica V-ring, but as a rule, they either buy a new commutator or send the damaged or worn one back to the manufacturer or to a commutator specialty company for refilling.

It is in the shops of the small to medium-sized companies that commutator repairing is still the rule. If, however, those responsible for the work in such shops could see the special equipment used and the care taken in building up a commutator at the factory, they too would realize the shortcomings of their repair methods, and would follow the lead of the larger coal companies in sending their commutators away for refilling.



Courtesy Jeffrey Mfg. Co.

Fig. 2—Factory Views of Building a Mine Locomotive Commutator

At the left is a rough commutator after it has been built up, heated in the electric oven, and the clamping bolts drawn down tight. The combination of heat and pressure drives out all excess binder from the insulating segments. The three rough commutators, in clamps, piled on the ball bearing stand, are being given a few days to "set" during which time the clamping bolts are tightened at regular intervals. At the right is a commutator after it has been bored and the ends faced. The true inside surface assures a perfect seat for the bars on the mica V-rings and assures that all parts will be in proper position.

Fig. 1 is typical of commutator repairs in the ordinary mine shop. In this case a complete set of new mica segments is being installed. After the assembly is completed, the commutator will be tightened by drawing up the V-ring bolts while heat from a blow torch is applied to the bars.

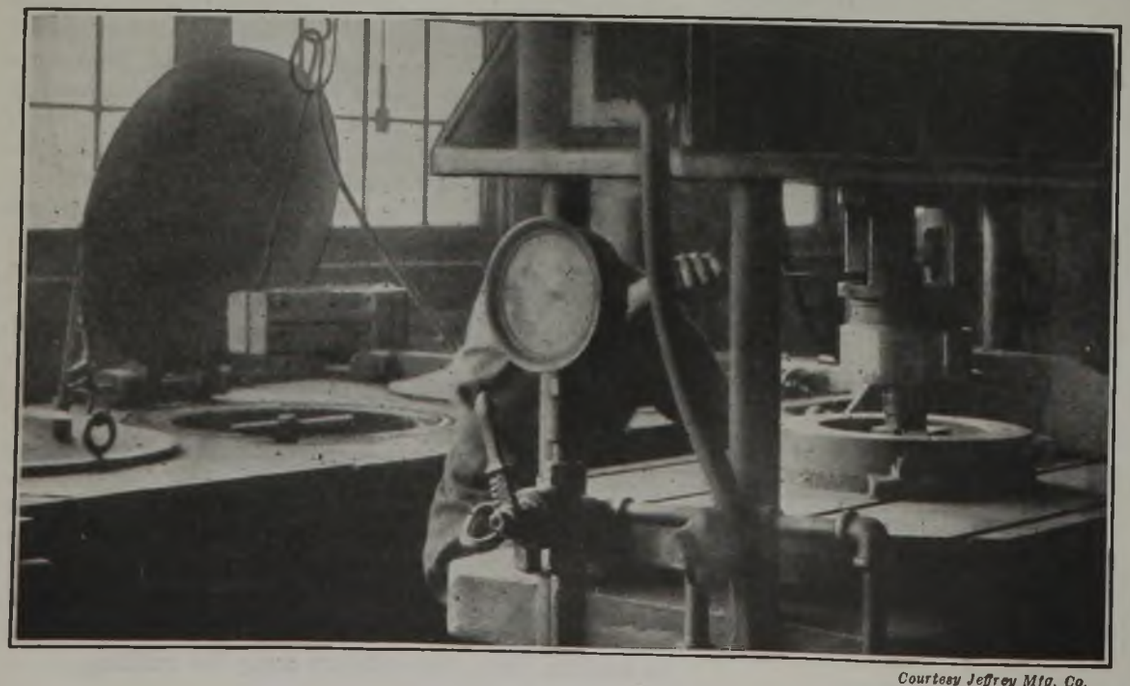
Common faults of this method include: (1) frequent use of mica of improper thickness or of mica that has been damaged by handling; (2) unbalanced armatures as the result of commutators being assembled slightly out-of-round or eccentric on the inside; (3) commutator bars not properly seated resulting in operating troubles from high or low segments; and (4) mica segments not sufficiently compressed to prevent oil or other foreign matter from working into the commutator, collecting dust or other impurity and eventually causing sparkover.

A marked contrast to the procedure depicted in Fig. 1 is presented by the typical factory method illustrated in Figs. 2 and 3. After the bars, which are in the rough so far as the edges are concerned, are assembled with the mica segments, the whole commutator is put into a four-section clamp, as shown in Fig. 2. Next the entire assembly, clamp and all is heated in an oven and the heavy bolts of the clamp tightened as much as possible. This compresses the mica segments so tightly that all superfluous binder is squeezed out.

After the initial heating and tightening, it is the usual practice to let the commutator stand several days during which time the bolts of the clamp are tightened at regular intervals. Next comes the boring and end-facing operation, which is done with the clamp in place. Fig. 2 (right) shows the appearance of the commutator after this machining has been completed. The inside is perfectly true, affording an opportunity for uniform seating of the bars against the V-ring.

Assembly of the commutator and V-rings on the shell is done in a hydraulic press. This results in imparting the same tightness to these insulating rings as was imparted to the segments. The clamp is not removed until after the final tightening of the V-ring bolts. Turning of the wearing surface and milling of the lead slots completes the job.

It is easy to see the difference that will likely exist between a commutator assembled by factory methods and one put together in a mine repair shop. The use of special clamps and the practice of boring the inside after assembly of the bars are prerequisites of a high-grade commutator. This work is not of a kind that can be handled economically in the mine shop.



Courtesy Jeffrey Mfg. Co.

Fig. 3—Press and Oven

Hydraulic pressure is applied in assembling the clamped commutator with the mica V-rings on the shell. After the V-ring bolts are tightened under pressure the clamp is removed and the wearing surface turned. In this photograph a completed commutator was placed in the press to illustrate how the bolts may be tightened while the commutator is under pressure. In the left background is a clamped commutator ready to be lowered into the electric oven.

What Oils Can Be Obtained from Coal By Low-Temperature Distillation, and What Will Be Their Commercial Uses?

By R. L. Brown and R. B. Cooper

AS LOW-TEMPERATURE carbonization will furnish us with a smokeless household fuel, will broaden the use of the lower grades of coal and will reduce wastes, it is a subject well worthy of study. By low-temperature distillation a combustible can be made from bituminous coal that will replace our diminishing anthracite supplies, giving a fuel that is less difficult to fire than coke. In fact, responsible engineers have proposed distilling coal at a low temperature, recovering the oil and passing the resultant coke directly into the boiler furnaces of a power plant.

Low-temperature carbonization will convert coal into coke and gas and, with this process, coal could be used that was neither suited to the making of metallurgical coke nor particularly well fitted for gas making. However, for the manufacture of gas there seems to be no advantage in low-temperature carbonization. The high-temperature process gives 11,000 cu.ft. gross of 575 B.t.u. gas, whereas low-temperature carbonization gives about 4,000 cu.ft. of about 950 B.t.u. The volume of this latter gas could be increased if the price of gasoline and, therefore, motor fuel, became such as to make it profitable to crack the low-temperature tar under pressure, thus obtaining an increased yield of the latter.

The third product of low-temperature distillation is liquid or semi-liquid bodies, namely oils and tars. The value of any process of this kind depends largely on the profitable utilization of the products so obtained. In England and in Germany some progress has been made in ascertaining the composition of this class of material, but in this country the tars have had only limited study. Inquiries into the possibility of utilizing low-temperature oils and tars should include a study of their possible use as motor fuel and as fuel oils and as to their availability for use as creosoting material and in Diesel engines.

As a consequence of the creation of a Federal Oil Conservation Board, the Board of Directors of the American Petroleum Institute has investigated the quantity of oil in reserve and has reported that there are 5,300,000,000 bbl. of proven reserve recoverable from existing petroleum wells and fields by present methods, and that the annual petroleum consumption is about 800,000,000 bbl. As indicated by M. L. Requa, head of the Oil Division of the U. S. Fuel Administration during the war, and by others, it would appear that in a relatively short time new sources of motor fuel must be found to replace those rapidly becoming exhausted.

If the deficiency is to be met by oil from fields under American control outside the borders of this country, the cost must necessarily be higher than at present, and if the oil required is to come from outside fields under foreign control, the cost will be still greater.

It must be remembered, however, that the depletion of the oil supply from wells will possibly be paralleled or followed by developments in the production of shale oil, though oil thus obtained may not be cheap because the shale will be obtained only by the development of an enormous mining industry. It must also be remembered that the oil-shale industry will be hampered by the fact that the residue left after the production of oil from this source is practically worthless, so that the oil will not be obtained without difficulty from the shales which contain it.

For these reasons the price of oil is likely to be high, and the production of oil from the distillation of coal will doubtless assume the dimensions of a large industry. We shall probably have a greatly increased recovery of light oils from coke-oven gas in the manufacture of which high temperatures are being used. Processes have been developed that yield about 4 gal. of motor fuel per ton, which figure can be nearly doubled by subjecting the tar fraction to cracking under pressure. Coke is an easy burning domestic fuel and, moreover, time will probably show that it is well suited for use in power plants.

During recent years the technology of the petroleum industry, and particularly of petroleum refining, has made great strides. Only a few years ago gasoline was all straight-run. As the demand has increased and industry has developed technically, cracking, or the

R. B. Cooper

Article entitled "Hunting for the Elements Produced by the Low-Temperature Distillation of Coal" presented by R. B. Cooper, at the ninth annual meting of the National Coal Association, Chicago, June 9. Mr. Brown is a chemist with the Bureau of Mines, and Mr. Cooper is the National Coal Association Graduate Research Fellow at the Carnegie Institute of Technology, Pittsburgh, Pa.

breaking up of heavy oils into gasoline, has made so much progress that now it is reported that nearly 90 per cent of certain oils is converted into gasoline. A short time back, gasolines were being universally treated with concentrated sulphuric acid to remove the olefine hydrocarbons. Research has shown that these olefines are actually desirable as they give gasoline its anti-knock properties.

Other conditions being the same, the higher the temperature in the cracking process, the greater the production of lighter oils, and with still greater increases in temperature, there is a greater production of olefines and aromatic hydrocarbons. Both of these types of hydrocarbons are of an anti-knock quality. In general, the same principles hold in the distillation of coal.

The light oil from high-temperature carbonization is aromatic. The nature of the products obtained at various temperatures is well understood but the character of the products derivable from low-temperature distillation are only slowly being discovered.

Though our rich heritage of petroleum is rapidly being exhausted, we hold about 60 per cent of the world's supply of coal which will be adequate for the needs of many centuries; so coal will ultimately and inevitably be our principal source of motor fuel. It follows that before many years the United States must discover how best to convert its coal into motor fuel. At present there are three paths which research has blazed to that goal. These are being sedulously followed by investigators in the hope that a commercial process may be developed.

The first of these is the conversion of coal into water gas and the conversion of the water gas into liquid fuels. The second is the hydrogenation of coal to give heavy oils; and the third is based on the carbonization of coal at both high and low temperatures. The first of these three methods is under investigation, both in this country and abroad; inquiries into the second are being conducted solely in Europe. The third is certain to play an important part in augmenting our motor-fuel supply. One of the first two must come or we shall be, sooner or later, seriously short of such fuel. In looking for the valuable elements of coal, as released or generated by low-temperature distillation, the authors of this paper have looked, among other things, for motor fuel.

Research is always expensive, possibly because it can never be put on what is commonly called a production basis. It demands, and inherently must demand, individual brain and hand work, in fact, special piece work. In our investigation, we were able to take advantage of another inquiry in progress at the Bureau of Mines, and where, therefore, apparatus, retorts, cooling systems, coal and assistance were available. The miniature plant was such that the exact conditions existing in the distillation of coal could be duplicated. The distillation products from a weighed quantity of coal totalled 31 gal. and were stated as in the lower box.

Light Oils Recovered from Gas in Low-Temperature Distillation

	Per Cent
Pentane	2
Isopentane	8
Amylenes	30
Hexanes	10
Hexenes	17
Heptanes	7
Heptenes	5½
Cyclic olefines of seven carbon atoms	3½
Octanes and above	7½
Octenes and above	9½

A complete study has been made of the light oils recovered from the gas. Chemically, the oil boiling between 20 deg. and 200 deg. C., which is 68 deg. and 392 deg. F., was a mixture of the chemical compounds recorded in the upper box. This mixture has the same physical characteristics as casing-head gasoline, but has, in addition, the great advantage of containing over 50 per cent of olefine hydrocarbons. Consequently, if used as motor fuel it would possess in a high degree those anti-knock properties that are so much desired by motorists. It would, therefore, be exceptionally valuable for blending with other gasoline. It is a most interesting fact that in contrast to similar material from high-temperature distillation, it is relatively low in diolefines, which otherwise would have to be removed by a refining process; also, it is free from carbon bisulphide, a most objectionable constituent of gasoline, which is present to a considerable degree in similar material produced by high-temperature distillation. The increasing scarcity of casing-head gasoline for blending purposes puts particular emphasis upon these facts.

The presence of such a high percentage of anylene suggests a possible source of supply for the production of amyl alcohol and its esters by chemical synthesis. These compounds are extensively used in the fields of plastics, lacquers and smokeless powder. The oils and tars from low-temperature carbonization processes differ from high-temperature tars in having a greater resemblance to petroleum. They contain no benzol, toluol, naphthalene, anthracene or carbolic acid. However, instead of the ordinary carbolic acid, a low-temperature tar contains similar bodies of a much higher molecular weight.

We all know that high-temperature tar can be used not only as fuel but in timber preservation, the manufacture of tarred felt or tarred paper for building purposes, and as paint for stone, brick or ironwork. It is used extensively for road building, both as a binder and as impregnating material for wood blocks. It finds aplication as waterproofing and roof paints. It yields oils, benzol, toluol and carbolic acid, which are used for dyes, explosives and medicinals.

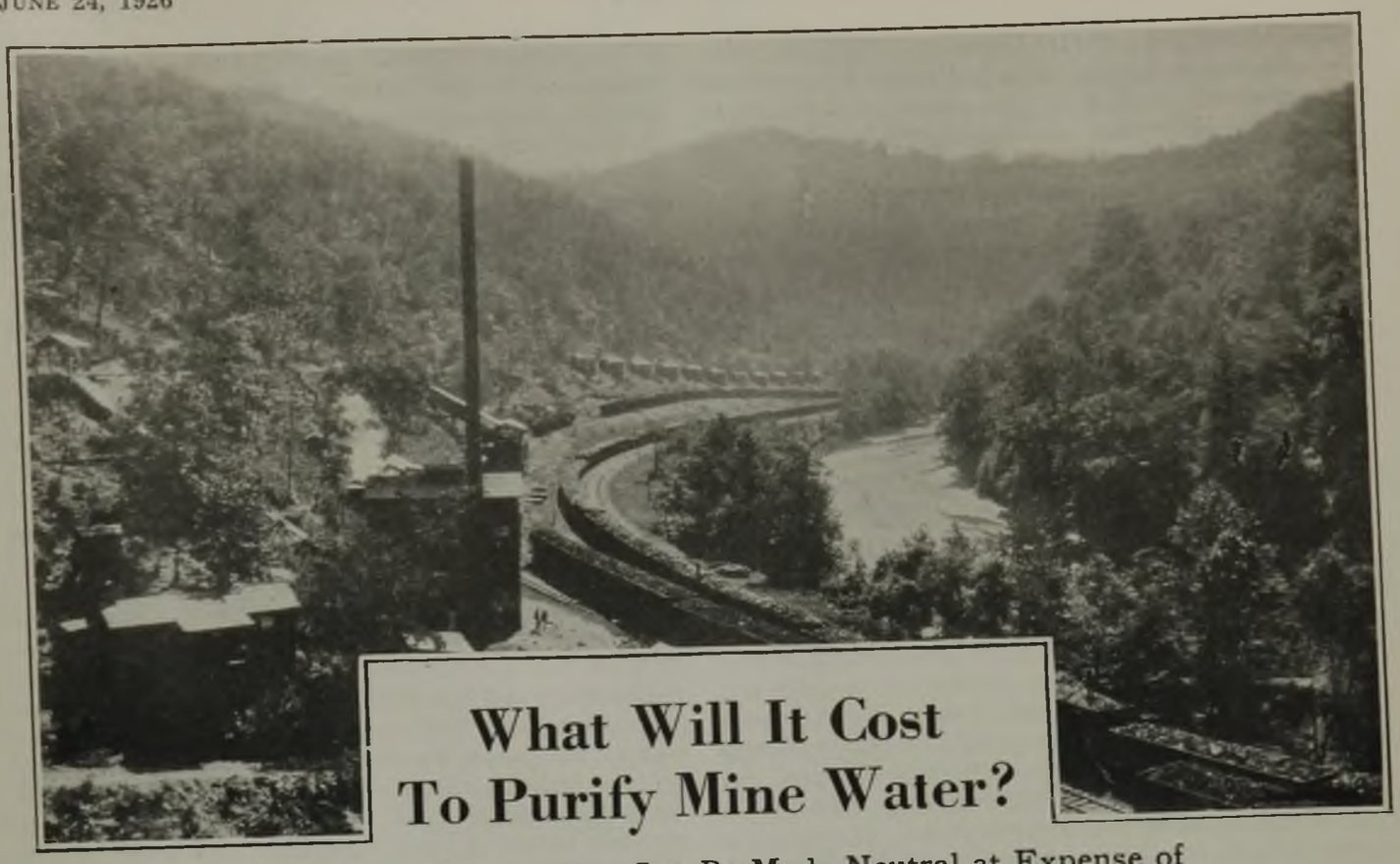
Whether low-temperature tar contains such a wealth of primary material can be discovered only by research or by further chemical investigation. It is probable that phenolic bodies are present, these being members of the carbolic-acid family. This suggests that, from coal, wood preservatives may be manufactured.

The physical properties of the neutral middle oils should be determined in order that these oils may be applied to uses for which they are fitted. The thought naturally occurs that, as the light oils are entirely aliphatic or petroleum-like in character, will not a lubricating grade of oil be present in the less volatile oils?

Low-Temperature Distillation
Yields per Ton of Coal

Resin condensate	100 lb.
Wax condensate	110 lb.
Medium oils	8 gal.
Light oils, recovered from gas	2 gal.

Of the medium oils slightly over 2 gallons were suitable for motor fuel.



What Will It Cost To Purify Mine Water?

Acid Effluent from Mine Can Be Made Neutral at Expense of From 37 to 57 Cents per Ton Mined and River Water Made Soft at a Cost of Between 70 Cents and $1 per Ton of Product

By Andrew Crichton
Consulting Engineer, Johnstown, Pa.

STREAM POLLUTION by mine drainage has long been a local problem but pending legislation and important court decisions adverse to the coal-mining interests have recently made it of national importance.

The pollution of domestic water supplies with acid mine drainage has resulted in many coal-mining communities in the abandonment of water supplies, the water company being compelled to find new sources of supply. To obtain satisfactory supplies the water companies were obliged either to move higher up stream above the coal measures or other source of pollution or tc seek at great expense a source of water remote from contamination.

No subject, to my knowledge, has been so misunderstood as that of the pollution of streams by mine drainage. Misleading statements regarding it have been published and broadcasted by radio, by prominent National and state officials. Officers of sportsmens' clubs, conservation leagues, Isaac Walton leagues, fish commissions and others have erroneously stated how simply and inexpensively this pollution can be remedied. Prominent mining officials and waterworks engineers have misunderstood the problem and have made statements which are bound to confuse the public and may result in ill-advised legislation if not corrected.

After several years' study of this problem, I feel safe in saying there is now no known satisfactory solution of this problem and no method by which acid mine water can be satisfactorily treated. If the water could be made fit for use at a cost of a few cents per ton, as some government officials claim, the coal industry, once it realized the effect of mine drainage on our fresh-water supplies, would certainly not oppose treatment.

No Longer Serve for Domestic Supply

At present nearly all the important streams of central and western Pennsylvania are seriously contaminated from acid mine water. Most of these streams twenty years ago were used for domestic water supplies and are now unfit for any use.

Pittsburgh, the center of one of the greatest mining and manufacturing districts of the world, depends for its water supply almost entirely upon the Monongahela and Allegheny rivers. The water in these rivers, due to mine drainage and manufacturing wastes, is now acid for certain periods of the year and is growing more acid year by year.

In an article on this subject written in 1923, I made the statement, since widely quoted, that of the 7,000 square miles of coal on the Monongahela River drainage area above Pittsburgh only 400 square miles had been mined out. If mining but 6 per cent of the coal has made the flow from that entire area acid during a large part of the year, it will be but a comparatively short time until the stream is acid all the year, and eventually its usefulness will be destroyed beyond recovery.

At present the total quantity of mine drainage is small as compared with the total stream flow in our

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Article entitled "Mine-Drainage Stream Pollution" read at the "Annual Convention of Coal-Operating Officials" held under the auspices of the American Mining Congress at Cincinnati, May 24-28. The headpiece shows the Tug River at Panther, W. Va. where are the mines of the Panther Creek Coal Co. The Tug which receives the waters of Elkhorn creek and Dry Fork as well as those of other streams has for a long time resisted the acidifying action of its tributary creeks but is gradually becoming acidulous.

rivers, so that the natural alkalinity of the fresh water neutralizes and renders harmless large quantities of mine drainage. However, one gallon of the average mine water will destroy the natural alkalinity of 80 to 100 gal. of fresh water.

Practically all mine drainage is acid. Of over 300 mines examined in central Pennsylvania, only four were found to produce alkaline water. Dilution or contact with limestone would account for these exceptions. Rainfall is the source of all surface and underground waters. Of the total rainfall 40 to 50 per cent is run-off reaching the streams almost immediately and only about 25 per cent of the rest penetrates the ground, a portion of which becomes mine drainage. Only a small portion of the percolating waters reach great depth, so there is less water in deep mines than in shallow. Mine development is constantly increasing, producing more acid mine drainage, leaving less alkaline water in the streams with which to neutralize the mine water. The more mine drainage, the less fresh water, and with the constantly growing demands this situation requires attention.

ON the Monongahela River drainage area are 7,000 miles of coal land and only 400 square miles have been mined out—just about 6 per cent. This has made the flow from the entire area acid part of the year. What will happen when sixteen times the area has been mined out, in view of the fact that the old abandoned mines still discharge acid water.

Our largest industries and public utilities have suffered most from the pollution of streams by mine drainage, because of their large and growing needs for pure water supplies. Nearly one hundred water companies in Pennsylvania have also similar problems, which are daily becoming more serious.

For years the interests of the mining industry have been considered paramount, but we are forced to admit that though coal is necessary, we must have water for our very existence, that one is dependent upon the other and that both are vital to the welfare and prosperity of our nation. The development of the coal industry has gradually progressed during most of the past century and cannot be said to have nearly reached its maximum. It has been a highly important industry to the welfare and security of our nation, as only the recent World War could demonstrate. Whatever ills have come with it have likewise been long in developing, so that good judgment and patient investigation, rather than drastic legislation, should govern us in handling this problem.

Sanderson's Water Supply Polluted

Mine drainage necessarily follows coal development, and any apparent disregard of the rights of others or the protection of water supplies may in a measure be attributed to the principle laid down by the Pennsylvania Supreme Court in the now famous Sanderson Case.

In 1886, Sanderson bought a property in the City of Scranton through which flowed Meadow Brook, a pure unpolluted stream. He built a dam and developed a water supply for his own use. The Pennsylvania Coal Co. at about the same time opened a coal mine, which soon produced acid mine drainage, destroying the use of this water. Sanderson brought suit for damage resulting from loss of the stream.

The case was twice tried in the courts of Lackawanna County, Pennsylvania and was twice before the Supreme Court of Pennsylvania. The first Supreme Court decision affirmed the lower court's award of damages to Sanderson; Justice Paxson filed a strong dissenting opinion, which was sustained in the second Supreme Court decision.

The Court took the position that if Sanderson could collect damages, every riparian owner thus affected could do likewise, and if they could collect damages they could also enjoin the pollution of streams by mine drainage, which would practically stop all mining operations, except by consent of the lower riparian owners; that trifling inconvenience to particular persons must sometimes give way to the necessities of a great community, especially where the leading industrial interest of the state is involved.

The Court further stated in its opinion that the coal company was making the natural and ordinary use of its property, and that Sanderson, with others, was then obtaining an abundant supply of pure water from other sources, but that it would not say that a case "may not arise in which a stream, from such pollution, may not become a nuisance, and that the *public interests* as involved in the general health and well-being of the community may not require the abatement of that nuisance."

The Pennsylvania R.R. forty years ago had to give up a water supply at Portage, Pa., due to mine-drainage pollution. It is one of the largest users of water in the state, and from time to time ever since has had to seek new sources of supply as older ones became unusable.

Reservoir Built to Escape Pollution

Shortly prior to 1905 the country suffered a severe drouth, old sources of supply had become polluted, attempted treatment of the water in large quantities was unsatisfactory, resulting in numerous engine failures, so that the railroad was compelled to haul water at great expense and with subsequent delays in operation.

Millions of dollars were appropriated to obtain an adequate supply for the present and future needs of the company, in the building of impounding reservoirs and in the laying of hundreds of miles of distribution lines. At that time it was not possible to find ample supplies of water reasonably convenient to points of consumption that were not being polluted or were not subject to pollution from mine drainage.

The Mountain Water Supply Co. was organized in 1905 and appropriated the waters of Indian Creek to supply the Pennsylvania R.R. system in southwestern Pennsylvania as far west as Pittsburgh, Pa. A large storage dam was built about four miles from the mouth of Indian Creek. The drainage area above this point is 110 square miles, of which 55 square miles is underlaid with the lower productive coal measures.

At the time, numerous small "country-banks" had been opened to supply coal to the farmers in the valley, but the coal lands had not been developed on a commercial scale. Several years later the Indian Creek Valley R.R. Co. constructed a standard-gage track from Indian Creek, a point on the Baltimore & Ohio R.R., up the valley to its head waters, but there was no material development of the coal resources until about 1917.

The Mountain Water Supply Co. and the Pennsylvania R.R. Co. have been anxious that some mutually satisfactory solution of this difficult problem be found, and they have spent thousands of dollars in an effort to find some means that would permit the mining of the coal without the destruction of this valuable water supply. The operation of their entire system in western Pennsylvania is dependent upon this reservoir for its water, and the anxiety of the companies regarding the result of the litigation is understandable. They appealed to the courts for protection of their rights only after it was apparent that the supply was gradually being ruined by mine water and nothing else could be done. The Fayette County court decided there was no public use of the water and that preventing the mining companies from discharging their water into Indian Creek would deprive them of the use of their property. The court refused to grant an injunction restraining the mining companies from putting mine water into this stream.

THE sludge from mine water will purify gas and it may be used in the manufacture of paint, but the demand is small enough now. What would happen if every mine were manufacturing it? It would then not even pay the barreling charges. New uses would have to be discovered. Until they are the cost of treatment will have no offsetting return.

Court Declares Mine Water a Nuisance

The Pennsylvania Supreme Court reversed the lower court, declaring that it was not a question of property rights, but that it was a nuisance to pollute the stream, and that the coal companies should not after a certain period discharge their mine water into Indian Creek or its tributaries above the dam of the water company. The United States Supreme Court concurred in this opinion.

It should be added that the water company not only supplied water to the railroad but also to several municipalities in western Pennsylvania, aggregating about 75,000 people.

The court's opinion states, "It is controlled by one fact and a single equitable principle: The fact that the stream has been polluted, and the principle that this creates an enjoinable nuisance, if the public uses the water." As a result of this decision, there has been much discussion as to what constitutes mine drainage or mine water. It was admitted by both sides that eventually this mine drainage would destroy this water supply for the purpose for which it was then and is now being used.

Some of the leading chemists, waterworks and mining experts of the United States were witnesses in that case, and there was no disagreement as to the facts; that continued pollution by mine drainage would eventually render the water of this stream unfit for any use.

Much testimony was introduced regarding the treatment of mine water, and there was no material disagreement on that point. When a water supply contains 4 grains of sulphates per gallon (sulphates being a product of sulphuric-acid pollution), it will require softening, and when the pollution exceeds 12 grains of sulphates per gallon, treatment is no longer effective, for it requires the use of so much soda-ash that the waters become so heavily charged with solids that they foam in the boiler. It would, therefore, be but a short time between the period when treatment is required and when treatment would no longer be effective.

The neutralization of acid mine water by the introduction of lime does not make the water fit for either domestic or industrial use. This matter was clearly before the court and was undoubtedly the reason for the decree that the mine waters be kept out of the stream.

The difference between the Sanderson and the Indian Creek decisions is that Sanderson, an individual who had access to another good supply of water, was not permitted to stand in the way of Pennsylvania's greatest industry, whereas in the Indian Creek case the public, also represented by the Commonwealth, is fighting to preserve one of the last available pure water supplies in the state. However, this decision is important as it should give much less concern to the mining industry than pending legislation, for the Mountain Supply Co. had a case with some unusual merits to justify the decision of the court. The value of the water company's property is several times that of the coal, equipment and development of the mining companies. The water company's dam was erected nearly ten years before any of the coal was developed, and the company notified each coal operator in writing prior to development that that company would be held responsible if by any act it polluted the stream.

I do not believe that, because of this decision, any water company can prevent a coal company from discharging mine water into a stream from which the water company gets its supply without supporting facts and conditions to warrant it. However, I feel the time has come when the few remaining unpolluted freshwater streams of the state should be protected; otherwise, where will we get good water for our growing needs? The policy of the Pennsylvania Sanitary Water Board, represented by W. L. Stevenson, to protect the present unpolluted streams, should have our support.

Shall Use or Beauty Be Test?

Much has been said about the cost of treating mine water, and there is much more confusion as to what is meant by treatment. The Conservation League wants a water in which fish will live, which will not kill bird life or vegetation. Every one would like the oxide of iron (which colors the beds of streams yellow) kept out of the water, and the domestic and industrial user wants a water fit for human consumption and commercial use.

From numerous determinations the average total acidity of mine water in central and western Pennsylvania has been found, as already stated, to range from 80 to 100 grains per U. S. gallon. The cost to neutralize a thousand U. S. gallons of such water has been variously estimated by different chemists at from 15 to 25c.

This depends upon the cost of lime, the cost of gathering the water to one central plant, the capacity of plant, the labor involved, and the cost of handling the sludge which in itself is an exceedingly difficult and expensive, if not impossible, proposition. The cost to construct a plant for lime treatment would be about $100 per thousand gallons daily capacity, or for a 1,000,000-gal. plant $100,000.

From measuring the flow of mine drainage and comparing it with the coal area exhausted in nearly 200 mines in Pennsylvania, we find the average yield to be 1,000 gallons per acre per day. A recent estimate of the acreage worked out in the bituminous mines of Pennsylvania, based on the total tonnage produced, would indicate a total daily production of mine drainage of 750,000,000 gal.

Would Cost Seventy-Five Millions

The cost to build lime treatment plants for this enormous quantity of water would be $75,000,000. The annual cost of treatment at 15c. per thousand gallons would be $41,062,500, and at 25c. per thousand gallons would be $68,437,500.

The estimate by Charles Dorrance of mine drainage reaching the streams from anthracite mines is 700,000,000 gallons daily, so that the above estimates for the entire state of Pennsylvania would be about doubled.

It must be understood the above cost is for neutralization only, and that even after this treatment, which is the one to which reference is most often made, the water is still unfit for either domestic or industrial use. To soften the water would cost more than double the above estimate for neutralization, and even with that the value of the product would be doubtful.

It will be seen that, with an annual production of 120,000,000 tons in the bituminous fields of Pennsylvania, the cost will be from 34 to 57c. per ton for neutralization and from 70c. to $1 per ton for softening.

In the bituminous fields of Pennsylvania alone from 4,500 to 5,000 tons of sludge would have to be handled daily, or 1,825,000 tons yearly. Even if dried and piled outside, it would be likely to reach the stream beds with every rainstorm. These beds eventually would be filled with this deposit. This iron oxide may be used for purifying gas and in the manufacture of paint, but it has a limited market, and with such quantities as would then be available it would be as common as dirt and without value. To mining men it would be nothing but slimy yellow mud, too thick to pump and too thin to shovel.

J. R. Campbell, formerly chief chemist for the H. C. Frick Coke Co., who built and operated the lime-treatment plant at the Calumet mine, has verified the above figures as to cost of treatment. Mr. Campbell has long been interested in this subject and probably knows more about it than any one else.

Staggering and Without Justification

It is fair then to say that, with these tremendous costs in Pennsylvania alone, the cost of treatment for the coal industry throughout the nation would be staggering and without justification.

The Stephens Bill, H.R. 8310, introduced at this Session, is an amendment to the Rivers and Harbors act of March 3, 1899. It is similar to the Rosenbloom bill of the last session. It makes it unlawful within the limits prescribed by the Secretary of War to discharge any free acid into navigable waters or their tributaries. It places in the hands of the Chief of Army Engineers the power to require neutralization of acid water or wastes and provides a fine for each offense of $500 to $2,500 or imprisonment of not less than thirty days or more than one year.

The state and individuals have spent thousands of dollars in an attempt to solve this problem, but without success, so that the time has surely come for wise Governmental action—not the hasty passage of drastic laws as now proposed that would so greatly embarrass the mining and manufacturing industries but a sane public policy that will tend to preserve our water supplies at as little cost to the community as possible.

Secretary Hoover's suggestion of a careful investigation of the entire problem before the passage of legislation, is wise, and should not only have the approval but the hearty co-operation of the entire coal industry. Unless some mutually satisfactory solution of the problem is soon found, endless litigation may result between the waterworks and mining interests.

Should Restrict New Development

One thing seems certain, and that is that we cannot mine the coal without destroying the water in the mining regions. Therefore, I feel the only sure and practical method of conserving the water supply is to stop mining coal in some of the little-developed areas yet remaining. This cannot well be done as between individuals, and the Government or state would be justified in purchasing, if necessary, under some plan to be devised, the coal lands necessary for the protection of our few remaining water supplies in western Pennsylvania. That the state recognizes the importance of this problem is evidenced by its participation with the water companies in the Indian Creek case.

The coal industry is so greatly overdeveloped that an opportunity is afforded for a worth-while beginning of this policy. The coal industry is little to be censured for the pollution of the streams that its operations have caused. What it has saved thus far by its failure to take care of the water its mines have discharged has been passed to the public, as the industry for a long period of years has not been profitable.

Trace Sixty-Five Coal-Mine Disasters to Non-Permissible Powder

From 1909 to 1924 the quantity of permissible explosives used annually in the United States increased from less than 9,000,000 lb. to over 50,000,000 lb.

"Sixty-five of the explosion disasters occurring in American mines from 1908 to the early part of 1923, says D. A. Lyon, of the U. S. Bureau of Mines, were definitely found to have been caused by explosives igniting gas and dust. The total number of men killed in these 65 explosions was 758. All these explosions were found to be due to the use of non-permissible explosives. In fact, the bureau has no record of an explosion disaster having resulted anywhere, at anytime, in the United States from the use of permissible explosives.

"There is unquestioned evidence that undercut coal can be blasted by permissibles as cheaply as by non-permissible explosives. Under other conditions, where the direct cost of using permissibles may be greater, the indirect savings offset this, when the cost of compensation for killed or injured workmen, of interruption to work and of damage to property from explosions or fires caused by non-permissible explosives are taken into consideration."

The West Virginia Coal Mining Institute's meeting which was to be held at Bluefield, W. Va., June 1 and 2, has been postponed until July 13 and 14 in order to avoid a conflict with other meetings.

Underground Operation

With Mechanical Loading, Cars Can Be Manipulated if Face Be Well Shot and Trips Available

All Car-Spotting Difficulties Vanish Where Machine and Main Haulage Give Loaders and Spotters Opportunity to Develop a Happy Rivalry

By Charles Gottschalk
Consulting Engineer, Evansville, Ind.

Spotting empty mine cars at a rate which results in the minimum delay to a mechanical loader is a difficult problem, for the principal reason that the rate of loading is seldom uniform. For instance a loader upon first entering a room or working place will often load out the first few cars at the rate of a ton a minute or better, and yet will require five, ten or even fifteen minutes to load a car when the standing coal is being attacked.

I am referring to loading machines as now employed in the Indiana and Illinois fields. They average according to conditions from 125 to 175 tons per shift. It is apparent that if the machines could load uniformly at the average rate of one ton per minute and do useful work 60 per cent of the time, the output would be 288 tons per shift. This is the tonnage that I predict present machines will approximate when their handling is better understood.

If coal is to be loaded mechanically at a uniform rate, the first problem is to bring the coal down in a free state or to employ a loading machine which is designed to mine as well as load, with or without blasting, as the case may be.

Second, where mine cars are employed there should be a reservoir between the discharge of the loading machine and the car, so that car changes can be made without stopping the loading machine.

Third, as long a face should be prepared at each location as roof conditions will permit, so that the loader will have to make but few locations per shift.

Fourth, each working place should be well lighted and ventilated.

Fifth, the partings for accumulation of loads and supply of empty cars should be of adequate length, and sufficient extra cars should be on hand to provide a surplus to draw on when unavoidable delays occur in haulage or in tipple operation.

Many other suggestions might be made, but I consider these to be the fundamental needs. The success of any plan that may be devised is so dependent upon these five basal requirements, all contributing to loading at a uniform rate, that a program in which they are not mastered will not be properly balanced and cannot result in success.

It is true that all operators do not look lightly upon these features of loading, and the attention they are giving them is being reflected in larger and larger output per machine.

I have referred to the desirability of getting a uniform flow of coal. Until this is accomplished within reasonable working limits, it is impossible to deal intelligently with the mechanics of car manipulation. Let us examine in detail the factors involved.

IDLE LOCOMOTIVES COSTLY

If half the time two locomotives are required to furnish cars to a loader and at other times one locomotive is sufficient, the result is that about 50 per cent of the time the investment in one locomotive and the pay of one operator is a total loss. Also, it becomes almost impossible to work out a main-haulage schedule which will be efficient without demanding more idle cars for sidings than are normally required. When these problems have been considered, and only then, will car-changing efficiency be the main index of production per loader.

Considering a case where these

Blasted and Double-Sheared Room Face at Kathleen Mine

This mine at Dowell, Jackson County, Illinois, is operated by the Union Colliery Co. The faces are sheared by a Joy shearing machine and loaded by Joy machines. The coal is 9 ft. thick but 2 ft. is left in the roof for protection. Joy loaders are used in all entries, crosscuts and to the first crosscut in rooms. The cars hold 3.7 tons and are delivered to loaders in trips of four to six cars ahead of cable-reel locomotives. These machine trips of empties are not uncoupled until the end car has been loaded, when it is placed in the nearest crosscut neck and a new trip of empty cars returned to loader.

Article entitled "Serving the Mechanical Loaders with Mine Cars" presented at the Coal-Operating Officials Convention of American Mining Congress, May 26, 1926.

problems have been worked out with due regard to their importance, the problem of car changes becomes comparatively simple. In fact it almost vanishes. Under good conditions with no bad luck about 290 tons have been loaded repeatedly. This would represent an average flow of coal of one ton per minute for approximately 60 per cent of an 8-hr. period. This leaves 192 min. for car changes, for machine moves and for other delays. Provided the work is in rooms and pillars and in 6-ft. coal, and crosscuts are loaded out by machine, probably six moves per shift would be required. The time lost in moving should be well within 10 min. per move, leaving 132 min. Allowing another half hour for attention to the loader would leave 102 min. for car changes. Using a 5-ton car, fifty-eight car changes would be required. This would necessitate making a shift in 1¾ min.

If switches are kept within 150 ft. of the loader, the changes during an entire shift can be made well within that time limit. The arrangements of switches in rooms depends upon conditions which vary not only in different mines, but sometimes in the same mine. It depends also upon whether mules or locomotives are employed or a combination of both.

MULE SLOW FOR SHORT MOVES

Where the cars do not hold over 3½ tons of machine-loaded coal and grades are not severe, changes by mule have the advantage that by the use of a small parting in the room the mule can hook onto either end of the car, and the storage and switching space can be maintained at a minimum length. The big disadvantage of using a mule, however, is the clumsiness with which it will shift a car the short distances that are needed during process of loading if the car is to be filled to maximum capacity.

The loading machine can be moved while loading so as to maintain the proper relation of discharge to mine car, but that cannot be done without delaying the work. In rolling seams, the mule is at a much greater disadvantage than in moderately level beds. Under some conditions a mule and motor would work to good advantage, but the exact system of tracks and combination of equipment for making car changes must remain in many respects a problem varying with the conditions.

A pioneer operator in machine loading recently remarked that mechanical loading was 10 per cent equipment and 90 per cent organization. Certainly, organization does play a most important part. To obtain this organization, requires men with ability to lead and inject the spirit of friendly competition among the different loader sections.

Many skilful and loyal men utterly lack the power to give orders. Each machine operator should have this ability so as to be able to direct the little gang backing up the machine and keep them "pepped up" to the performance of their duties.

My theory is that if you keep the coal coming off the end of the machine conveyor, at a regular rate, the average organization will somehow contrive to take it away as opportunity immediately begets competition between the haulage gang and the loader crew. If, on the other hand, the coal is loaded in a dilatory manner, because of an irregular delivery of cars or imperfect preparation of the coal for loading, no possible arrangement for car manipulation will make up for this deficiency.

Nemacolin Finds Fire-Fighting Equipment Essential in Electrical Mine

By W. Z. Price
Assistant Superintendent, Buckeye Coal Co., Nemacolin, Pa.

Mine fires originate from many causes and are a serious and formidable menace to operation regardless of their extent. Danger is ever present because of the evolution of noxious gases. A slight back-draft from the fire will preclude the workers from doing anything unless they are amply protected with smoke or gas masks.

The purpose of this article is to describe what the Nemacolin mine of the Buckeye Coal Co., a subsidiary of the Youngstown Sheet & Tube Co., is doing to prevent fires from assuming serious proportions. It must not be infered, of course, that the precautions it is taking are the last word in fire protection, but they represent the best means that they have been able to devise against this ever-present danger.

The first fire-fighting equipment on a large scale at Nemacolin was the so-called "tank-car." Two of these cars were built several years ago and have been extensively used for fire extinguishment.

This car is a cylindrical tank with curved ends, 11 ft. long and 4 ft. in diameter. It rides on two platform trucks, being suspended horizontally between 5-in. H-beams. Its overall length is 18 ft. 6-in., its height 4 ft. 6-in. The width of the trucks is 4 ft. 9-in., yet the car will round with ease a curve of 16-ft. radius. It holds 700 gal. of water when slightly over two-thirds full, the remaining space being occupied by compressed air under a pressure of 100 lb. per square inch.

At one end, mounted on the same carriage is a reel holding 200 ft. of standard 2½-in. fire hose. This reel has a tank connection along its axis and is directly connected to the hose, so that in case of fire, the operative after extending the hose and opening the valve has a stream of water under pressure that bears favorable comparison to that available in most surface fire fighting.

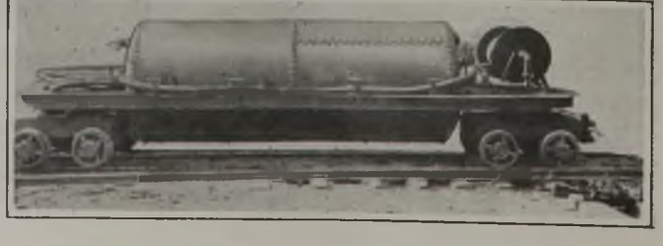
As the tank will completely discharge the water in from 3 to 5 min., a second tank is necessary, the first being recharged meanwhile. The two cars have 400 ft. of hose. This will undoubtedly suffice to reach the fire in most places, certainly until additional lengths can be forwarded from the surface. Government-approved portable air compressors are provided throughout the mine, and these are used for charging the tanks after the water is discharged and the connections are closed.

On each car is a set of hose adapters which will enable the fire hose to be connected to the water

Article entitled "Fire Protection Underground" presented at the Annual Convention of Coal-Operating Officials held by the American Mining Congress at Cincinnati, Ohio, May 27.

Tank Car

Two of these are used at Nemacolin. They hold 700 gal. of water and are evacuated by compressed air.



Foamite Truck

This tank holds 40 gal. of liquid extinguisher. The truck, it will be noted, is mounted on a car, so that it can go on the track as far as the track extends and then can be dismounted and run on its own wheels to the fire.

lines which are standard. The hose couplings have threads conforming to the rules established by the Underwriters.

It is frequently necessary to get close to the fire and in such cases a Hayward nozzle is used. This is capable of throwing four separate streams simultaneously: A lateral spray at right angles to the nozzle with a working radius of 35 ft., a diagonal lateral spray just ahead of the first, another diagonal spray at the end and a direct stream.

The nozzle has several detachable rings which vary the flow so that twelve different combinations of streams may be obtained. It is kept in a glass box in the lamphouse so that it can be seen and its availability known to all employees. Its great advantage is apparent for the three sheets of water will drive smoke ahead of the hoseman, thus enabling him to reach the scene of the fire with comparative ease and safety.

In addition, each working face has a 1-in. water line and a 2-in. line close behind. Thus water for refilling the tanks is always available. This sprinkling system is under a constant head maintained by a tank on the surface. The pressure is at least 100 lb. per square inch at all times. Each working face has a ½-in. sprinkling hose, so that in most cases a fire can be extinguished without bringing in the tanks. The main sprinkling line is a 6-in. pipe subdividing into fours and twos.

In passing, it may be said that the opposite end of the tank car from the reel can be equipped with a horizontal perforated pipe, so that the roof and ribs may be sprayed as by a street sprinkler. This was regularly used in Nemacolin until rock-dusting began. One tank load was found to sprinkle adequately 2,000 ft. of heading.

Other methods, however, are used at Nemacolin for fire fighting when the use of water, for any reason, is impractical. Each electric locomotive whether it be of trolley, cable-reel, or storage-battery type—and there are thirty-four in all—is equipped with a carbon-tetrachloride extinguisher. In each section of the mine are several 2½-gal. carbonated-solution sulphuric-acid extinguishers. This equipment has already prevented several serious fires. Defective blasting caps may ignite the explosive and hence the coal; a fall of rock on a battery locomotive may "short" the cells and another on a trolley wire may make "a short" on the rail thus igniting the loose roof coal thereabout. These are samples of potential mine fires which these 2½-gal. extinguishers have successfully smothered. The extinguishers are distributed in the ratio of one to every 100 tons of production. They have been found invaluable.

Lastly the mine is equipped with 40-gal. Foamite tanks. These are necessary adjuncts to the tank cars, as fires are likely to occur in places, such as aircourses, where no track is laid. Were the fire-fighters to wait, before acting, until sufficient hose was rushed in from the surface, the blaze might assume tremendous proportions.

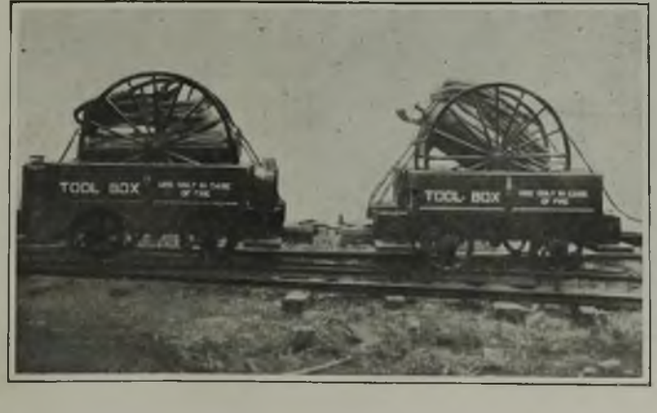
These Firefoam engines are endorsed by the Underwriters. They are mounted on wooden carriage wheels and placed on small flat cars built especially for them and by which they can be transported over the rails as close as possible to the scene of the fire. They can then be pulled off the truck and pushed to any point desired like any two-wheeled cart.

On each flat car, in addition to the Foamite engine, are four 2½-gal. extinguishers like those previously described, a box of sand and another containing shovels, picks, axes, saws, hatchets, a bar, nails and a sledge hammer. These boxes are kept locked and sealed but are easily broken open if necessary.

This equipment, the management at Nemacolin believes, is needed at any electrically operated mine. Some thirty or more automatic reclosing section circuit breakers, and several hundred sectional line switches are helpful in handling fires, but these, of course, cannot be classed as fire-fighting equipment.

Extinguisher on Portable Air Compressor

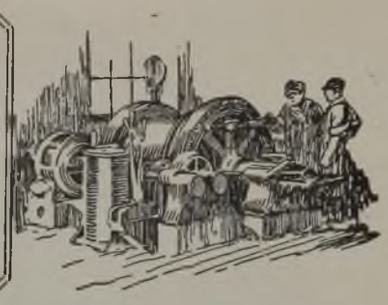
Arrow indicates extinguisher.



Two Fire-Fighting Trucks

These have a Foamite engine, four carbonated-solution sulphuric-acid extinguishers, a box of sand, shovels, picks, axes, saws, hatchets, nails, a bar and a sledge.

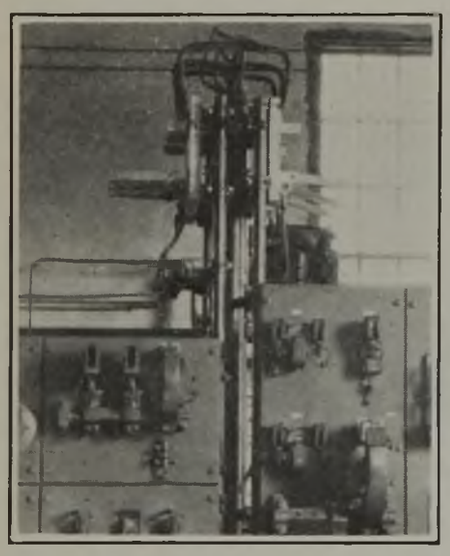
Practical Pointers For Electrical And Mechanical Men



Control Power Taken Ahead Of Main Disconnects

Testing to determine the continuity of circuits and their freedom from grounds and from shorts to other wires usually afford the quickest way to locate trouble. A visual inspection seldom reveals the point of failure unless it is aggravated and has damaged the equipment.

In order to facilitate testing of the automatic control boards of substations and mine fans, J. F. MacWilliams, electrical engineer of the Pennsylvania Coal & Coke Corp., has not followed the manufacturer's diagram but instead has connected the operating transformers on the line side of the machine disconnecting switches. A close-up of the connection at Ehrenfeld No. 1 substation is shown in the above illustration.



Arrangement at Ehrenfeld Station

Connecting the control transformer on the line side of the disconnecting switches allows the automatic boards to be tested without starting the motors or opening the leads to prevent starting. In the substations of the Pennsylvania Coal & Coke Corporation all bare high-voltage parts are kept above ordinary reach.

The conduit, through which the 2,200-volt line enters, terminates between the two disconnect switches. One switch feeds the fan motor and the other the motor-generator. At the top where the wires branch to the switches, the smaller leads which feed the control transformer, can be seen. This transformer is mounted on the wall in front of the lower left corner of the window.

Porcelain fused cutouts serve as disconnecting switches for the transformer. Many engineers object to the connection outlined above, believing that the function of a disconnecting switch is to "disconnect," and that therefore but one such switch should be used and that this switch should be in the main line so as to "kill" all wiring and apparatus when it is opened.

With the connection used by the Pennsylvania Coal & Coke Corporation, the only wiring left alive after opening of the two disconnect switches is the short run to the operating transformer. The other live lines are the low-voltage circuits on the control board. The arrangement permits making a complete sequence test of the control board without actually starting the motor or opening the leads.

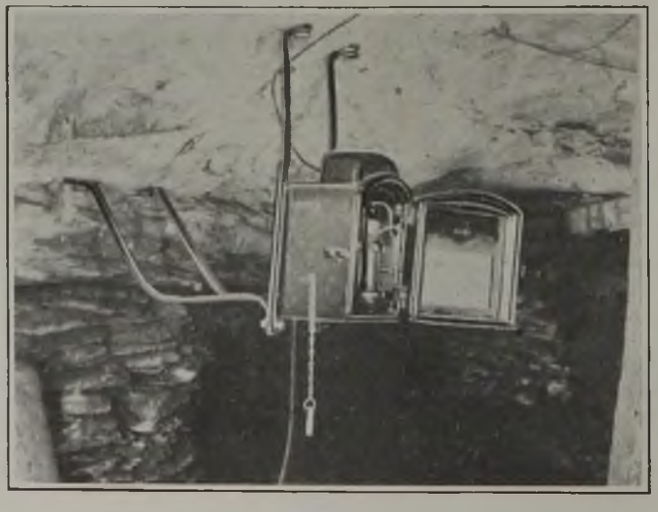
Hung From Roof Telephones Give Less Trouble

Nothing is certain in a mine. Falls of roof and wrecks frequently disturb any stationary equipment that is installed in an exposed place along the roadway. Wrecks can be reduced to a minimum if sufficient money is expended in maintaining rolling stock and tracks. In most mines, however, derailments are common rather than rare, and this fact must be taken into account when installing certain equipment.

The usual method of hanging a mine telephone not located in an underground office or waiting room is to fasten the instrument to a post. But if a wreck knocks out the post the telephone is rendered useless or perhaps destroyed.

To overcome this trouble the Edgewater Coal Co., of eastern Kentucky suspends the telephone from the roof as shown in the accompanying illustration made from a photograph taken in No. 3 mine at Coaldale. The mine electrician claims that this method has the added advantage that it affords better air circulation around the instrument thus minimizing possible trouble from moisture.

Whenever equipment is to be operated under vacuum, says *Power*, none of the exteriors of the parts likely to be subjected to that vacuum should be painted before the equipment has been erected, started and the vacuum established. When thus painted any pores or cracks are thoroughly filled, and a visible improvement in the vacuum will be observed. If the painting is done before that time, the small openings will be covered over by a thin coat and paint will not penetrate them.



Telephone on Roof Bracket

Cars when derailed often knock down posts. If mine telephones are suspended from the roof their maintenance cost is reduced and more continuous service is obtained from them.

Current in Bearings May Cause Rapid Wear

Excessive bearing wear without noticeable overheating puzzled the chief electrician of a mine in central Pennsylvania. The troublesome bearing was on a 2,300-volt induction motor of the wound-rotor type. When a worn lining of the bearing was being renewed it was noticed that the shaft had a peculiar appearance instead of the usual polish.

From this the chief electrician concluded that stray current flowing through the bearing was the cause of the wear, and he proceeded to clear up grounds found in the rotor and control circuits.

How to Detect Current

This cause of excessive bearing wear is so unusual that it is liable to be overlooked. Whether an appreciable current is flowing through the bearing can be determined by connecting an ammeter of low resistance, or a millivoltmeter, from the shaft to the bearing.

Another way which in some cases can be used to indicate a current is to connect a short piece of small copper wire from a rubbing contact on the shaft to the bearing. Heating of the wire by the shunted current is the indication, but it should be ascertained that the heat is not generated by friction of the one end of the wire on the shaft.

If the trouble is not due to grounded circuits then it can probably be blamed to faulty design. Correction of this fault is of course difficult. A possible remedy is to insulate the bearing shells from the frame or base of the machine.

Barbed Wire Protects Line From Lightning

Every summer lightning causes much damage to mine substation, especially to those equipped with motor-generator sets. Puncturing of the motor insulation occurs in many instances even though the installation is protected, apparently, by approved arresters.

J. F. MacWilliams, electrical engineer of the Pennsylvania Coal & Coke Corp., Cresson, Pa., had such a case, but judging from last summer's experience he has practically eliminated, or at least greatly lessened, the chance of further trouble.

One of the Moss Creek substations, is fed by a 2,300-volt line passing over two high hills. Two arresters of approved type were used, and much care was taken to obtain a good ground. Nevertheless the insulation of the motor-generator set was punctured several times each summer.

Electric Storms Harmless

The step which seems to have eliminated the trouble was taken somewhat over a year ago. Mr. MacWilliams ordered 2,000 ft. of galvanized barbed wire and strung this on the pole line over the tops of the two hills. Extensions were added to the pole tops to support the wire.

Grounds were made at every fifth pole by a ground rod with a pancake coil at the bottom. During the succeeding summer months no trouble was experienced in the substation even though many severe electrical storms occurred.

Mine Water Carries Ashes From Boiler to Dump

At small boiler plants, of capacity, say under 400-hp., ashes are usually carried to the dump by wheelbarrow. Though the quantity of material handled may seem large to the fireman, it is hardly enough to justify the installation of expensive ash-handling apparatus. But these are days when men do not "appreciate" work which can be done satisfactorily by mechanical means.

Trench in Front of Boilers

The only cost of this ash-disposal scheme was the digging and concreting of the trench which diverts the discharge from the mine pumps through the boiler room on its way to the creek.

The fireman of the two 150-hp. boilers at the Exeter mine of the Kingston - Pocahontas Coal Co., Hemphill, W. Va., is relieved of any work connected with carrying the ashes away from in front of the boilers. He simply rakes them out from under the grates and they drop into a trench in front of the ashpit door. A stream of water flowing through the trench carries the material into the nearby creek.

The trench and boiler fronts are shown in the accompanying illustration. In this case the water passing through the trench is part of that pumped out of the mine. The scheme proved so satisfactory that one or two other plants of the company have been arranged in the same way. The plant at Exeter is used to supplement purchased power and to act as a standby should the purchased power fail.

How Far Can a Single Belt Transport Coal?

Single-belt conveyors a mile long between head and tail pulleys are not outside of the realm of possibility, according to C. H. Adamson, engineer for the Stephens-Adamson Manufacturing Co.

Probably the main factor limiting the distance between centers is the working stress of the conveyor belt. Reduced frictional resistance in drive, idler, take-up mechanism and carriers has lowered belt stresses, with a corresponding increase in allowable conveyor lengths.

In nearly every instalation of belt conveyors the belt itself costs from 30 to 50 per cent of the entire installation. Long belt conveyors require high tensile strength, and the cost of the belt per foot of length is correspondingly increased. The belt depreciates more rapidly than the machinery; therefore conditions which increase the life of the belt, such as ball-bearing carriers, lower the unit cost per ton of material handled. Single-belt conveyor installations will rarely be made in greater lengths than are now standard, concludes the same authority. Probably long-distance belt-conveyor transportation will, therefore, continue to be of the multiple-unit type.

In reaching this conclusion, Mr. Adamson does not consider the degradation consequent on the use of the multiple unit, nor the difficulties due to the creation of dust, including when coal is transported, the danger that the material conveyed may, in being chuted, from unit to unit, introduce an explosion hazard. Furthermore the question of headroom may have to be considered.

News Of the Industry

Three-Cornered Freight-Rate Fight For Northeast Coal Markets Resumed As Hearings Open at Atlantic City

The three-cornered rate fight for the coal markets of New England and the Middle Atlantic states was resumed at Atlantic City, N. J., on Monday of this week, when the Interstate Commerce Commission reopened hearings in its so-called *Anthracite Coal Investigation* at the Marlborough-Blenheim before Commissioner Johnston B. Campbell and Special Examiners Irving L. Koch and Joseph Esselman.

This proceeding, Docket No. 15006, was undertaken in the first instance on the recommendation of the U. S. Coal Commission, which thought the time was ripe for a re-examination of the rate structure on hard coal. A number of desultory hearings on that question were held in 1923 and 1924. The case was subsequently broadened to cover the transportation charges on bituminous coal and coke. Except for certain adjustment in tariffs applicable to central New York destinations, the anthracite rates have passed out of the picture.

The original order issued in this case, 101 I.C.C. 363, establishing joint all-rail rates on prepared coal from low-volatile districts in southern West Virginia to certain points in Trunk Line and New England territory, however, gave the anthracite industry and the anthracite carriers an interest that the earlier perfunctory hearings did not win. Subsequent emergency extensions and expansions of that order, made during the recent anthracite strike, added materially to that interest.

Three Interests Make Demands

The present line-up of the contestants, therefore, shows:

(1) The low-volatile producers of southern West Virginia demanding a further extension and broadening of the routes opened up by the original order and a lower rate basis;

(2) The northern producing fields, particularly central Pennsylvania, opposing this all-rail invasion of the Northeast by their southern West Virginia rivals and demanding that the adjustment of rates to tidewater also receive the scrutiny of the Commission;

(3) The anthracite industry and the anthracite carriers watching to protect their own interests in this rich coal-consuming territory. Incidentally the anthracite operators are complaining of the rate relationships between bituminous coal and the steam sizes of anthracite. It is unlikely, however, that that point will be raised in the present proceedings.

The high-volatile interests of southern West Virginia, who were denied a new rate adjustment in the original decision, but later were accorded emergency rates, which expired April 30, trail along with the low-volatile producers. They have made a point that their rates westbound and to southeastern points are differentially related to the rates on low-volatile coal and insist that equal consideration should be given them in the establishment of rates on low-volatile to the Northeast. Eastern Kentucky and the low-volatile districts of Virginia, as well as the semi-anthracite field in the Old Dominion State, likewise insist that the benefits which may be won by southern West Virginia should also accrue to them.

Trunk Lines Oppose New Routes

Trunk line railroads, notably the Pennsylvania and the Baltimore & Ohio, object to the establishment of new all-rail routes. They base this objection on the ground that the facilities for handling business through the Hagerstown and Potomac Yard gateways were not designed for this traffic and that to burden such gateways with this movement would threaten the standards of their service.

In the original order the Commission directed the establishment, effective Oct. 15, 1925, of rates on low-volatile lump, egg and nut from mines in C. & O. group 1, as specified in C. &. O. tariff I.C.C. No. 9834; mines in Virginian Ry. group 1, as specified in Virginian Ry. tariff I.C.C. No. 1685, and mines in N. & W. group 3, as specified in N. & W. tariff I.C.C. No. 3006-B, which should not exceed the following:

(1) To Pennsylvania R.R. stations, Tuxedo to Edgewood, Md., $3.45 per gross ton; to Perryman and Iron Hill, Md., and points intermediate, $3.70; to Newark Center, Del., and Brooklyn, N. Y., and points between said stations, rates not exceeding rates from the Clearfield district by more than $1.10.

(2) To Baltimore & Ohio stations, Alexandria Junction to Van Biber, $3.45; Sewall to Barksdale, Md., $3.70; Newark, Del., to Philadelphia, Pa., $3.94.

(3) To New Haven railroad stations, Portland to Chestnut Hill, Conn., Talcottville to Willimantic, Conn., North Windham, Conn., to Forest Hills, Mass., South Windham, Conn., to Oak Lawn, R. I., Attleboro, Mass., to Boston, Mass., $5.58; to other New Haven stations named in Pennsylvania R.R. tariff AA-I.C.C. No. 1800, rates not more than $1.10 per ton above Clearfield rates.

(4) To Boston & Maine stations, Farley to Boston, Mass., $6.70; to other Boston & Maine points specified in Baltimore & Ohio R.R. Co. Coal & Coke Series Tariff I.C.C. No. 2523, rates not more than $1.35 in excess of those maintained by the Baltimore & Ohio from the Cumberland-Piedmont field.

Emergency Rates Granted

Later, following a hearing in New York City, the Commission broadened its original order by establishing the following emergency rates on prepared coals:

(1) From all mines in the New River, Tug River, Pocahontas and Clinch Valley District No. 1 fields to all points in New Jersey and the New England states, other than destinations covered by original orders, rates $1.10 over Clearfield.

(2) Clinch Valley District No. 2 to Baltimore & Ohio, Pennsylvania and Long Island R.R. stations and to destinations covered under paragraph (1) the same basis as applicable from Pocahontas and Tug River.

(3) From all mines in the Kanawha, Coal River, Logan, Kenova and Thacker districts to all points on B. & O., P. R. R. and Long Island railroads covered by original order of July 22, 1925, and to all points in New Jersey and the New England states, rates not more than 25c. over New River-Pocahontas.

(4) From all mines on the Big Sandy division of the Chesapeake & Ohio Ry. in Kentucky to destinations described in preceding paragraph, rates not more than 40c. above the New River-Pocahontas basis.

(5) Semi-anthracite from McCoy and Merrimac, Va., on Virginian Ry., and Pulaski to Vicker, Va., inclusive, on Norfolk & Western Ry., rates not exceeding rates on Pocahontas coal to destinations in paragraph (2).

The Commission, however, declined to extend the application of these rates to the movement of mine-run all-rail and ignored the pleas of western Pennsylvania and northern Ohio for consideration.

These rates became effective Dec. 31, 1925, and expired April 30, 1926. The

Commission refused to extend their life. In denying applications for such extension it announced that further hearings would be held to consider the question of the establishment of such rates on a permanent basis. These rates, therefore, will be among those considered in the present hearings.

Broadening of the issues to include the rates on coal to tidewater for transshipment followed an appeal of the Central Pennsylvania Coal Producers' Association. This appeal, the granting of which puts into issue the relationship of rates to the northern and southern tidewater piers, was bitterly opposed by the southern interests. The latter charged the northern producers with attempting to evade the responsibility of filing a formal complaint challenging the relative adjustment. Another appeal brought in all of the Upper Potomac field.

In effect, therefore, the investigation now covers the relationship of rates from practically the entire Appalachian Region, other than Alabama and Tennessee, to the Middle Atlantic and New England states via all-rail and rail-and-water routes via all ports of transshipment from New York on the north to Hampton Roads on the south. One of the recent supplemental orders in the case specifically brings in the question of the reasonableness and prejudicial character of the rates, charges, regulations and practices, "including tidewater and transshipment rates, charges, regulations and practices," on bituminous and semi-bituminous coal and coke from all mines in Pennsylvania, Ohio, Maryland, Virginia, West Virginia and eastern Kentucky to all points in Virginia, the District of Columbia and in the Middle Atlantic and New England states; and of semi-bituminous coal from mines in Virginia to all points in Virginia, the District of Columbia and in the Middle Atlantic and New England states.

The Commission has announced that evidence on the all-rail situation must be completed at the Atlantic City hearings, which may last three weeks. "If it develops," says George B. McGinty, secretary of the Commission, "that adjournment is needed in respect to the tidewater situation in order to do substantial justice, a further hearing upon that phase of the investigation will be held later."

Photo Moffett Studio.

G. H. Merryweather

"Bert" Merryweather, the new president of the American Wholesale Coal Association, has been actively identified with that organization and its predecessor, the National Coal Jobbers' Association, since the launching of the last-named body in the fall of 1917. For a number of years he served as secretary-treasurer and last year he was vice-president. Mr. Merryweather is associated with the Waubun Coal Co., Chicago.

Non-Interference of Government with Business Will Promote Continued Prosperity, Says Schwab

Continued prosperity is foreseen by Charles M. Schwab, chairman of the Bethlehem Steel Corporation, who surveyed the business situation in a recent address before the Syracuse (N. Y.) Chamber of Commerce. "With the government seeking to conduct its affairs in the most economical manner, arranging the tax laws upon the sound principles advocated by Secretary Mellon, and pursuing a policy of non-interference with the legitimate activities of business, and with the American people working together as they are now doing, we can have confidence that permanent prosperity shall have every opportunity to flourish," he said.

"I am an optimist on the business outlook," declared Mr. Schwab, "for the following reasons:

"(1) The American people are hard at work producing new wealth at an amazing speed. That means purchasing power, new savings, new opportunities for expansion of production.

"(2) Nature promises a year of bountiful crops on top of the enormous agricultural production last year.

"(3) Wage earners are working with their employers in a spirit of greater peace than I have seen for 25 years.

"(4) Business men have been carrying on their work carefully in recent years and not indulging in speculative expansion.

"(5) Railroads are providing a transportation service of greater efficiency than the people of the country have ever enjoyed.

"(6) Through the operation of our banking laws and by reason of the prudence of those in charge of our banks, credit facilities have not been taxed and the business of the country is generally sound.

"(7) The government, under the leadership of the President, stands for a policy of sanity, conservation and progress."

Southern Gem Stockholders Lose in Reorganization Plan Approved by District Court

Stockholders owning approximately $1,021,054 of the capital stock of the Southern Gem Coal Corporation, which was thrown into a receivership in January, 1924, apparently will be the only losers when the affairs of the company are finally liquidated by the receivers, providing the company that is taking over the mining properties is able to operate on a paying basis.

Under the terms of sale approved by Judge Lindley in the U. S. District at Danville, Ill., on June 17, the purchaser, the Brewerton Coal Co., of Chicago, has agreed to issue stock to holders of $440,000 in bonds of the Southern Gem Coal Corporation and to creditors having $400,000 in claims against that company. Stockholders of the Southern Gem company, however, will receive nothing.

In approving the sale of the property Judge Lindley said that he regarded it as "the best possible settlement" that could be effected for bondholders and creditors. He set July 1 as the final date for hearing on the receivership and it is believed that at that time he will order the receivers, W. S. Wilson, of Pinckneyville, Ill., and N. S. McLean, East St. Louis, Ill., to file their final reports. Following the receipt of the reports the receivership will be terminated.

In addition to issuing stock to the bondholders and general creditors the Brewerton company agreed to assume delinquent payrolls and back taxes on the mining property in Perry County. It is estimated that the total purchase price was more than $1,000,000. The Brewerton company some time ago purchased the Southern Gem mines in Franklin and Jefferson counties under terms similar to the sale at public action in Pinckneyville, Ill., in June 8.

W. A. Brewerton, head of the Brewerton Coal Co., is said to contemplate including the Southern Gem mines in a merger of 43 coal mines in Illinois and Indiana recently reported to be under way.

Sells Ohio River Interests

The West Virginia Coal & Coke Co., with headquarters at Fairmont, W. Va., has purchased the river interests of the Philadelphia & Cleveland Coal Co., which included docks at Huntington, W. Va., a boat line on the Ohio River and a large unloading plant at Cincinnati, Ohio. A. C. Ingersoll, president of the Philadelphia & Cleveland Coal Co., has been made manager of the river interests which were taken over. It is announced that the deal does not affect the remainder of the activities of the Philadelphia & Cleveland Coal Co., which consists of offices at Cleveland, Columbus, Akron, Indianapolis, Wheeling and Cincinnati. At Groveport, near Columbus, the company has an immense coal storage plant from which the Columbus Railway, Power & Light Co. is supplied

Tentative Awards Made for N. Y. State Coal Needs

Tentative awards have been announced by the Department of Purchase, State of New York, at Albany, for supplying anthracite and bituminous coal for many of the state institutions. The awards included the following:

The Lehigh Valley Coal Sales Co. was awarded the contract for furnishing 1,400 tons chestnut, 1,300 tons egg, 500 tons stove, 1,000 tons buckwheat No. 1, and 3,100 tons pea coal at regular company schedule of prices.

The D. L. & W. Coal Co. obtained the contract for furnishing to six institutions 4,500 tons barley, 800 tons stove, 250 tons chestnut, 450 tons egg and 650 tons pea at the regular schedule.

Weston Dodson Coal Co., Inc., was successful in its bid for furnishing 2,160 tons of stove coal at $9.70 per ton f.o.b. mines; 200 tons chestnut at $9.15; 1,450 tons pea at $6.25 and 8,700 tons buckwheat No. 1 at $2.04@$2.24 per ton, depending upon delivery points. For 4,000 tons barley to Randall's Island the price was $3.89 f.a.s.

Other bids accepted included that of Martin F. Shea, of New York City, for furnishing 35,400 tons of buckwheat No. 1 to three institutions at $2.19 per gross ton, f.o.b. mine. Mr. Shea also captured contracts for furnishing 7,600 tons stove coal at $9.60 per ton; 2,195 tons egg at $9; 1,920 tons chestnut at $9; 150 tons grate at $8.50, and 150 tons pea coal at $6.50.

Pattison & Bowns were granted the contract for sending 15,000 tons of barley coal to the Binghamton institutions at $1.50 per ton. They will also deliver to various other institutions 3,250 tons stove coal, 1,019 tons egg, 561 tons chestnut and 1,550 tons pea coal at $9.50, $9, $9 and $6.50 respectively.

The successful soft coal bids were:

Simpson Mining Co., Rochester, 10,700 net tons, mine-run, to Albion, Batavia and Gowanda, $1.60 per ton; 19,000 tons mine-run, to Middletown and Thielle, $1.55 per ton; 2,675 tons ¾ lump and 700 tons 1¼ lump to five delivery points, $1.80 per ton; 13,000 tons mine-run to St. Lawrence, $1.55 per ton.

Pittsburgh & Shawmut Coal Co., Pittsburgh, Pa., 18,000 tons slack at $1.30.

Northern Coal Mining Co., St. Mary's, Pa., 4,000 tons nut and slack to Newark, N. Y., $1.40.

Active British Mine Hums With Brisk Demand

Contrary to general belief, not all the British coal pits are idle. Dean Moor colliery is very much in action and unable to meet the demands. No pickets of trade unionists or Communists interfere with its operatives.

Dean Moor colliery lies in the moors of a remote district of the Cumberland Mountains—the nearest railroad station is more than twenty miles away. Its daily output before the strike was about 75 to 80 tons of coal per day. Neither the company owning the pit nor the 65 to 75 men working it are affiliated with the owners' or the miners' associations.

The men, in addition to free houses and firing and medical benefits, obtain a quarterly bonus on their output as well as their wages. And, since this mine was opened early in the century, it has had neither labor nor financial troubles. Its coal is sold in the surrounding agricultural and iron-ore districts, and in ordinary times the purchasers usually cart or otherwise convey it themselves. During the strike, however, a fleet of motor and steam wagons and lorries have been distributing orders within a vastly increased area.

Barnett Coal Co., Latrobe, Pa., 44,640 tons mine-run to seven delivery points, $1.45 per ton.

Steamship Fuel Corp., New York City, 25,350 tons mine-run to eight delivery points, $1.45 per ton.

George D. Harris Coal Co., New York City, 22,000 gross tons mine-run to Brooklyn and Manhattan, $4.44 per ton f.a.s.; 50 tons smokeless coal at $1.78 per ton and 400 tons at $1.64.

Whitney & Kemmerer, New York City, 670 gross tons slack for Randall's Island, $4.54 per ton, f.a.s., and 56,400 net tons mine-run to five institutions at $1.295 per ton.

Kaiser-Barnett Coal & Coke Corp., Buffalo, 12,000 net tons mine-run to two institutions, $1.68 per ton.

Demand Higher Rates on Coal-Mine Insurance

Compensation-insurance experience on coal-mine risks throughout the country has been so unprofitable that the company members of the Associated Companies at a meeting on June 16 decided to discontinue writing such risks except at a substantial increase in rates. In any states which will not approve of an adequate rate basis the business will be discontinued entirely so far as the members of the Associated Companies are concerned.

Coal-mine business written through the Associated Companies during the past five years shows an underwriting loss of $4,500,000. It is estimated that rates are about 50 per cent less than they should be to make possible an even break on the underwriting. On the other hand, the acquisition cost of the business has been kept as low as possible, only 10 per cent commission being allowed, as compared with 17½ per cent paid on other classes of compensation insurance. A considerable proportion of the expense of conducting the business goes into the inspection costs, without which the risks could not be written at any rate.

The Associated Companies is already withdrawing from Kansas as the laws of that state are such that coal-mine compensation risks cannot be written at any rate. The United States Fidelity & Guaranty Co., of Baltimore, recently announced that it had discontinued writing coal-mine risks, and the Integrity Mutual Casualty Co., which recently failed for several millions, charged that the bulk of its troubles was due to coal-mine loss experience.

The Associated Companies is composed of the Hartford Accident & Indemnity Co. of Hartford, the Maryland Casualty Co., of Baltimore; the Standard Accident Insurance Co., of Detroit, and the United States Casualty Co. of New York. These companies have aggregate assets of about $95,000,000.

Senator Fred M. Sackett, of Louisville, is behind a bill introduced in the U. S. Senate on June 15 to establish a mine-rescue station and equipment at Madisonville to serve the western Kentucky field.

Bituminous Coal Loaded Into Vessels at Lake Erie Ports During Season to End of May

(In Net Tons)

Ports	Railroads	1926 Cargo	1926 Fuel	1926 Total	1925 Cargo	1925 Fuel	1925 Total	1924 Cargo	1924 Fuel	1924 Total
Toledo	Hocking Valley	1,650,366	46,881	1,697,247	1,867,930	56,230	1,924,160	1,422,987	40,881	1,463,868
	Big Four	303,911	1,377	305,288	310,425	330	310,755	.....	.....	.....
	N. Y. C.-Ohio Central Lines	371,958	18,461	390,419	138,659	12,991	151,650	4,505	227	4,732
	Baltimore & Ohio	519,927	13,848	533,775	536,564	17,385	553,949	234,923	7,975	242,898
Sandusky	Pennsylvania	1,071,060	30,065	1,101,125	920,309	28,507	948,816	276,743	7,832	284,575
Huron	Wheeling & Lake Erie	188,461	7,980	196,441	200,977	9,763	210,740	179,392	8,426	187,818
Lorain	Baltimore & Ohio	244,386	22,274	266,660	41,645	25,588	67,233	252,415	24,885	277,300
Cleveland	Pennsylvania	62,301	17,475	79,776	13,261	27,501	40,762	158,254	29,146	187,400
	Erie	.....	.....	.....	18,138	1,252	19,390	56,556	1,917	58,473
Fairport	Baltimore & Ohio	48,668	10,917	59,585	44,497	18,239	62,736	53,407	20,234	73,641
Ashtabula	New York Central	21,946	8,313	30,259	89,583	22,899	112,482	191,531	22,488	214,019
	Pennsylvania	183,192	10,922	194,114	85,704	10,773	96,477	131,412	14,398	145,810
Conneaut	Bessemer & Lake Erie	233,597	29,117	262,714	202,381	47,569	249,950	294,959	43,446	338,405
Erie	Pennsylvania	32,441	9,561	42,002	23,554	12,187	35,741	66,026	14,089	80,115
Totals		4,932,214	227,191	5,159,405	4,493,627	291,214	4,784,841	3,323,110	235,944	3,559,054
Storage Loading		*60,142	774	60,916	*33,017	1,048	34,065	*182,060	4,940	187,000

* Coal loaded into vessels in December of previous year, after close of navigation, and forwarded from Lake Erie ports during year indicated.
Compiled by Ore & Coal Exchange, Cleveland, Ohio; H. M. Griggs, manager.

Direct Efforts to End British Strike Await Fate of Legislative Program; Labor Scores 8-Hour-Day Proposal

Attempts at direct negotiation to end the British coal strike, now in its eighth week, apparently have been abandoned while both parties wait to see what fate overtakes the legislative program laid down by the British Government.

The first plank in the platform advocated by Premier Baldwin is the return to the eight-hour day. Commitment of the government to this proposal already has provoked a storm of disapproval from the Laborites and the Liberals. The Baldwin party, however, has given no indication that it intends to retreat from its position.

The Premier outlined his plan in an address to the House of Commons on June 15. In general it was based upon the recommendations of the Royal Coal Commission, which rendered its report several weeks ago. In his speech the Premier made specific reference to recommendations for the amalgamation of existing undertakings and the enactment of enabling legislation. He indicated, however, a reasonable time would be allowed the operators to effect such consolidations voluntarily.

Nothing was said with respect to the nationalization of mineral rights. Mr. Baldwin intimated, however, that the recommendations of the commission dealing with selling agencies, profit-sharing, family allowances, housing and re-absorption of workers displaced by mergers would be taken up later.

Although the subsidy offer of the government expired on June 1, the hope was held out that government aid would be made available to tide over an emergency if owners and miners composed their differences.

Baldwin Defends Longer Day

The proposal to lengthen the working day, which runs counter to the recommendation of the commission, was put forward as the necessary first step in resumption of operations. Mr. Baldwin defended the suggestion as one which gave the workers a chance to maintain their present standards of living. His failure to advocate the eight-hour day earlier, he explained, had been due to the fear that some of the owners might abuse the concession. He had since been assured that "as to 50 per cent of the coal produced, there would be no fall in wages at all, and as to 25 per cent, a fall of less than 10 per cent during the period of July, August and September. Everywhere thereafter the 1921 minimum would be guaranteed."

Nothing was to be gained, he continued, by prolonging the struggle. On the contrary, "it will leave every one worse off at the end than they were at the beginning. The commissioners declared that disaster was impending over the industry unless certain things were done. Instead of co-operating wholeheartedly to do these things, the parties to the dispute have preferred to fight. Had they agreed with the government on March 24 to stand firmly on the report we might today have made some advance with laying the foundations of a new prosperity, the men would have been back at work and our foreign competitors would not have been capturing our markets."

A. J. Cook, secretary of the Miners' Federation, was one of the most caustic critics of the Baldwin program. Lloyd George also assailed the longer working day and the Labor Party went on record in opposition.

"The Prime Minister," said "Emperor" Cook, "has confirmed the opinion already held by the miners and their leaders that he is nothing more or less in this dispute but the advocate of the coal owners. A reduction of hours has always been bitterly opposed by the mine owners. The miners have been absolutely solid on this question. There is no more prospect of their giving way than of the railwaymen, the transport workers or others agreeing to longer hours of work.

"The debate in the House of Commons has done nothing to bring a settlement nearer. Every one must see how the Prime Minister tries to act in a dual and deceptive rôle by informing the nation in a speech that was broadcast that he was not out to reduce the standard of living of the miners, and yet, in his speech in the House of Commons yesterday, he made no secret of the fact that the only proposals he has put before them are longer hours and lower wages.

"Instead of bringing forth the olive branch, he has unsheathed the sword. The miners will never voluntarily accept reductions of wages. No attempt to enforce longer hours by legislation will succeed. It is tragic that the British Prime Minister uses his position as chief officer of the Crown to defend the coal owners' interests against those who invest their lives in the mines."

The resolution adopted by the Laborites at a meeting on June 16 read:

"The declaration of policy made by the government yesterday on the mining crisis as regards hours and wages is in violation of the recommendations of the Royal Commission report, is inadequate to meet the problems of the industry; is a surrender to the demands of the owners and calculated to prolong and embitter the struggle.

"The party, therefore, resolves to offer to these proposals its most strenuous resistance."

Says Government Blunders

"It seems to me the government is blundering very badly," said Lloyd George. "When I had news last night of what had been said, I could hardly believe it. It seemed to me to be so incredible that I thought I had better wait for a full report. I was very much surprised that the summary I had last night was completely confirmed by the full report."

A meeting of a committee of the miners' international organization was scheduled for London yesterday. It was announced that this meeting would consider what steps could be taken to further aid the British miners. British members were reported to be ready to ask for more drastic measures to prevent the exportation of coal from other countries to the United Kingdom.

Tomorrow (June 25) the executives of the unions affiliated with the Trades Union Congress are to meet. Interest centers in what will happen if Mr. Cook repeats his attacks upon the labor leaders responsible for calling off the general strike last month.

Unemployment outside of the coal industry increased only 5.3 per cent last month, but June figures will undoubtedly be much more unfavorable. A mid-month review of the situation shows the iron and steel industry at a standstill, Sheffield cutlery plants hard hit, many pottery kilns closed down, cotton spinning mills phalanxing workers and the automotive industry seriously embarrassed by a shortage of supplies.

Reserves of Coal at Hornsey (North London) Station of London Northeastern Ry.

Though the British railroads are curtailing their services, they are well provided with stocks of coal. Where in this country the coal would be pitched into a pile and removed by a steam shovel with perhaps some of the earth foundation, in England the lumps are arranged on the outside as carefully as if a masonry wall was being constructed.

Mine Bureau Economic Plan Hinges on Funds

With the approach of the new fiscal year plans of the Bureau of Mines for the organization of its economic work are beginning to take form. Director Scott Turner and Assistant Director C. P. White up to the present have made no secret of the fact that they have been marking time in the economic end of the Bureau's activities awaiting the availability of funds carried by the 1926-1927 appropriation act.

Although the broad features of the Reynders committee's report recommending the centralization in the Bureau of Mines of the work on the economics of mining have been carried out in part, the details for handling the work inside the Bureau have not been worked out finally. Mr. White's hands have been tied by the complexities of regulations covering the handling of appropriations.

Another uncertainty has been removed in the decision of Congress not to pass coal legislation.

Though the organization plan is still under discussion the underlying principles are becoming clear. Mr. White hopes that his branch can become a great center of information concerning the mining and refining industries. With the economic and technical branches working together he hopes that the Bureau may become the handmaiden of mining in much the same way that the Department of Agriculture is the servant of the agricultural industry.

The problems of organization in reaching the objective include the linking of the economic studies of mining with the engineering studies in such a way as to give the engineers the benefit of the economic viewpoint and give the commodity specialists the advantage of engineering assistance. This can be done by detailing engineers from the technical branch to act, part time, in the economic branch and in some instances by consolidating the economic and technical work under a single commodity chief.

There also is the question of teaming the studies of production and marketing with the studies of the Geological Survey with regard to reserves.

A further need is to tie the statistics of a given commodity with the other economic and engineering studies of that commodity and at the same time provide for the necessary uniformity of statistics on all commodities. This may be done, it is believed, by decentralizing the work. It would be possible to detail the statistical personnel to the commodity divisions and provide for the general co-ordination by some person responsible for the statistical program as a whole.

The report of the U. S. Engineers of the Pittsburgh district shows that in May there were moved on the Monongahela River 1,618,474 tons of coal and 26,582 tons of coke; on the Ohio River in this district, 468,513 tons of coal and 26,582 tons of coke, and on the Allegheny River, 89,550 tons of coal.

Orient No. 1 is Still a Large Mine

While New Orient's production was curtailed for a few months by confining the work to development and repairs, the output of "Old" Orient was boosted from the usual 6,000 tons per day to 8,000 tons. This is raised in mine cars by a huge steam hoist through a shaft approximately 500 ft. deep. The older mine is 3 miles from New Orient.

Ban on Ohio Co-operatives Receives Scant Notice

Word received from all sections of the southern Ohio field indicates that little attention was given to the recent order of the officials of the United Mine Workers in that state relative to union men working on a co-operative basis. This practice had become widespread in the field and following a mass meeting of idle miners at Nelsonville recently, the order was issued.

It was announced that union men would not be allowed to work where their wages would not equal the Jacksonville scale. But outside of a few of the smaller mines which ceased operations, little effect resulted from the order. The larger co-operative concerns continued work and are selling their product at the current market quotations, which seldom if ever net the miners full union wages. It was announced that some of the co-operative concerns made slight changes in their manner of operation and will continue unmolested.

Railroads Using More Coal; Cost Declines

Class 1 railroads of the United States consumed 9,024,910 net tons of coal in locomotives in freight and passenger service during March, 1926, according to the Interstate Commerce Commission. Consumption by districts was as follows: Eastern, 4,389,628; Southern, 2,185,000; Western, 2,450,282 tons. During the corresponding month of 1925 the totals were: Eastern district, 3,917,560 tons; Southern, 1,935,515; Western, 2,296,505; United States, 8,149,580 tons.

The average cost per ton in the Eastern district in March, 1926, was $2.72; Southern, $2.22; Western, $2.93; United States, $2.66. These figures, when compared with those for March, 1925, represent decreases in all districts, as follows: Eastern, 14c.; Southern, 19c.; Western, 17c., and for the country as a whole, 16c.

Teton Coal Co. Asks Lower Rates in Idaho

Backed by the Idaho State Grange, the Teton Coal Co. has filed with the Public Utilities Commission of Idaho a petition requesting that freight rates on coal from the mines of this company to points in Idaho be ordered reduced approximately $1 per ton. The petition sets forth that the present freight rates charged for the hauling of coal in this state are excessively high. This charge is laid at the door of the Union Pacific.

"The defendant's road from Talbot to Pocatello, a distance of 140 miles, follows a water grade and is comparatively straight and easily maintained," recites the petition, "passing, as it does, practically all that distance down the Snake River valley over level ground. The rate in effect from Talbot to Pocatello is $2.20 per ton on lump and $2 on slack, while the Union Pacific R.R. system, of which the Oregon Short Line is part, hauls coal from Boise to Kellogg and Wallace, 547 miles, over three mountain ranges and up the fourth grade, for 55c. per ton in excess of the rate charged from Utah and Wyoming coal fields to Boise."

Plan Naval Coaling Station

The Navy Department is reported from Washington as negotiating to take over from the War Department all or a portion of a tract of 273 acres formerly a part of the army base reservation in Norfolk, Va., for a naval coaling station. The land sought adjoins the coal station of the naval operating base.

Commerce Bodies Study Rates

The Pennsylvania State Chamber of Commerce has notified the Philadelphia Chamber of Commerce that it has set under way a study on a state-wide scale of soft-coal rates. Representatives of the two organizations will be present at a hearing on the problem this week.

Coal Industry May Escape Legislation If Plan Is Devised Before December To Prevent Interruption of Supply

By Paul Wooton
Washington Correspondent of *Coal Age*

After six ballots had demonstrated that the House committee on interstate and foreign commerce is deadlocked on whether or not any coal legislation should be recommended, the committee on June 16 voted to make the matter the first order of business at the December session.

On the motion to report the Parker bill favorably the vote was 9 to 9. A motion to bring out an unfavorable report also was a tie. An effort then was made to obtain a majority vote on the bill after some of its provisions had been eliminated, but the nine members opposed to the legislation were not satisfied. Another proposed amendment whittled away more of the bill, but the vote still was 9 to 9. In all, four amendments were proposed, but the members opposed to any legislation were unmoved.

There was opposition to the agreement to make coal legislation the first order of business at the December session. It is contended that this is a sort of suspended sentence held over the coal producers. Some members of the committee feel that this will stimulate the industry during the next five months to devise some plan of its own which will make less likely an interruption of coal supply.

Wyant Reiterates Opposition

Representative Wyant, of Pennsylvania, a member of the committee, interprets the action of the committee as follows:

"This means that the committee at this session will not take action on the several socialistic measures designed to strangle the coal industry. Furthermore, as one who has led the fight against political interference with private business, I can assure the public that any attempt to single out this industry for the yoke of bureaucratic control will be fought stubbornly and, I believe, successfully, in the next session of the Congress.

"We are convinced that we are fighting for a supreme public interest when we oppose a movement that would inevitably lead this country into the stormy and thorny path through which Great Britain is now plowing. This nation is a business nation. Insurance against stifling of private initiative on which our prosperity rests means continuing prosperity. And my continued aim and effort, in the interests of the public and of industry, will be to keep the dead hand of government off the coal business.

"In closing, I would say that if we ever do have regulation in this country we will have it with a vengeance. It will not be confined to coal, but will embrace oil and many so-called necessaries of life. In my sober judment such regulation would spell the beginning of the end of a great republic. The importance of this issue, involving bureaucracy and supergovernment of business, cannot be overemphasized. The very foundations of our republic would be imperiled. Having faith in the future, I am confident this hysteria has reached its peak."

The feeling among some, at least, of the advocates of coal legislation is that a cross-section of the interstate and foreign commerce committee would show it to be much more opposed to legislation than the House as a whole and that the membership as a whole would show a substantial majority for the Parker bill, or even more drastic legislation. There are no evidences, however, that many members, other than a few in the anthracite-consuming region, are at all exercised over the failure of the committee to bring out legislation.

This legislative effort was one of the results of the anthracite strike. When the strike began it was predicted freely that its political results would be serious in that it would arouse a demand for regulation that could not be resisted. Despite the fact that the strike established a record in its duration, the expected political pressure was slow in materializing. When it did arrive it was not strong enough to get even the mildest bill on the calendar. Coal legislation at this session of Congress has been given more careful consideration than at any previous session, yet on the final vote it could not command a majority of the committee on interstate and foreign commerce.

Those opposing coal legislation emphasized as their strongest argument that coal should not be singled out for regulation or even near-regulation. Whatever is prescribed for coal should be extended to oil, clothing, food and other necessities of life. This point was used with telling effect and is quite strong enough to convince any ordinary member of Congress unless there are strong countervailing reasons.

Sentiment for Legislation Grows

On the other hand, the result shows that Congress has moved much nearer legislation than it was five years ago. Then with the war prices and the panic of 1920 prices freshly in mind the rather innocuous Frelinghuysen seasonal rate bill was voted down by a large margin in the Senate. At that time there was not even a rumble of legislation in the House. There is little doubt that the present House would have passed any coal bill which the interstate and foreign commerce committee might have reported. In the present Senate more than a majority voted to take up the Copeland bill. It happened that the proposal on which that vote was taken was to make the bill a special order, which requires a two-thirds vote.

Thus it is seen that the slow growth of opinion is in favor of some public supervision of any industry that does not give reliable service or does not prevent the recurrence of abnormal prices. There is no move to regulate oil or clothing or shoes or potatoes because the producers of those articles somehow manage to keep the supply going.

To the mind of the ordinary consumer the fact that he cannot get coal when he wants it, but can get gasoline, makes a great difference. The test of strength shows that the sentiment for coal legislation has not reached the point to carry Congress but that the margin is a narrow one. If the industry can keep the public supplied with coal and prevent unreasonable increases in prices the sentiment will subside, but strike talk next winter is likely to furnish the slight additional pressure which will be needed to put coal legislation on the statute books.

Gold Medal Is Bestowed on Champion Coal Loader

Paul Dobele, a coal loader employed by the Bethlehem Mines Corporation, a subsidiary of the Bethlehem Steel Corporation, has just been given a gold medal by the company for loading 538 tons of coal in 12 working days. The coal was loaded with a hand shovel in the Dakota mine, in West Virginia. Dobele's average daily loading of 45 tons was nearly equal to the amount of coal carried in a full sized railroad coal car.

In France, Dobele's native country, the average yearly production per miner in 150 tons. In Germany and the United Kingdom the average output of coal is 225 tons per year. The average output in the United States is 700 tons. Dobele thus loaded in 12 days almost a year's production of an American miner, more than two years' production of a British or German miner, and over three years' production of a French miner.

Another gold medal has been awarded to Will Miller, the champion coal loader of another Bethlehem mine nearby. Miller loaded 413 tons in 14 days. This was during the first half of October last year. During the entire month of October, consisting of 27 working days, Miller loaded 722 tons of coal.

The medals were presented at the annual first-aid meet, at Barrackville, W. Va., by N. A. Elmslie, division superintendent, Marion Division, of the Bethlehem Mines Corporation.

Accept Less Than 1917 Scale

Employees of the Lincoln Coal & Coke Co., at Keisten, in Fayette County, Pa., have accepted a reduction in wages somewhat below the 1917 scale, at which they were working, in order to enable the company to take a contract which will insure work for several months. The company's plant is in the Connellsville coke region.

News Items From Field and Trade

ALABAMA

Montevallo Electrifies.—The Montevallo Coal Co. recently spent $60,000 for electric motors to take the place of the old steam equipment. The capacity of the mines has been increased 150 tons daily, now giving a daily output of 600 tons of coal, according to T. A. Thomas. The present officers of the company are T. A. Thomas, president and treasurer; V. J. Nesbit, vice-president, and J. M. Chapman, secretary and sales manager.

ARKANSAS

Spadra Mines to Resume.—Coal mines in the Spadra district are expected to resume operations between June 25 and July 6. The anthracite mines in the Spadra field probably will start work about July 6. J. E. Nichols, district manager for the Midland Coal Co., declared that indications point to a full run of nine months. All disagreements between operators and miners apparently have been settled, W. T. Perkins, local manager, said.

COLORADO

Coal Company to Cut Wages.—The Vickers Coal Co., of Trinidad, operators of a number of mines in Las Animas County, has filed notice with the State Industrial Commission of its intention to put a 10 per cent wage reduction into effect on June 24. The reductions, according to announcement filed with the commission, is effective among all of the employees of the company.

ILLINOIS

To Extend Coal Road.—The St. Louis, Troy & Eastern R.R., a Madison County coal road controlled by the Illinois Power & Light Corp., has been authorized by the Interstate Commerce Commission to build a 1.53 mile elevated extension to connect with the eastern end of the McKinley Bridge, in Venice. The improvement will give the railroad an important connection with the North St. Louis industrial district. The work will cost $863,000, it has been estimated.

The new National mine, at Belleville, reopened June 5, giving employment to 150 miners.

Chicago Firm Bankrupt.—D. E. McMillan & Brothers, 37 W. Van Buren Street, Chicago, has filed a petition in bankruptcy in U. S. District Court, listing liabilities as $194,140.69 and assets as $124,394.15. Failure to meet payrolls was given as the cause. The company was interested in the Sincerity Mining Co., operating in the southern Illinois field. The petition was filed by David E. and John P. McMillan, as D. E. McMillan & Brothers, a partnership. The petition has been referred to a referee and a receiver or trustee is expected to be appointed soon.

The new Edgewood-Metropolis cutoff of the Illinois Central R.R. will be hauling coal from Franklin and Williamson counties by November, according to announcements in those counties. Track has been laid complete for about twenty-two miles south from Edgewood and it is expected that further extensions of the new roadbed will allow shipments into the northwestern industrial fields by early fall or winter.

INDIANA

Air Cleaning Plant for Ayrshire.—The Ayrshire Coal Co. is installing a new coal cleaner at Mine No. 8, at Arthur, Pike County. Work started a few days ago and will be rushed to completion. The coal will be cleaned by air instead of water. The new plant will cost about $100,000 and will be modern in every respect.

Walkout Ended. — More than 100 miners who walked out at Francisco mine No. 2, Princeton, Ind., several days ago following a dispute over division of mine cars have returned to work. It was reported that the district No. 11 mine board, at Terre Haute, advised the men to return to work. The men walked out when the mine management refused to grant their demand that the output of a mine loading machine be limited to the number of cars the machine of four men could load if working by hand. This would have cut the machine's output to one-fourth its capacity.

The Twin Oaks Coal Co., at Linton, has filed a preliminary certificate of dissolution with the Secretary of State.

KENTUCKY

The Hopkins County Mineral & Mining Co., Madisonville, has leased 3,000 acres in Hopkins County for development of coal mining in the near future.

The White Cross will hold a first-aid contest at Pikeville July 5 for the coal mine teams of the Pike Sandy Valley. Many teams have already registered and many others are expected.

The Cameo Coal Mining Co., Mayking, has 900 acres of land under development. The company has a daily output of 400 tons.

The old plant of the Mayking Coal Co., in southeastern Kentucky, idle for a long time, is being placed in running shape, and will be operated by A. B. Ewen, manager of the Ace Coal Co., Caudill, for the Houser Coal Co. A bridge connecting the Mayking spur with the main line of the Louisville & Nashville R.R. is being rebuilt.

MISSOURI

Strip Mine Nearly Ready. — Actual operation by the Howard County Mining Co. on its strip mine project near Higbee will begin soon. A contour map of the entire field has been made by the engineers, showing the location of the coal, the proposed situation of the tipple and other buildings.

The Coil Coal & Mining Co., with headquarters at Madisonville, Ky., has opened a branch office in the Syndicate Trust Building, St. Louis. J. C. Mahen is in charge.

NEW MEXICO

The state may tax coal produced on land leased from the United States, Assistant Attorney General Robert C. Dow ruled in an opinion announced recently. His opinion is in reply to an inquiry from the state Tax Commission.

NORTH DAKOTA

R. M. Stee, of Minot, and others have obtained an option on the John Coffin farm near Velva, with a view to developing the coal which is known to underlie it.

OHIO

Elkhorn City Company Quits.—Contracts with producing companies having expired the Elkhorn City Coal Co., with offices in the Dixie Terminal Building, Cincinnati, has gone out of business. In its place comes the Hatcher-Elkhorn Coal Co., of Big Shoal, Ky., its chief source of supply, which has taken over the offices. A. P. Knedler, former sales manager for the Elkhorn City company, has taken a similar position with the Hatcher-Elkhorn company.

Hughes Paying His Debts.—John Glaser, of the Midland Coal Co., of Cincinnati, who was appointed trustee for the Hughes Coal Co. last autumn, when financial disaster faced the latter company, reports that 80 per cent of the indebtedness has been paid off and prospects are favorable for all debts being paid dollar for dollar. Charles Hughes, head of his company, has worked assiduously to accomplish this and seems well on the way of fulfilling the faith which his creditors placed in him.

Portal of Main Entry of No. 3 Mine, Phelps Dodge Corporation

Substantial construction marks the modern work of this company. The foliage on the hills, stunted and scattered, marks the semi-arid character of the climate, as well as the height of Dawson above sea-level.

Johnston Mine Closes.—The Johnston mine at Dilles Bottom notified the miners to remove their tools by June 15, as the mine is to be temporarily dismantled. The duration of the shutdown is uncertain.

Chauncey Mine to Close.—The New York Coal Co., with headquarters in Columbus, has announced that mine No. 26, at Chauncey, will be closed down indefinitely. This is due to the fact that the company cannot compete with West Virginia coal as long as compelled to pay the Jacksonville scale. About 400 men were on the payroll and the mine has been operated intermittently for the past four months, averaging about half time. Mine No. 26 of the same company, located at Floodwood, has been closed since January.

Uncover 10 Ft. Seam.—While drilling a test well on the Mills farm, near Mills Station, Gallia County, the drill pierced a 10-ft. seam of coal 350 ft. from the surface. The discovery of this seam has aroused much interest among the land owners of that section.

Toledo Dumpings Heavy.—Dumpings at the Hocking Valley docks at Toledo during the week ended June 9 totaled 340,698 tons as compared with 321,957 tons the previous week. The total dumpings up to that date were 2,106,760 tons as compared with 2,304,825 tons for the corresponding period last season. Dumpings at the New York Central docks during the week ended June 9 were 171,221 tons as compared with 208,989 tons the previous week. Total loadings at these docks to date have been 890,796 tons against 561,295 tons during the same period last season.

PENNSYLVANIA

Limits Medical Allowance.—The Attorney General's Department, in an opinion written by Deputy Attorney General James O. Campbell to Richard H. Lansburg, Secretary of Labor and Industry, holds that the State Workmen's Insurance Board has no authority to authorize payment of more than $100 for medical services, medicines and supplies for employees of policyholders of the state fund entitled, because of injuries received, to have such services and supplies furnished by their employer under the provisions of the Workmen's Compensation act. It also is held that the board has no authority to pay for such services and supplies for a greater period than the first thirty days after disability begins.

Wider Market for Lehigh Field?—The Lehigh & New England R.R. has been leased for 999 years by the Lehigh Coal & Navigation Co. to the Reading Company. In anthracite circles it is believed that this may open the way for a heavier tonnage of Lehigh coal being marketed in Philadelphia.

Coal Fall Kills Two.—Two anthracite mine workers were killed by a fall of coal in the No. 8 colliery of the Lehigh Coal & Navigation Co., at Coaldale, June 17.

New Open-Shop Record.—The Pittsburgh Coal Co. reports a new high record for open-shop tonnage during the week ended June 12. Eleven mines of the company in the Pittsburgh district produced 62,235 tons during that week. There are nearly 3,000 men now working in these mines. The average for the week was 2,772 men at work.

WEST VIRGINIA

To Build Two Big Tipples.—Contracts have been awarded for the construction of two large, modern steel tipples for the Pemberton Coal & Coke Co. in the Winding Gulf field. One will be installed at Big Stick and the other at the Watwise mine. The cost will be about $100,000. The structures will be equipped with shaker screens, picking tables, loading booms, refuse-disposal equipment as well as with resizing conveyors. Each tipple will have a capacity of 300 tons an hour.

New Equipment for Koppers.—A three-track shaker screen and rope-and-button conveyor is being installed at the Koppers Co.'s mine in Boone County.

At the annual commencement exercises of the University of West Virginia, at Morgantown on June 15, nine men were graduated from the school of mining engineering: Those who will be connected with the coal industry in the immediate future are as follows: C. F. Farmer will join the force of the Crab Orchard Improvement Co. at Eccles, Raleigh County; P. H. Gillie will become a safety director of the West Virginia state Department of Mines; H. G. Kennedy and I. A. Given will make a study of mining methods in West Virginia, and G. E. Fish will join the Island Creek Coal Co., at Holden, Logan County.

James M. Thompson, an employee of the Amherst Coal Co., Logan, was fined $10 recently for failing to timber his working place. Fred Maxwell, an employee of the Chafin-Jones-Heather Coal Co. at Peach Creek, Logan County, was fined $50 for shooting six holes before cleaning up the bugdust, thereby increasing the hazard of a dust explosion.

The Fall River Pocahontas Collieries Co., a New York corporation, has reduced its capital stock from $90,000 to $30,000, according to a certificate filed in the office of the Secretary of State in Charleston.

Air Locks at Bethlehem Mines—Success is said to have followed the installation of a double air-door lock recently installed as an experiment by the Bethlehem Mines Corporation in its mines No. 41 at Barrackville and No. 42 at Dakota. The lock is designed to prevent short-circuits in aircourses. A latch, operated by a cable and spring, prevents more than one of the two doors being opened at a time. When door No. 1 is closed, a cable connecting with the latch on door No. 2 tightens, drawing the latch away and releasing door No. 2. When door No. 2 is then opened the same principle is reversed, releasing a cable attached to the latch on door No. 1. A spring, behind the latch, forces it into place so as to lock the door until No. 2 is closed again.

The Bethlehem Mines Corporation has thoroughly rock-dusted both No. 41 and No. 42 mines here, No. 41 having received five treatments and No. 42 four treatments.

Baxter Falls in Line—With three of its largest mines, Nos. 261, 251 at Coalwood and No. 86 at Carolina, using only permissible equipment, the Consolidation Coal Co. is now installing permissible equipment in its No. 96 mine at Baxter.

Opens Old Mine—Idle for several years, the old Ehlen mine of the Consolidation Coal Co., near Shinnston, will be reopened within the next few weeks. Workmen are now busy cleaning up in preparation for the opening. This mine formerly loaded some of the best coal mined in the Fairmont region, the bed being thick and containing a good grade of Pittsburgh coal.

Short-Circuit Fire—A small fire, believed to have started from a short-circuit in the electrical wiring, occurring in the First street mine of the Glendale Gas Coal Co. at Moundsville recently, was extinguished before much damage

had been done by firemen from the Moundsville city fire department. The only loss was to a little timbering in the mine.

Reopen Mines to 600.—With the resumption of operations at the Wendel and Galloway mines during the first week of June, employment was given to 600 miners in northern West Virginia. The Wendel mine, located in Taylor County, is owned by the Maryland Coal Co. It had not been in operation for about two years. The Simpson Creek Collieries Co. owns and operates the Galloway mine, which is located in Barbour County, midway between Clarksburg and Grafton. The Galloway mine is being operated at capacity. This mine had been idle since Sept. 1. Both mines are on a non-union basis although formerly operated under an agreement with the United Mine Workers.

Another Non-Union Mine — Operations were resumed at the Golden mine of the By-Product Coal Co. in the Scotts Run section of Monongalia County on the morning of June 4. The mine will be run on an open-shop basis. It is owned by the Watson interests of Fairmont, but it has been leased, it is understood to several people in that city. The company has no agreement with the union. With the Golden mine resuming operations there are now 25 non-union plants operating on Scotts run, with no mines operating under agreement with the union. The non-union tonnage totals about 200 cars daily.

Testing New System—The American Rolling Mill Co., is trying out a four-room system in operating its mines Nos. 1 and 2 at Nellis, Boone County. The idea is to eliminate waste of time in furnishing the cars to the miner at the working face. Instead of one car being placed, four are furnished. The haulage is double-tracked in order to work out the plan.

The Melcraft Coal Co., with offices at 800 Union Trust Bank Building, Pittsburgh, Pa., has been granted permission to hold property and do business in this state. It is planned to operate a coal mine at Coalmont. The officers of the company include J. P. Williams, Jr., vice-president; John S. Briikes, Jr., secretary; L. R. Martin, E. C. Hugh, R. T. Rossell, F. Y. Young and F. J. Holub, all of Pittsburgh. A. W. Mellon is mentioned as a stockholder.

The Wilsondale Coal Co., Huntington, filed a certificate at the office of the secretary of state on June 2, which shows that it has been dissolved.

Improvements completed recently at Montcoal mine No. 1 of the Colcord Coal Co., in Raleigh County, include the installation of a rotary dump, 50 new steel mine cars and the replacement of one mile of track in the yard, 50-lb. rail being put down instead of 30-lb. A storage bin to place nut coal also was erected.

Arrest Law Violators — Eleven arrests were made in May for violations of the state mining laws, according to Robert M. Lambie, chief of the state department of mines. Reports show that $625 was assessed in fines. Infractions consisted of tamping holes with fine coal, shooting black powder without tamping, firing more shots than one at the same time, non-employees entering a mine and operating locomotives without authority and while under the influence of liquor, careless handling of a trip in the main haulage and other violations. The heaviest fines were for $100 which was assessed against two men, jail sentences were imposed in some instances.

Fine Coal Being Stocked at a Cement Works

Plants of the cement industry are the biggest users of pulverized coal. This is used for drying the ingredients and for burning the clinker. Joseph Harrington at the American Wholesale Coal Association's meeting in Toledo, June 8, said that 8,000,000 tons of powdered coal was used annually in cement works and only 5,000,000 tons at steam plants.

Fire Creek Coal Co., at Fire Creek, Fayette County, has let a contract to erect a new steel tipple to replace the one destroyed by fire several weeks ago. This is the oldest mine on New River, having been opened up about 1874. The Fire Creek seam of coal took its name from this concern. The tipple will have a capacity of 500 tons a day and will span three tracks. Shaker screens and loading booms are included.

The Consolidation Coal Co., Fairmont, has made arrangements with the State Department of Health to obtain filtered water from Shinnston for its mining town at Owings, Harrison County. Effort is being made also to have the mining town provided with a proper sewage system. This is among the larger mining towns of the company.

The Buckhannon Fuel Co., Buchannon, W. Va., filed a certificate at the office of the secretary of state on June 5, showing that it has been dissolved.

The Index Mining Co., Parkersburg, W. Va., has reduced its capital stock from $100,000 to $10,000.

The Winfield Coal Co., which has been operating in the vicinity of Meadow Bridge for the last fourteen or fifteen years, is dismantling its plant and removing equipment to Boncar. It is stated that the lease at Meadow Bridge has been practically exhausted.

Davy-Realty Co., Welsh, W. Va., was chartered in the office of the Secretary of State in Charleston, W. Va., on June 12, to develop coal and other minerals. The capital stock is $10,000. The incorporators are : J. H. Barker, Gary; B. O. Swope, G. A. Swope, H. H. Riley and J. N. Harman, Jr., all of Welsh.

Randall Coal Co., Morgantown, has filed a certificate of dissolution at the office of the Secretary of State.

Adamston Mine Resumes.—After being shut down since April 1, the Adamston mine of the Baltimore Coal & Coke Co. has resumed operations and is expected to run continuously. The mine will operate under the open-shop system. It has a capacity of approximately 450 tons daily.

CANADA

Canadian Roads Buy Alberta Coal.—R. C. Vaughan, vice-president of the Canadian National Rys., has announced that his company is placing orders for approximately 1,300,000 tons of coal with Alberta mine operators. The Canadian Pacific Ry. also has placed large orders for coal in that field.

The British Empire Steel Corporation have contracts which will require an output of more than 100,000 tons per week to the close of navigation. The collieries of Cape Breton will shortly be in full operation.

Begin Development Work — Equipment for the development of the McCarthy coal property, at Long Rapids, on the Mattagami River in northern Ontario, has arrived at the property after considerable delay, owing to the breaking up of the winter roads. A force of thirty men will be engaged and development actively carried on. Many claims are being staked out to the east, west and north of the original discovery.

Justice Murphy, in Supreme Court Chambers, appointed the Canadian Credit Mens' Association interim receiver for the Nanoose-Wellington Collieries, Ltd., which has been operating a colliery at Lantzville, near Nanaimo, on Vancouver Island, B. C. The company's total liabilities are placed at $115,000, of which approximately $65,000 are secured.

Among the Coal Men

R. D. Flippen has been appointed mine supply purchasing agent for the Norfolk & Western Ry., a position recently created. Mr. Flippen was formerly with the Williamson Supply Co. He will have his offices at the Pond Creek Collieries in South Williamson, W. Va. His duties will be to purchase all supplies for the Norfolk & Western operations, including the Vulcan Collieries, at Vulcan; Howard Collieries, at Chattaroy, and the Pond Creek Collieres, all in West Virginia.

C. B. Hotchkiss, assistant general manager of the Utah Fuel Co. of Salt Lake City, Utah, will take over the duties of general sales manager which have been performed by J. S. Critchlow for the past two or three years, but who now becomes general sales representative for the company in California. Mr. Hotchkiss will add Mr. Critchlow's duties to his present office.

Will Huffman, of Stone, Ky., who has been acting general manager of the Fordson Coal Co., has gone west for his health. He has been given a leave of absence of three months. For a time he had been in Richmond, Va.

John Dunn, who was mine foreman of the Fordson Coal Co. (Henry Ford interests) in Kentucky, has accepted a position as superintendent of the Turner Coal Co. at Ragland, Mingo County, W. Va.

T. A. D. Jones, of New Haven, Conn., coach of the Yale football team and representative of the Wyatt Coal Sales Co. in Connecticut, was one of the guests of the Kanawha Country Club opening on June 12 and 13 in Charleston, W. Va. Other coal tradesmen among the invited guests were: **S. D. Fobes,** of New York City, Eastern manager of the Wyatt Coal Sales Co.; **Homer C. Gill** of Columbus, Ohio, and **Fred Lagg** and **W. I. Donnelly,** both of Cincinnati, Ohio.

Marshall J. H. Jones, assistant to the president and general superintendent of mines, and **M. D. Gibson,** chief engineer, of the Bertha-Consumers Co., are at the company's Eureka mine, near Morgantown, W. Va., superintending the installation of a river tipple. When this work has been completed and the federal government has finished Lock No. 7, the mine, it is expected, will be operated at capacity.

M. R. Barrios, of Havana, Cuba, president of the American Coals Co., was a recent visitor to the southern West Virginia coal field. He called on officials of the Wyatt Coal Sales Co. in Charleston, W. Va.

Fred S. Lamb, of Pittsburgh, Pa., has been named receiver of the Short Creek Coal Co., an Ohio corporation. The receiver was appointed on the petition of William W. Keefer, of Pittsburgh, who alleges that the company owes him $86,000 on two promissory notes in addition to having other liabilities totaling $2,500,000. Mr. Keefer admits that the company is solvent, but says it is unable to meet its obligations due to the condition of the coal market. The value of the company is placed at $4,000,000, and it is said to have a capacity of 900,000 tons per year.

Dr. T. D. Scales, owner of the John Bull and Erie Canal coal mines, near Boonville, Ind., has been re-elected a director in the Hoosier State Automobile Association, which position he has held since the death of former U. S. Senator James A. Hemenway, of Boonville, about four years ago.

Jerome C. White

Jerome C. White, research engineer, Davis Coal & Coke Co., Thomas, W. Va., has accepted an editorial position on the *Coal Age* staff. Mr. White was born at Sonman, Cambria County, Pennsylvania, in 1896, graduated at Allegany College, Allegany, N. Y., and gained his early experience in engineering at the operations of the Rochester & Pittsburgh Coal & Iron Co. and the Buffalo, Rochester & Pittsburgh R.R. In his first year out of college he worked in mines in Colorado and British Columbia. He became mine foreman for the Penker Mining Co., Portage, Pa., later enlisting in the U. S. Navy. After the war he returned to the Penker Co. In 1922 he was associated with the purchasing department of the Lorain Steel Co., at Johnstown, Pa. He assisted in the planning and development of the Lindsey Coal Mining Co., of Corinth, W. Va. In 1924 he attended the Graduate School of Business Administration at Harvard University and at the end of the year joined the staff of R. P. Maloney, vice-president and general manager, Davis Coal & Coke Co.

Capt. James O'Boyle, president of the Pittston Coal Mining Co., of Pittston, Pa., received an honorary degree at the recent commencement exercises held at Holy Cross College, at Worcester, Mass.

Erskine Hewett, William P. Gest and **Walter C. Janney** have been named to represent the board of managers of the Lehigh Coal & Navigation Co. on a committee of six which will review the capital structure of the company and report back to the managers. The representatives of the stockholders on the committee are **Samuel S. Walker, Walter L. Haehnlen** and **Thomas S. Gates.**

Obituary

Thomas F. Farrell Killed In Train Wreck

Thomas F. Farrell, vice-president of the Pocahontas Fuel Co., New York City, was killed in a collision of trains on the Pennsylvania R.R. near Blairsville, Pa., on June 17. He was returning from the convention of the National Coal Association, at Chicago, having been re-elected a director from West Virginia. His company has operations in Mercer and McDowell counties, in the southern West Virginia field. Mr. Farrell was a native of Sandusky, Ohio, and as a young man entered the employ of the Big Four railroad, later becoming connected with the traffic department of the Chesapeake & Ohio Ry. in Cincinnati. Probably 25 years ago he joined the old New River Coal & Coke Co. at Thurmond, W. Va., and became general manager of the western sales office in Cincinnati. After being with that firm about 12 years he joined the Pocahontas Coke Co., with headquarters at Bramwell, W. Va., and still later joined the Pocahontas Fuel Co. At the time of his death he was a director of the Smokeless Coal Operators' Association of West Virginia. During the World War he was a member of the committee from the Smokeless Coal Operators' Association to co-operate with the U. S. Fuel Administration.

After the National Coal Association meeting Mr. Farrell went to Notre Dame, Ind., to attend the commencement exercises, where one of his sons was graduated. This son was with him at the time of the accident, although he was not seriously injured, accordingly to reports.

Otto Michaelis, one of the best known operators of modern mines in the Standard field of Illinois, died suddenly June 8, at his home in Belleville, Ill., after a short illness. Born Dec. 17, 1875, in Belleville of a father who was at that time a coal-mine operator in the Standard field, he became a miner when old enough to work in the mines and retained his connection with the industry until his death. He and his brother up until two years ago operated from one to four mines at different times. The Superior mine at Belleville under his supervision was for many years noted for its economical management.

Louis T. Krebs, of Morgantown, W. Va., 50 years old, in charge of the Morgantown offices of the W. A. Marshall Co., coal brokers, of Philadelphia, Pa., died at his home June 15. Mr. Krebs had been associated with the W. A. Marshall Co. for several years and lived in Morgantown for 25 years. He was a member of the staff of the late Governor William E. Glasscock from 1909 to 1913.

Production And the Market

First Visible Effect of British Strike Seen in American Market; Price Change Slight

Development of a stronger demand for West Virginia high-volatile coal was the outstanding feature in the bituminous markets of the country the past week. This demand is directly attributable to the British strike and marks the first time that the cessation of British production has left a visible impress upon the market. At the outset of that strike there was a brief flurry, which disappeared as quickly as it came. Since then there has been some quiet, intermittent buying, but the volume did not become noticeable until a few days ago.

During the past week there were about sixty vessels waiting for cargoes at the southern loading piers. A number of boats also cleared from Baltimore. It was reported that British interests were in the market for 1,000,000 tons to be used on the railroads and in the gas plants of the United Kingdom. As a result of this demand, pier prices on pools 5, 6 and 7 increased 45 to 50c. per gross ton. Inland prices, while firmer, advanced only a fraction of that range.

Little Change in Price Levels

These increases, however, had little effect upon the general level of spot prices throughout the country. Pool prices at Baltimore were slightly higher. Boston prices also were higher. The general run of pool quotations at New York and Philadelphia were unchanged. Inland prices, other than those directly in the sweep of the buying movement, either remained stationary or declined. *Coal Age* Index of spot bituminous prices as of June 21 stood at 158 and the corresponding price was $1.92. This was an increase of two points and 3c. over the preceding week.

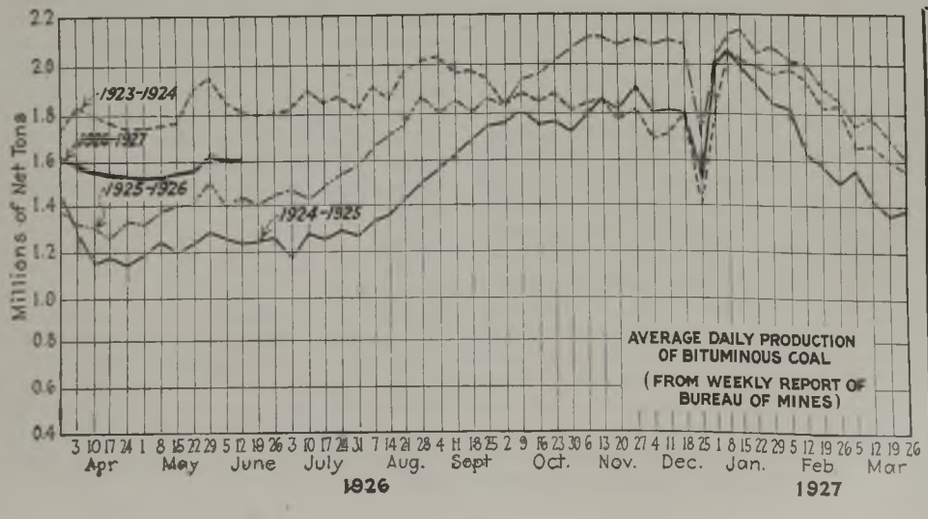
Production of bituminous coal is slowly contracting. Although the output for the week ended June 12, estimated by the Bureau of Mines at 9,600,000 tons, was 940,000 tons greater than the week preceding, that increase merely represented the recovery from the holiday depression. The actual daily rate of output showed a slight decrease. It does not appear at the present time that there will be an early substantial change in the current rate of production. More can be looked for, perhaps, in the shifts of centers of output.

Lake Movement Well Maintained

The lake trade is one of the strongest sources of support for present production. During the week ended June 20 lake dumpings totaled 998,341 tons of cargo and 46,178 tons of vessel fuel. This brings the total for the season to date to 8,299,150 tons, as compared with 7,113,347 tons for the corresponding period a year ago, 5,687,865 tons in 1924 and 9,096,840 tons in 1923. Anthracite dumpings the preceding week ended were 113,711 tons.

The recovery in anthracite production during the week ended June 12, when output was estimated at 2,083,000 net tons, hardly reflects the market situation. As a matter of fact, the principal consuming centers report a diminishing demand for domestic sizes. In sympathy with this decline several of the independent producers have adopted a policy of voluntary suspension of operations for two days a week. In no other way does it seem possible to check the downward movement of spot prices on independent domestic tonnage and the collapse of quotations on steam sizes.

The Connellsville coke market is a humdrum affair. Prices have shown no change because the spot demand has been so light. Production, however, is declining and there is little surplus tonnage offered—so little in fact, that substantial orders probably would mean an advance in furnace quotations.



Estimates of Production

(Net Tons)

BITUMINOUS

	1925	1926
May 29	8,141,000	9,683,000
June 5 (a)	8,375,000	8,660,000
June 12 (b)	8,622,000	9,600,000
Daily average	1,437,000	1,600,000
Cal. yr. to date (c)	212,592,000	243,004,000
Daily av. to date	1,539,000	1,757,000

ANTHRACITE

May. 29	1,681,000	2,089,000
June 5 (a)	1,634,000	1,678,000
June 12	1,825,000	2,083,000
Cal. yr. to date (c)	39,706,000	31,063,000

BEEHIVE COKE

June 5 (a)	130,000	195,000
June 12 (b)	136,000	196,000
Cal. yr. to date (c)	4,931,000	6,169,000

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

Middle Western Coals Sluggish

Neither steam nor domestic coals are active in the Illinois and Indiana producing fields. Large industrial consumers are withholding orders in spite of the fact that production of fine coal has been curtailed because demand for the larger sizes is so small. A number of Chicago plants claim that current stocks must be reduced before any large-scale purchasing is resumed. St. Louis, too, is backward. Standard prices, except on central Illinois lump and screenings, continue firm.

There is, however, enough regular business moving to keep Illinois output up to 1925 levels, but Indiana is slipping. Much of this tonnage is for industrial consumption. All fields are loaded down with "no bills" of domestic sizes. Strip mines have the edge on competitive business in southern Illinois. The Duquoin district just limps along. Railroad tonnage is the support of the Mt. Olive field. The Standard district is still selling at a loss.

In the domestic market, Eastern coals command the trade. There is a steady demand for smokeless mine-run in the Chicago district and a fair movement of lump, egg and nut to country yards. Retailers have found the Eastern high-volatiles an attractive buy. Anthracite demand is slow. Coke is seasonably active. There is very little storage business being booked in the St. Louis market.

Kentucky Continues Improvement

Improvement, both in all-rail shipments and in the tonnage moving to the lakes, characterizes the eastern Kentucky trade. In the western part of the state, however, complaint is made that the demand from markets north of the Ohio River is not living up to the rosy hopes expressed when the new sales arrangements were made several weeks ago. Nevertheless, recent production figures show weekly outputs considerably in excess of the totals for 1924 and 1925.

The heavier rate of shipment to the lakes has weakened the prices on slack coal from the eastern fields and western screenings have reacted in sympathy. The general range in both fields now is $1@$1.15. Some eastern producers also have sold block at $1.75@$1.80. Most operators, however, ask $2@$2.35. Aside from these defections and a little quiet shading here and there on specific orders, the general level of spot quotations is unchanged.

The market at the Head of the Lakes is still in a state of flux. Dock operators, however, are consoling themselves with the thought that prices will become stabilized on the basis of the recent reductions. One dock officially has reduced its price on Elkhorn lump and stove 75c.; splint, 75c.@$1; Hocking, 35@50c. Screenings are weak. Kentucky and Pocahontas screenings are offered at $4 and other grades are $3.75.

No further reductions are expected. Most of the large steam contracts have

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

Low-Volatile, Eastern	Market Quoted	June 22 1925	June 7 1926	June 14 1926	June 21 1926†
Smokeless lump	Columbus	$2.85	$3.10	$3.10	$3.00@$3.25
Smokeless mine run	Columbus	1.85	2.05	2.05	**2.00@2.20**
Smokeless screenings	Columbus	1.30	1.25	1.25	1.20@1.35
Smokeless lump	Chicago	3.10	3.00	3.00	2.75@3.25
Smokeless mine run	Chicago	1.95	1.90	1.90	1.85@2.00
Smokeless lump	Cincinnati	2.85	3.10	3.00	3.00
Smokeless mine run	Cincinnati	1.85	2.00	2.00	2.00
Smokeless screenings	Cincinnati	1.20	1.35	1.30	1.25@1.35
*Smokeless mine run	Boston	4.25	4.50	4.30	**4.35@4.50**
Clearfield mine run	Boston	1.75	1.80	1.75	**1.65@2.00**
Cambria mine run	Boston	2.10	2.05	2.00	**2.00@2.25**
Somerset mine run	Boston	1.95	1.90	1.85	**1.75@2.10**
Pool 1 (Navy Standard)	New York	2.55	2.60	2.60	2.50@2.75
Pool 1 (Navy Standard)	Philadelphia	2.60	2.65	2.65	2.50@2.80
Pool 1 (Navy Standard)	Baltimore	1.85	2.00	2.00	**2.05@2.15**
Pool 9 (Super. Low Vol.)	New York	2.00	2.05	2.10	2.00@2.25
Pool 9 (Super. Low Vol.)	Philadelphia	2.00	2.10	2.10	2.00@2.25
Pool 9 (Super. Low Vol.)	Baltimore	1.75	1.80	1.80	**1.80@1.90**
Pool 10 (H.Gr.Low Vol.)	New York	1.85	1.85	1.85	1.75@2.00
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.70	1.85	1.85	1.75@2.00
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.60	1.65	1.65	**1.70@1.85**
Pool 11 (Low Vol.)	New York	1.55	1.65	1.70	1.60@1.80
Pool 11 (Low Vol.)	Philadelphia	1.55	1.55	1.55	1.45@1.70
Pool 11 (Low Vol.)	Baltimore	1.40	1.60	1.60	**1.60@1.65**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.40	1.40	*1.30@1.50*
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.45	1.45	1.35@1.55
Pool 54-64 (Gas and St.)	Baltimore	1.45	1.40	1.40	**1.45@1.50**
Pittsburgh sc'd gas	Pittsburgh	2.40	2.25	2.25	2.20@2.30
Pittsburgh gas mine run	Pittsburgh	2.15	2.00	2.00	1.90@2.10
Pittsburgh mine run (St.)	Pittsburgh	1.95	1.80	1.75	1.60@1.90
Pittsburgh slack (Gas)	Pittsburgh	1.50	1.35	1.20	**1.20@1.30**
Kanawha lump	Columbus	1.85	2.05	2.05	1.85@2.25
Kanawha mine run	Columbus	1.40	1.55	1.55	1.40@1.75
Kanawha screenings	Columbus	1.05	1.05	1.05	.95@1.15
W. Va. lump	Cincinnati	2.30	2.25	2.10	**2.00@2.50**
W. Va. gas mine run	Cincinnati	1.50	1.50	1.50	**1.50@1.75**
W. Va. steam mine run	Cincinnati	1.40	1.35	1.35	**1.35@1.50**
W. Va. screenings	Cincinnati	1.15	1.15	1.05	**1.00@1.25**
Hocking lump	Columbus	2.15	2.35	2.35	2.25@2.50
Hocking mine run	Columbus	1.50	1.55	1.55	1.40@1.70
Hocking screenings	Columbus	1.30	1.10	1.10	1.00@1.20
Pitts. No. 8 lump	Cleveland	2.20	2.15	2.15	*1.80@2.50*
Pitts. No. 8 mine run	Cleveland	1.85	1.70	1.80	*1.70@1.80*
Pitts. No. 8 screenings	Cleveland	1.45	1.25	1.30	*1.20@1.30*

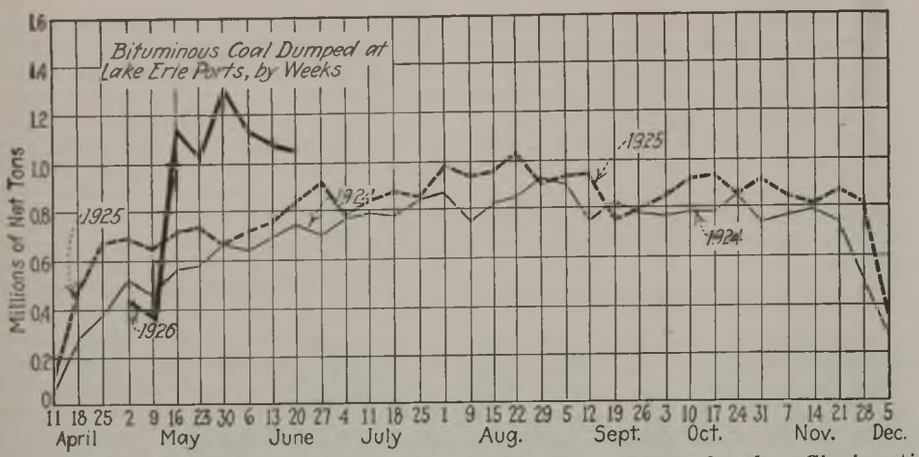
Midwest	Market Quoted	June 22 1925	June 7 1926	June 14 1926	June 21 1926†
Franklin, Ill. lump	Chicago	$2.60	$2.60	$2.60	$2.60
Franklin, Ill. mine run	Chicago	2.35	2.25	2.25	2.25
Franklin, Ill. screenings	Chicago	2.10	1.65	1.80	1.60@2.00
Central, Ill. lump	Chicago	2.35	2.30	2.30	*2.25*
Central, Ill. mine run	Chicago	2.10	2.05	2.05	2.00@2.15
Central, Ill. screenings	Chicago	1.75	1.75	1.75	*1.40@1.75*
Ind. 4th Vein lump	Chicago	2.60	2.40	2.40	2.25@2.60
Ind. 4th Vein mine run	Chicago	2.35	2.15	2.15	2.10@2.25
Ind. 4th Vein screenings	Chicago	1.85	1.80	1.85	1.75@2.00
Ind. 5th Vein lump	Cnicago	2.25	2.15	2.15	2.00@2.35
Ind. 5th Vein mine run	Chicago	1.95	1.95	1.95	1.85@2.10
Ind. 5th Vein screenings	Cnicago	1.50	1.40	1.45	1.40@1.50
Mt Olive lump	St. Louis	2.50	2.35	2.35	2.25@2.50
Mt. Olive mine run	St. Louis	2.25	2.15	2.15	2.15
Mt. Olive screenings	St. Louis	1.75	1.55	1.55	1.50@1.60
Standard lump	St. Louis	2.25	2.25	2.25	2.25
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@1.85
Standard screenings	St. Louis	1.70	1.30	1.35	1.25@1.50
West Ky. block	Louisville	1.50	1.75	1.80	1.75@1.85
West Ky. mine run	Louisville	1.25	1.20	1.25	1.10@1.40
West Ky. screenings	Louisville	1.05	1.10	1.10	*1.00@1.15*
West Ky. block	Chicago	2.00	1.75	1.75	1.65@1.85
West Ky. mine run	Chicago	1.35	1.15	1.15	.95@1.35
South and Southwest					
Big Seam lump	Birmingham	2.10	2.30	2.30	2.05@2.55
Big Seam mine run	Birmingham	1.75	1.85	1.85	1.75@2.00
Big Seam (washed)	Birmingham	1.85	1.85	2.00	**2.00@2.25**
S. E. Ky. block	Chicago	2.25	2.40	2.40	2.10@2.75
S. E. Ky. mine run	Chicago	1.70	1.65	1.65	1.50@1.85
S. E. Ky. block	Louisville	2.25	2.00	2.15	*1.75@2.35*
S. E. Ky. mine run	Louisville	1.55	1.35	1.45	**1.35@1.65**
S. E. Ky. screenings	Louisville	1.10	1.15	1.15	*1.00@1.15*
S. E. Ky. block	Cincinnati	2.40	2.15	2.15	2.00@2.30
S. E. Ky. mine run	Cincinnati	1.55	1.50	1.55	*1.25@1.75*
S. E. Ky. screenings	Cincinnati	1.10	1.10	1.10	1.00@1.25
Kansas lump	Kansas City	4.00	4.00	4.00	4.00
Kansas mine run	Kansas City	2.85	3.00	3.00	3.00
Kansas screenings	Kansas City	2.60	2.50	2.40	2.35@2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**; declines in *italics*.

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

	Market Quoted	Freight Rates	June 22, 1925 Independent	June 22, 1925 Company	June 14, 1926 Independent	June 14, 1926 Company	June 21, 1926† Independent	June 21, 1926† Company
Broken	New York	$2.34	.....	$8.10@$8.70	.....	$8.25@$9.25	.....	$8.25@$9.25
Broken	Philadelphia	2.39	.....	8.60	$9.25	8.50@9.15	$9.25	8.50@9.15
Egg	New York	2.34	$8.50@$8.75	8.45@8.70	8.50@9.25	8.75@9.25	*8.50@8.75*	8.75@9.25
Egg	Philadelphia	2.39	8.70@9.30	8.50@8.70	9.00@9.85	9.00@9.15	9.00@9.85	9.00@9.15
Egg	Chicago*	5.06	7.86@8.50	7.44@8.18	8.48	8.13	8.48	8.13
Stove	New York	2.34	8.90@9.25	8.95@9.20	9.25@9.75	9.25@9.50	*9.00@9.50*	9.25@9.50
Stove	Philadelphia	2.39	9.30@9.65	8.95@9.10	9.15@10.30	9.35@9.50	9.15@10.30	9.35@9.50
Stove	Chicago*	5.06	8.22@8.70	7.92@8.10	8.84	8.33@8.58	8.84	8.33@8.58
Chestnut	New York	2.34	8.35@8.65	8.45@8.70	8.50@9.25	8.75@9.15	*8.00@8.75*	8.75@9.15
Chestnut	Philadelphia	2.39	8.70@9.55	8.60@8.70	8.75@10.05	9.00@9.15	8.75@10.05	9.00@9.15
Chestnut	Chicago*	5.06	8.14@8.35	7.69@8.00	8.71	8.38@8.53	8.71	8.38@8.53
Pea	New York	2.22	4.75@5.50	5.00@5.70	6.50@7.00	6.00@6.25	*6.00@6.50*	6.00@6.25
Pea	Philadelphia	2.14	5.50@5.75	5.00@5.40	6.25@6.75	6.00@6.35	6.25@6.75	6.00@6.35
Pea	Chicago*	4.79	4.91@5.36	4.69@5.00	6.03	5.65@5.80	6.03	5.65@5.80
Buckwheat No. 1	New York	2.22	2.00@2.40	2.50	1.75@2.25	3.00@3.50	1.75@2.25	3.00@3.50
Buckwheat No. 1	Philadelphia	2.14	2.15@2.75	2.50	2.15@2.50	2.25@2.75	2.15@2.50	2.25@2.75
Rice	New York	2.22	1.75@2.00	2.00	1.40@1.85	2.00@2.25	1.40@1.85	2.00@2.25
Rice	Philadelphia	2.14	1.85@2.00	2.00	1.65@2.00	1.75@2.25	1.65@2.00	1.75@2.25
Barley	New York	2.22	1.40@1.50	1.50	1.10@1.40	1.50@1.75	*1.00@1.40*	1.50@1.75
Barley	Philadelphia	2.14	1.40@1.50	1.50	1.50@1.75	1.50@1.75	1.50@1.75	1.50@1.75
Birdseye	New York	2.22	.....	1.60	1.30@1.60	2.00	1.30@1.60	2.00

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



been signed. Retail buying is on a hand-to-mouth basis because of the price demoralization and unfavorable credit situations. Demand for industrial coal over the iron ranges also is light because mining operations have been curtailed and heavy stocks were accumulated earlier in the season. Receipts from the lower lake ports are substantial. The latest report shows 57 cargoes, including seven of anthracite, unloaded in a week.

Northwestern Trade Marks Time

A better industrial outlook is foreseen in the Northwest with more favorable crop prospects. Coal buying at the Twin Cities, however, is quiet. The price war at the docks put all-rail coal out of the running for the time being, as Illinois and Indiana shippers showed no inclination to follow the lead of the docks in price slashing. A steady movement is reported from Milwaukee. Up to June 17 receipts of lake coal at that port totaled 1,045,372 tons, as against 959,073 tons a year ago.

Conditions in the Southwest are steadily improving, but few shaft mines are operating in the Kansas fields. Increasing demand, however, probably will bring these mines into production within a few weeks. There is a brisk storage demand for Arkansas semi-anthracite. Prices generally are unchanged.

Retailers show little interest in storage coal prices made by the Colorado mines. Activity in the steel industry and at the sugar refineries holds up the demand for industrial coals. Colorado prices are firm. Kemmerer - Rock Springs domestic grades are $3.60; steam sizes, $1.10@$1.50. Utah retailers are keeping up their storage stocks, but the public displays less eagerness to take advantage of the low prices which have been made on summer deliveries.

High-Volatile Takes Lead

The tidewater demand for high-volatile coal held the center of the stage in the Cincinnati market last week. Heavy buying for foreign shipment put a number of Kanawha operations on a full-time basis. Logan County, too, enjoyed some of the benefits of the increased demand. All grades of West Virginia high-volatile have advanced in price, but eastern Kentucky did not share in the increase. Low-volatile coals, on the other hand, are sluggish and slack is selling at the same range as that prevailing in the high-volatile fields.

Movement through the Cincinnati gateways last week totaled 13,875 loads, an increase of 704 cars over the preceding week and 896 over a year ago. Louisville & Nashville interchange increased 841 cars; Norfolk & Western 71 cars. Chesapeake & Ohio interchange decreased 213 cars. The total interchange included 4,049 cars destined to the lakes. There were 12,845 empties en route to the mines.

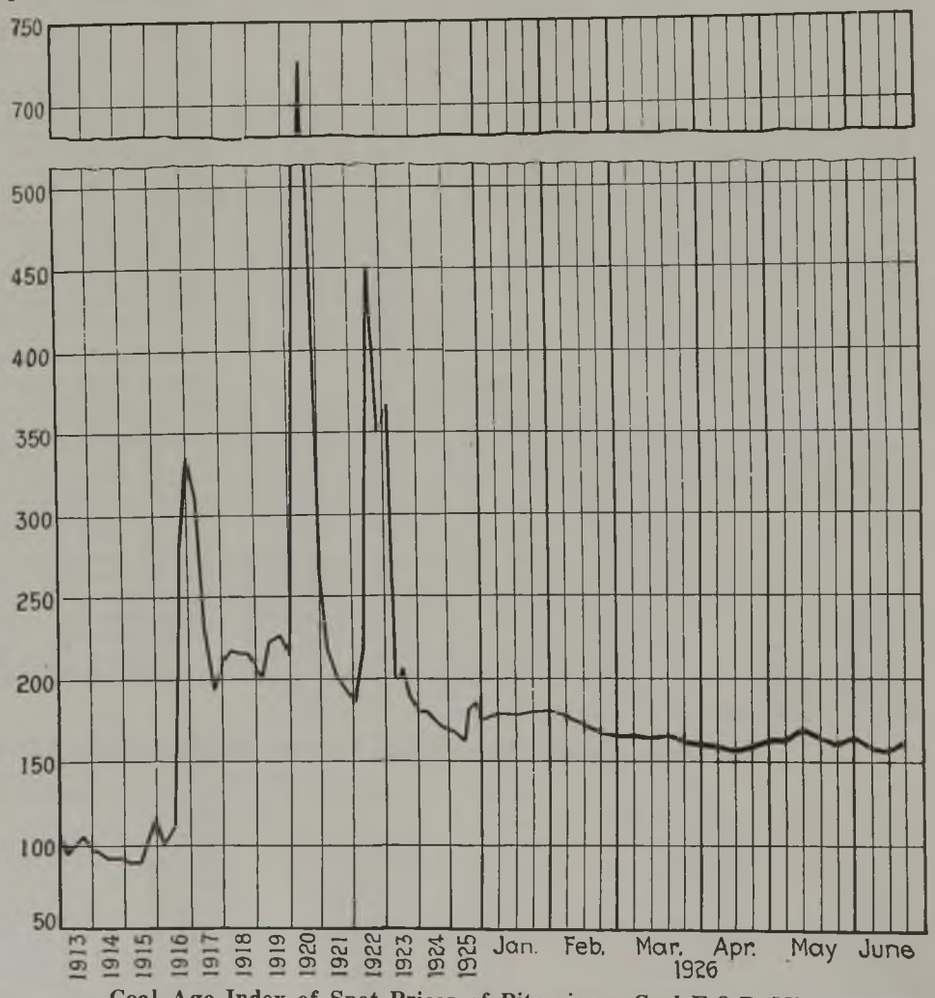
The Cincinnati retail market is so quiet that trade observers are convinced that it could not be revived by price reductions.

A broader demand for domestic grades featured the central Ohio market the past week. Urban dealers were more willing to stock splint and smokeless coals. School contracts also helped the situation. Distress offerings have disappeared and prices generally are steadier. Country buying, however, is backward. Steam demand still is sluggish. A few contracts are renewed from time to time. Spot business is slow. Public utilities and railroads are the largest buyers. Southern Ohio production does not exceed 15 per cent of capacity.

Northern Ohio Prices Weaken

Prices in northern Ohio are erratic. All grades of No. 8 coal were weaker last week. Further declines, particularly on slack, are forecast as the pressure of accumulations from the non-union fields shipping to the lakes increases. There is little life to spot trading at Cleveland. During the week ended June 12 the eastern Ohio district produced approximately 203,000 tons, or 29 per cent of capacity, as compared with 161,000 tons the preceding week and 232,000 tons a year ago.

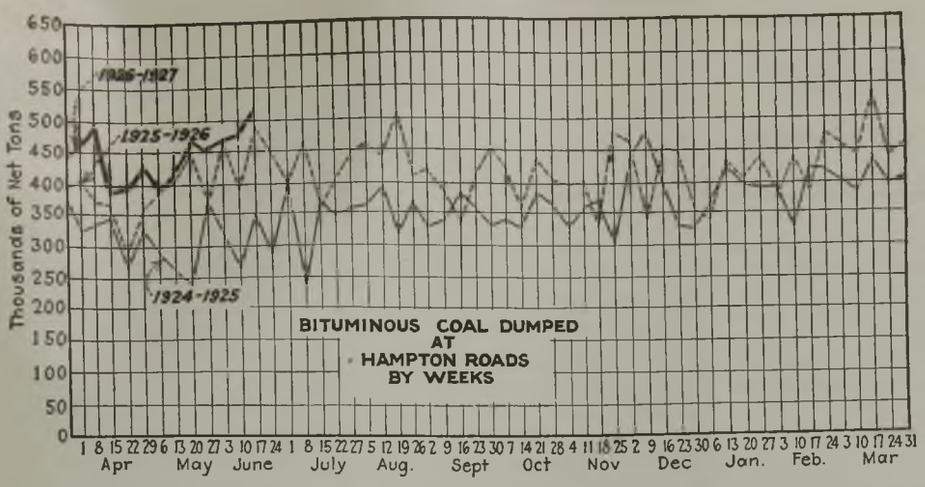
A nickel gain in the spot prices on gas slack marks the change in the Pittsburgh district market the past



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

	1926				1925	1924
	June 21	June 14	June 7	May 31	June 22	June 23
Index	158	156	157	160	161	166
Weighted average price	$1.92	$1.89	$1.90	$1.94	$1.95	$2.01

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



week. There is little storage buying and no real increase in the movement for current consumption. Central Pennsylvania, on the other hand, wears a brighter aspect than the western part of the state because production is slowly forging ahead of May figures. Retail buying is the explanation advanced for the gain. Prices are unchanged.

The Buffalo bituminous market remains a haven of pessimism. There has been a slight increase in gas slack prices, due more to lack of lump orders than to a bigger demand. Nominal quotations are: Pocahontas lump, $2.75@$3; mine-run, $2@$2.25; slack, $1.50@$1.75; Somerset County lump, $2.75@$3; mine-run, $2.50; Westmoreland gas lump or mine-run, $2.50; slack, $1.50; Cambria mine-run, $2@$2.25; Indiana County lump, $2.85; mine-run, $2.10; Fairmont lump, $1.50@$1.65; mine-run, $1.40@$1.45; slack, $1.10@$1.25; Youghiogheny lump, $2.15@$2.35; slack, $1.35@$1.55; Pittsburgh and No. 8 steam lump, $1.65@$1.85; slack, $1.30@$1.50.

Stronger Undertone in New England

In New England the steam coal market seems a shade firmer, due more to curtailed production and increased export inquiry than to any improvement in domestic demand. Navy Standard is up to $4.35@$4.50 at Hampton Roads, although little tonnage is changing hands at the top figure. On cars at Providence or Boston, some interests are asking $5.40@$5.50 per gross ton, but there are others who will make concessions to clean up tonnage.

Outside of inquiries for exports and contracts for the rest of the coal year, the bituminous situation at New York is moribund. The export demand is favoring Kanawha coals. It would not be surprising, however, if low-volatiles also gained. The latter are enjoying a larger movement for bunker fuel. On the contract side of the market, negotiations are impeded by the refusal of Pennsylvania producers to sign up at ruinous prices.

At the present time, factors in the Philadelphia market see nothing to lift the bituminous trade at that point out of the doldrums. Current buying shows no unusual features. Contracts are more or less of a dead issue. Baltimore centers its attention upon the export and bunker movements, both of which are more active. Although local demand has not broadened, the spot market is somewhat stronger in all pools.

Spot steam trade in the Birmingham district is slow. Deliveries against industrial contracts are well maintained, but railroads are taking only minimum allotments. The contract movement of domestic grades is steady. There is little inquiry in the spot market, however, for the medium and lower grades of coal. Spot demand for coke is more active and third and fourth quarter contracting is encouraging. The base contract price on foundry coke is $5.50; spot moves at $6@$6.50. There is some stocking of domestic coke by western dealers.

Anthracite Demand Diminishes

A diminishing demand for domestic sizes of anthracite is reported from the Atlantic seaboard markets. The point has been reached where some of the independents are compelled to shut down two days a week. The adoption of this policy has upset the plans of buyers who had hoped to pick up blocks of independent tonnage at further price concessions. Stove coal leads in demand at both New York and Philadelphia. Pea is easier, but there is no surplus tonnage to be had.

Chestnut is the weakest of the larger sizes. Many retailers are loaded up with this size and will take additional tonnages only in mixed orders. Egg, too, is somewhat sluggish, but not to the same extent as nut. Straight lots of stove, on the other hand, command a premium of 25c. in the New York spot market.

Barley alone of the steam sizes reveals indications of activity—and the signs are none too strong. Buckwheat and rice are a problem to most shippers and price concessions are the order of the day. With the policy of curtailing production adopted by the independents and storage of steam sizes by the larger companies, hopes are entertained that further declines may be checked.

Lake shipments from Buffalo during the week ended June 17 totaled 77,300 net tons, of which 35,500 tons cleared for Milwaukee, 24,600 tons for Sheboygan, 14,400 tons for Duluth and Superior and 2,800 tons for Sault Ste. Marie.

Spot Connellsville furnace coke is $2.75@$2.90, but there is little tonnage moving. Any real demand probably would send the price to $3. Contracting for third quarter deliveries is proceeding very slowly. There is practically no contract demand for the second half foundry coke as the majority of the foundries seem content to buy on the open market, which holds at $4@$4.50.

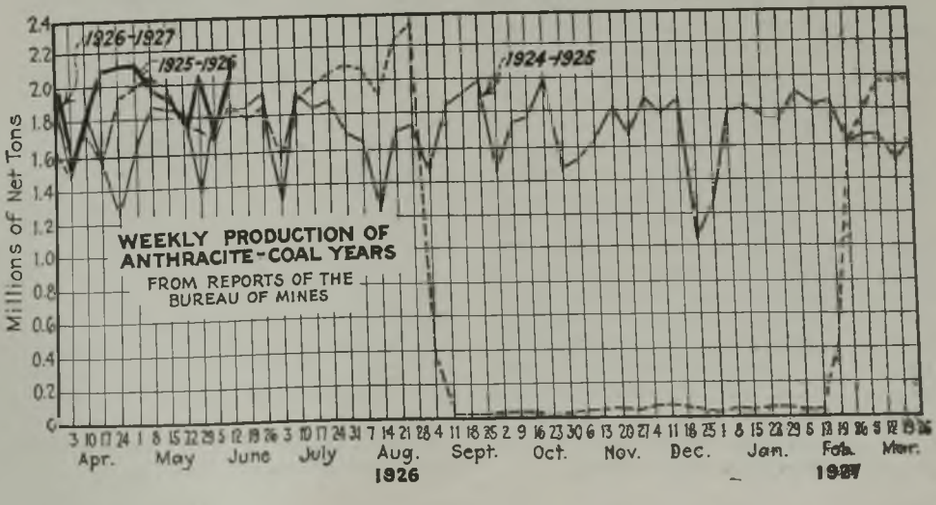
Coke production in the Connellsville and Lower Connellsville regions during the week ended June 12 totaled 138,610 tons, according to the Connellsville *Courier*. Furnace oven output was 78,100 tons, a decrease of 2,300 tons when compared with the week preceding. Merchant oven output—60,510 tons—decreased 1,080 tons.

Car Loadings and Supply

	Cars Loaded — All Cars	Coal Cars
Week ended June 5, 1926	945,964	155,094
Preceding week	1,081,164	177,600
Week ended June 6, 1925	998,243	153,217

	Surplus Cars — All Cars	Coal Cars	Car Shortages — All Cars	Coal Cars
June 7, 1926	270,841	79,013	.....	.....
May 31, 1926	257,926	75,253	.....	.....
June 8, 1925	318,805	125,785	.....	.....

Utility May Use Lignite.—Officials of the Northern States Power Co., from Minneapolis, held a conference at Fargo, N. D., last week to consider the use of lignite coal in their plants. The company has a number of water-power developments with steam auxiliaries, as well as many steam plants. Two immense plants are located in the Twin Cities besides a number of lesser plants in and around the cities. The activities include several street-car systems as well as electric light and power plants.



Foreign Market And Export News

British Suspension Boon to German Foreign Coal Trade; Restrict Prices and Output

Berlin, Germany, June 5.—The British strike has opened the way to a recovery of some of the export trade lost by Germany during the Ruhr occupation. Slight gains also have been made in the local markets. No attempt, however, has been made to exploit the fuel resources of the country by pushing up production. Prices, too, have been held down to prevent a domestic labor crisis.

The policy being pursued by the German trade is that laid down by the Ruhr syndicate at the beginning of the strike. At that time many operators were inclined to pick up profits where they could and let business drift in the current of events, but wiser counsels prevailed. It was feared that a boom of transient character would be seized upon by labor to further its own interests. German operators did not want a boom at the expense of domestic labor troubles. They refused to be mere stopgaps and accepted only contracts of some duration.

This policy was strengthened by the fact that the capacity of the German coal-mining organization does not lend itself to a sudden large increase of output. At the beginning of the strike the Ruhr syndicate was producing 312,000 tons of bituminous coal per day. This output was pushed up to 352,000 tons the third week of the strike. As the consumption of British coal in Germany amounts to about 12,000 tons per day, the surplus was only 28,000 tons.

It is possible to raise the daily output to 400,000 tons per day. The other fields hardly come into consideration as their combined output is less than half of the Ruhr production and their margin of capacity, not more than about 25,000 tons per day. The total surplus tonnage which Germany could add to normal output, therefore, does not exceed 2,500,000 tons per month, which, of course, is only a fraction of the British output and requires careful husbanding.

On May 1 the Ruhr syndicate had about 9,000,000 tons stored at pits and 400,000 tons loaded in lighters and railway cars. The reserves in all other fields aggregated 700,000 tons. This reserve, however, included a fair percentage of coke, for which during the first month of the strike no visible increase of demand has become noticeable, and of bituminous coal—chiefly lean coal which is of secondary consideration in the export trade. The German reserves are therefore chiefly for domestic consumption and that such is the case has been proved by events. After a full month of the British strike it was stated that the 9,000,000 tons of the Ruhr syndicate had not diminished and only the 400,000 tons in transit were cleared to some extent.

In view of the situation it is clear that German coal mining can profit by the British strike only by recovering such export markets as have been lost during the Ruhr occupation and possibly a small percentage of the market which British coal has had in Germany. A certain amount of success has been achieved in this direction, and a number of long contracts from public institutions in France, Belgium, Finland, Sweden and Denmark have been obtained. This number will increase according to the duration of the British strike and in the same proportion as the coal shortage in Europe grows.

The conditions under which the Ruhr syndicate is booking orders are rather strenuous and nothing less than pressing need is causing foreign buyers to accept them. Such orders are drafts on long sight and there is no doubt that German coal mining will emerge from the situation created by the British strike in a stronger position.

A considerable increase of the German coal export in the months to come is already assured and every week of the British strike is adding to it, but the sudden boom which the German public, including the stock exchange, had expected will be studiously avoided no matter how long the strike lasts.

Alexandria Coal Market Quiet

The May coal market of Alexandria, Egypt, closed quietly with sales 44,000 tons, arrivals 38,000 tons and stocks 90,000 tons, according to a cable to the Department of Commerce from Trade Commissioner Richard A. May, Alexandria. Imports from Germany were 7,000 tons. Arrivals are now negligible. Prices: Cardiff, 260 piastres; Newcastle, 200 piastres.

Franco-Belgian Trade Stronger

Paris, France, June 10.—Each week the British tie-up continues adds to the strength of the coal markets here and in Belgium. Thrown back upon her own resources, France finds it necessary to husband her supplies and the French mines are limiting contract shipments to 70 per cent of contract order.

In view of the instability of exchange, some of the French government bureaus are inserting clauses in coal contracts placed with foreign suppliers fixing payment in francs on a pre-determined rate of exchange for the pound sterling, American dollar, Belgian franc or the reichmark.

Increases in mining rates are the order of the day. Effective June 1, wages in the Loire have been increased 2.25 to 2.75 fr. per day for underground workers, 1.80 to 2.25 fr. for surface adult laborers and 1.25 fr. for girls and boys.

Prices at the pitheads in the Sarre have been advanced 3@8 fr.

April output of coal and lignite in France totaled 4,200,222 metric tons, as compared with 4,566,021 tons in March.

Since May 1 prices on Belgian coals have been raised 9@44 fr. Coking smalls are scarce at 115@117.50 fr. Lean duffs are almost out of the market. Offers of 220@240 fr. bring out little anthracite sorts.

Export Clearances Week Ended June 17

FROM HAMPTON ROADS

	Tons
For Italy:	
Ital. Str. Ada O, for Naples	6,589
Ital. Str. Monbaldo, for Genoa	3,763
For Spain:	
Belg. Str. Burgondier, for Gibraltar	7,121
For Martinique:	
Nor Str. Fram, for Fort de France	3,825
For West Africa:	
Ital. Str. Delia Terzo, for Dakar	8,846
Ital. Str. Boba Seconda, for Dakar	3,452
For Canada:	
Ital. Str. Labor, for Three Rivers	5,691
For Brazil:	
Br. Str. Telesfora de Larrinaga, for Rio de Janeiro	7,524
Br. Str. Francis, for Para	3,746
Amer. Str. Western Knight, for Rio de Janeiro	6,519
For Norway:	
Nor. Str. Norsfjord, for Bergen	2,405
For England:	
Br. Str. Grelisle, for River Thames	6,995
Dan. Str. Brosund for an English port	4,452
Br. Str. Emlymain, for River Mersey	7,493
For Cape Verde Islands:	
Br. Str. West Wales, for St. Vincent	7,178
For United Kingdom:	
Dan. Str. Grete Jensen	7,979
Br. Str. Ulmus	4,549
Span. Str. Zabalbide	4,566
Br. Str. Greliven	7,700
Nor. Str. Bjornstjerne Bjornsen	8,183
For Cuba:	
Nor. Str. Sagaland, for Havana	3,871
For Argentina:	
Ital. Str. Gerty, for Buenos Aires	5,095
For Ireland:	
Br. Str. Pacific, for Queenstown	4,220
For Uruguay:	
Du. Str. Park Haven, for Montevideo	6,094

FROM BALTIMORE

	Tons
For Italy:	
Ital. Str. Tirso, for Genoa	7,207
Br. Str. Eastmoor, for Genoa	8,004
Ital. Str. Campania, for Savona	6,964
For England:	
Br. Str. Ethelwold, for Dover	6,399
Br. Str. Rothley, for Liverpool	6,125
Br. Str. Roseden, for Liverpool	6,459
For Irish Free State:	
Br. Str. Wittington, for Dublin	4,681

FROM PHILADELPHIA

For Nova Scotia:	
Nor. Str. Dampfire, for Halifax	——

Hampton Roads Coal Dumpings*

(In Gross Tons)

	June 10	June 17
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	150,268	135,272
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	78,268	112,247
C. & O. Piers, Newport News:		
Tons dumped for week	193,115	213,747

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

Pier and Bunker Prices, Gross Tons

PIERS

	June 12	June 19†
Pool 1, New York	$5.40@$5.65	$5.40@$5.65
Pool 9, New York	4.90@ 5.15	4.90@ 5.15
Pool 10, New York	4.60@ 4.85	4.60@ 4.85
Pool 11, New York	4.35@ 4.55	*4.35@ 4.50*
Pool 9, Philadelphia	4.95@ 5.30	*4.85@ 5.20*
Pool 10, Philadelphia	4.70@ 5.00	*4.60@ 4.85*
Pool 11, Philadelphia	4.35@ 4.65	*4.30@ 4.55*
Pool 1, Hamp. Roads	4.40@ 4.50	**4.50@ 4.55**
Pool 2, Hamp. Roads	4.25@ 4.35	**4.35@ 4.40**
Pool 3, Hamp. Roads	3.90@ 4.00	**4.10@ 4.20**
Pools 5-6-7, Hamp. Rds	4.00@ 4.10	**4.50@ 4.60**

BUNKERS

Pool 1, New York	$5.70@$5.95	*$5.65@$5.90*
Pool 9, New York	5.15@ 5.30	**5.15@ 5.40**
Pool 10, New York	4.90@ 5.10	*4.85@ 5.10*
Pool 11, New York	4.60@ 4.80	*4.60@ 4.75*
Pool 9, Philadelphia	5.20@ 5.55	*5.10@ 5.35*
Pool 10, Philadelphia	4.95@ 5.25	*4.90@ 5.10*
Pool 11, Philadelphia	4.60@ 4.90	*4.55@ 4.85*
Pool 1, Hamp. Roads	4.50	**4.60**
Pool 2, Hamp. Roads	4.35	**4.40**
Pools 5-6-7, Hamp. Rds	4.10	**4.60**

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

Coming Meetings

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

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

The West Virginia Mining Institute will hold its summer meeting June 13 and 14 at Bluefield, W. Va.

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

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

New Companies

The Barco Coal Co. has been incorporated in Denver, Colo., with a capital stock of $100,000, by K. S. Britt, G. B. McClellan, and Fred Graziker. Address Rothegerber & Appel, 650 Symes Bldg., Denver.

A certificate of incorporation has been issued to the **Rosedale Coal Co.,** Fairmont, W. Va.; capital $100,000. The incorporators are C. H. Humphries, Charles E. Hawker and R. S. Miller, of Fairmont, and James E. Gins and Robert D. Bradford, of Morgantown.

Carbondale Coals, Ltd., Calgary, Alta., has been incorporated to mine and deal in coal, with a capital of $300,000. The incorporators include Andrew L. Stevens, William Kemp and Leonard E. Cross.

The Leland Coal Co., Ltd. has been incorporated to mine coal and other minerals, with a capital of $1,000,000, by James H. Prowse, George Gray, Norman R. Shaw and others. Headquarters are at Taber, Alberta.

The Freeport Collieries Co., of Columbus, Ohio, has been incorporated with a capital of $10,000 to own, deal in and operate coal properties of all kinds as well as to deal in coal and coke at wholesale. Incororators are E. E. Learned, B. W. Gerhart, J. R. Elder, Adam G. Innis and S. D. Doney.

The Cameo Coal Mining Co., of Whitesburg, Ky., has been incorporated with a capital of $10,000, by A. B. Ewen, T. F. McConnell and W. J. Raybould, to operate in the Letcher fields of southeastern Kentucky.

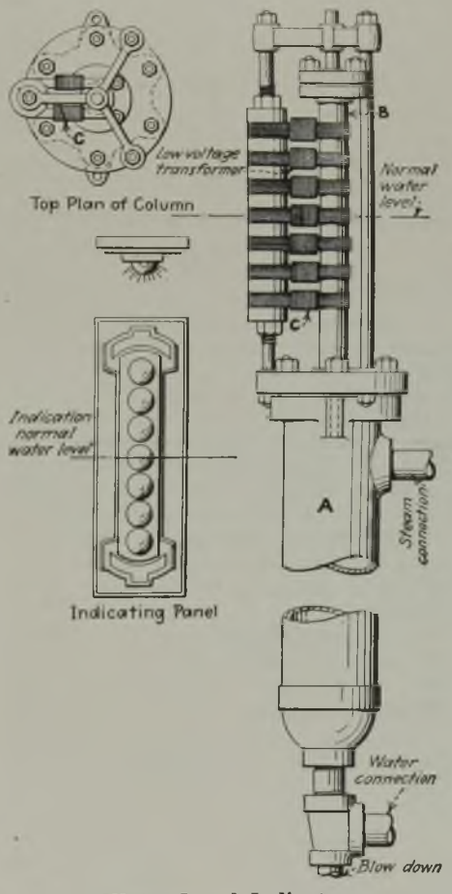
The Wabash Coal & Coke Co., 343 South Dearborn St., Chicago, has been incorporated with 1,000 shares of no par value to mine and deal in coal and other fuel products. The company was organized by E. M. Strachan, A. C. McClelland and Morris Bernstein.

New Equipment

Ace Water-Level Indicator

A type of liquid water-level indicator used for boilers, tanks, etc., known as the "Ace," with which one or more indicating panels may be used and which may be placed adjacent to or at any convenient point some distance from the boiler, has been brought out by the W. B. Connor Co., Inc., 110 West 42d St., New York City.

The indicator consists essentially of a float chamber or column *A* with a special extension tube *B* for the armature, low-voltage transformers *C* and a seven-light indicating panel. The tube *B* is made of non-magnetic metal through which the magnetic flux passes across the pole of the external armature. The low-voltage transformers *C* are located outside the apparatus in order to avoid contact with the live steam. They are also not subjected to any pressure or temperature. The armature actuated by a float in the column *A* and responding to the water level, travels through the magnetic field of seven transformers, giving seven indicating points. The armature is tubular in construction, made of magnetic material and copper plated. The rod connecting the armature to the float is Monel metal. The float is kept as small as possible, namely 3½ in. in diameter, and is made of forged steel suitable for steam pressures up to 600 lb. No guides or other internal mechanisms that would tend to cause sticking and prevent operation are used.



Water-Level Indicator

A float within the water column on the boiler actuates low voltage transformers located above it which energize a bank of remotely situated lamps. These show the level of the water in the boiler.

The transformers, located as they are, are not subject to excessive temperatures and the voltage carried on the primary is between 3 and 4 volts. The output of the secondary transformer when the armature is out of the field is about ¾ volt and with the armature in the field about 3 volts, operating a 3.8 volt light. The device can be used in connection with operating a series of lights of an indicator as illustrated or a graphic chart for permanent record or a high- and low-water alarm signal. The indicators are made for standard pressures of 150, 250, 400 and 600 lb., and the weight is approximately 175 lb. The water column or float chamber of the indicator can be used as an auxiliary to the standard water column as illustrated, or it can be furnished equipped with water gage to replace the existing column.

Switchboards Automatically Control Substation

In the accompanying illustrations may be seen the two switchboards constituting the new Cutler-Hammer automatic substation controller. This apparatus has been so designed that it starts the motor-generator set and automatically provides maximum protection without the expense of an attendant.

This controller is composed of two switchboards, one for the high- and the other for the low-tension current. These boards are interlocked both mechanically and electrically. The low-tension board is really the "master mind" of the control apparatus. It is this board which ferrets out the troubles and guards the motors, generators, machinery and control equipment from damage. It provides automatic starting, stopping and protection to all the equipment.

The apparatus can be made to start by means of a time clock, or a push button which may be located at some remote point. After it is started by either of these methods the low-tension board takes full control, responding immediately to all emergencies as well as to normal conditions.

The following controls are provided in the construction of this low-tension board: Automatic starting from a push-button station; alternating-current, low-voltage release; automatic restart after return of alternating current; dead-phase, reverse-phase, phase-failure and field-failure protection; alternating-current overload protection by means of an instantaneous trip and also by an inverse time limit; thermal protection of the transformers; automatic opening and closing control of the direct-current circuits; direct-current

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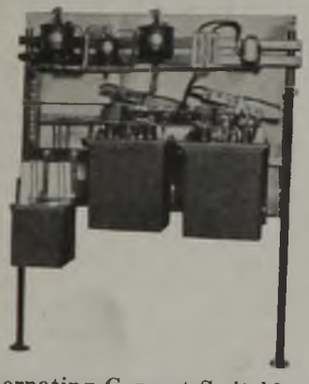
overload protection by time limit and also instantaneously; direct-current, low-voltage and reverse-current protection. The board also contains an alternating-current line voltmeter, direct-current ammeters for synchronous motor field, direct-current line voltmeter and a line ammeter.

The Master Mind

This is a front view of the direct-current switchboard. It is interlocked both electrically and mechanically with the alternating-current board, the two forming the complete control. Most of the real control apparatus is, however, mounted on this board.

The high-tension board carries all of the high-tension switching equipment. It is interconnected with the low-tension board, and functions in combination with it. This board also contains a potential transformer, providing dead-phase protection and in addition furnishes low voltage for the alternating-current line voltmeter. High-tension fuses protect this transformer. This board also carries current transformers for use with the overload relays and the alternating-current ammeter. It has also oil-immersed switching equipment consisting of: A 3-pole manually operated oil circuit breaker, arranged for bell-crank operation from the front of the low-tension board; a 5-pole, oil-immersed, magnetic contactor used in starting, which connects the auto-transformer to the line, and the motor starter to the auto-transformer low-voltage tap, during the acceleration period; one 3-pole oil-immersed magnetic contactor used in running.



Alternating-Current Switchboard

Upon the board is mounted the alternating-current switches and some other pieces of equipment. Although the two boards are separate they are so interconnected that they form practically a unit control. Thus although their functions are somewhat dissimilar they operate in conjunction one with the other.

In order to prevent short circuiting the auto-transformer this contactor is mechanically interlocked with the starting contactor so that both cannot be closed at the same time. The transfer from the starting to the running contactors is accomplished by the supervisory relays on the low-tension panel.

In the design of these switchboards, particular attention has been paid to accessibility for inspection and maintenance. All high-tension wiring between circuit breaker and oil-immersed contactors and transformers is made by means of a rigid busbar. Lugs are provided for connecting incoming lines, motor leads, and auto-transformer to the board. An asbestos terminal board near the floor provides easy means of connecting the control and meter circuits to the low-tension panel.

When the control circuit is closed either by push button or time clock, the synchronous motor comes up to speed and the direct-current circuit breaker is closed, connecting the load to the generator. If any trouble exists on either the direct- or alternating-current sides of the set which may damage the apparatus, or if such trouble should occur during operation, the set will automatically shut down until this difficulty is rectified. It will then resume operation automatically.

Recent Patents

Tipple-Screen Cleaner; 1,567,075. James S. Pates, Pittsburgh, Pa. Dec. 29, 1925. Filed Oct. 23, 1919; serial No. 332,711.

Coal Conveyor and Conveying System; 1,567,330. Richard Peale, St. Benedict, Pa., assignor to Rembrandt Peale, St. Benedict, Pa. Dec. 29, 1925. Filed Jan. 13, 1919; serial No. 270,909.

Aerial Tramway Grip; 1,567,391. Edward H. Sackett, Arvado, Colo. Dec. 29, 1925. Filed April 18, 1924; serial No. 707,439.

Overturning Cage; 1,567,522. Daniel F. Lepley, Connellsville, Pa. Dec. 29, 1925. Filed Nov. 2, 1923; serial No. 672,389.

Automatic Mine Door; 1,563,827. Giusto Boggio, Royalton, Ill. Dec. 1, 1925. Filed Sept. 4, 1925; serial No. 54,455.

Grab Bucket; 1,564,041. Clifton N. Windecker, Painesville, Ohio. Dec. 1, 1925. Filed Feb. 25, 1924; serial No. 694,881.

Dustless Rock Drill; 1,564,780. Charles C. Hansen, Easton, Pa., assignor to Ingersoll-Rand Co., Jersey City, N. J. Dec. 8, 1925. Filed Nov. 12, 1924; serial No. 749,374.

Loading Mechanism for Conveyors; 1,564,936. W. C. Cadwell, Anaconda, Mont. Dec. 8, 1925. Filed July 26, 1922; serial No. 577,552.

Method of Producing Mining-Machine Bits; 1,565,052. Newton K. Bowman, Bowdil, Ohio. Dec. 8, 1925. Filed March 12, 1924; serial No. 698,695.

Coal Cutter; 1,565,376. Nils D. Levin, Columbus, Ohio, assignor to the Jeffrey Mfg. Co., Columbus, Ohio. Dec. 15, 1925. Filed Oct. 18, 1917; serial No. 197,291. Renewed April 18, 1925.

Industrial Notes

J. W. Guay, formerly sales engineer of the Fort Pitt Steel Casting Co., McKeesport, Pa., has been appointed works manager, and **H. F. Stratton**, formerly in charge of the pattern, mould and machine department, has been named superintendent.

Hall-Will, Inc., Erie, Pa., is the name of a company recently organized for the manufacture of pipe, bolt and nipple threading machines. Leslie S. Hall, formerly vice-president and general manager of the Williams Tool Corporation, who organized Hall-Will, Inc., is its president and general manager, and C. Williams, a son of the founder of the Williams corporation, is its vice-president.

Joseph T. Ryerson & Son, Inc., of Chicago, Ill., have taken over the reinforcing bar division of the Penn Metal Co., of Boston.

Wm. Moorhead, of the Moorhead Electric Machinery Co., and Gust Reitmeyer, expert in repairing and rebuilding mining equipment, have consolidated their interests and formed the **Moorhead-Reitmeyer Co., Inc.**, 40 Water Street, Pittsburgh, Pa. A complete list of used mining equipment and modern repairing facilities will be available.

The Ohio Brass Co., Mansfield, Ohio, has moved its Chicago office from 1217 to 1714 Fisher Building, 343 South Dearborn St.

The Baltimore office of the **Timken Roller Bearing Service & Sales Co.** was closed May 1. The service requirements of customers in this territory will be supplied through the Richmond, Pittsburgh and Philadelphia branches. C. F. Rose, formerly assistant manager of the Chicago branch of the company, has been appointed manager of the Cincinnati branch. H. C. Sauer has been named manager of the Detroit branch. Fred G. Rumball, formerly manager of the Kansas City branch, has been promoted to the position of sales engineer, automotive division, of the Timken Roller Bearing Co. Mr. Rumball will have his headquarters at Cleveland. The position of branch manager at Kansas City will be filled by L. M. Carey.

The Knoxville (Tenn.) office of the **Sullivan Machinery Co.**, E. L. Thomas, manager, has just moved from 614 Market Street to new and larger offices at 611-15 General Building, 623 Market St.

The Tulley Equipment Co., St. Louis (Mo.) representative of the Climax Engineering Company, Clinton, Iowa, has moved to 239 Pine Street, where offices and a service station will be maintained.

The A. F. Brown Co., 79 Barclay St., New York City, has removed its sales department and stock room to the general office and works, at Elizabethport, N. J.

The Park Manufacturing Co., makers of motors for special use in coal mines, will start a factory at Petersburg, Ind., it has just been announced. At the present time the company turns out this equipment at Terre Haute, Ind.