

# COAL AGE

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## Long Way to Bottom Of World's Coal Bin

TO THE average person, that is, to the vast majority of those who make up what is usually termed the general public, two questions concerning coal are always pertinent. The first of these has to do with price—price now, next month, next year. The other is a vague uncertain apprehension, fostered more or less by writers of popular and semi-scientific fiction, that the world is burning up its supply of coal faster than it should and that within a comparatively short time, say a generation or two, the fuel bounty wherewith nature has so lavishly endowed this land of ours will have been exhausted and the peoples of that day and age will be compelled to seek some substitute means of heat supply or go cold and perhaps hungry as well.

As to the future trend of prices so many variables enter the equation that any attempt to forecast it can be little more than mere speculation. Certain it is that the extent to which labor-saving machinery is or can be adopted will play an important rôle in price determination.

Exhaustion of our coal resources is a possibility that is extremely remote. The period of time during which the world's known coal supply will be adequate to its requirements has been variously estimated by "experts" at from 500 to 15,000 years. This old planet, therefore, will not go cold for lack of fuel during the lives of men now living, nor within those of their children or their children's children. During 110 years of commercial coal production in the United States this country has exhausted, including losses incurred in mining, appreciably less than 2 per cent of its known coal deposits. Making all due allowance, therefore, for the increased demands of the future it is certain that our coal supply will last for "quite a spell."

## Yet There Are Compensations

WE SYMPATHIZE in the United States with our government-behounded British coal-mine operator cousin and we trust that our federal authorities will never so harass us to the disadvantage of the consumer, operator and miner alike. But there is a compensation. The British Government likes to see coal prices high because it means automatically much higher wages to the miners. It helps greatly with two million or so coal-miner votes. The women vote, of course, and their interest is the same as that of their men.

It is good indeed to have the government interested in high prices in your industry. The British Government chuckles when the operator gets a good price just as ours does when the farmer gets an increased return for wheat and corn. It must seem good to have the government with you when you boost your price and

look sad when you lower it. It's not so here unless you are a farmer. They coddle the farmer vote here just as they do the miner vote in Great Britain.

But then, and here's the rub, when the operator increases the "f.o.b. pit," the retailer raises his prices, which is, of course, to be deprecated. The government hounds the retailers for this offense. However, that attempt to shift the blame would not work if the consumer was properly organized like the miner. The government would take the snivelling retailer in hand just as Charlie Bryan did. It would establish coal depots on free non-taxpaying ground in the heart of the city. But the consumer really doesn't matter so much in Great Britain. He is poorly organized. He votes on large national issues.

The miner alone counts. He votes for himself, for his own wages and lets politics go at that. So the government is glad when coal prices rise, especially as about one hundred millions of tons, or over 33 per cent of the whole output, go abroad, and only one-third of the whole production is used for domestic purposes. When the foreigner pays who should care? He has no vote whatever and so is beyond the pale altogether and has no rights that anyone respects. No nation is really internationally minded.

## Union Mines Are Safe

IN THIS month's issue of the *United Mine Workers' Journal* is a cartoon entitled "He Changed His Tune," which is flavored, to say no more, with truth. A man is seen approaching a non-union mine, with a pick in hand, saying: "This is the life! The United Mine Workers can't tell me what to do." In the next picture, the man's pick is flying from the drift mouth in a manner suggesting an extremely violent explosion, and in the third the man, who is greatly frightened, is running from the mine pursued by a dog marked, "Accidents due to poor working conditions." By the way, the miner has had time meanwhile to put adhesive plaster on his face.

The flavor of truth in the story is that the union mines which do not work cannot well have accidents and therefore are safe. On the whole the working conditions are better in non-union than in union mines, some having wonderful records and many leading in protective devices, but the union mines are winning just now in the competition for safety, though not so much as the United Mine Workers would have us think. There are no accidents in industry when there is no industry to have accidents. The tin-mining industry in the United States has less accidents than that in Great Britain because in the former no one is employed in that industry. However, the automobiles at union mines are doing what mine accidents cannot do. When the mines are idle, there are more fatalities on the surface.

## What Foreign Trade Demands

FOREIGN commerce can be built up only on service. It is not possible to succeed if foreign trade is accorded less consideration than domestic. In fact, it is necessary to treat it with more care. The foreigner knows next to nothing about American coals, and Americans, knowing little about foreign boilers and firemen, cannot afford to dismiss the problem of distribution as cavalierly as they sometimes successfully do in this country. They must follow their fuel to the boiler room; they must note its behavior; they must ascertain what kind of coal will do the work best.

In this country a manufacturer who has had success with the low-volatile coal of one producer can find where there is another mine owner producing similar fuel. He can go to his dealer; he can ask his neighbors; he can consult a directory; he can look up the town on the map and seek another producer operating nearby or he can look in a trade paper and get some information—no matter how meager—from the advertisements it contains. Then there are the publications of the Bureau of Mines. His chances are one hundred times as good as those of a foreign buyer who, after much diligent but ill-directed inquiry, may get a gas coal in place of a low-volatile or vice versa. Success in coal selling abroad is based on service and mutual confidence.

Another necessity is a yard. Foreign buyers are often small consumers of coal. Besides, they, like others, do not like to buy a large shipment until they have tried out the coal. If foreign trade is to be built up the shipper must be prepared to deliver in almost any quantity. It is well to be able to give the buyer a chance to see the coal. It is partly because this element of success in selling has not been observed that so far we have been unsuccessful in placing coal in large quantities in Europe.

## Why Hunt Trouble?

WHEN buying new equipment why not make use of the expert knowledge of the manufacturer and at the same time automatically arrange the transaction so that the machinery being purchased is guaranteed to do the work required?

Too often the mining company having an elaborate engineering organization goes to unnecessary expense in preparing detailed specifications covering new equipment. Limiting dimensions and other essential details should of course be prepared with all possible care. However, most specifications should stop here, inviting the manufacturers to submit proposals covering a machine which will accomplish the desired result under the conditions set forth. Ordinarily the reliable manufacturer is only too glad to sell machinery on such a contract, accepting full responsibility for satisfactory performance.

Many times it has happened that a purchaser, who went to considerable trouble and expense in calculating and preparing elaborate specifications, found after installation that the new equipment was inadequate for the service intended. The manufacturer proves that he is not at fault because the machine conforms to the specifications which described the equipment but did not state the work to be performed. This sort of situation is about as unpleasant for the manufacturer

as it is for the purchaser. In most cases the maker, due to his knowledge and experience in his special line, could have furnished a satisfactory machine had he been given the proper latitude in the specifications.

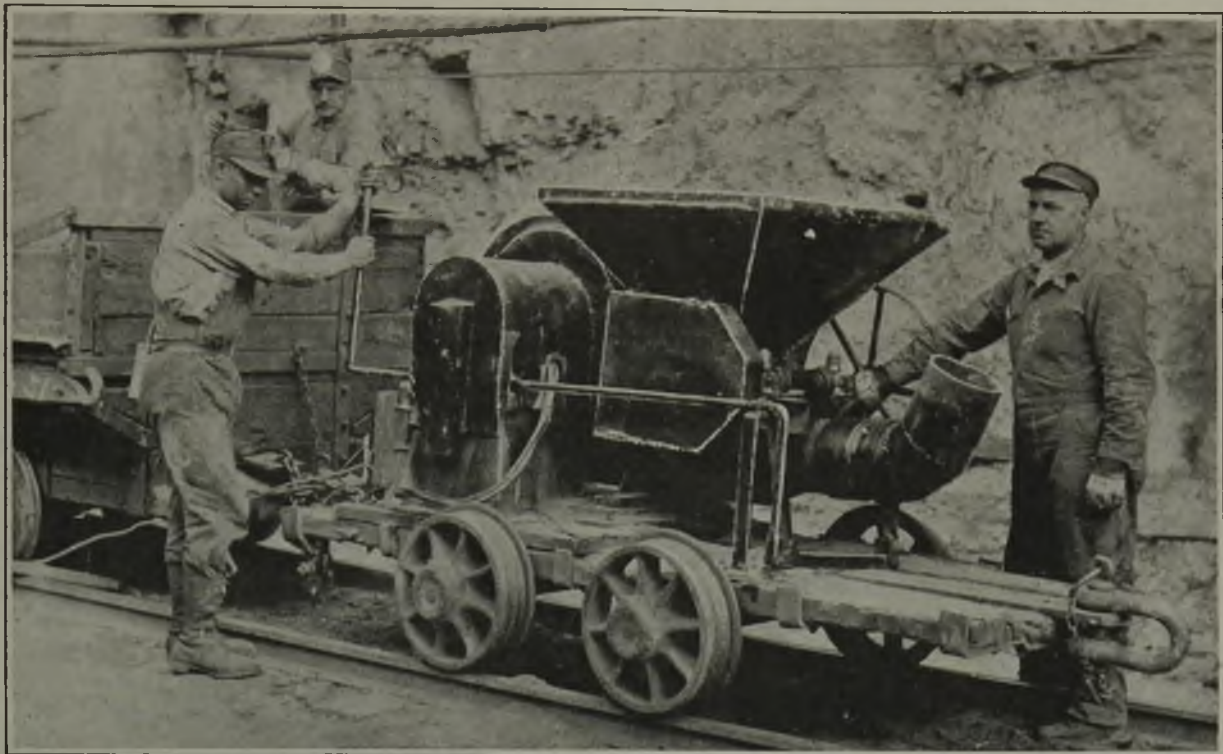
When purchasing new equipment don't hunt for trouble. Include the necessary detail, putting it up to the manufacturer to supply a machine which will accomplish a definite purpose. On the other hand, avoid ordering duplications of old equipment that the manufacturer has discarded. This practice is neither fair to the makers of machinery nor to the purchaser. It cannot yield the best results. Spare parts cannot be as cheap if specially made and the company which gives an exact repeat order often finds its repair parts are more expensive and the efficiency of its equipment lower, though it gains, of course, in the quantity of spare parts carried, in not having in some cases to buy spare parts and also in the fact that its men know how to handle the old equipment and it would take time to accustom them to the new. The gains, however, are far less than the losses. In the interest of morale, no company should be buying new machinery of old type.

## "Keep Cool with"—Coal

WE HAVE only a few ways of keeping cool—all quite costly. One is to go out of town to the hills, the woods, the sea or the strand. Another is to take an automobile ride or a short excursion on the trolley. As George H. Cushing, speaking mainly of the moderately well-to-do, has well said, "it costs \$350 a month to keep cool; it costs about \$30 a month to keep warm." That is because we don't go about the business of keeping cool in the same way. We make our houses and offices warm; we do not make them cool. Who would not be happy to pay as little for reasonable coolness as for satisfactory heat? Too often we miss our calculation and go away in a cool spell to shiver and return to face blistering heat. But if we cooled our houses and offices we would make no mistakes of this kind; we would use our cooling apparatus when we needed it, even in the spring or autumn if the conditions warranted it.

The summer holidays are growing longer and "week-ends" are getting more numerous and time consuming. True, vacationing has its value. It clears the tired brain of cobwebs; it widens the scope of one's interest; it gives the children a relaxation they need; it affords an opportunity to cast off civilization just a little and go back to nature, but still it is getting to be a drain on business activity and, moreover, some cannot go, and in the still heat of city streets how greatly vitality is drained from those who have to stay at their desks!

In winter we have sometimes to raise the temperature of the air coming into our houses 60 to 90 deg. and in summer all we would need to lower the temperature would be 10 to 20 deg. The lowering may be inefficient as compared with the raising of temperature, but the range being so much less, the cost should not be excessive. This dissertation seems little germane to the subject of this publication, coal production, but the use of power to produce cold would level the peaks of coal consumption and the coal industry might do well to advocate the practice of the artificial cooling of houses, offices and places of public resort.



Kenilworth Rock Duster

## Rockies Are Full of Ingenious Dusting Machines

Lacking Perfected Apparatus, Mines Are "Rolling Their Own," Using Whatever Equipment Is at Hand—Uniform Feed Difficult to Assure—At Kenilworth, Hillside Dirt Is Blown on Freshly Watered Surfaces

**I**NGENUITY is having a full opportunity to do its work in the Rocky Mountain coal mines these days. The great problem "How to rock dust?" faces every mine superintendent, and it is no simple problem. But every man wants his mine made safe against the ignition of coal dust even if he is not driven to do it by law as in Utah. As a result the mountain region is full of home-made devices for applying inert dust of one kind or another and employing various principles. At Wattis, Utah, they are "mudizing" as described in a recent article. But most mines are blowing the dust in dry, using either adobe or native soil, ground or unground, or they are pulverizing shale or soft sandstone. One company tries soaking the entries first.

Nobody knows all about the art of rendering coal dust in a mine incombustible, but the men of the Rockies are finding out a great deal by the cut-and-try method, based on all the information available. Their greatest difficulty, just now, is to produce a dusting machine capable of applying the material as they think it ought to be applied. To meet this shortcoming they are inventing and adapting—and getting things done.

At Kenilworth, Utah, for instance, the men of the

NOTE—The rock-dust distributor in the headpiece was built for use in the Kenilworth, Utah, mines of the Independent Coal & Coke Co. mainly through the ingenuity of such men as Master Mechanic W. H. Woodhead (right), and Mine Foreman K. F. Lueder (left). It requires three men to operate it, including a motorman whose locomotive pushes the duster and its accompanying car of dust. The operator of the machine turns the discharge pipe about with the lever at the rear end of the car, as illustrated by Mr. Lueder, and the third man must shovel dust from the pit car into the hopper (posed by Fireboss Sam Westerfield).

Independent Coal & Coke Co. have built a unique machine and adopted a method all their own. Around Kenilworth, as at many other mines in the Utah Wasatches, there are thick outcrops of rock deposits which lend themselves well to rock dusting. The material is a sort of sandstone which disintegrates rapidly and completely under exposure to the weather. This dirt can be shoveled easily from the face of a bank through a sand screen and into a mine car and delivered into the mine as rather finely pulverized rock dust.

There is difficulty in stating exactly how fine it is, but judging it by its appearance and texture, a considerable portion would pass through a 200-mesh screen as most of it is finer than motor sand and crushes easily to talcum-powder fineness between the thumb and the forefinger. Recognizing this as a handy supply of rock dust, W. H. Woodhead, master mechanic; K. F. Lueder, mine foreman, and others of the mine force set to work building a machine under the direction of Superintendent W. F. Clark that would apply it.

They built a 1-yd. capacity bin of  $\frac{1}{8}$ -in. sheet steel welded at the joints in the form of an inverted pyramid. An ample outlet at the bottom of this bin feeds the dust down into a 12-in. pipe carrying the air discharge of a blower, an ingenious combination agitator and feeder preventing the dust from caking and delivering it to the outlet. The pipe is tapered so that the discharge is of only 8 in. diameter. Here a loose elbow may be revolved through an arc of about 45 deg.



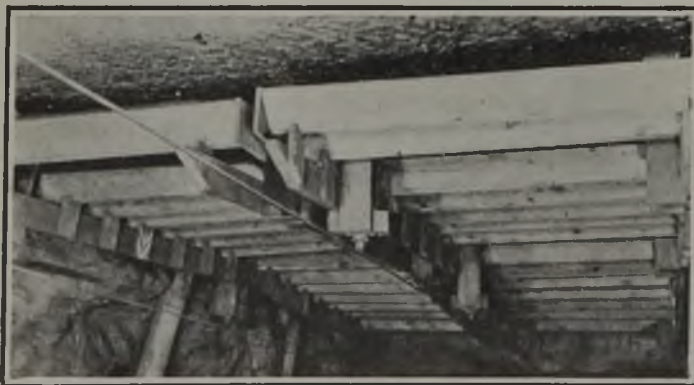
#### This Is an Example of New Mexican Ingenuity

The new machine for blowing dry dust into manways, return aircourses and back entries in the Stag Canyon mines of the Phelps-Dodge Corporation at Dawson, New Mexico, consists of a 40-in. blower driven by an ordinary mining-machine motor. Dust is fed by gravity from a sheet-steel hopper into the discharge line which terminates in an elbow that has been cut in two to give the dust stream only a slightly upward direction. This unit is attached to a mine car carrying the dust supply, and the whole outfit is moved by a locomotive.

Of course, the men realized that the flow of dust from the hopper into the air stream must be uniform. It would not do to have the outlet at the bottom of the hopper so small as to cause packing or arching. Neither would it do to have the outlet so free that the dust flow would be too heavy for the air. And provision had to be made to prevent blowing back through the bin.

So along in the late summer they rigged up their feeding device, which was designed to overcome these difficulties and yet be simple and rugged. A section of 5-in. pipe suspended on an axle was set horizontally through the outlet aperture at the bottom of the hopper. Eight strips of  $\frac{1}{4}$ -in. flat steel  $1\frac{1}{2}$  in. wide were welded on edge to the outer surface of the pipe in parallel arrangement. This converted the pipe into a sort of paddle wheel, with the steel blades revolving through an arc which extended upward about 2 in. into the dust bin. The remainder of this combination agitator and feeder was enclosed in a cylindrical housing open at the bottom.

The dust fed by gravity into the spaces between blades, was revolved downward and dropped into the air pipe whence it was blown out through the elbow nozzle. The steel blades successfully prevented the dust in the bin from arching over the outlet. The housing in which the feeder revolved was of sufficiently snug fit to prevent much back pressure of air should the exhaust pipe be partially choked. The device provided also a uniformity of dust feed.

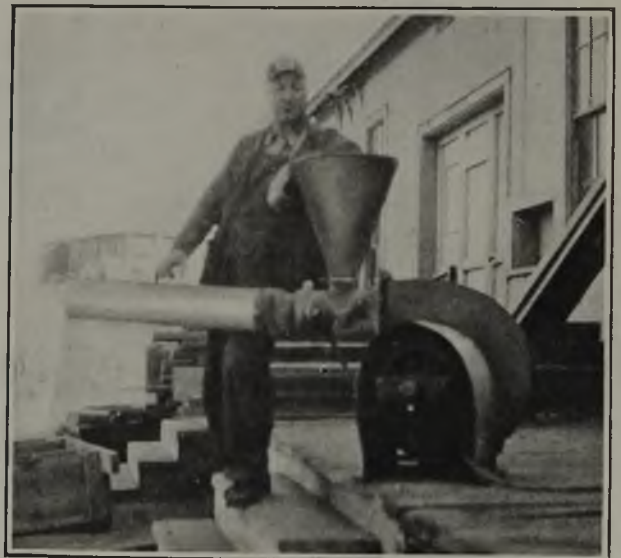


#### Rock-Dust Barrier at Dawson, New Mexico

This method of suspending V-troughs from crossbars is considered, by the Phelps-Dodge Corporation, as the best way to support barriers in the No. 6 mine of the Stag Canyon group. The roof is brushed high enough to erect 16-trough batteries, leaving a full 6 ft. of headroom. A battery covers the full width of the entry. Sixteen troughs when heaped have a capacity of 49.6 cu.ft. The dust used is tailings from a concentrator in the region. The roof and ribs are covered with wet adobe dust by a cement gun, even in the spots occupied by the barriers.

The upturned elbow at the discharge end of the pipe would revolve because the threaded joint was not screwed up tight. The dust stream could be directed from rib to rib at the will of an operator at the opposite end of the machine. An upright lever mounted close at his hand was connected with a rod running the full length of the machine and supported solidly on strap-iron rests equipped with plain bearings. Opposite the discharge end of the pipe this rod was bent downward in a right angle and connected, through an 18-in. steel link, to an arm projecting from a collar clamped firmly around the discharge elbow. By this lever and its connections, the elbow nozzle could be turned.

A 5-hp., direct-current motor, operating at 1,750 r.p.m., direct-connected to the 24-in. blower was also used to revolve the feeding device in the hopper. To do this, a 4-in. pulley was mounted on an extension of the fan shaft. A belt from this pulley to a 24-in.



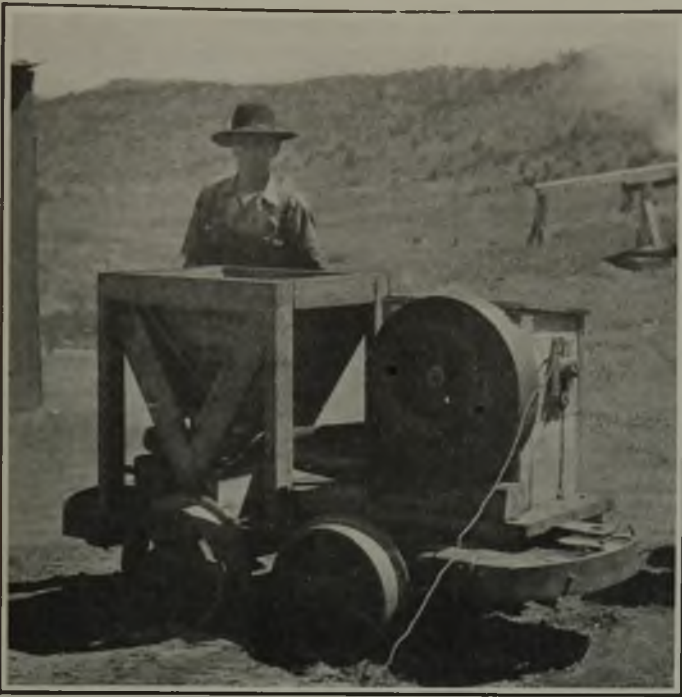
#### One of the Original Union Pacific Dusters

This direct-connected blower in inverted position supplied the air and the small conical hopper supplied the dust which was discharged through the flexible-jointed pipe shown here in the hands of Supt. T. H. Butler of the Hanna, Wyo., mine of the company. The outfit was mounted on a mine-car track.

wheel accomplished one speed reduction. Further reduction was made by an 18-tooth pinion on the belt wheel shaft meshing with a 78-tooth gear on the shaft of the feeding device. Thus a speed of 67 r.p.m. was imparted to the feeder. All the gears and the motor were housed in sheet iron for safety.

About 100 ft. of light cable was used to connect the motor to a source of power. This cable was "hot-hooked" on the trolley wire as the outfit moved slowly along, or the end of the cable was clipped to the trolley wire and the clip moved from time to time as the machine advanced. The motor was grounded on the track through a truck axle.

When the machine first went into the mine it discharged the finely divided sandstone successfully, but not enough of it stuck to roof and ribs. The plan was then adopted of preceding the machine with a sprinkler hose. The entry in the process of dusting was thoroughly washed down immediately ahead of the machine, and the rock dust was sprayed onto surfaces saturated with water. The result was reasonably satisfactory. The sprinkler washed the coal dust to the floor, and the rock dust stuck to the surfaces in a sort of plaster coat. This "plaster" tended to let go its coarser particles



**A Booster Fan Does the Work Here**

This simple machine, which consists merely of a twelve-inch booster fan and a small wooden dust hopper from which dust is expected to slide by gravity through a curved pipe into the air stream, represents one stage of experimentation with the dusting problems at the Bon Carbo mine of the American Smelting & Refining Co., near Cokedale, Colo. Charles Smith, mine electrician, appears in the picture.

and presented, when fully dry, a rather dusty surface.

The machine distributed about two tons of dirt in completely dusting 1,000 ft. of 24-ft. entry which had an unusually high roof. The height sometimes ran up to 18 ft. The machine and an attached mine car of dust were handled by the hoisting rope on slopes and by a locomotive on main entries.

The machine was put into operation in August of the present year. There were distinct limiting features to this machine in its early stages, but some of these can be removed. The main difficulty was that it required too many men. When it was hauled by a locomotive a crew of four were required. One man sprinkled ahead, a motorman handled the locomotive, a shovelman stood in the mine car feeding dust steadily into the hopper and the machine operator directed the dust, started and stopped the fan and looked after the power cable.

**This Is the Way They "Mudize" in Stag Canyon**

A cement gun is used by the Phelps-Dodge Corporation to apply tailings from a nearby mill or adobe dust from the ground surface or a mixture of cement and sand, one to eight. Wet tailings are sprayed on roof and ribs of all main haulage roads, the surfaces having already been gunited. The machine, with a crew of three men, can cover 600 ft. of such entry in a day. The train consists of the supply car, cement gun, air receiver, air compressor, water tank and locomotive.



When the outfit hooked onto a haulage cable on a slope, of course no motorman was necessary, but the hoistman should be accounted as part of the crew, for haulage on the rope was obviously impossible while the dusting was in progress. The shovelman could be eliminated only by increasing the size of the dust hopper, which would probably necessitate changing the feeding mechanism. But whatever its limitations, the machine represented one more idea in the long list which the West is developing. From experimentation with such ideas comes the finished machine of the future.

Another home-made dust distributor with many of the same limitations was that which was built in August at the Bon Carbo mine of the American Smelting & Refining Co., near Cokedale, Colo. It consisted of a wooden bin to hold about  $\frac{1}{2}$  yd. of dust. The feed was by gravity assisted by suction from the air line. The opening in the bottom of the bin was equipped with a pipe in the air line turned in the direction of the air travel. The necessary blast of air was supplied by a 12-in. booster fan blowing through a pipe which tapered to a diameter of about 3 in. at the outlet. This simple and compact outfit was mounted on a mine-car truck and was ready for travel into the mine, moved by a haulage locomotive and accompanied by a car loaded with dust. C. R. Garrett, mine superintendent, and Charles Smith, mine electrician, are devoting a good deal of thought to the machine in the hope of developing it.

In experimenting with this and that at the Delagua mine of the Victor-American Fuel Co., in Colorado, men used their ingenuity with whatever parts and equipment happened to be handy. The result was a blower made from a 10-ft. oblong steel tank and a low-pressure rotary blower capable of delivering a large volume of air. Holes were cut in the ends of the tank to permit a large sheet-iron pipe to be inserted the full length of it. The tank was filled with dust and slots in this pipe were made to admit the dust. The stream of air passing from the blower through this pipe was intended to produce such a volume of dust that a uniform deposit would be made throughout the area traversed.

Difficulty was experienced in getting a steady feed of dust through the inlet slots, and the outfit was cumbersome and heavy. But it represented a trail-blazing effort which has led the company into the use of more advanced dusting devices. The Victor-Ameri-



#### Machine Planned to Produce Large Volume of Dust

It was built at the Delagua mine of the Victor-American Fuel Co. from various parts and old equipment which happened to be handy. The blower sent a stream of air through a sheet pipe running through a tank. Dust from the tank was expected to fall through slots in the pipe and thus be caught in the air and discharged in a cloud into the atmosphere without particular direction. Dust could be shoveled into the tank when a top lid was raised.

can Fuel Co. experimented with rock dusting at Delagua long before the rest of the country had waked up to the value of the practice. Its work began as far back as 1911 when General Superintendent Ben W. Snodgrass was superintendent there.

Experiments in building dusting machines have been steadily progressing in the mine shops of the Union Pacific Coal Co., at both Hanna and Reliance, Wyo. Such dusters as had been built by late summer were able to deliver the dust, but they, too, suffered handicaps that had to be overcome.

At Hanna, Superintendent T. H. Butler first tried an ordinary forge blower turned upside down and driven by a small direct-connected motor. This blew a stream of air through a 5-in. pipe on top of which was mounted a funnel-shaped dust hopper with a capacity of about  $\frac{1}{2}$  yd. A short piece of stout, flexible tubing connected the outlet with a 4-ft. length of galvanized iron pipe equipped with a hand hold. With this the dust could



#### One Motor Drives Everything on Kenilworth Car

By means of a belt and a reducing gear on the opposite side of the machine, a revolving feeding device, set in the bottom of the hopper delivers dust at uniform speed and without danger of choking into the 12-in. pipe from the blower. This pipe is tapered to an 8-in. discharge and connects with a loose elbow which can be turned from side to side by the operator. Roof and ribs are washed down with water immediately ahead of this machine so that the dust sticks to all surfaces readily.

be accurately directed by an operator. The whole unit was mounted on a truck and accompanied by a car of unground surface dust.

To control the flow of dust and to prevent a back-draught of air from blowing up through the little hopper, a 4-leaf, revolving valve built on the order of a stove-pipe damper, was installed in the round pipe through which the dust descended into the air stream. This was first turned with a hand crank so that a man had to walk along beside it to run the feed. This extra man may be eliminated by gearing or belting the rotary valve to the blower motor.

That company has experimentally dusted parts of its properties with adobe dust from the exterior of the mines, screening but not grinding it. Finally it has been concluded that fineness is obligatory, so a pulverizer has been installed.

The Phelps-Dodge Corporation at Dawson, New Mex., the Utah Fuel Co. and the United States Fuel Co., both in Utah, and several other companies have done much experimental work with dusting machines of their own construction. Thus the Rocky Mountain region has many hands and heads busy and the 1924 crop of dusting devices is proving itself a "bumper."

### Washing of Freeport Coals Studied At Pittsburgh Experiment Station

A study of the washing characteristics of coal from the thick Freeport bed in Pennsylvania has been completed by the U. S. Bureau of Mines investigators working in co-operation with the Carnegie Institute of Technology. The tests were conducted at the Pittsburgh experiment station. Coal from this thick bed makes good metallurgical coke except that at some mines the ash content is usually too high, and at other mines sulphur is present in the coal in excess of the quantity permitted in metallurgical coke. Therefore, washing to remove the ash and the sulphur is an important and vexing problem to the coal-mine operators. The coal is mined for byproduct coking, steam-raising, domestic use, gas-making and other purposes. The problem in washing is to eliminate the fragments that in mining get into the coal from impure bands present in the coal bed, as well as impurities finely distributed in the coal from some layers of the bed. It was determined that the best treatment for coal with bony fragments was to make three products—clean coal for coking, secondary coal for use in boiler plants, and refuse.

### Salt Damages Walls of Coke Ovens

Salt is an impurity which occurs in many varieties of British coking coals. It consists principally of sodium and potassium chlorides, and on account of its ultimate effect on the brickwork of the oven walls it is desirable to eliminate it as far as possible. To do this, frequent change of the washing water is necessary, as in course of time the accumulation of dissolved chlorides in the water becomes excessive, and instead of washing reducing the salt content of the coal it actually increases it. The washing water itself therefore must be as free as possible from these constituents. On account of its salty nature, mine water is frequently quite unsuitable for washing purposes. —G. Stanley Cooper in *Byproduct Coking*.

## Elaborate Care Fails to Protect Gates Mine

Pipes Extended to Face of Every Working Place—Electric Detonators a Possible Cause of Explosion—Many Safety Precautions Provided—Recommend Better Supervision of Night Shift

A COMMITTEE of mine inspectors composed of Edward E. Girod and four others have submitted a report of their findings and recommendations covering the explosion which occurred on July 25 in the Gates No. 1 mine of the H. C. Frick Coke Co., at Gates, Pa. The other members of this committee were Richard Maize, Silas S. Hall, W. H. Howarth and Harry Phythyon. Their report submitted to Joseph J. Walsh, Secretary of Mines, of Pennsylvania, gives two probable causes of the explosion and makes certain specific recommendations.

The Gates No. 1 mine is in a gaseous territory. The Pittsburgh seam, which at this mine is 8 ft. thick, is being worked. The location is on the east side of the Monongahela River about twenty-five miles south of Brownsville. A shaft 250 ft. deep forms the main entrance to the mine. Ventilation is provided by a force or blower fan driven by steam which produces a pressure of 2.5 in. water gage. The inspector's report here reproduced describes the details of the mine layout and the conditions as observed by the committee.

The air is forced down a compartment of the main shaft, the airway being separated from the hoisting shaft by a concrete partition. The air after leaving the shaft is conducted for some distance along airways parallel to the main haulage roads but later enters these roadways which thereafter serve as intake airways. The air is conducted through the workings and then returns to the surface at outlets provided for that purpose. It is prevented from making a short circuit to the hoisting compartment of the main shaft by a series of doors on each main haulage road leading to the main shaft.

### EXPLOSION CONFINED TO ONE SECTION

The mine is divided into three sections to one of which, the North section, which is adjacent to the Palmer mine of the same company, the explosion was confined. About 51,600 cu.ft. of air per minute enters through No. 6 Butt entry and a parallel aircourse and is distributed throughout the workings of the section. This entry forms the longer side of the triangle occupied by the area described. It is also the roadway through which all the coal in the section is brought to the shaft.

On one side are two parallel airways separated from the rest of the mine by a barrier pillar. These two parallel headings are the return airways for that side of the triangle, the other side of which is bounded by an old gob. Another pair of adjacent headings, which are parallel to No. 6 Butt and on the same side as the rooms turned off that roadway, serve as return airways for that side next to the old gob and nearest to the hoisting shaft.

Rooms have been turned off No. 6 Butt and as a rule they have been driven north on the face, until they reach a boundary of the triangle. The first rooms turned off No. 6 Butt are short but they increase in length successively until No. 15 room is reached.

Thereafter each in its turn is shorter than the one that precedes it, No. 24 room being the last room turned. No. 13 room is about 1,500 ft. long, extending from No. 6 Butt to the apex of the triangle.

The rooms are crossed at frequent intervals by crosscuts and entries so that the triangle resembles somewhat a part of a huge checkerboard except that it is crossed by several diagonal entries which have been disregarded as a part of the plan of mining the coal in the area being described.

At the head of each room the process of extracting the room pillars has been going on for several months so that a gob extends along two sides of the triangle making two gob lines which meet at an apex at No. 13 room. The accompanying map shows the layout of the triangle.

Two parallel entries with brick-and-cement stoppings connect this triangular section with the main return aircourse of the adjacent Palmer mine, which is ventilated by an exhaust fan with a water gage of about 3 in.

### SMOKE ISSUES FROM AIRSHAFT OF PALMER MINE

About 7:30 p.m. on July 25 smoke was discovered issuing from the airshaft of the Palmer mine, and it was supposed at first that the smoke was caused by a fire or by an explosion in that mine. Upon investigation it was discovered that the smoke was the outcome of an explosion in the Gates mine in the section adjacent to the Palmer mine. One of the 13-in. brick-and-cement stoppings which had been built in these entries to separate the two mines was torn down by the force of the explosion and thus the smoke noticed at the Palmer airshaft was carried in the air current from the Gates mine.

In addition to the broken stopping in the entry leading to the Palmer mine the inspectors found evidence of much violence extending over a large part of the section. There was not much evidence of heat nor violence noticed along No. 6 Butt entry nor in the first few rooms turned off No. 6 Butt, although a number of brick stoppings were demolished along that entry. The violence was considerable in the central part of the triangular area and toward the apex of the triangle opposite No. 6 Butt entry. The heat seemed to increase toward the western corner of the triangle as was evidenced by the fused coal dust that was plastered on posts and other surfaces.

The forces and flame traveled in different directions but seemed to radiate from the neighborhood of No. 21 room, where six dead bodies were found. Near the end of that room one narrow place driving westward toward the gob had recently been cut by an electric shortwall machine. Another similar place 25 ft. farther back from the head of the room was partly cut and evidently this cut was being made when the explosion occurred. On the roadway of the room, between the place that had just been cut and the place that was being cut, many tangled detonator wires were found, indicat-

ing that about one hundred electric detonators were assembled together there, the leather case in which the detonators were carried by the shotfirers being found empty and in good condition at the head of the room. Most of the detonators were found to be destroyed.

**SHOTFIRER AND ASSISTANTS FOUND IN SAME ROOM**

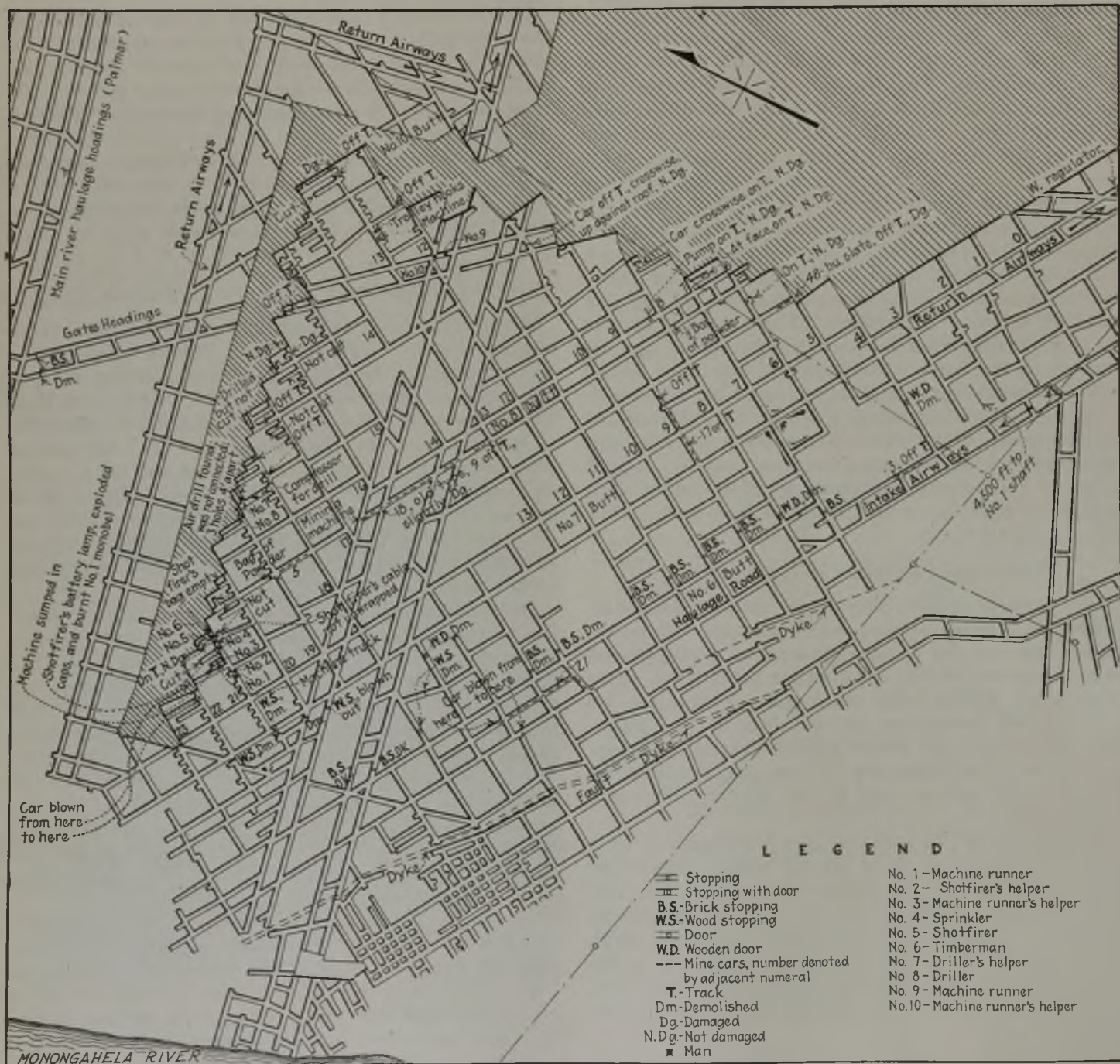
Close by the bundle of detonator wires a place was found where a quantity of permissible powder had been burned. Apparently it had lain on the ground in the space between two ties in the track. The room was timbered with legs and crossbars at this place, and these timbers were deeply charred. Three flame safety lamps were found extinguished at this point also, indicating that the shotfirer and his two assistants were together here when the explosion occurred. One of the safety lamps and three exploded detonators were found under a piece of slate that had fallen from

the roof. This safety lamp was found lying on its side with its glass broken, but the evidence indicated that the slate fell after the explosion had started. There was no evidence that any shots had yet been fired in the working places.

It appeared from all the evidence available that while the shotfirer and his assistants were at this point in No. 21 room arranging their detonators and powder for convenient use a flame approached from some source which exploded the detonators and burned the permissible powder, although it may be that the detonators themselves initiated the explosion.

In addition to these three men, a cutter and his helper and a timberman were found dead in this room. A driller and his helper were found at the head of No. 19 room. Another cutter and his helper were found near the head of No. 12 room.

An accumulation of gas might have taken place in



**Map of the Northern Section of the Gates Mine of H. C. Frick Coke Co. Where an Explosion Occurred July 25, 1924**

The explosion blew out a 13-in. brick-and-cement stopping in a heading leading through the large barrier pillar between the Palmer and the Gates mines. This will be seen marked B. S. and Dm (Brick Stop-

ping and Demolished) near the left side of the plan. The explosion seemed to center from the neighborhood of No. 21 room, where six dead bodies were found. On the roadway of the room were the tangled

wires of about one hundred detonators, mostly exploded. Close by a place was noted where a large quantity of powder had burned, charring the legs and cross-bars by which the place was timbered.



Room 21 where the six men were found, due either to a sudden outburst of gas caused by a heavy fall or to a gradual issue coupled with a disarrangement of the ventilation, which accumulation could have become ignited by an electric arc, or possibly by the accidental firing of the detonators. This explanation seems the most reasonable to the inspectors, but the evidence was insufficient to make this opinion positive.

The section of the mine under consideration is known to generate some explosive gas, but the ventilation had been restored when the inspectors explored the scene of the explosion on Monday, and they found no gas except at one place. Here it was issuing from the floor. There had been no explosive gas noted on the mine report books for this section of the mine since Dec. 14, 1923.

The H. C. Frick Coke Co. has spared no pains nor expense to make and keep this mine in a safe condition. Sufficient air was supplied to give adequate ventilation. A system of sprinkling with pipe lines and hose had been provided so that all the working places might be sprinkled with water before the shots were fired. A man accompanies the shotfirer for this

purpose. The coal is sprinkled by the loaders as they load it. It is cut and shot on the night shift. Permissible powder only is used for shooting. Electric cap lamps are used exclusively except by the officials and shotfirers who use flame safety lamps but one such lamp is furnished to each cutter in addition to his electric cap lamp. But, considering the quantity and character of the work being performed in this section on the night shift, the supervision was insufficient.

The inspectors close their report with certain recommendations suggested by their investigation: 1. That the ventilation be arranged so as to reduce to a minimum the chances of short-circuiting the air current. 2. That proper examinations be made and efficient supervision be provided for the workings on the night shift. 3. That the Federal Bureau of Mines withhold its approval of electric detonators unless the type submitted for approval provides against their being exploded accidentally by electricity. 4. That greater care be exercised in the handling of detonators and explosives. 5. That all electric wires and equipment be installed, maintained and operated so as to reduce the danger of arcing to a minimum.

## Engineers Study Needs of Industrial Centers in Coal Storage Report

STORAGE will assure a continuous and reliable supply of coal throughout the country, it is asserted in an analysis of the needs of communities and industries accompanying a series of summaries of regional conditions to be embodied in the report of the Coal Storage Committee of the American Engineering Council, of which W. L. Abbott, of Chicago, is chairman. The complete report, Ex-Governor James Hartness, of Vermont, president of the Council, said in making the announcement, would exceed 100,000 words, and would be made public following a meeting of the administrative board of the Council to be held at the headquarters of the Western Society of Engineers in Chicago, Oct. 17 and 18.

"From the standpoint of consumers in both large and small communities," according to the analysis, "the first requisite is that the supply should be freed from irregularities having their origin largely in artificial causes. There is a negligible amount of intentional manipulation of the market, but flurries and near panics are frequent. Consumers often are responsible."

### ESTABLISH AVERAGE MONTHLY STANDARD

The Engineering Committee has established a storage practice in leading industrial centers, using as a standard an average monthly shipment plan. As to this the analysis said:

"Evidently it is essential that the consumer store coal. The ideal practice would be for him to store during the summer a large portion of the amount consumed during the winter. But such an ideal is too much to expect, hence the committee has set up as a standard an average monthly shipment plan.

"Compliance with such a standard would mean that the consumer would store a minimum amount of coal and such would not be in storage for a great length of time; the transportation agencies would be relieved of the inordinate peak demands and would be enabled to move coal at less expense than now; the producer, knowing what his monthly demands would be, could

so arrange his operation schedules as to produce coal at a much lower cost per ton.

"Eventually, should such a practice become generally and regularly followed, the amount of storage required would be materially reduced, but this cycle of improvement can be initiated only by consumers."

The Chicago committee of the Council's main committee, it was said in analyzing conditions in that city, based its conclusions on data from fourteen representative industries having a consumption of 4,640,000 tons, representing 15 per cent of the total coal moving into the Chicago district.

"Only 6.7 per cent of the annual consumption of these industries should be stored if all of the users were purchasing coal on the basis of uniform monthly shipments," this committee reported. "This is a larger percentage than that pertaining to Philadelphia, but in comparison with most of the medium to large cities of the country it is a very low percentage.

"It means that if users generally in this district were purchasing coal on a contract basis with equal monthly shipments, the aggregate storage bill would be but a small amount when distributed over the entire year's supply. Undoubtedly some industries would be obliged to store a larger percentage, but the typical establishment is in a fortunate condition in this respect."

The uniform monthly shipment plan recommended by the engineers for Chicago, would, it was said, result in monthly shipments of 386,550 tons to 14 consumers, seasonal storage of 295,500 tons, amounting to 6.4 per cent of annual consumption, reserve storage 7.1 per cent of annual consumption and total storage 13.5 per cent of an annual consumption of 4,638,600 tons.

TAR YIELD OF WESTERN LIGNITES.—A large number of assay retort tests of samples of lignite taken from public lands in the Western states have recently been made by the oil-shale laboratory of the Bureau of Mines, Boulder, Colo. The Colorado lignites so far tested yielded from 8 to 10 gal. of tar to the ton. Samples of Wyoming lignite yielded as high as 20 gal. to the ton.

## Why Not Use Approved Equipment in Place of Open or Half-Safe Type?

Electricity Causes Many Disasters and Fires—To Date None Has Been Caused by Flashes from Permissible Apparatus—Lists Large Variety of Equipment Bureau Has Approved

A DISCUSSION of safe electrical equipment for gaseous and dusty coal mines is given in publication No. 2,626 by L. C. Ilsley, electrical engineer, U. S. Bureau of Mines. This paper starts by comparing the buying of approved equipment following a disaster to "locking the stable door after the horse is stolen," then goes on to discuss some recent accidents and their effect.

"An open type of electric coal drill was used in a gaseous mine in West Virginia. This was the probable cause of the death of twenty-seven men. A half-safe type of electric coal-cutting machine was used in a gaseous mine in Pennsylvania. This was probably the cause of the death of thirty-six men. An unapproved, unsafe type of flame safety lamp was used in a gaseous and dusty mine in Utah. This was the alleged cause of the death of 171 men. All three disasters happened within the last six months, and it would seem would have been avoidable if proper equipment had been used.

"It is understood that more rigid requirements will be enforced in West Virginia. The committee of state mine inspectors made definite recommendation for improving the conditions in the Pennsylvania mine to which reference has been made. The Industrial Commission of Utah has already issued new orders which will prevent the use of unsafe lamps in that state.

"These acts and recommendations are all good and will help to prevent accidents in those states in the future. Is it not a pity that such recommendations and orders were not made a little earlier before the toll of life had been exacted? Is it not unfortunate that other states will not take these lessons to heart and safeguard their mines before and not after disasters take place?

"Electric current can cause accidents in five general ways as follows: (1) By shock to persons; (2) by igniting powder; (3) by igniting gas; (4) by igniting coal dust; and (5) by setting fire to flammable material such as timber and coal. Many accidents from these causes are preventable if proper care is taken. Most of the accidents caused by sparks and flashes from electrical apparatus would not take place if approved electrical equipment was used. By approved equipment is meant equipment that has been tested and formally approved by the Bureau of Mines. So far as known, up to the present time, no disasters have been caused by sparks or flashes from equipment having the Bureau's approval.

"The table accompanying this article and compiled by M. W. von Bernowitz from records of the Bureau of Mines covering the period 1910 to 1924, shows disasters and fires caused by electrical apparatus and circuits.

"The table shows that in the twenty-six accidents reported, 499 lives were lost and 86 other men were injured; besides there was much damage to property.

"During the past fourteen years the Bureau of Mines has, in co-operation with manufacturers of electrical machinery and equipment for mines, conducted thousands of tests on various machines and apparatus submitted by the manufacturers to determine whether the device is safe for use in explosive atmospheres. If the

machine, or any part of it, is not safe, the bureau and the manufacturer work together to eliminate the unsafe features. When the machine finally passes the bureau's test, it is formally approved for use in coal mines where hazards from gas and dust occur. Several classes of equip-

ment have been tested, and there is a steadily growing list of approved equipment recommended for use wherever such equipment is needed.

"The electrical equipment so far formally approved by the Bureau of Mines includes five storage-battery

Disasters from 1910 to 1924, Inclusive, Attributed to Electrical Apparatus and Circuits

State	Probable Cause of Ignition	Fatalities	Injuries
Wash.	Arc from booster-fan motor ignites gas	10	
Ill.	Arc from short-circuited trolley wire sets fire to ventilating door	31	
Ohio	Arc from bare cable sets fire to "sulphur" band (a)	16	
Wash.	Arc from trolley wire ignites gas	8	
Pa.	Arc from trolley wire ignites gas	82	
W. Va.	Arc from tailing cable ignites gas	6	3
W. Va.	Arc from filament of electric-light bulb ignites gas	2	
Ky.	Arc from trolley wire ignites powder	3	
Mo.	Arc from office-fan motor ignites gas	1	
Pa.	Arc from pump-motor controller ignites gas	19	
Pa.	Arc from trolley wire ignites gas	18	
Pa.	Arc from switch ignites gas	14	
Pa.	Arc from trolley wire ignites gas	4	
W. Va.	Arc from trolley wire ignites gas	7	
Ind.	Arc from defective cable ignites gas (b)		
W. Va.	Arc from trailing cable ignites gas	7	
Utah	Arc from short-circuited wire ignites timber (c)		
Pa.	Arc from hoist motor ignites gas	5	
Pa.	Arc from electric wire caused by derailed trip ignites coal dust	90	78
Kan.	Arc from battery of storage-battery locomotive ignites powder		13
N. M.	Arc from electric-power wire caused by runaway trip ignites coal dust	120	
Okla.	Arc from short-circuited power wires sets fire to coal (d)		
W. Va.	Sparks from electric-drill motor ignites gas	27	
Pa.	Arc from electric mining machine ignites gas	36	
Pa.	Arc from short-circuited trolley wire sets fire to ventilating door (d)		
Pa.	Sparks from electric coal-cutting machine ignites gas (d)		
		499	86

(a) Mine sealed for months. (b) Several acres of workings sealed for months. (c) Besides being closed for months, much damage was done to workings. (d) Part of mine sealed.

locomotives, one power truck, two coal drills, nine short-wall mining machines, one arcwall mining machine, four cap lamps, two hand and trip lamps, and two single-shot blasting units. A complete list with more detailed information can be found in Bureau of Mines Technical Paper 364. This paper is in course of publication and a copy of it can be obtained free of charge by writing the Director of the Bureau of Mines, Washington, D. C."

## Coal and Coke in House-Heating Plants

Accurate data on the effectiveness of combustion of bituminous coal and coke for generating steam under hand-fired low-pressure cast-iron boilers of a type actually used in heating large buildings have been obtained as the results of a study at the Pittsburgh station of the Bureau of Mines. The experimental work has been under way since early in 1922. The effectiveness of different methods of firing the different coals tested was determined, as well as the relative value of the different fuels used. The results showed that the bituminous coals from the Pittsburgh and Lower Kittanning beds, of Pennsylvania, and the coke were of about equal steaming value at the lower pressures but at medium and higher pressures permissible with this equipment, the coke had about 90 per cent of the steaming value of the bituminous coal.

## Texas Lignite Field Sets Steam Shovel to Work

Stripping Methods May Eliminate Underground Mines in Parts of Texas for the Overburden Is Often Light

BY HOWARD MARSHALL  
Austin, Texas



Shovel of Western Securities Coal Co.

ONE of the most important events in the history of the Texas lignite industry is the opening and successful operation of the strip mine in the Rockdale lignite fields by the Western Securities Coal Co., a subsidiary of the McAlester Coal Co., of McAlester, Okla. The importance is due to the fact that by this new process, it has been estimated lignite coal can be mined for from one-half to two-thirds, or even less, as much as by the established mining methods now in general use throughout the state.

As the result of the ability of this new strip mine to produce coal so cheaply, prices on lignite coal have been slashed to unprecedented depths. The city of Austin, which is the biggest single user of lignite in the state, before the opening of the price war, paid \$1.50 per ton, f.o.b. at the mines; now it pays \$0.96 per ton.

In the Texas lignite mines, the coal is extracted from depths varying from 50 to 300 ft. by means of shafts, and by hand labor. The producing cost of lignite by this method is from 50 to 60 c. per ton; by the new stripping method, it is estimated to be not more than 40c. per ton. Reliable authorities declare that the Western Securities people can produce lignite at 20c. per ton as soon as the markets justify greater production.

In order to meet the competition, the majority of the lignite operators in the state have cut the pay of the diggers from 30c. per pit car of 1,600 lb. to 25c.

Until the coal had actually begun to leave the stripping few people believed that the venture of the Western

Securities company would be a success. They believed that this attempt to strip mine coal would result as did that of the Federal Fuel Co., which proved to be one of the most tragic stories of failure in the history of the Texas lignite industry.

The plan of the Federal Fuel Co., organized in 1918, differed from other types of stripping mainly in the kind of machinery which it proposed to use. Two giant devices, not steam shovels, strip-mined the coal and loaded the coal cars in the mine yards.

However, misfortunes followed closely on the heels of these adventurers in strip mining. The machinery broke, adverse weather conditions hampered the work, and just as it seemed that the project would succeed, the treasury of the company became exhausted, and the whole scheme had to be abandoned. The total loss sustained by the company officials totaled half a million dollars.

The Western Securities Co. came into the Rockdale lignite field about a year ago when it leased the property of the Federal Fuel Co. This property consisted of 1,938 acres, of which 748 acres were actually tested by the process of sinking small wells at various points. The bed is 14½ ft. thick, and most of it is overlaid with 20 ft. to 40 ft. of sandy clay, which is easily stripped.

According to claims advanced by the Federal Fuel Co., this field contains 20,000,000 tons of the finest lignite coal in the state. President Puterbaugh has

### Stripping 15-Ft. Seam

Overburden is about 25 ft. thick though it hardly seems so, judging by the thickness of the lignite. Note the cars on the lignite berm and the stripping shovel in the rear. This scene is on the property of the Western Securities Coal Co., near Rockdale, Texas. The use of shovels is lowering the cost of producing lignite considerably, wherever as here the lignite is thick and the cover merely enough to keep the bed in good condition.





#### Another View

This, taken from above, gives a good idea of the thickness of overburden. The loading shovel can be seen excavating the lignite in a cut 15 ft. lower than the big stripping shovel which is kept 50 yd. ahead of the loading equipment. The photograph was taken when the stripping shovel was still making its first or "box" cut.

been quoted as saying that there is enough lignite in this bed to supply all the industries of Texas for the next ten years, at the present rate of consumption.

The property is located about six miles from the main line of the International-Great Northern R.R., and approximately nine miles from Rockdale. The Western Securities has rebuilt an old spur from the main line to their mine at Sandow, and have incorporated it under the name of "The Rockdale, Sandow, and Southern."

Machinery of a value of more than two hundred thousand dollars has been moved in by this new company. This equipment includes: Two steam shovels, one standard locomotive, and a large number of tools for use in the machine shops of the company.

The strip which has been opened is at present perhaps a quarter of a mile long, 80 ft. wide, and 40 ft. deep. The overburden of the lignite here is at least 15 ft. The shovels can uncover and mine, in an eight-hour day, about 25 ft. of the lignite.

The large shovel rests on the bed of lignite which has been uncovered, and which has been swept smooth by two men working with steel brooms. It keeps about fifty yards in advance of the small, coal-removing shovel. The track, on which the coal cars are moved into the long strip down an incline, rests on the top of the bed of coal, just to the right, and above the small shovel. At the present time, these cars are moved by the short pushes of the big dipper of the small shovel, but it is said that the company will presently purchase another locomotive to do this work.

According to State Mine Inspector N. M. Bullock, of Rockdale, Tex., these cars can be loaded in 12 min-

utes. As the average coal car will hold about 40 tons of lignite coal, the shovels can uncover, at this rate about 1,200 tons of lignite coal in one day of eight hours. Allowing for unforeseen delays, each day should see 20 cars of coal leaving the strip. And by simply stringing lights across the cut, and by working three shifts of men, at least 2,400 tons of lignite coal can be mined in a 24-hour day.

Industrial chemists have recently analyzed samples of the coal from the strip at Sandow, and have declared that it contains practically the same number of heat units as that which comes from the deeper stratas of lignite. The lumpy condition of the coal will probably necessitate the use of crushers for use with furnaces which are mechanically stoked.

The rising prices of oil are inducing a number of power plants, which have heretofore used fuel oil in their furnaces, to introduce lignite. In other words, because of its two hundred thousand dollar investment, the Western Securities people do not wish to slash lignite prices further, as long as there is a reasonable market for their output. It is due to these factors, in the opinion of many mining men, that the small operators are still enabled to compete with the big strip at Sandow.

But with the coming of the dull months next winter, a hard season is foreseen for the shaft mine owners. There is little doubt that the strip can produce coal far more cheaply than they. And when the annual market depression comes to the lignite industry, the keener competition, it is believed, will close many of the small mines. Some mining authorities are of the opinion that other strip mines will be opened quickly in imitation of the example set by the Western Securities people. If this is done, Texas will witness the most radical change in mining methods that has occurred in the history of the industry.



Tipple and Power House, Consolidated Coal Co.

This mine near Rockdale is somewhat typical of the lignite mines of Texas. The surface structures are usually light and impermanent.

COAL-DUST EXPLOSION GALLERY IN INDIA.—Consequently on a severe explosion at Parbelia Colliery in the Ranganj coal field which killed seventy-four persons and was ascribed largely to coal dust, a committee was formed to study such dangers. The committee had had built a gallery 150 ft. long and from 3 to 4 ft. in diameter on a site near the headquarters of the Department of Mines at Dhanbad. The Parbelia Colliery is about 1,500 ft. deep. All the galleries are now being stone-dusted with shale ground to the necessary fineness in a ball mill.—David Penman, *The Mining Institute of Scotland*.

# Making Power Contracts That Will Save Your Purse

Power Schedules Should Be Selected with Care—Large Savings Often Can Be Made by Buying Under Two Schedules—Contract Must Be Based on Intimate Knowledge of Conditions at Mine to Be Supplied

BY W. H. RUSSELL  
Farmington, Ill.

**A**MONG the many ways the electrical man can effect economies at a coal mine, two are of prime importance, viz., efficient purchase or generation of power and elimination of unnecessary energy losses. The schedule under which power should be purchased is the subject of this article.

This is important because large sums often can be saved with no expense or trouble except the time necessary to make a study of the local conditions under which the power is used and of the different power schedules under which it may be bought.

In the purchase of central-station power large sums of money are often wasted by the selection of the wrong schedule or the use of but one when two different rates might better be selected. Most power companies have several different schedules available, and, though they are usually willing and anxious to help the consumer of their product to select the most advantageous rate, they are quite often unacquainted with the peculiarities of each coal-mine load and make incorrect recommendations. Likewise, the coal-mine executive is often unacquainted with the peculiarities of power rates and is sometimes resigned to the habit of regarding power bills as a necessary evil rather than a chance to make substantial savings with practically no expense.

## SLIDING SCALE GENERALLY USED

Though there are many different forms of power schedule, most of them are alike in that they consist of two parts, viz., a demand charge and an energy charge.

One schedule commonly known as the estimated demand rate is probably that most generally used; it consists of, first, a method of making a fixed annual or monthly demand charge and, second, a method of allotting, in proportion to the maximum demand, the total consumption of power to a sliding scale.

With this schedule, the maximum demand is based on the active load which is a certain percentage of the total of all motors or other power-consuming machinery connected to the system. This percentage generally takes into consideration the number of motors or other devices in use and other factors which might have a bearing on the probable maximum demand for power by the whole system.

At best, this is a haphazard method with much chance for unfairness to either party to the contract. There is always more or less trouble concerning changes in the connected load, especially when another locomotive is placed in service or one is taken out of service. A change should be made in the demand charge whenever the connected load is increased or decreased, but this is liable to happen so frequently that it will be neglected with loss to somebody.

In spite of the clumsiness of this method of determining the demand charge, it is quite generally used, and often the reason for its selection is that the low rate for the actual energy consumed is attractive.

When the mine works steadily at full capacity, the demand charge is not burdensome because it is counterbalanced by a large energy consumption which often results in a low average cost per kilowatt-hour; but if the mine has to be shut down or the tonnage reduced part of the year, the demand charge is often a heavy burden, particularly if nothing is running but a few pumps and the fan. Usually, on such occasions, the fan is run only a part of the time and then at reduced speed.

The second schedule is based upon a measured maximum demand and automatically takes care of any change in the connected load. The actual maximum demand figure used in computing the bill may be established monthly or yearly or for whatever period of time is fixed by the power company.

By this method the maximum demand is measured and recorded continuously on a chart driven by a clock, and the demand thus obtained is used in computing the bill by various methods. Generally the maximum demand is used to determine the quantities to be charged at the different rates, thus:

First 30-hr. use of max. demand .....	3,000 kw.-hr. at 10c. per kw.-hr.
Second 30-hr. use of max. demand .....	3,000 kw.-hr. at 7c. per kw.-hr.
All in excess of 60-hr. use of max. demand.....	44,000 kw.-hr. at 2c. per kw.-hr.

Various discounts are then allowed for prompt payment, limited-hour service, quantity used, power-factor correction, etc.

## WHAT CONSTITUTES MAXIMUM DEMAND?

Maximum demand is a term which is commonly misunderstood. The general understanding seems to be that it is the instantaneous maximum load. This interpretation, except in rare cases, is wrong. The maximum demand is the average load for a given time interval, usually 30, 15, or 5 min., or in the case of violently fluctuating loads an even shorter interval of time. Thus a motor with a steady load sufficient to cause it to use exactly 50 kw. would register a demand of 50 kw., regardless of the time interval. If the demand meter is fitted with a time-interval indicator of 30 min. and the load were reduced to nothing for the first half of the 30 min. and increased to 100 kw. the second half, the recorded maximum demand would still be 60 kw. during this particular 30-min. period.

The energy charge on these schedules is applied by a sliding-scale rate based on the power used, so that the higher the consumption the lower the average rate up to a certain point; after this point is reached, the charge is usually a low rate per kilowatt-hour for the entire quantity used. Some consumers of power think this a very expensive rate, but under certain conditions it has decided advantages; principally at mines where the output of coal is large for but a few months of the year. The rate per kilowatt-hour may be somewhat

high during operating periods, but the demand charge during the slack months may be eliminated, and the result is an advantage for the entire year.

When using the measured demand rate it is sometimes practical to reduce the total power bill by cutting down the maximum demand by reducing the tonnage, but in the case of the estimated demand rate any change in the load and demand charge usually means a conference with the power company and a complete change in the contract, which soon becomes burdensome, and is likely to be neglected.

In case of the complete suspension of mining operations the measured demand rate system is very convenient and at the same time economical because the pumping and ventilation load may be so regulated as to keep the demand down to a minimum. At the same time the occasional use of a hoist or locomotive will not increase the maximum demand, if other equipment is first shut down, whereas the estimated demand rate fixes a demand charge in proportion to the total of all the equipment which is connected and in running order. If the rule be strictly enforced this prohibits the occasional use of hoists and locomotives and also prevents any reduction of the demand charge during a suspension.

Some power companies permit the use of two separate rates. This is a benefit to many coal-mine consumers as invariably the class of load which is steady earns a much lower rate than one which is subject to violent fluctuations or which is on but a few hours of the day. Most coal mines which use electric power to any great extent have an abundance of both the steady and the intermittent loads and can take advantage of the two rates, if they are permitted to do so. The steady load, of course, consists principally of fan and pump motors. Fan motors consume an enormous quan-

ties, would have been \$5,358.03, and had it all been purchased on the other rate, the cost would have been \$7,149.36. This scheme has been working for several years at two mines owned by the same company and has never failed to show a greater saving than that in 1923.

At another mine an additional discount of 15 and 5 per cent is allowed from the power bills because no power is used between 4 p.m. and 8 p.m. during the winter months. This offpeak service is not always permissible but, if available, it may be applied to service supplying power for mining machines, locomotives and hoists used only during the day.

The purchase of power must be treated as a specific problem for each mine and in order to arrive at the best solution one must be familiar with the power requirements and how they will be influenced by probable market conditions. The anticipated installation of additional machinery, as well as the technical side of power consumption and rates, also must be considered.

### Pays for Slate and Slack Removed

IN GREAT BRITAIN, as in the United States, the retailer of coal is under fire, Mr. Shinwell, the Secretary of Mines, charging that the prices are excessive. In a reply by the Coal Distributors' Information Department, 27 Southampton St., London, W. C. 2, entitled "The Price of Coal" (16 pp. paper bound), the whole question as to retailing costs is discussed and it is stated that the average net profit of six representative London coal merchants has been shown to Mr. Shinwell as approximately 18c. for each ton of coal over a period from 1921 to 1923. A practice, apparently general in Great Britain, is to screen the coal at the retailer's yard, the men being paid 36c. per ton for all small coal thus obtained, this payment being additional to the wage rates for the work of loading. Similarly the men are encouraged to pick out slate by a payment of \$2.42 (10 shillings) per ton of slate picked. "From these facts," says the booklet, "the desire and the effort of the merchants to send out the coal in satisfactory condition must be apparent; it is not a question of altruism, but of common sense, the satisfaction of customers being essential to continued custom."

### Will Try to Find Better Refractories

tity of power and usually constitute a 24-hr. a day load, which is extremely desirable to the power company and permits of a low rate. Mining machines, locomotives, hoists, etc., work only when coal is being hoisted and do not earn so low a rate as a fan.

It does not cost a power company much to have two separate metering equipments and where two schedules are available the average coal-mine consumer does well to take advantage of them.

Table I shows the quantity and the cost per kilowatt-hour of all the power purchased at a mine of 1,000 tons daily capacity in a 4-ft. seam during the year 1923, when there were many idle days. This power was purchased under two separate contracts and metered separately by the power company. The principal expense in connection with the additional metering equipment was for one extra meter and two current transformers at a total cost of less than \$100.

It will be noted that ventilation earned the lowest rate, using nearly 56 per cent as much power as used by cutting and main haulage equipment. As a check on results, the power bills are figured according to each rate every month and for the year 1923. The cost of the power, if it had all been purchased on one of the

A co-operative agreement has been made between the Department of the Interior and C. A. Hirshfield, of Detroit, representing a group of large central power-plant operators, to make a survey of present conditions relating to the use of power-plant refractories. The survey will be conducted by engineers of the Bureau of Mines. With the present high ratings at which boiler plants are being operated and the increasing use of pulverized coal with its attending high temperatures, the refractories now available for lining boiler furnaces are proving inadequate. In this survey a study is being made of the characteristics of refractories now available for use in power-plant boiler furnaces, and the conditions under which they are used, their life in operating practice under the conditions prevailing at different plants and the way in which the refractories now marketed fail to meet these conditions. The purpose of the survey is to obtain fundamental data to be used in bettering refractory service.

Table I—Showing Cost of Power for Various Purposes

Type of Service	Energy Consumed in Kilowatt-Hours	Cost in Cents per Kw.-Hr.	Total Cost
Ventilation.....	72,910	1.68	\$1,229.34
Cutting and haulage.....	130,531	2.5	3,263.29
Pumps and misc. equipment	10,880	2.5	272.00
Total.....	214,321	Ave. 2.22	\$4,764.63

# France—Its Present Attitude Toward Germany and Its Reconstruction Achievements

BY E. J. MEHREN

Vice-President, McGraw-Hill Co., Inc.,  
New York City

COMING to France after visiting Germany and noting there the transformation of spirit and the indications of reviving strength, one naturally asks whether the French, if aware of these developments in Germany, are formulating a policy that will work toward a peaceful solution of their differences. As everyone knows, the French policy to date, no matter how justified to the French mind as a means of forcing reparations or insuring security, has built up a hatred of the French in Germany. Such a feeling, taken in connection with the growing strength east of the Rhine, bodes no good for Europe.

Do the French realize what has happened in Germany? Do they foresee the possible results of the growing enmity? What policy are they formulating that will, peacefully, meet the situation? These are questions that force themselves on the visitor who, leaving Germany, comes to France.

The French do realize what has happened in Germany; they are watching Germany more closely than is any other nation. The result is what might be expected of men who do not blind themselves to the facts; a growing opinion that France must develop a harmonious relationship with Germany. The view is not yet very articulate, but Herriot's more conciliatory attitude, as contrasted with Poincaré's, is tangible evidence of the growing feeling. Force is seen to be ineffective; the invasion of the Ruhr is conceded to have been a blunder.

## COMMERCIAL TREATIES LOGICAL

The more friendly development, it is felt, should begin with commercial treaties, possibly commercial alliances. The German steel mills in the Ruhr, for example, can get their cheapest iron from Lorraine, now a part of France; Lorraine, on the other hand, needs German coal and can find the best market for its iron in the Ruhr. What more logical, then, than to come to agreement and to facilitate the co-working of these economically allied iron-mining, and coal- and steel-producing districts?

How much farther, if this step be accomplished, the relationship may and should go is hardly yet the issue. There is a feeling growing that a friendly relationship between the two nations must be worked out. Some—and they are of the school of Caillaux, the former premier, who was banished during the war because of pro-German activities—favor the formation of a Franco-German Alliance.

Of course, there are opponents, like Poincaré and his followers, of any plan

that looks with reasonableness upon relations with Germany. Poincaré however, has lost ground. The last election showed that the French want to try a new method of dealing with Germany; and the tide, judging by what could be learned here in Paris, is still setting away from Poincaré and toward the development of amicable relations.

Unquestionably, such a relationship between these countries would be the

hall), and surveyed in every direction the worst destruction I had seen in France. It was a city beaten flat, the streets obliterated, with no vestige of the pit heads that had once marked this, the richest of France's coal mining districts.

This week I stood on the same spot. Round about was an entire new city, housing as many people as before the war. There were gaps here and there, where new buildings had not replaced the old; there is work under way in almost every street, on pavements, or sidewalks, or services; there are large buildings still under construction, new churches, and two banks; but for practical purposes it is a complete town, a town resurrected and at work—resurrected and at work where only desolation had reigned four years ago.

Striking as is the impression within the city of Lens itself, the impression is even stronger when one motors to the heights of Notre Dame de Lorette (where 100,000 French soldiers gave their lives during the war) and looks

down upon the whole area. The landscape as far as one can see is dotted close with new red-roofed towns, each surrounding the shaft of a single large mine. The impression would draw admiration from the dullest—admiration of the energy, the determination, the courage, the perseverance of the people of France.

Of course, the scars of war are still visible. Remains of trenches are round in Lens and in the country round about, while from the tippie of No. 11 shaft one can trace the wide swath of waste land—No Man's Land—where ran the main trench line, established when the English took Loos in the terrific fighting of September, 1915. Part of this trench line will be allowed to remain forever as a permanent memorial of the war.

## MINE RECONSTRUCTION

Much remains, too, to be done in the way of completing the reconstruction. Sidewalks are missing in large part. Many streets are unpaved or only temporarily paved. The churches and the municipal buildings are in hand only now or not yet started, the first efforts being put upon the recovery of the mines and upon housing. Probably two years more will be needed, in the Lens district, to finish the work.

To reinforce the general observations about progress, a few statistics will be given. The company operating the Lens concession (16 mines) will be taken, as an example. The Lens company before the war employed 12,300 men underground and mined 370,000



Row of Miners' Houses near Lens

The "cities" around Lens, for which British and Germans fought so bitterly and which the Germans demolished so completely, are rebuilt, with the solidity, permanence and grace characteristic of the continent of Europe.

best assurance of peace in Europe. This the French are beginning to admit. It is a hopeful sign.

## FRANCE WANTS SECURITY

Repeatedly, in discussing these matters, it was impressed upon the visitor that France has no commercial jealousy of Germany, and that her sole desire is for security against German aggression. The reparations difficulty would long since have been adjusted had security been assured. This desire accounts, in part, for the Ruhr occupation, though the invasion was defended as a means of securing reparations payments. The Ruhr is the great steel center, the Pittsburgh, of Germany. In control of this district, France could prevent material preparations for war. It seems likely, however, that she will soon retire from the Ruhr (The London pact was concluded after this was written) and the question of security will be left to later conference, possibly under the auspices of the League of Nations.

But security she does want and until she gets it, through agreement with other nations or German alliance, it will be the controlling motive of French policy.

## RECONSTRUCTION ACHIEVEMENT

Admiration was recently expressed in these letters over developments in Germany. But no less should be the admiration of the French; they have done a mighty work in rebuilding the devastated regions.

Four years ago I stood in Lens, on the site of the Hotel de Ville (the city



**Business Section in Lens**

A few scaffolds attest that something yet remains to be performed, but Lens bears little sign today of the destructive hand of the invader. Reconstruction has gone on apace despite the delay in the payment of reparations.

of the whole of France, it produced one-fifth of the tax return. Yet with these handicaps—diminished taxation, no outside financial help and a war-tired people—France has rebuilt her devastated regions. For practical purposes, the task is done. In four years her destruction has been repaired. Full economic and social life has been restored in territory wrecked beyond any other in history.

As I wandered over this scene of reconstruction this week, the contrast with conditions of four years ago came repeatedly to my mind. Particularly did I recall a sign that I had seen in Lens in 1920. On a mound of stone and brick was this slogan in French, "Lens will rise again."

The sign has disappeared; so has the heap of brick and stone. Instead is the Lens that had been foretold, the new Lens—sign of the courage, the persistence, the indomitable energy of the people of France.

metric tons of coal per month. On May 1 of this year, 10,458 men were at work underground, and the monthly tonnage was 175,000 (working conditions are still quite unsatisfactory). Of the 8,300 houses for workmen, 7,490 have been rebuilt and the population of the mine towns (32,250 in 1913) is now 30,284. Thirteen out of the 23 destroyed working shafts have been repaired, the headworks completed and put in service, and so have eight out of the 12 ventilating shafts. Of 35 million cubic meters of flooding water 31 million had been removed.

For French coal mines as a whole, the reconstruction figures show even greater progress than that of the Lens company. Of 200 mines destroyed, 145 are again producing coal, some of them, however, with temporary installations.

In the rebuilding of the tipples, electric substations, washhouses for the workers and the other necessary structures the best construction and the latest equipment have been employed, so that the Lens area has the unique distinction of a whole district modernly equipped. The plant layouts are impressive for their substantial character and the entire absence of the timber structures and shabby buildings so characteristic of our mines. All the buildings are of brick, both the mine structures and the homes for the workers.

**GENERAL RECONSTRUCTION**

This picture of reconstruction is matched in every part of the destroyed area; in many districts, of course, there were no industries, so that this side of the Lens development is missing. For the whole of the destroyed region the figures stand as shown in the accompanying table.

**Progress of Work of Reconstruction in Devastated Regions**

	Total Work to Be Done	Finished Jan. 1, 1924
Houses and farm buildings	741,900	605,900
Farm land to be reclaimed, hectares	1,923,000	1,788,000
Factories to be rebuilt	22,900	20,872
New roads, kilometers	58,697	42,360
Railroad and other engineering structures	6,125	4,800

Finally, the population of these areas, which before the war had been 4,690,000 and which had declined to 2,075,000 at the time of the Armistice, has now risen (figures of Jan. 1, 1924) to 4,253,000.

One other comment needs to be made that the appreciation of the French accomplishment may be complete: France has, herself, raised practically all the money required for this reconstruction. Her reparation receipts from Germany have covered only a relatively small part of the cost.

This is a great accomplishment and one that explains the French insistence upon reparation payments. She was the chief sufferer and if her budget is now unbalanced it is because of her reconstruction charges. No wonder, then, that Poincaré had a strong following in his pressure on Germany. Would not any people who had placed upon themselves this very heavy burden tend to view the matter as they did. Let it be remembered, too, that in the wrecking of these regions France lost heavily of her income, for while the destroyed area was only one-fourteenth

**Garden**

**Village at Lens**

The permanent but box-line houses of this coal-mine town have the elaborate fences so common in French mine villages. The road is carefully made. In too many of our towns the feet of horses and pedestrians tread out the pathway and roadway.



**Compares Output Records In Kanawha Field**

An interesting comparative statement of productive performance, showing the average yearly output in tons

per man during 1923 in connection with the operation of several mines in the Kanawha field of West Virginia, has been prepared by A. O. Wilson, statistician of the Kanawha Operators Association, as follows:

**Comparative Statement of Average Yearly Output per Man in 1923 in the Kanawha Field**

	Loaders	Cutters	Pick Miners	Inside Daymen	Outside Daymen	All Men
Co. A.	2,030.0	29,523.0	1,995.7	2,924.9	6,764.4	961.4
Co. B.	1,628.1	25,537.7		3,120.6	5,559.2	828.8
Co. C.	1,872.2	8,447.1		1,270.4	3,274.3	488.6
Co. D.	1,814.1	16,501.8		2,492.4	4,730.2	806.4
Co. E.	1,967.6	26,847.3		3,622.6	8,678.8	1,048.9
Co. F.	2,055.2	21,356.4		5,424.7	6,663.2	1,144.0
Co. G.	1,745.2	17,187.7	1,370.5	7,031.6	5,106.3	896.9
Co. H.	1,417.1	14,742.4		4,429.8	5,730.3	1,016.6
Co. I.	2,298.2	23,509.8		6,197.8	9,773.9	1,282.7
Co. J.	796.2	13,495.1		3,729.4	3,142.9	812.2
Co. K.	2,125.3	22,017.4		3,964.5	10,610.0	1,106.0
Co. L.	1,792.7	21,302.1	2,189.6	4,518.0	7,168.3	1,075.0
Co. M.	1,641.9	12,160.1	1,956.9	3,313.5	3,096.2	688.4
Co. N.	1,970.9	19,981.6		3,744.4	4,484.4	889.3
Co. O.	1,142.7	14,271.1		5,176.2	4,577.8	663.9
Co. P.	1,222.6	24,548.0		3,133.0	4,428.7	917.2
Average for fifty-two mines	1,910.1	21,659.6	1,325.6	3,915.9	6,609.4	1,003.7

In the above statement *italic* numbers are below the average, and only one company registers "Clear."



## Resistance of Mine Headings To the Flow of Air

In Smooth Roadway Coefficient Only 0.000,000,003,6—  
Rough Floor Will Add 10 Per Cent—Cutting  
Out Crosscuts Reduced Friction 6 Per Cent

By J. W. PAUL, G. E. MCELROY and H. P. GREENWALD\*

IN 1922, the Bureau of Mines commenced an extensive research on coal-mine ventilation factors, large-scale tests being conducted in its experimental mine near Bruceston, Pa., over a period of two years. No. 2 butt entry in the experimental mine was selected as the section in which the tests were to be made. The entry had been driven by miners working under the union scale, the coal being undercut with a puncher machine and shot in the usual way. The butt entries are not driven parallel to the coal faces but at an angle of 10 deg. to the right, and the coal breaks along the faces and butts giving a kind of saw-tooth contour to the rib. There were recesses at intervals for the 8 x 8 in. posts used in the coal-dust explosion tests, and there were also instrument stations every 200 ft. which had a concrete front wall about 10 ft. long flush with the coal rib.

The roof was not timbered and was about as rough as the roof would be in any similar mine entry which had not had heavy falls. The usual mine track lay on the floor, the gage being 42 in. At the beginning of the tests the floor was fairly clear of loose spilled material but later became rougher. The entry was fairly straight, the greatest deviation of actual center line from survey center line being about 2 ft. There were cut-throughs to No. 1 Butt every 100 ft. which had airtight stoppings in them. This left dead ends about 20 ft. long opening out at intervals of 100 ft.

### UNUSUAL CARE TAKEN TO GET TRUE RESULTS

The test section was 335 ft. long and the two ends were trimmed so that they had the same cross-sectional area. The test method consisted of measuring the loss in static pressure between the two ends of the section simultaneous with the measuring by pitot tube of the volume of air flowing through the section. An air measurement station was constructed in No. 1 butt, all the air having to pass it and all the instruments were placed there. The development and trial of instruments and test methods took up much of the time and was responsible for many delays and repetitions. The results obtained and reported here are probably accurate within 2 per cent and are thoroughly reliable.

The coefficient of friction or friction factor for the section was computed from the formula:

$$k = Cd = \frac{5.2 AH}{SV^2}$$

where

- A = Cross-section area in square feet.
- H = Loss of pressure in inches of water.
- S = Rubbing surface in square feet.
- V = Average velocity of air in feet per minute.
- d = Weight of air.
- C = True co-efficient of friction.
- k = Co-efficient of friction as ordinarily used.

The value  $k$  involves the weight of air while  $C$  does not. The cross-sectional area was taken as the average of measurements made every 5 ft. and the rubbing surface was taken as the product of the length of the

section and the average perimeter determined in the same manner as the area.

The friction factor or coefficient of friction,  $k$ , was determined for this entry and was found to be 0.000,000,003,6 with air weighing 0.075 lb. per cubic foot. It was also evident that variations in the roughness of the entry would cause more difference in the value of  $k$  than variations in the weight of air which are normally met with except possibly in very deep mines or at high elevations.

The value just given was for an entry with reasonably smooth floor and may be taken as a minimum value for ordinary conditions. A moderate increase in the roughness of the floor increased the value of  $k$  5 per cent, and in an entry with much spilled coal or roof dribblings on the floor a 10-per cent increase may be assumed which would make  $k = 0.000,000,004$ .

It was also determined that a change in the velocity of the air caused a change in the value of the friction factor. As the velocity increases the value of  $k$  decreases but tends to become constant. The value given above is a fair average for velocities higher than 300 ft. per minute but as the velocity falls below 300 ft. per minute the value of  $k$  increases very rapidly. Thus at 150 ft. per minute the increase is 23 per cent and at 100 ft. per minute is 50 per cent of the value given for velocities above 300 ft. per minute. Thus at 100 ft. per minute the value of  $k$  would be between 0.000,000,005,4 and 0.000,000,006, depending on roughness.

### ALLOW 10 PER CENT FOR A CROOKED ENTRY

The effect of crookedness of the entry could not be investigated and the values given are for fairly straight entry. If the entry were so crooked that the survey center line would in some places be close to the rib, it appears probable that an increase in  $k$  up to 10 per cent would have to be allowed. On the whole a maximum value of  $k = 0.000,000,004,5$  appears to be reasonable for rough crooked entry with velocities above 300 ft. per minute.

Tests were made to determine the power consumed by eddy currents rotating in the cut-through dead ends. Board deflector brattices were placed across them flush with the rib of the entry and the resistance redetermined. Placing these brattices reduced the resistance of the entry about 6 per cent, the cut-throughs being located every 100 ft. Theoretically it takes less power to move the air in an entry if the cut-through dead ends are closed, but the money saving is so small that no special construction is justified. If there is much waste material to dispose of in driving the entry and a very high velocity air current will travel through it when finished, it may be worth while to gob the cut-throughs shut and plaster the front wall, but the erection of special deflectors cannot be justified.

The Pennsylvania bituminous mining law requires shelter holes at 15-yard intervals on entries having mechanical haulage. This condition could not be duplicated exactly in the experimental mine without the expenditure of much time and labor, but shelter holes were cut half-way between the cut-throughs making the distance between openings  $16\frac{3}{4}$  yards. The addition of these intermediate shelter holes did not cause any marked increase in the resistance of the entry. The shelter hole is only  $2\frac{1}{2}$  ft. deep and 4 ft. wide as compared with a cut-through dead end 20 ft. deep and 9 ft. wide. The power consumed by eddy currents in the smaller recess is negligible.

\*Chief of coal-mining investigations, mining engineer and assistant physicist, respectively, U. S. Bureau of Mines.



## News Of the Industry



### Explosion at Mine of Kemmerer Coal Co., Sublet, Wyo., Kills Thirty-Nine

On an "idle" day, between 11 and 12 a. m., Sept. 16, the Sublet or No. 5 mine of the Kemmerer Coal Co., located seven miles north of Kemmerer, Wyo., blew up, killing thirty-nine men out of the fifty-one who were working in the mine. Had the plant been actually in full operation about two hundred men would have been at work and possibly killed. The explosion is declared to have been severe. However, twelve men came out alive, emerging from the wreckage at about 5:30 p. m. The rest perished, the bodies being badly burned. On Sept. 23 the bodies of ten men had not yet been found, the quest having been blocked by falls.

The twelve men that escaped probably were saved from suffocation by the blocking of the airways due to caving. Part of the force was in a man trip going out of the main slope when the explosion occurred. Most of the bodies of these men were still in the cars when the rescuers reached the spot.

#### Mine Entrance Caved In

The explosion took place during a heavy rainstorm. It caved in the entrance of the mine and caused so much damage at that point that no rescue crews entered till 1:30 p. m. Apparently the damage in the mine was severe, as the removal of the bodies was accomplished slowly.

The force of the blast completely wrecked a long housing over the portal of the mine, which is a slope.

P. J. Quealy, the aged head of the company, was early on the scene and directed the rescue operations. Rescuemen were brought in from Rock Springs and Hanna. Sublet No. 5 has not had an explosion since 1881, but the Frontier Mine of the company blew up Aug. 4, 1923, killing 78 out of 94 men in the mine at the time.

The mine, strange to say, is quite wet, water being pumped from it regularly. It lies in the Cumberland basin, the seam dipping about 20 deg. and more steeply than the inclosing hills. It appears that much of the water that forms in the valley finds its way into the mines, perfect floods appearing at times when the static pressure with increasing depth causes a rupture in the reservoirs which the Cretaceous measures contain.

Some years ago the coal was being worked where it outcropped on the hills. The coal was dropped from this point down almost to the railroad level.

After a while, when the workings had extended far down the dip, it appeared ridiculous to be hoisting coal up such a height only to lower it again to about the same level. The bed being buried at tippel level a rock entry was driven to intersect it and thus cut off the unnecessary travel. At that time the company was operating a slow-speed fan but after the rock tunnel was driven a high-speed fan was installed.

In order to protect the miners, as the mine made gas, though not in large quantities, electric cap lamps were used exclusively. Spray lines were run within a short distance of all working faces. A hose extended these pipes to the loading point. Some men—perhaps two—were deputed to spend their whole time sprinkling the mine. Permissible explosives were used exclusively. The company had a good safety organization and had oxygen breathing apparatus.

The coal is a high quality bituminous with about 35 per cent volatile matter.

It appears that the source of the explosion was No. 12 entry but its actual cause is not yet known. The company believes it must have been personal carelessness, for the ventilation was excellent and all safety precautions had been taken. It will be remembered that the explosion at the Frontier mine was due to a fireboss opening a lamp to re-light it in a place where gas was present.

#### 46-Days' Coal in Storage, Say Purchasing Agents

The Fuel Committee of the National Association of Purchasing Agents estimates stocks of anthracite and bituminous coal in the hands of commercial consumers on Sept. 1 at 51,325,000 net tons. This is a decrease of 12,178,000 net tons when compared with the stocks on hand on May 1.

The report states that business as a whole shows an increase of 11 per cent for the month of August as compared with July and that the indications are for a continued slow but steady gain. It is estimated that industrial consumers had in their bins on Sept. 1 sufficient coal to meet requirements for 46 days. Consumers are advised that it would be well to place coal in storage now, coal prices remaining about the same as last month.

#### \$27,940,000 in Equipment For N. Y. Central Lines

New York Central, the Michigan Central and the Cleveland, Cincinnati, Chicago & St. Louis railroads on Sept. 16 asked authority from the Interstate Commerce Commission to issue \$20,955,000 of 4½ per cent equipment trust certificates. The proceeds would be used to purchase 4,100 coal cars, 3,200 box cars and other equipment, the total cost of which would be \$27,940,000.

#### West Kentucky Mine Signs Up At Union Scale

The coal mining interests of western Kentucky say they cannot understand what actuated the Phoenix Coal Corporation, at Drakesboro, Ky., in breaking away from the operators and signing the Jacksonville agreement with District 23, United Mine Workers. This was the first mine to accept the agreement—and the only one thus far. The plant is a large one, employing about 250 men. It is a comparatively new mining plant, having been established about seven years ago.

It is difficult to see how the union can figure that it has won a victory, in view of the fact that the mine probably can operate only on a temporary basis, under the 1919 wage scale with screenings at 90c. @ \$1.10, and prepared at \$2.25 @ \$2.75, with some coal quoted as high as \$3. The company evidently is gambling on a stiff increase in the market in spite of the facts that the field is full of big stripping plants and non-union mines, which can produce far more coal than the normal production of the district and at far under the union production cost.

#### Five Miners Entombed by Explosion at Utah Mine

An explosion at the Rains Mine of the Carbon Fuel Co., near Castlegate, Utah, at 6 p. m., Sept. 21, entombed five miners. Rescue crews were working frantically the next morning to reach the imprisoned men. The mine did not take fire, as reported in earlier dispatches, and progress was being made in clearing away debris.

Mine company officials said that while a check showed only five men were at work cutting and blasting when the explosion occurred, it is possible there were others. Normally the mine employs about 200 men, but the work crews were off shift at the time.

### Officials Confer on Status Of Trade Associations

Efforts to bring about a clearer definition of the legality of trade-association activities were initiated at a series of conferences held in Washington Sept. 22 by a special committee of the Chamber of Commerce of the United States with the Federal Trade Commission, Secretary Hoover and Attorney General Stone.

The committee, headed by Richard F. Grant, president of the National Chamber, laid before the government officials the results of a recent referendum reflecting the overwhelming opinion of business organizations that trade organizations perform a valuable public service and should be maintained. Arguments in support of this position were submitted, and the basis laid for a further conference to be held next month, when some statement of the government's attitude may be made.

The members of the committee accompanying Mr. Grant were Milton E. Marcuse, president of the Bedford Pulp & Paper Co., Richmond; George Publee, Washington; Alfred Reeves, general manager of the National Automobile Chamber of Commerce, and Elliot H. Goodwin, resident vice-president of the U. S. Chamber of Commerce.

Mr. Grant said after the conferences: "We are not so much concerned over the question whether present trade associations fall within the scope of existing laws as in having a clear understanding of the proper function of trade-association activities. The special committee of the National Chamber formulated a series of resolutions with that in mind, and the overwhelming vote of the business of the country was in favor of its recommendations. We have made a careful search of the bills filed and decrees entered by the courts in cases relating to trade-association activities, and it is our belief that the activities proposed in these resolutions are entirely within the law.

"Apprehension has arisen among trade associations, of which more than 300 are members of the Chamber of Commerce of the United States, that all associational activities come under the ban, and some are afraid that mere membership might be the occasion for prosecution."

### Know Any Bright Mules?

The most intelligent mine mule that Dwight Wilcox, superintendent for the Superior Coal Co., Gillespie, Ill., ever heard of was one which a driver in his own employ showed him. The driver was doing the gathering for seven working places and the mule had made just one round of the seven places when Wilcox came along.

"Betcha that mule can make the next round by itself," challenged the driver.

"Don't be so funny," scoffed the superintendent.

But the mule did the trick, delivering its seven empties and picking up its seven loads without a word or a touch from the driver, who merely followed along and hooked and unhooked the chain. So Wilcox was convinced.

And now who knows a more intelligent mine mule?

### New Colonial Colliery Co. Absorbs Madeira, Natalie And Greenough Operations

Special to Coal Age

Scranton, Pa., Sept. 23.—With independent anthracite companies it is now practically a case of one merger after another. Following the announcement of the consolidation of the Temple Coal Co. and the East Bear Ridge company into the new Temple Anthracite Coal Co. came word of a practical completion of a merger of the Von Storch Collieries Co., the Legitts Creek Colliery and the West Ridge colliery by a group headed by former Governor William C. Sproul.

Now a third merger of anthracite companies has been completed. In the latest consolidation Madeira, Hill & Co. has taken over and merged the Madeira colliery and property in Plains, (Luzerne County), Pa., the Natalie colliery and property, the Greenough colliery and property, and 209 acres of coal lands located between them, known as the Hickory Swamp basin, all near Mt. Carmel, Northumberland County, Pa.

It is estimated that the combined output of all these operations will be 750,000 tons of coal a year. R. V. Norris & Son, of Wilkes-Barre, well-known mining engineers, have completed an exhaustive survey of all properties involved and report that the lands contain over 30,000,000 tons of coal available for market.

The new consolidation is known as the Colonial Colliery Co. and is incorporated under the laws of Pennsylvania. The main offices of the company will be in Philadelphia.

It is expected that the new company, under new management, and with a new breaker to prepare coal from the workings served by the Greenough and Natalie mines and also the coal from the tract of land lying between them will greatly exceed the earning power of the collieries operating separately. The new breaker will be called the Colonial colliery breaker and will be constructed of steel and concrete. It will have a daily capacity of 2,500 tons. The total cost of the new breaker, plant and development will be over \$1,300,000, it is stated.

### May Reduce Rates from Illinois To Anderson, Ind.

Rates for shipping coal from Illinois mines to Anderson, Ind., alleged to be exorbitantly high, may be reduced as the result of a hearing by E. L. Gaddess, of Washington, an examiner for the Interstate Commerce Commission. The case at issue was that in which the city lighting plant asked a refund of \$249 from the Big Four and Illinois Central railroads for alleged unfair rates charged for shipping coal to Anderson from Marissa, Ill. F. D. Roberts presented the case in behalf of the city. The City of Anderson alleges that the unfair rate cost \$246 on five carloads of coal, and in the petition the Interstate Commerce Commission is asked to allot the city that refund. Representatives of the railroad companies were in the city. A decision is expected in a few months.

Mr. Roberts says that the Interstate Commerce Commission will make a ruling soon in the case involving rates for West Virginia coal, in which it is alleged that Indianapolis gets a 35c. lower rate per ton than Anderson.

## Output and Value of Coal from Colorado Mines in 1923

(Compiled by U. S. Geological Survey)

County	Loaded at mines for shipment (net tons)	Sold to local trade and used by employees (net tons)	Used at mines for steam and heat (net tons)	Made into coke at mines (net tons)	Total quantity (net tons)	Total value	Average value per ton	Number of employees			Average number of days worked	
								Underground Miners, a	All others	Surface Total		
Arohuleta, Moffat, Montezuma, Montrose and Pitkin.....	2,091	9,939	100	.....	12,130	\$38,000	\$3.22	21	3	3	27	171
Boulder.....	556,035	36,149	35,818	.....	628,002	1,690,000	2.69	538	224	126	888	155
Delta.....	79,966	27,239	395	.....	107,600	342,000	3.18	70	16	27	113	165
Elbert and Jefferson.....	140,514	6,783	9,490	.....	156,787	346,000	2.21	106	53	28	187	211
El Paso.....	196,438	147,030	12,115	.....	355,583	1,030,000	2.90	234	86	55	375	185
Fremont.....	526,335	80,670	6,458	.....	613,463	2,658,000	4.33	649	284	158	1,091	164
Garfield.....	202	22,138	.....	.....	22,340	80,000	3.54	31	4	2	37	163
Gunnison.....	509,659	7,409	25,924	.....	542,992	1,835,000	3.38	363	137	153	653	182
Huerfano.....	1,928,472	20,727	16,218	.....	1,965,417	7,319,000	3.72	1,442	571	452	2,465	175
Jackson.....	55,500	1,660	100	.....	57,260	121,000	2.11	46	11	19	76	266
La Plata.....	68,577	27,860	28	14,292	110,757	341,000	3.08	99	30	16	145	223
Las Animas.....	2,900,287	57,477	55,995	175,743	3,189,502	10,245,000	3.21	2,797	956	653	4,406	184
Mesa.....	148,344	30,025	2,205	.....	180,574	510,000	2.82	188	55	37	280	195
Rio Blanco.....	.....	3,706	.....	.....	3,706	13,000	3.78	5	1	.....	6	240
Routt.....	745,508	16,099	41,848	.....	803,455	3,120,000	3.88	592	218	248	1,058	57
Weld.....	1,512,976	39,553	24,901	.....	1,577,430	3,555,000	2.25	883	465	185	1,533	193
Total, excluding wagon mines..	9,370,904	534,464	231,595	190,035	10,326,998	33,243,000	3.22	8,064	3,114	2,162	13,340	174
Wagon mines served by rail....	19,220	.....	.....	.....	19,220	56,000	2.92	.....	.....	.....	.....	.....
Grand Total.....	9,390,124	534,464	231,595	190,035	10,346,218	33,399,000	3.22	.....	.....	.....	.....	.....

a Includes also loaders and shotfirers.

### Colorado Producers See Good Prospects for Fall

Colorado coal operators are discouraged. The consensus among them after the poorest summer on record, was that immediately after September a real pick-up in business is coming and that the winter is going to see a heavy and reasonably profitable movement of Colorado coal in all the markets it normally reaches.

Buying has been abnormally slow all summer for three main reasons, they say. The farmers in the Colorado coal market territory, comprising the states of Colorado, Nebraska, Kansas, Oklahoma and Texas, have been in a state of financial collapse. There has been further a feeling that prices were going to remain low. A third cause of delayed buying has been a desire to wait till the Interstate Commerce Commission reports a reduction in the Missouri River rates. The sudden realization that wheat in all those states is a bumper crop and is moving at a good price, and the cheerful indications of an oncoming bumper crop of corn have pretty well relieved the farmer of his pauperism. The days of violent price cutting appears to be definitely over, for price cuts during the summer brought no business at all. It is definitely known that another increase following the 25c. boost in August will be made in September. And there is no indication that the I. C. C. is going to announce its decision in the Missouri River case until late fall or winter.

#### May Fix Rates on Mileage Basis

The feeling is general in Colorado that the country is going to get a shock when the commission hands down its Missouri River decision. It will not surprise Colorado to see the commission wipe out the present rate-making basis and adopt straight mileage as the basis for all coal rates. This was stoutly advocated before the commission by Harry F. Nash, of the Oakdale and Alamo coal companies, at the time of the hearings more than a year ago, and since then some others have come to share his feelings in the justice of such a basis. If the commission does adopt it, the rate structure covering a wide section of the United States would have to be adjusted to conform.

Western railroads never have been in better shape to handle traffic, even the Moffat road, hauling Routt County's 800,000 tons of coal, claiming to have remedied some of the physical defects which too often have made it impotent just at the times when coal needs to

### Coal Company Sells Fruit As Side Line

The unusual spectacle of fruit being retailed in a coal office can be seen in St. John, N. B. J. S. Gibbon & Co., dealers in hard and soft coal and former operators of a pit in the Grand Lake bituminous mining region, have entered the new business on a wide scale. The store formerly devoted to receiving coal orders and displays of different types and grades of hard and soft coal now is partly filled with domestic and imported fruit of all kinds. Outside the store, boxes of fruit are on display, with the prices attached. What started this firm in the new line was the purchase by J. S. Gibbon, senior member of the firm, of an orange and grapefruit grove in Florida. After disposing of the fruit from his own property, Mr. Gibbon started selling fruit in general in his coal office. J. S. Gibbon & Co. have been in the coal business in St. John for more than twenty years. During the slack coal season of the summer period, the fruit side line proved effective.

move. It is cited by an operator that Colorado's running time during the coal year 1923-4 averaged higher than that of several other Western states, partly because there has been less recent overdevelopment in Colorado. One important mine, Alamo, near Walsenburg, has been opened during the year but that is all. However, there are now two more new mines in immediate prospect. This indicates the confidence that certain Colorado operators have in the immediate future.

Oil is growing as a coal competitor, especially because of the recent strike in Routt and Moffat Counties. At present, however, oil has little if any advantage in price. This relationship probably will continue unless the Routt County oil dome turns out to be a tremendous producer. More than one coal company with retail branches is seriously considering the advisability of selling both oil and coal, so that if customers insist upon oil the coal man will not be a dead loser by it.

Coal has not been dealt any death blow in Colorado as is evidenced by the fact that the salesmen when hard after the machinery and equipment business during the past spring and summer found ready returns for their labors.

### Wilton Lignite Mine Reopens On Non-Union Basis

The Washburn Lignite Coal Co. has reopened its mine at Wilton, N. D., on a non-union basis, after having operated for the past six years under the union scale of the United Mine Workers. The mine was practically the only lignite mine operating on a union basis the past year.

When the old union contract expired on March 31, the operators of the Wilton mine shut down their plant for the summer and did not sign the new contract.

The company stated that it could not meet the competition of a large number of mines which sprang up in the last two years, operating on a non-union basis at much lower wages than the union scale. The Washburn company offered a scale conforming to the wages now being paid by many of the bituminous mines in the East.

The proposed scale ranges from \$4.50 to \$5.50 per day for most company men, according to the company statement, with a separate scale for miners operating on a tonnage basis.

The union voted against the men returning to work on a non-union basis.

It is asserted by the company heads that many outside men are willing to go to work at the present wages, but that outside men will not be hired until the old employees have definitely settled their course.

The new scale of wages is as follows:

Pillar coal, per ton.....	\$0.85
Entry coal, per ton.....	.73
Room coal, per ton.....	.62
Cutting, per ton.....	.11
Slack, per car.....	.50
(NOTE—wage earned on per ton basis would range from \$7 to \$10 per day.)	
Drivers, per ton.....	\$0.04
or per day.....	5.00
Cagers, per day.....	5.50
Bottomshaft, per day.....	5.00
Motor men, per day.....	5.50
Trip riders, per day.....	5.00
Trappers, per day.....	3.50
Screen man, per day.....	5.00
Box-car loader men, per day.....	5.00
Other top men, per day.....	4.50
Head track man, per day.....	5.50
Track men helpers, per day.....	5.00
Head timber man, per day.....	5.50
Timber men helpers, per day.....	5.00
Pipe man, per day.....	5.50
Pumpers, per day.....	5.00
Head blacksmith, per day.....	5.00
Blacksmith helpers, per day.....	4.50
Carpenters, per day.....	5.00
Hoist engineer, per month.....	135.00
Barn boss, per month.....	125.00
Power-house engineers and firemen, per day.....	4.50
Boiler washer, per day.....	5.00
Section men, per day.....	3.50

### L. & N. Handles 8 per Cent Of Country's Coal Tonnage

The Louisville & Nashville R.R., in a recent statement, reported that in 1923 a total of over a half million cars of coal, or 8 per cent of the soft coal mined in the United States, was transported over its lines. The road with 5,038 miles of track, as compared with 251,175 miles of track in the United States, has 2 per cent of the total trackage, as against 8 per cent of the total coal tonnage, and demonstrates the importance of the road as a coal carrier. The tonnage handled comes from mines in Tennessee, Kentucky, Virginia, Alabama and Illinois.



#### Recreation Hall for Miners and Their Families

In the mining town of Hanna, Wyo., belonging to the Union Pacific Coal Co. Hanna is devoted entirely to the mining of coal.

## British Marketing Methods Preserve Stable Relations Throughout Trade

Respect for Contract Obligations Marks Dealings of Producers, Middlemen and Consumers—Coal Exchanges Play Important Part—Advantage of Such Institutions Here Debated

BY PAUL WOOTON

Washington Correspondent of *Coal Age*

Because the British have been conspicuously successful in the marketing of coal, it was this aspect of the British industry to which the American coal men attending the World Power Conference, at London, paid most attention in their tours and studies, which the British facilitated in every way. Napoleon referred to Great Britain as a nation of shopkeepers. If "shopkeepers" be changed to "merchants" the British are glad to have the thought kept alive.

Marketing is the least explored field of our industry. For that reason the American observers regarded a study of British methods well worth while. They were much impressed with the stability of the relationships between producers, middlemen and consumers. The obligations of contracts are held in the highest respect. There is no complaint there that a coal contract means nothing.

The British contracts always contain a strike clause, but there is no provision as to free coal. Since car shortages are practically unknown in Great Britain, this prolific source of trouble in this country is not present there. A British mine can count on producing its normal output so long as there is no strike. In cases where the shipper is unable to supply the quota in one month, definite provision is made for releasing him from the obligation or for making up the deficit in a specified manner. The higher standing of the British contract is explained in part by the fact that they have no wagon mines and, in fact, few mines with an annual capacity of less than 50,000 tons. This means that all the producers are men of substance. Even allowing for that, all the American observers agree that business honor in Great Britain is on a very high plane.

### Exchange a Steadying Influence

One of the things which contributes to the maintenance of the settled relationships in the British trade and the high standard of honor is declared to be the coal exchange. There are some fifteen such exchanges in the principal cities of the British Isles. That at Cardiff is typical. Through this exchange and similar ones at other South Wales ports, arrangements are made for the marketing of the 50,000,000 tons which are produced annually in this section. The floor of the exchange is a busy place for two or three hours at the middle of the day.

Representatives of the producers, the middlemen, the shipowners, the insurance companies, and in fact, all having anything to do with the coal trade initiate most of their transactions

through personal contact on the floor of the exchange. It is not unusual for an exporter to receive an order from abroad, arrange the purchase of the coal, procure the vessel and arrange the insurance all within an hour, without leaving the floor of the exchange.

The larger exporting firms have their own docks. Their foremen call at the exchange each morning and are given instructions as to the loading of ships. There is no posting of sales with tonnage and prices, and no preliminary investigation of an applicant for membership. Membership on the exchange can be maintained only, however, by the strict observance of its traditions of square dealing. The Americans were convinced, however, that the personal contacts at the exchange are an important element in building up a high standard of business honor.

### Verbal Promises Are Always Kept

Agreements made verbally on the floor of the exchange are leisurely confirmed later by letter, but over a period of many years there has been no instance when a member has failed to keep his verbal promise, regardless of price changes that may have resulted before he committed himself in writing. While there is no blackboard in the exchange, the representatives of the trade papers are admitted to the floor and base their bulletins of prices on the transactions which are made on the floor.

Observers from the United States are convinced that these exchanges contribute to a more prompt handling of business than would be possible without them and that they contribute in an important degree toward the stable relationships and square dealing which characterize all factors in the coal trade in Great Britain. There is frank recognition that each factor needs the other and the veiled hostility which so frequently characterizes the relationships between American producers, wholesalers, retailers and the transportation agencies is entirely lacking.

There is much difference of opinion, even among the Americans who have visited the British exchanges, as to whether or not this institution could be used to advantage in this country. There is no one place in this country which can be compared to Cardiff, where so large a portion of the output of the tributary region flows through one channel. Norfolk and Cleveland are the only points where conditions are at all similar. In the coal fields tributary to those two points, only a part of the production is water borne. A very considerable portion of the output moves by rail from hundreds of mines to thousands of destinations. This greatly reduces the advantages of

### Best Wages and Conditions In America, Says Kennedy

Special to *Coal Age*

Scranton, Pa., Sept. 23.—The highest wages and the best working conditions in coal mines are found in America, Thomas Kennedy, president of District 7, United Mine Workers, recently declared upon his return from a tour of Europe. Accompanied by James A. Gorman, secretary of the Anthracite Conciliation Board, he visited Europe as one of the delegates from the organization to the International Mining Congress at Prague, Czechoslovakia. Mr. Kennedy is now attending sessions of the biennial convention of the miners of the Lehigh field at Freeland. Neither he nor his staff, except members of the district executive board, had opposition for another two-year term at the election held recently. During Mr. Kennedy's absence, Andrew Matti, veteran vice-president of the district, was in charge of affairs. Matti is the oldest official of the United Mine Workers in the anthracite field, having taken office soon after the men were organized by the late John Mitchell.

the coal exchange, even at those unusually favored points.

At the same time the coal exchanges at interior points, such as London and Sheffield, seem to possess great vitality, despite the fact that they are not the active institutions as are the exchanges at Cardiff and Newcastle. Much of the business at those points is conducted, as it is here, by telephone, by mail or by personal solicitation, yet the exchange apparently performs a valuable function in addition and some think that the plan is well worth trying at such points as Pittsburgh, Columbus and St. Louis.

### Shirkie Denies There's Foul Air in His Mine

Hugh Shirkie, owner of the Shirkie mine at Shirkieville, Ind., which is idle because of a strike of the miners employed there, stated that the miners' allegations of foul air and no roads are without foundation and that in support of his statement he has the official statement of the mine inspector.

In a resolution the 500 miners gave as their reasons for refusing to work that foul air in the mine had resulted in one death and serious sickness to another miner, and that the company had failed to provide proper tracking, causing 90 per cent of the miners to have to shovel their coal several times before finally reaching the mine car with it.

The resolution stated that J. W. Davis, a negro, died at the top of the mine on Aug. 19, after coming out of the mine, because of foul air, and that on the following day 65 miners were forced to abandon work because of foul air in the mine.



# Problems In Underground Management



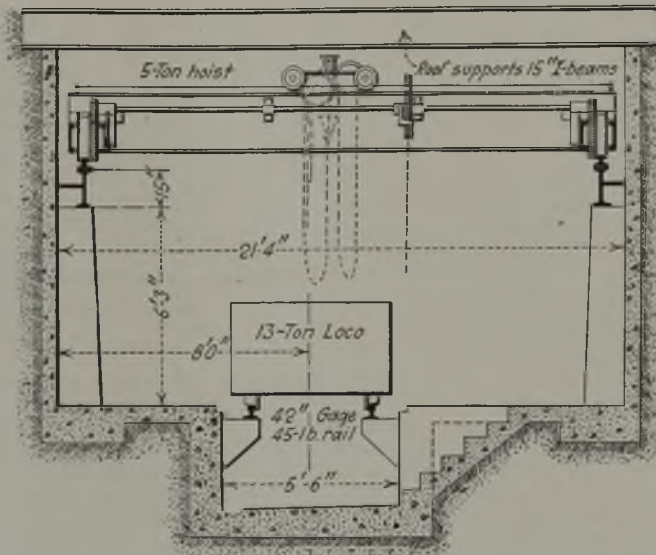
## Underground Locomotive Barn at Kramer Both Capacious and Convenient

may be necessary to put up a stopping and regulator on the end of the barn nearest to the return airway if too much air passes through the barn. The repair stall is to be substan-

**T**HE ultimate economy of commodious and well constructed quarters for the storage and repair of mine locomotives is now quite generally recognized. The problems involved—and indeed, they are not easily solved—are most vital. Time was when a structure of this sort was viewed as a luxury, but no longer is this true, for the motor barn is now a primary part of a mine operation.

The satisfactory location of an inside locomotive barn and the arrangement of the stalls and track, not to mention the coursing of the ventilating current through the repair pit, call for careful study and the revision of many details before actual construction commences. The plan of the motor barn of the Northwestern Mining & Exchange Co., Du Bois, Pa., for its new Kramer mine—daily capacity 4,000 tons—is suggestive of possibilities in such construction.

This barn is to be located 600 ft. from the auxiliary shaft. The first stall looking inbye, is the largest and is provided with a pit and such equipment as will be required for making minor repairs to locomotives. The second stall is planned for the unloading of supplies from mine cars into a wide crosscut at the rear of and joining the



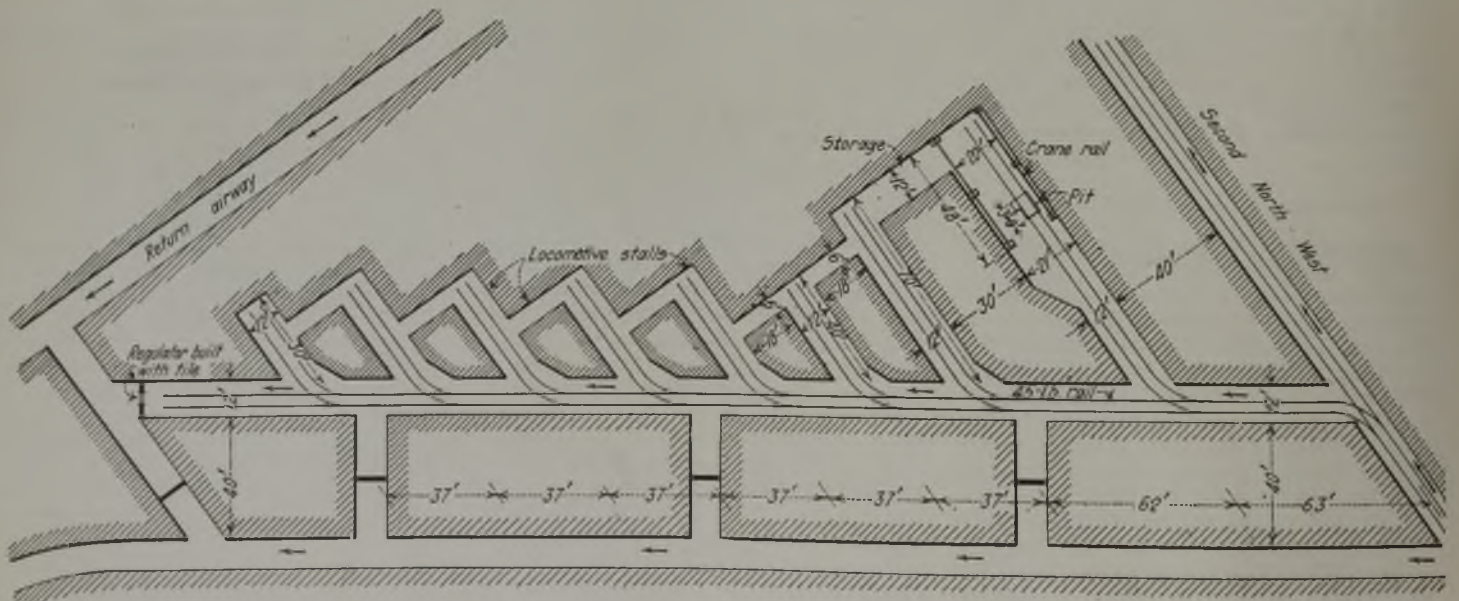
**Cross-Section of  
Repair Pits**

The mine rail is supported over the repair pit by shelf brackets. By this means the width of the pit is not limited as it would be if the rails rested directly on the tops of the walls on either side of the pit, nor do the rail supports hamper the work of the electrician.

first and second stalls. This provision obviates the need for storing supplies and materials where they interfere with the workmen. All other stalls are to be used for the storage of locomotives; each will accommodate three 13-ton units, except the last, which has room for only two locomotives of this size.

Crosscuts are to be made from stall to stall to facilitate ventilation. It

tially built of concrete and steel. Attention is called to the most important features—namely, the crane and the pit. To provide facilities for lifting parts in any part of the stall, a 5-ton crane of the trolley type will be provided. The track by which it is supported is strong enough to sustain the weight of one end of a 13-ton locomotive when it is necessary to tilt the machine so as to facilitate the removal of



**Underground Locomotive Barn at 4,000-Ton Mine Provided with Several Stalls**

Each stall except the last holds three 13-ton locomotives. The end one has capacity for two only. The first, or outbye, stall has a repair pit and equipment for

making minor repairs. The second stall is used for the unloading of repair supplies from mine cars. The arrows indicate the direction of the air current by which the

barn is ventilated, provision being made for throttling the ventilation should it at any time prove excessive, especially in the winter months.

wheels or tires. The crane track, which is supported by 15-in. I-beams running lengthwise of the repair stall, is 48 ft. long, each track resting on two 24-ft. lengths of I-beam, which in turn rest on three concrete columns, the joint between them being supported by the center column.

The locomotive track rails over the pit rest on shelf blocks. Thus working space is provided under and around the tracks. The stairway, which is of concrete, enters at the side of the track. Consequently it in no way reduces the available operating space. In these two ways the electrician in making his repairs finds his movements and efforts unhampered.

### Passing of Mine Bosses' Underground Shanty

By C. E. REYNOLDS  
Superintendent, Allegheny Pittsburgh Coal Co., Logan's Ferry, Pa.

Underground mine bosses should meet several times each working day to compare notes and talk over the work of the day. An office of some sort is usually provided in the mine for this purpose. More often than not it is nothing more than an enlarged manhole in the coal, which is sometimes boarded off from the entry on which it faces and is entered through a flimsy door; it may or may not have a window. Because of its crude construction and make-shift appearance, it is generally termed the "bosses' shanty." But times change. The company office of prior years was crude compared with that of today, and underground offices doubtless will share in the general advance.

In the Springdale mine of the Allegheny Pittsburgh Coal Co., not far from Pittsburgh, a fireproof office of concrete and steel is being completed that has the appearance of a carefully planned outside building. It was built with the purpose of making office hours pleasant for the bosses, thereby insuring greater efficiency from them. An interior view of this office is exhibited in the accompanying illustration. The

wires attached to the two-by-four in the left-hand corner are temporary.

This office is located in a break-through between the manway and the main haulage road. At each end is placed a door to give easy access to, and to give a good view of, each entry and in each of the endwalls is a port-hole that sets up a ventilating current of air in the office. Conveniences in the form of an electric stove and built-in clothes lockers are furnished. The company plans later to conduct from the outside drinking water and hot water for washing to a point on the manway outside the door of the office. At this station also it intends to install latrines that will be discharged into a sewer line leading to the main sump which has a storage capacity of over 2,000,000 gal. of water.

### British Make New Rules for Safety in Shotfiring

The British Secretary of Mines has issued an order, to become operative on Oct. 1, governing the firing of shots in coal mines where danger may arise from firedamp or coal dust. The new regulation stipulates that no person may be newly appointed to fire shots unless he possess the prescribed qualifications as regards age and practical experience underground, and that no person may be appointed whose wages depend upon the mineral to be gained.

The examination for gas, which has to be made by the shotfirer immediately before the firing of each shot, is to include examination for any gas issuing from the shothole itself and from any break within 20 yd. Shotfiring is specifically prohibited within 20 yd. of cavities and breaks that are not accessible to examination for gas issuing from them or contained in them.

Every place where a shot is to be fired is to be treated thoroughly with stone dust or water unless the firer is given written permission by the manager to dispense with this precaution. Where two shotholdes are close enough together to make it possible for the firing of one shot to relieve the work

to be done by the other, the first shot must be fired before the second hole is charged, the object being to guard against the second hole being overcharged, as might be the case if it were charged before the first shot were fired, leaving the firer in doubt as to the work to be done by the second shot. An exception with limitations is made to this provision in respect to shots to bring down the coal in longwall faces, subject, however, to the condition that the shots are fired between shifts.

### Wetted Handkerchief Useless As Breathing Apparatus

According to A. T. Winborn, in the *Ebbw Valley Works Magazine*, mine workers in South Wales are being taught to use a handkerchief as a respirator in mine-rescue work and, further, when examined at ambulance (first-aid) competitions they lost marks if they omitted to make reference to its use in emergencies.

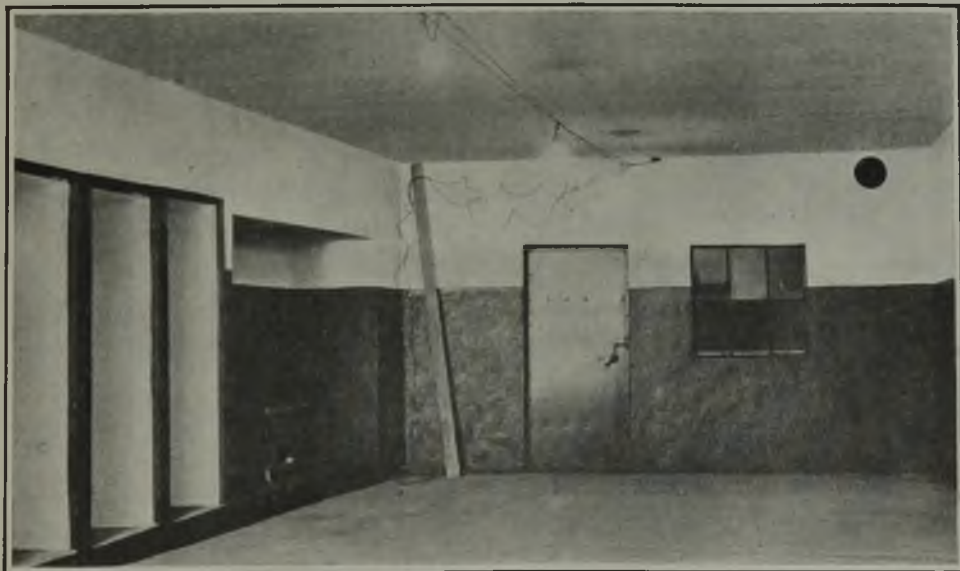
Mr. Winborn remarks that the only possible service a handkerchief might perform would be to filter air containing dust or smoke and thus lessen in some degree the irritation that is caused to the bronchial tubes and other air passages when air is breathed under these conditions. In the case of smoke, however, says Mr. Winborn, one would be well advised to use caution, as smoke is rarely unaccompanied by noxious gases which easily might overcome the man placing his full confidence in the handkerchief.

#### HANDKERCHIEF FOR SELF-SUCCESS

In comment on Mr. Winborn's remarks it may be said that the use of a wetted or unwetted handkerchief in safety work is wholly inexcusable. The risk is too great. The handkerchief is no protection against carbon monoxide. It has its uses, however. Where the hazard has to be faced by a man caught in a mine after an explosion it is advisable to use a wetted handkerchief, which will screen out the smoke and dust in the air he breathes, which solid particles may well be poisonous. It is not to be forgotten that men have been poisoned cleaning out byproduct apparatus at coke-oven plants where carbon monoxide most probably was not present.


The smoke and dust may not be harmless, and it is well to screen it out. Probably carbon monoxide in lethal doses will be present. If it is, the handkerchief is no protection except as it hampers respiration and so lengthens a little the time in which the blood will become saturated. We do not know, furthermore, that there are no highly soluble gases that the water in the handkerchief may absorb.

The handkerchief has done excellent work apparently in some cases, but to use it in rescue operations is to take a chance that cannot be too strongly condemned. Those who are in the mine and face immediate death, however, would do ill not to use any method that might be of assistance, no matter how relatively ineffectual, and there is some reason to believe that to use a wetted handkerchief is better than to take no precaution against death.




How Long Will Your Mine Run?

If for many years, it will pay to build a comfortable, spacious office underground, electrically lighted, cement faced, with lockers and other conveniences like this one at Springdale, Pa.



## Practical Pointers For Electrical And Mechanical Men



### Uses Electrically Heated Oven to Keep Equipment Dry

It is indeed unusual to find a repair shop so well equipped as that at the Orient No. 2 Mine of the Chicago, Wilmington & Franklin Coal Co., near West Frankfort, Ill.

Like many other parts of the plant the electrical repair shop shows evidence of a tendency to break away from customary mine practice. An interesting feature of this shop is the automatic electrically-heated baking oven. This heater is used for drying electrical apparatus after or in process of repair, and it may be used to dry electrical insulation, which, for instance, has become wet by being splashed in water

as to what could be done. He had undergone such disagreeable experiences before. Perhaps he could smooth the ring a little with a block of stone and continue to put in new brushes to replace those being rapidly worn out. In this way he might postpone permanent repairs until Sunday, but at a considerable cost in brushes, labor, anxiety and wear to the collector ring.

Suddenly a new idea came to him. What would happen if he would remove all the brushes that bore on the bad ring. After an hour's thought and study he was thoroughly convinced that, in view of the light load on the

six-ring converter, the machine may sometimes refuse to start from a standstill. However, by turning the armature to another position and then closing the alternating-current starting switch, the machine would start without hesitation.

### Let Repairmen Know What Replacements Cost

Typical of the progressiveness of the Mallory Coal Co., of Logan County, West Virginia, is the method used in handling the mechanical and electrical repair parts. Upon stepping into the warehouse a display of white tags catch the eye. These tags are tacked below each of the well-arranged wooden bins and tied to the larger and heavier parts that are stored in orderly fashion on the floor.

An examination of these tags reveals that in addition to the usual information regarding catalog number, order number, and description, the unit cost price is given in plain figures, for any one to read. By this method the chief electrician and others taking out repair parts are informed as to the cost. As this class of parts usually costs considerably more than the repair men realize, the system has the effect of making the conscientious man hesitate before using a new part, and often induces him to put back into service an old part which by a little ingenuity and work can be made to serve as well as the new.

The company may have other reasons for noting the cost prices on the tags. Whatever these may be it is apparent that the practice does not add an appreciable extra burden of clerical work. The receiving, accounting and dispensing of supplies is handled with a surprisingly small expenditure of labor.

### Purchased Expensive Lathes Without Due Thought

A company decided to buy several engine lathes, one for each repair shop. Someone suggested that these lathes should be large enough to turn the tires of the haulage locomotives. In the office a catalog was consulted showing the largest tires to be of 30-in. diameter. Lathes accommodating a 30-in. circle were purchased and installed, but when, several months later, an attempt was made to put an axle with wheel cores and tires assembled, into one of these lathes it was a shock to find that a 30-in. tire is of 30-in. diameter at the tread but considerably more over the flange. The lathes were useless for this important duty.



Electric Baking Oven with Automatic Heat Control

Electrical apparatus which must be held as spare equipment often absorbs moisture from the air and when most needed proves to be unserviceable. This oven can be regulated to maintain any desired temperature. It would be a valuable acquisition to any mine-supply or repair shop.

or has been idle and, in consequence, has absorbed moisture. Devices for the automatic control of the oven maintain a constant temperature or shut off the heat at any predetermined time.

### Removes Arcing Brushes and Runs Without Them

The alternating-current brushes in one holder of a six-ring, 300-kw., 275-volt converter began to flash indicating a burned spot on that particular collector ring. Although the average day load was not over 150 kw. this ring was rapidly getting in worse condition. It was inconvenient to stop the converter for repairs before the next Sunday. The mine electrician was puzzled

converter, this was the only reasonable way to meet the difficulty. A trial proved his judgment correct. The machine carried the load until the next Sunday with no signs of distress. When Sunday came the ring was put into first-class condition by turning and grinding.

The method of "getting by" with removed brushes having proved successful, this mine electrician wondered what proportion of the full load could be carried under such a condition. From a reliable technical source he was informed that approximately 58 per cent of full-load rating could be safely carried by the converter. In addition he was informed, and it was later proved by trial, that when the brushes are lifted from one ring of a



A similar case occurred with another company. One of the officials appropriated money for a new lathe. The management of this company also thought it advisable to get a lathe large enough to accommodate locomotive trucks. An expensive gap or double-bed type lathe was specified, the maximum gap opening to be 40 in., this being the gage of the locomotives. Soon after the installation an attempt was made to put a truck in the lathe, but the gap was not wide enough. Too late it came to the attention of the purchasing agent that a 40-in. gage truck measures more than 40 in. width over tires. The lathe has never been used as intended.

What is the lesson? Just who was at fault? We will not try to place the responsibility but suggest that had the practical mine mechanic or electrician been taken into confidence and consulted regarding the details of the lathe to be purchased, the errors would not have occurred.

### Plug and Hose Always Ready

Regardless of all the precautions which may be taken at a mine property to eliminate the possibility of a fire



**Fire Hose Protected from Weather**

So that the fabric will not become wet and rot and also to prevent the heat of the sun from injuring the rubber the fire hose is protected by a small slanting roof. The sides of the housing also support a reel upon which the hose is wound.

not a little hazard still exists. Buildings of concrete, stucco or steel make the mine yard quite safe; however, the very nature of some of the equipment and supplies which must be kept in the yard makes it imperative to have fire-fighting apparatus always available.

Fire plugs and reels of hose are located in several advantageous positions in the yard of Donk Bros. Coal and Coke Co. Thermal mine No. 4, near Edwardsville, Ill. The fire hose is always handy and to protect it from the weather is covered with a little housing as shown in the illustration. The hose is on a reel, so it can be run out readily.

### Hoisting Cables Should Be Lubricated Regularly

Most wire ropes used for hoisting purposes are constructed with a core of manila heavily saturated with a good lubricant. The strands of steel are wound around this core which acts as a cushion and holds the grease or lubricant in reserve. This does not, however, obviate the necessity for the subsequent use of a lubricant after the rope has been placed in service.

The illustration shows workmen at the J. K. Dering Coal Co. Mine, near Eldorado, Ill., lubricating the main hoist cable. The work is done periodically so as to insure proper service and long life from the rope.

The men are shown on a wooden platform laid across the shaft opening. After the attachments between the rope and cage are lubricated the cage is slowly lowered to the bottom of the shaft. The men on the platform meanwhile apply grease to the rope. Cloth gloves are used for this work so that the workmen will not injure their hands on any broken or damaged wires.

All this work must be done carefully because just below the men, under the temporary platform, is the gaping hole of the shaft. As grease may drop on the platform where the men might step and slip much care is taken. It must be remembered that with greasy gloves and no place on which to hang every precaution must be taken to avoid the possibility of an accident.

When planks are stretched across the shaft for this kind of work the ends should not extend over the opposite compartment, because when the cage in the compartment over which the men are working arrives near the bottom the other cage may come up and strike the ends of the planks and upset the men into the shaft.

Usually nearly all of a hoisting cable may be lubricated from some position near and over the ground. Often this may be done where the rope enters the hoist room or inside the building just where the rope passes onto the drum. Here the workmen are safer.



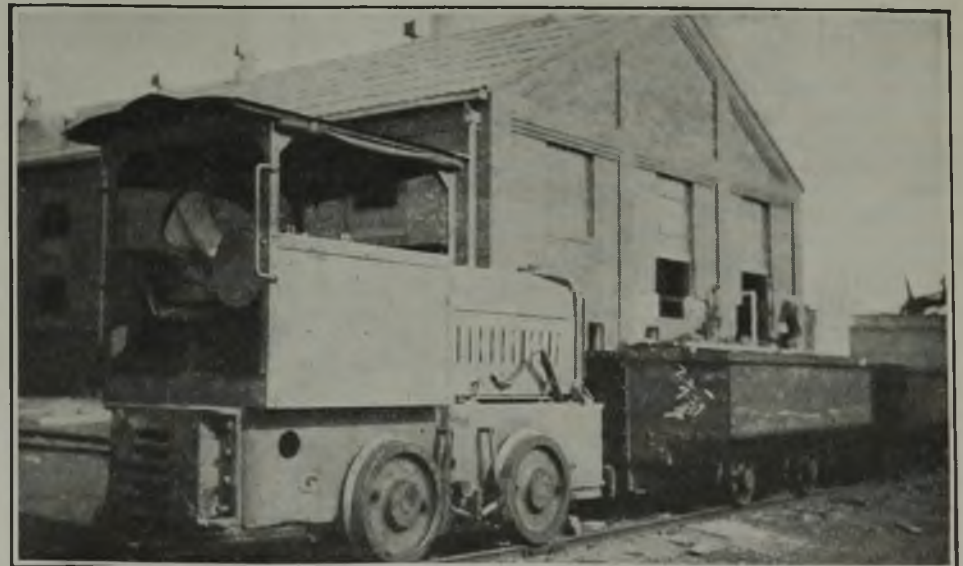
**Greasing the Main Shaft Cable**

Hoisting ropes must be lubricated frequently, but, as the work is dangerous, precaution must be taken so that the workmen may not be injured. These men are standing on a temporary platform.

### Gasoline Locomotive Hauls Cars Around Mine Yard

Not all the locomotives used at the mines are operated by electricity, steam or air. At the Orient No. 2 Mine of the Chicago, Wilmington and Franklin Coal Co., near West Frankfort, Ill., a gasoline locomotive is used to transport cars around the colliery yard.

It was chosen for this service because it was desired to keep the yard free from trolley wires. All the cables and wires around the buildings are buried. The power used in the shops and supplied to the large shaft hoist which incidentally is the largest in the coal-mining field, is furnished through underground cables laid in extensive conduits leading from a main transformer substation.



**Gasoline Locomotive Obviates Need for Electric Wiring**

Mine yards nowadays are being laid out so that every operation may be performed rapidly and with ease. Former generations delivered themselves of a similar "wheeze," but witness the gasoline locomotive used at Orient No. 2 Mine. As it eliminates trolley wires it makes it unnecessary for the top men to keep looking up to watch their heads. When they should be looking downward to watch their steps.

## Book Reviews

### Heating and Ventilating Engineers Fail to Sense Some Big Opportunities

Regret will be the principal sentiment of the coal producer who reads "The American Society of Heating and Ventilating Engineers' Guide, 1924-1925." The book contains so much of great value, is such a credit to the society that issues it that a coal producer cannot but be surprised that it overlooks in such a marked degree the two big needs of the heating and ventilating industry—the cooling of air and the use of small coal.

It is to be hoped that when the title is changed so as to read "1925-1926" the book will contain two new chapters on these subjects and will treat them with as much completeness and acumen as it does the others and that the advertising section will bear evidence that the heating and ventilating engineers have these two desiderata in mind. There is a chapter in the present book on refrigeration, but it deals with cooling not so much for human comfort as for the preservation of perishable products.

A chapter on "How Temperature, Humidity and Air Motion Affect Human Comfort" does get measurably nearer the subject. We are informed that "the cooling effect produced by the evaporation of water has been helpful in air conditioning, particularly when the air is quite dry." Unfortunately we want the air cooled most when it is most highly saturated, and so this statement gives a minimum of satisfaction. However, the value of air movement is stressed, but the breeze helps in no degree when the air is entirely saturated. It seems that comfort may be increased, but real comfort cannot be attained, through evaporation.

We think heating and ventilating engineers will some day arrive at the point where they will give us comfortable air under the most humid of conditions, not alone by air motion and evaporation of water but by actual cooling provisions.

As for the other deficiency in this book it is inexplicable. We look at the advertisements with a hope born of despair. Surely the boiler manufacturers, if not the heating and ventilating engineers, realize the importance and advantage of using fine coal, especially those exhibiting in the economy shows of the anthracite operators. A few do, apparently—in a degree.

The Brownell Co. says: "The Brownell Smokeless Boiler is designed and constructed to burn any kind of fuel economically and without smoke," but it says no more. The Abram Cox Stove Co. is a little more specific. It says: "The cheaper grades and sizes of hard coal are made to yield as many heat units as the larger and more expensive sizes. In the Novelty Carburetor Boiler there is a big saving in burning hard coal regardless of the size, as well as soft coal."

The International Heater Co. says: "The International Economy Smokeless Boiler is an updraft boiler designed to burn any fuel used for heating purpose, as soft coal, hard coal including buckwheat on large installations, coke and oil." "The Molby Boiler," says the Molby Boiler Co., "gives a steady, even heat over long periods with low-priced No. 1 Buckwheat anthracite."

The Spencer Heater Co. briefly claims that its boiler "burns small-size hard coal." Most of the advertisements say nothing whatever about coal size. The Combustion Specialties Corporation, manufacturer of the Combusto Draft System and an exhibitor in the anthracite economy shows, says nothing about the ability to burn small sizes.

We think the anthracite and bituminous operators should suggest to the manufacturers who make boilers which are able to burn small sizes that they stress that fact in their advertisements. We believe they should urge on the Heating and Ventilating Guide publishers that some statement be made in the text on the lower price and greater economy of the use of small sizes of coal. No subject is more important to consumer and producer than this of the possibility of reducing the size of coal burned. Missionary work is best done in guides, text books and publications that the architects and ventilating engineers read.

#### Neglect Economy of Small Sizes

A word to publishers who may be expected to issue such books doubtless would suggest to them the advantage of their authors specifically calling attention to the economies in using smaller and less expensive coal, not with the design of inducing authors to introduce what they do not approve—if it be possible that they do not approve of the use of fine sizes—but so that a matter so vital shall not be overlooked. No book on heating is complete that does not emphasize this feature in modern practice.

The Guide contains 234 reading pages, 224 pages of catalogue advertising and 52 pages of the roll of membership in the society. It measures 6 x 9 in., is cloth bound, costs \$3 and is published annually by the society at 29 West 39th St., New York. To quote its authors, it "contains reference and design data useful in the planning and construction of modern heating and ventilating installations, prepared from the society's transactions, the investigations of its research laboratory and the practice of its members." The statement is a modest definition of an extremely useful book. Frederick D. Mensing and the Guide Publication Committee are greatly to be commended. More might have been said in this volume about the controversial subject, methods of combustion, but perhaps lack of space and a desire not to enter into controversy caused this subject to be avoided.

### Byproduct Coking

An excellent book but somewhat too closely devoted to British practice is that by the late G. Stanley Cooper and Ernest M. Myers. It is entitled "Byproduct Coking." Why it is British primarily because it says nothing about the Roberts oven which has done so much to revolutionize American coking possibilities by making it possible to make coke out of Illinois coal. It says nothing about American practice with its short coking time and high temperatures. It seems strange that the latter subject is untouched, for a remarkable paper on the advantages of American practice has been published in most or all of the British papers which make coking a subject for attention.

#### SPEAK A COMMON LANGUAGE

Nevertheless the practice in the United States is confessedly based on European practice and Coppée, Otto, Simon-Carves, Koppers, Semet-Solvay and Wilputte are almost household words among byproduct-coke men in the United States, though Collin, Huesener and Simplex and the company which is named, Coke and Gas Ovens, Ltd., are not by any means so generally known. The brief preparation section of this book is, however, wholly alien to our practice and describes nothing but Coppée and Baum (Simon-Carves) washers. Readers will be interested in one reference to American practice which seems to indicate one of the reasons why byproduct ovens are not placed at coal mines, though another and perhaps more important reason is because there is little opportunity to use the gas, unless the mines are near a town or a large blast furnace where the gas can be used for domestic purposes or for engines as the case may be.

"In Great Britain" says one of the authors, "little has been done in the way of scientific mixing of various classes of coal, but in America coal mixing is much resorted to, and the mixtures are so arranged that a coke is produced suitable in all respects for American blast-furnace practice. Coals from several districts are thoroughly combined in special mixing chambers, the proportions of each being previously determined as a result of careful tests and comparisons. These chambers serve as receptacles for the different coals, and mechanical means are provided to insure thorough admixture and the production of a homogeneous coke. This mixing is the key to the success of the plan."

The book deals with the oven itself and its operation, with the machinery by which the coal and coke are handled and the gas exhausted, the recovery of tar, ammonia and benzol, condensers and scrubbers, utilization of surplus coke-oven gas, tar distillation, chemical tests and the future developments of the industry. It contains 192 pages measuring 5½ x 8½ in. and 131 illustrations, including 18 folded plates. Cloth bound. Price \$4.50. The American publisher of this Benn Bros.' book is D. Van Nostrand Co., 8 Warren St., New York City.



# Production And the Market



## Demand in Bituminous-Coal Market Gaining Accompanied by Better Prices

Stimulated by the seasonal urge of cooler weather, the bituminous-coal trade continues to show the steady advance that set in a few weeks ago. Prices are still climbing, the gains being due almost entirely to the increasing demand for the larger sizes, quotations for slack showing a marked downward tendency. The process of readjustment in general industrial conditions is still in evidence, and as a result consumers are buying carefully. Nevertheless, hitherto tardy buyers on contract are reappearing here and there and signing up. With the acceptance of a 10-per cent cut in wages by 14,000 textile workers resumption of operations on full time in a large number of New England plants that have been long idle is announced for Oct. 1. Meanwhile other industries report increases in employees, payrolls and earnings per capita.

### Price Index Advances Again

Coal Age Index of spot prices of bituminous coal continues its upward course, advancing two points during the last week to 169 on Sept. 22, the corresponding price for which is \$2.04. This compares with 167 and \$2.02 respectively on Sept. 15.

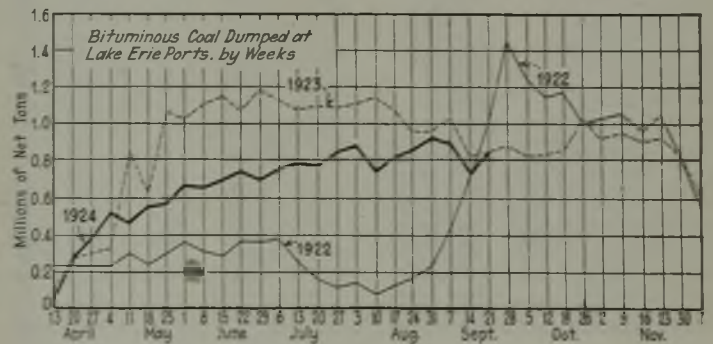
A further increase in activity was in evidence at Hampton Roads last week, dumpings of coal for all accounts for the seven days ending Sept. 18 totaling 383,710 net tons, compared with 338,432 tons handled during the preceding week.

Although the movement of coal up the lakes has declined markedly from the peak reached during the last week in August, total shipments being nearly six million tons less than at this time a year ago, the carryover of four million tons from last year must be considered in any estimate of the adequacy of the available supply. There was practically no carryover from 1922 to 1923. Dumpings during the week ended Sept. 21, ac-

ording to the Ore & Coal Exchange, were as follows: For cargo, 770,331 net tons; for fuel 45,957 tons, compared with 705,606 and 42,598 tons respectively during the previous week.

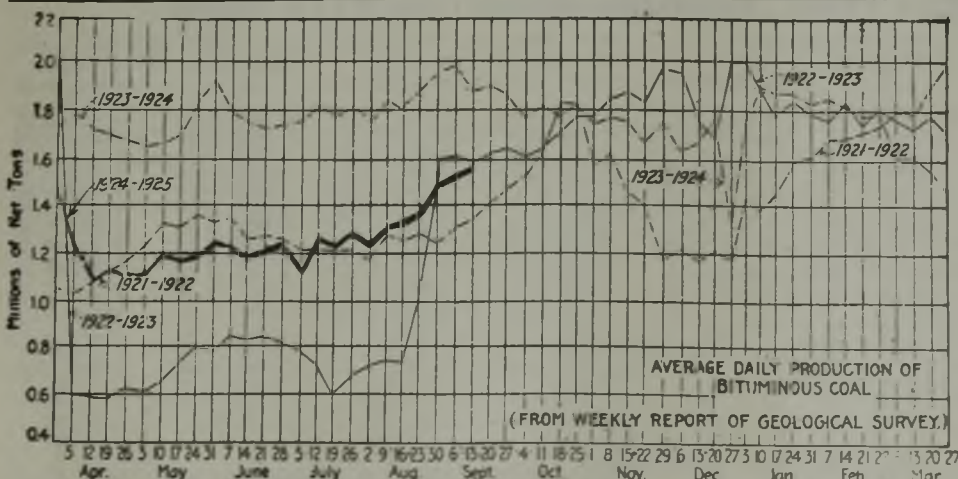
### Sharp Increase in Output

Production of bituminous coal registered a sharp rebound during the week ended Sept. 13, when, according to the Geological Survey, 9,531,000 net tons was produced, a gain of 573,000 tons over the week ended Sept. 6, when the output was 7,958,000 tons, according to revised figures. The comparatively low total of the



previous week, of course, was due to the short week occasioned by the observance of Labor Day. There also was a marked increase in the production of anthracite during the week ended Sept. 13, the output totaling 1,820,000 net tons, compared with 1,451,000 tons during the preceding week.

The anthracite market continues to gain headway, tonnage moving with increasing ease. Stove maintains the leadership in demand, but egg and nut are moving more rapidly. Steam sizes likewise are gaining in strength. Independent quotations for domestic sizes show a growing firmness.



### Estimates of Production

(Net Tons)		
<b>BITUMINOUS</b>		
	1923	1924
Aug. 30	11,737,000	8,719,000
Sept. 6 (a)	10,485,000	7,958,000
Sept. 13 (b)	11,378,000	9,531,000
Daily average	1,896,000	1,588,000
Cal. yr. to date (c)	388,212,000	312,102,000
Daily av. to date	1,793,000	1,437,000
<b>ANTHRACITE</b>		
Aug. 30	1,893,000	1,837,000
Sept. 6	3,000	1,451,000
Sept. 13	2,000	1,820,000
Cal. yr. to date (c)	68,490,000	64,058,000
<b>COKE</b>		
Sept. 6 (a)	345,000	112,000
Sept. 13 (b)	317,000	111,000
Cal. yr. to date (c)	13,795,000	7,204,000

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

Midwest Lump Up; Steam Down

Stiff demand for domestic sizes of the best Midwest coals continues but a softening of the weather is expected to produce a quieting effect. In fact this effect is already beginning to make itself felt in central Illinois and in the Standard district. Business is heavy enough even in those fields, however, to keep every open mine running most of the time. No further increase in lump and egg prices is expected soon in those regions. East Kentucky and West Virginia business in the Midwest continues so pressing that producers are declining orders for domestic sizes. Smokeless lump is now solidly fixed at \$4, and mine run, though still running at \$2, may take an overdue rise by Oct. 1.

The inevitable result of all this rush of domestic business is a slump in steam coal in most fields. Good southern Illinois screenings several days ago sank past their previous bottom of \$1.50 and now range clear down to \$1.25. Central Illinois steam coal runs down to \$1.10 and Standard district is well below \$1. This means that practically everything won in higher domestic prices is lost on screenings. No car shortage of any serious proportions has developed in the Midwest fields but the Illinois Central felt the pressure sufficiently to begin on Sept. 15 counting "no bills" as empties. Other roads did not follow suit last week. However, Illinois Central mines are not heavily burdened with

"no bills," even in steam sizes, so nobody is suffering much from the dearth.

Mines in the Duquoin and Jackson County field are working and coal is moving, with the exception of nut and screenings. Three days a week seems to be the limit in these fields. In the Mt. Olive district domestic tonnage is beginning to move and things are opening up. Nearly all the mines have a couple of days a week with steam sizes going on contracts and railroad tonnage good. In the Standard district, steam is holding back working time. Screenings are hard to move and steam nut and egg are impossible. Six-inch lump and 3x6-in. egg are in fairly good demand and 2-in. lump is beginning to move. Mines here are getting three to four days a week and could do better were it not for steam sizes.

In St. Louis the first chilly wave brought the business that should have come to the dealers two months ago. Nearly all of this demand is for lump coal and has occasioned an advance of 50c. a ton in two weeks. Dealers are asking the same price for egg as for lump, even though they can buy egg for 25c. a ton less. Business seemingly is going to southern Illinois high-grade this season. The retail price on this advanced from \$6.75 to \$7 with prospects of a further advance in a day or two. Mt. Olive, which has not begun to sell yet, advanced from \$5.75 to \$6. Standard remains at \$4.75@5.

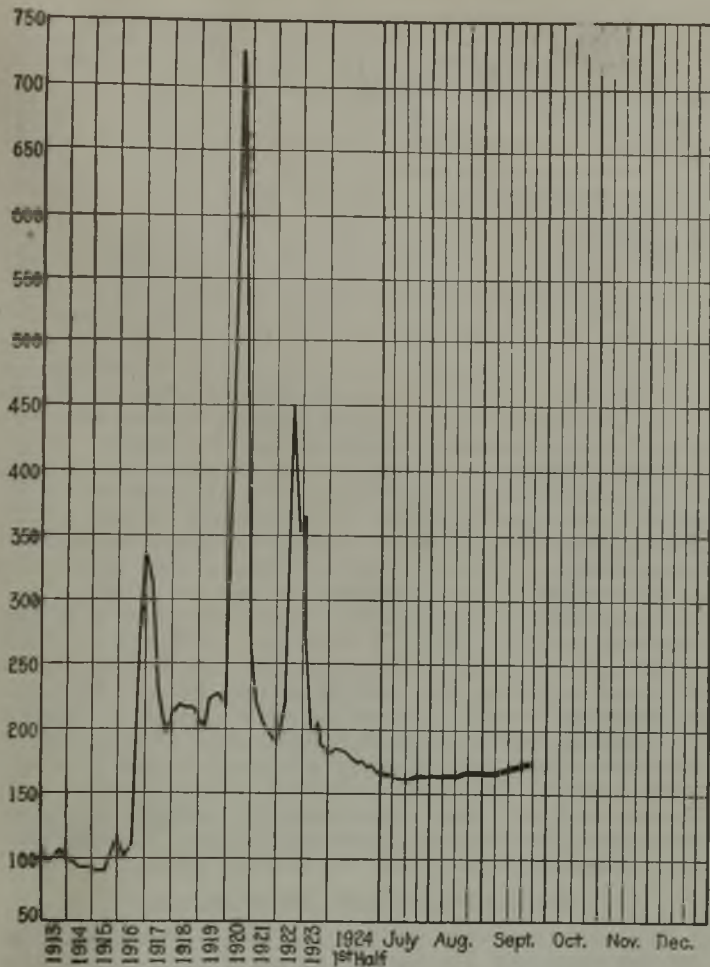
Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Table with multiple columns for market quoted prices, dates (Sept. 24 1923, Sept. 8 1924, Sept. 15 1924, Sept. 22 1924), and categories (Low-Volatile, Eastern; Midwest; High-Volatile, Eastern; South and Southwest).

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

Table with columns for Market Quoted, Freight Rates, and dates (Sept. 24, 1923; Sept. 15, 1924; Sept. 22, 1924) for various coal types like Broken, Egg, Stove, Chestnut, etc.

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



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

Index	1924			1923
	Sept. 22	Sept. 15	Sept. 8	Sept. 24
Index	169	167	166	200
Weighted average price	\$2.04	\$2.02	\$2.01	\$2.42

This diagram shows the relative, not the actual, prices on four-teen 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.

### Kentucky Is Oversold

Demand for coal in Kentucky is quite heavy. Many operating companies are sold up, running full time, and refusing business that doesn't carry a good price. The result is that prepared quotations are 25 to 50c. a ton higher than they were a week ago. Western Kentucky producers are asking \$2.75@\$3 for best block, while eastern Kentucky operators are going them one better and quoting \$2.75 @ \$3.25. Lump is \$2.50@\$2.75 in both fields, with egg moving at the lump price in western Kentucky, and about 25c. a ton under lump in eastern Kentucky. Mine run and screenings are practically unchanged.

The better prices and steady demand may influence a few small companies to sign the Jacksonville agreement in the strike zone of western Kentucky, one large company having given in over the week. However, the operators whose mines are down on account of the strike, are generally figuring on being down for years, instead of months, unless they can go on a non-union basis or "bust" the union. Right now, however, it looks as if the producers can sell all the coal they can mine, and at excellent prices.

### Northwest Is Busy

Receipts at the Duluth docks fell off last week, when only 33 cargoes were landed, and of these, five were hard coal. Twelve cargoes are en route and one of these is hard coal. It is thought that receipts will gradually fall off from now on, as the grain trade is rushing and the docks are fairly full. The dock companies evidently are not figuring on carrying a large surplus over after the close of navigation.

The 28c. increase in rates from southern Illinois mines to Twin Cities has been confirmed by the Interstate Commerce Commission and Duluth dealers expect more Twin City business as a consequence. The hard-coal movement is large, although a warm spell which started last Wednesday may stop shipments. Country dealers say that they fear a rail tie-up and hope to turn over quickly the stocks they are ordering. Soft coal is moving well, although there is no rush. It might be termed normal business. The docks are shipping steadily.

Milwaukee coal dealers are more buoyant in spirit. Orders are flowing in, and coal is moving from the docks. There is a notable tendency toward firmness in prices. Southern Illinois mines have advanced their figures 15 to 25c. a ton to dealers and the Pocahontas mines are not taking orders because they are well sold up. Milwaukee dealers expect an advance in Pocahontas of 50 to 75c. a ton. The total receipts of coal at Milwaukee by lake thus far in 1924 are 552,954 tons of anthracite and 1,488,310 tons of bituminous coal.

### Western Business Is Quiet

The demand for Southwestern production has improved steadily since Sept. 1. Mines already open are working almost full time and more mines are expected to be reopened in Kansas soon. The quotation on Henryetta (Okla.) lump has been advanced to \$5.50. Oklahoma nut is quoted at \$4, mine run at \$3.25 and screenings at \$2. Kansas shovel lump coal has been advanced 25c. to \$4.25. The prices for other grades of shovel coal are the same as those for shaft: \$4 for nut, \$3@\$3.50 for mine run and \$2.35 for screenings. Present quotations show a cut of 15c. on screenings, which have shown a tendency to move more slowly than domestic grades, although there is no surplus yet.

Last week was rather dull throughout Colorado, which resulted in a notable decrease both in the production and working time of mines. However, during the last few days the heavy demands for all sizes have been encouraging and operators are preparing for a busy season to begin soon. Colorado mines worked on an average of 25 hours last week and less than 30 per cent of working time lost was attributed to "no market." Prices remain unchanged.

In Utah mines are still operating less than three days a week. They are shipping more coal to the Northwestern markets than they were, but the demand from the Pacific Coast is poor. Very little business has been obtained by the Utah operators in this market since storage orders were filled about the middle of August.

### Sellers' Market at Cincinnati

For the first time in ten months the situation at Cincinnati has changed from a buyers' to a sellers' market. Most offices have available supplies well booked to the end of the month. Buyers from Cleveland, Toledo and other lake ports have appeared in quest of slack and the smaller sizes. Two-inch has stiffened and domestic holds firm. In smokeless there has been a general disposition to move the domestic price up to \$4. The run of mine business in low volatile is acceptable at \$2 and there isn't much stuff moving under that. The slack is the weak brother. Because of the large call for the sized coals there has been a perceptible weakening in the Western movement.

Domestic trade in Columbus and central Ohio shows a decided improvement. Buying of the better grades has resulted in higher prices on smokeless and certain varieties of splints. Industrial conditions are improving, though steam buying is restricted to present needs, some of the larger consumers still using up reserves. Contracting is quiet. Utilities are fair purchasers while carriers are buying less than normal. Production is showing slight increases in all producing areas of Ohio.

The steam trade at Cleveland seems to be moving along in alternate waves of strength and weakness, though a steadily increasing demand is evident, and spot prices are holding firm at recent quotations. Inquiries are fair and steam purchasers are buying moderate quantities, both for current needs and storage. Many mines in eastern Ohio report car shortage on one large railroad, due to open-top cars being on other divisions of the road and the further fact that repair work on bad-order cars has been deferred until their need was imminent. The railroads report increased traffic and there is a better tone all around, business conditions showing improvement.

**Tonnage Moving Better at Pittsburgh**

Coal movement out of the Pittsburgh district has increased slightly in the past week or two. Measured by conditions in the steel industry, there has been no increase in industrial activity since Sept. 1. Some consumers are now stocking coal in a limited way, however, the liquidation of old stocks having been practically completed several weeks ago. The call for domestic coal is slowly rising.

Further improvement is noted in central Pennsylvania, but the increase in output is not large. Wagon mines are picking up business for delivery to the cities and the car loadings for the week ending Sept. 13 were 13,120, as against 10,818 for the previous week, which had one holiday. There are 1,800 "no bill" cars.

The general tendency in the Buffalo market is still a stand-off, there being slight improvement if anything. Quite a large percentage of West Virginia coal is coming in, paying 15c. a ton freight over Pittsburgh and still able to come out whole some way. Regular quotations remain at \$2.25@ \$2.50 for Youghiogeny gas lump, \$2@ \$2.25 for Pittsburgh and No. 8 steam lump, \$1.75@ \$2 for all mine run and \$1.10@ \$1.35 for slack, paying \$2.09 from Allegheny Valley mines and \$2.24 from other mines for freight to Buffalo.

Industrial conditions at Toronto show little change, the demand for bituminous continuing light. Quotations for carload lots f.o.b. destination are: Steam lump \$6@ \$6.40; Pennsylvania smokeless, \$5.75@ \$6.25.

**Weakness Reappears in New England**

The firmer tendency noted in the New England tidewater bituminous market last week has not been maintained and a weakness even more pronounced than heretofore has developed. To move an oversupply certain shippers have named \$5.15@ \$5.20 per gross ton on cars Boston for what is claimed to be Pool 1 run of mine New River and Pocahontas and orders have been acceptable at this level regardless of the amount ordered. There has been no decline in spot f.o.b. prices at the southern loading piers for strictly high-grade coals, however, \$4.10 being the minimum and up to \$4.30 asked in certain instances.

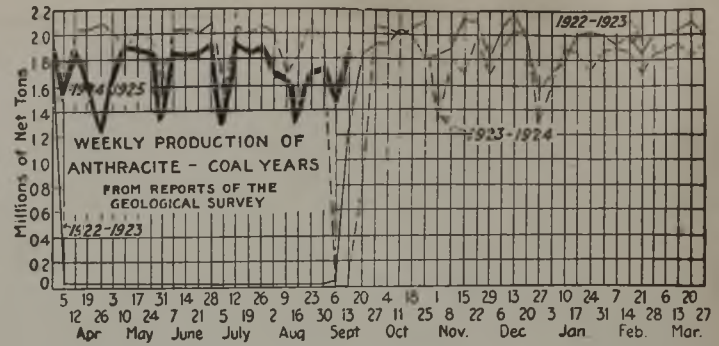
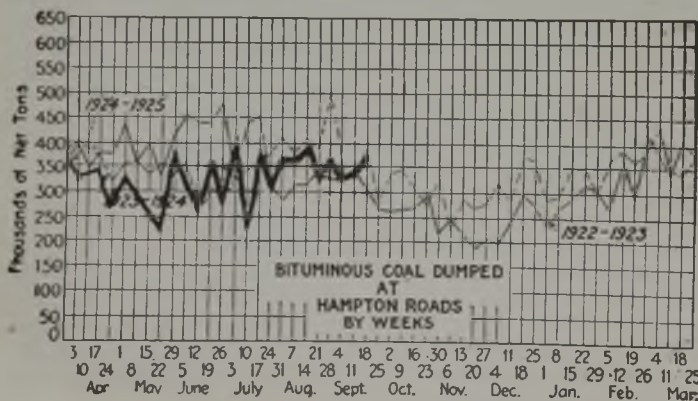
The all-rail market offers nothing new. A few inquiries have come forward but they have not resulted in business because prices cannot be made to compete with the landed cost of coal from tidewater.

The Providence tidewater market maintains a higher level than Boston. Some early-week sales were at \$5.10 on cars for pool 1 mine run New River, but this was cleaned up cargoes and \$5.30 is now the low quotation, so business being done at 5c. to 10c. more. Arrivals have been fairly plentiful the past week but as most of it has been in barges shippers have not been under pressure.

The retail demand for anthracite has expanded considerably.

**Atlantic Markets Slowly Gaining**

Business at New York during the past week has not been as brisk in some quarters as the previous week, though receipts move easily. Some new business in contracts extending to April 1 was reported, but seller and buyer negotiate carefully. A firmer tendency is evident and the prospects for a busy late fall and winter are bright. Large consumers are willing to take more coal and it is not as hard as formerly to ship full quotas on contracts. The railroads are taking heavy tonnages and buying by various industries has been heavier. Receipts at tidewater piers are moderate and there is not as much free coal to be picked up at low prices.



Movement of tonnage at Philadelphia is increasing, but it is far from sufficient to enable mines to operate on full time. Producers are not at all keen in making contracts except at considerable advance on present market prices. Business conditions continue to improve, and consumers are taking more tonnage for storage, but still have far to go before they have anything like customary winter stocks. This applies to most coal users except railroads and central power plants. In the tide market there has been an increase in the number of boats chartered for general trade.

An upward trend has set in at Baltimore, inquiry having increased encouragingly. Prices have stiffened to some extent. The export situation in the last few days has developed a better tone, and shipments for the first half of September exceed those of the entire month of August.

A hopeful feeling exists at Birmingham. Spot buying is somewhat better and contracts are being signed here and there. Inquiry for bunker and export coal is still light, though there is a fair tonnage moving regularly to Cuban points and some to South American interests. The railroads are taking more coal than for several weeks.

**Demand for Anthracite Growing**

Hard coal is moving easily in the New York market. The call for stove coal has become so heavy that some believe it will be necessary to start an educational campaign to encourage the use of other sizes. Egg and chestnut also are moving rapidly and without any trouble. The demand for the last-named size shows a slight increase over last week. Independent quotations for the domestic coals are a little stronger, straight stove bringing as much as 50c. more than when taken with other sizes. Some of the independent operators are sold up for the next couple of weeks on the larger sizes. The steam sizes likewise are gaining strength.

Demand at Philadelphia from producers is holding its own, but with some difficulty, for with the exception of a strong demand for stove, all the other sizes are easy. Most operators find some difficulty in moving nut, pea, remains almost stagnant and egg has not improved. Retailers feel that in order to make money they must advance prices in the face of increased mine prices. Steam coals are a trifle stronger, with better demand for buckwheat.

A tinge of chill in the air at Baltimore has increased orders for anthracite from householders. There is no rush, it is true, and stocks on hand are in most cases fairly liberal. The buyer, now that he knows that there is little chance of any early increase in retail prices, is not hurrying.

The situation at Buffalo is not much changed. When the weather turns threatening demand picks up, but a return of sunny days cuts it down again. Consumers depend on gas to a considerable extent. More small sizes of anthracite would be burned if a simple and effective blower device were obtainable.

Contracting for fourth-quarter coke at Connellsville is now completed, except as idle furnaces may go in, there being no immediate prospect of this. The contracting movement involved less tonnage than expected. The spot market remains quotable at \$3@ \$3.10. Spot foundry coke is easier in tone, but remains quotable at \$4@ \$4.50.

**Car Loadings, Surpluses and Shortages**

	Cars Loaded		Surplus Cars		Car Shortage	
	All Cars	Coal Cars	All Cars	Coal Cars		
Week ended Sept. 6, 1924	920,979	149,473	194,306	97,089		
Previous week	1,020,339	168,584	231,667	111,254	274	
Week ended Sept. 8, 1923	928,916	153,022	67,651	13,501	10,211	5,595

## Foreign Market And Export News

### Confidence Wanes in British Market; Upturn in Output

A less confident tone is strongly in evidence in the Welsh coal market, the volume of business done during the last week having perceptibly decreased. The apprehension of operators and miners regarding the effect of the Dawes plan on the coal industry in this country has spread to exporters, who are fearful of difficulty in selling coal against increasing German competition. The operators have resolutely declined to cut their prices any further, and many of them prefer to close their pits rather than to increase their losses by accepting lower figures. The lower grades of coal are keenly feeling the competition from the north of England, and, though Admiralty qualities are fairly easily disposed of, small coals are a problem. Inquiry from the Continent has decreased somewhat, and the home trade is quiet.

The Newcastle market on the whole seems to be getting steadily into greater difficulties. Prices are at their lowest ebb, and the pits are working short time where they are working at all. German, French and Belgian business is poor and trade with Italy has declined. Unemployment in Durham and Northumberland is getting to be a serious problem, and the miners take the view that reparation coal is responsible for all their troubles.

Production by British collieries during the week ended Sept. 6, a cable to *Coal Age* states, was 5,180,000 tons according to the official reports. This compares with 5,113,000 tons produced during the week ended Aug. 30.

Notice of termination of contracts has been given to 2,000 miners in Wales, the contention of the operators being that the workings are old and that production costs have been prohibitive. In Warwickshire 800 men have had seven day's notice to terminate contracts, the reason being that the operators cannot any longer carry their losses. In all cases efforts are being made to get the men employment at neighboring pits.

### French Household Coal Active; Industrial Grades Lag

There is no material change in the French coal market; the situation in industrial coals is still quiet, the stocks of no considerable importance; the house-coal trade conspicuously active.

The price schedule for October has not been established yet, but the opinion is that prices will remain unaltered, with, perhaps, the exception of dry and anthracite fuels.

Trading in British coals is almost at a standstill.

The Paris market continues to be bombarded with German tenders for the free sale of coal. The tonnage received so far, however, has been extremely small.

The agreements between the Ruhr industrialists and the M. I. C. U. M. have been renewed and will remain in force during the transitory period contemplated by the London protocol, comprised between the first and second verification dates of the Reparation Commission, that is, from Sept. 1 to Oct. 7.

Under the terms of these agreements the German mines have agreed to continue deliveries of coal and byproducts based on the programme established by the Reparation Commission. The prices will be fixed by mutual convention between the Reparation Commission and the German Government.

### Domestic Trade Strengthens Hampton Roads Market

Business at Hampton Roads shows some improvement, the domestic situation giving a boost to the trade. Tidewater business has not felt any real effect of the upturn in the domestic market, but the general outlook is pronounced better.

Domestic coal has strengthened from 50 to 75c. a ton, and there seems to be a seasonal increase in demand for all business, due to the increase in steel trade and other conditions. Foreign

business, however, showed no improvement, but the bunker trade has substantially increased. This has had a tendency to boost the market. Coastwise movement is holding its own, with prospects of advancement soon.

### Export Clearances, Week Ended Sept. 20, 1924

FROM HAMPTON ROADS	
For Argentina:	Tons
Ital. Str. Fiume, for Buenos Aires.....	8,455
For Brazil:	
Br. Str. Vulcan City, for Rio de Janeiro .....	6,707
Br. Str. Ethelwolf, for Rio Grande do Sul .....	5,923
For Canada:	
Br. Str. Chalister, for Three Rivers .....	8,608
Br. Str. Chatham, for Bridgetown.....	5,398
For France:	
Fr. Str. P. L. M., 24 for Marseilles .....	8,211
For Malta:	
Ital. Str. Alberta No. 8.....	2,079
For Porto Rico:	
Amer. Schr. Rachel W. Stevens, for Humacao .....	1,316
For West Indies:	
Nor. Str. Korsfjord for Kingston....	2,087

FROM BALTIMORE	
For Porto Rico:	
Am. Str. Major Wheeler, for San Juan .....	3,232
For Cuba:	
Am. Schr. William H. Marston, for Cienfuegos .....	1,766
Am. Str. Mangore, for Daiquiri.....	3,505
Am. Schr. Jacob W. Hook, for Manzanillo .....	908
For Canada:	
Dan. Str. Nordfarer, for Corner Brook .....	5,600
For Italy:	
Ital. Str. M. T. Cicerene, for Civita Vecchia .....	9,353

FROM PHILADELPHIA	
For Cuba:	
Nor. Str. Mathilda, for Antilla.....	—

### Hampton Roads Pier Situation

	Sept. 11	Sept. 18
<b>N. &amp; W. Piers, Lamberts Pt.:</b>		
Cars on hand.....	1,757	1,447
Tons on hand.....	110,648	92,367
Tons dumped for week.....	101,861	122,868
Tonnage waiting.....	7,000	2,000
<b>Virginian Piers, Sewalls Pt.:</b>		
Cars on hand.....	1,300	1,704
Tons on hand.....	90,600	111,100
Tons dumped for week.....	112,464	83,230
Tonnage waiting.....	2,207	13,038
<b>C. &amp; O. Piers, Newport News:</b>		
Cars on hand.....	2,012	2,040
Tons on hand.....	107,985	105,865
Tons dumped for week.....	87,847	136,501
Tonnage waiting.....	2,150	1,075

### Pier and Bunker Prices, Gross Tons

	PIERS	
	Sept. 13	Sept. 20†
Pool 9, New York....	\$4.60@ \$5.00	\$4.60@ \$5.00
Pool 10, New York....	4.50@ 4.75	4.50@ 4.75
Pool 11, New York....	4.25@ 4.50	4.35@ 4.50
Pool 9, Philadelphia..	4.90@ 5.25	4.90@ 5.25
Pool 10, Philadelphia..	4.45@ 4.70	4.45@ 4.70
Pool 11, Philadelphia..	4.30@ 4.50	4.30@ 4.50
Pool 1, Hamp. Roads.	4.00@ 4.15	4.10@ 4.25
Pool 2, Hamp. Roads.	3.90	3.90@ 4.00
Pools 5-6-7 Hamp. Rds.	3.85@ 3.90	3.85

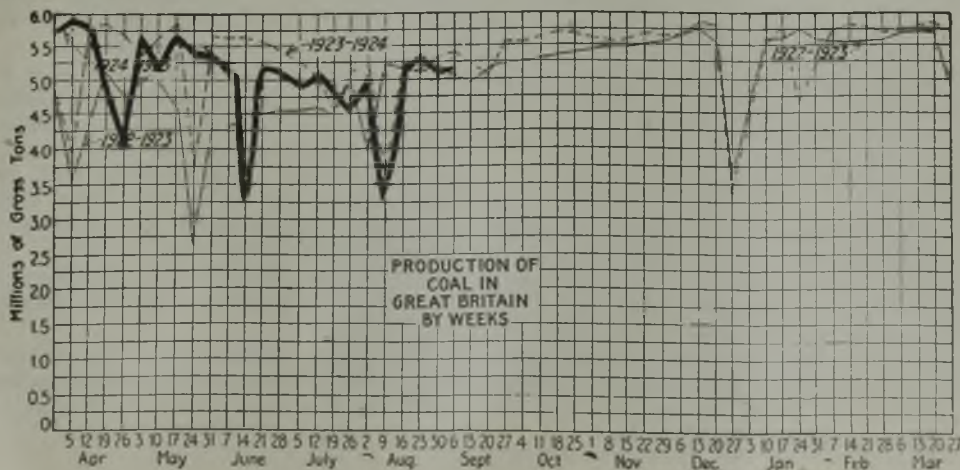
### BUNKERS

Pool 9, New York....	\$4.90@ \$5.30	\$4.90@ \$5.30
Pool 10, New York....	4.80@ 5.05	4.80@ 5.05
Pool 11, New York....	4.55@ 4.80	4.65@ 4.80
Pool 9, Philadelphia..	4.90@ 5.25	4.90@ 5.25
Pool 10, Philadelphia..	4.75@ 4.95	4.75@ 4.95
Pool 11, Philadelphia..	4.50@ 4.70	4.50@ 4.70
Pool 1, Hamp. Roads.	4.15	4.10@ 4.25
Pool 2, Hamp. Roads.	4.00	4.00@ 4.10
Pools 5-6-7 Hamp. Rds.	3.90	3.90

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

Quotations by Cable to <i>Coal Age</i>		
	Sept. 13	Sept. 20†
<b>Cardiff:</b>		
Admiralty, large.....	28s. 6d. @ 29s.	28s. @ 28s. 6d.
Steam smalls.....	17s.	15s. @ 15s. 6d.
<b>Newcastle:</b>		
Best Steams.....	14s. @ 19s. 3d.	19s. @ 24s.
Best Gas.....	19s. 6d. @ 23s.	21s. @ 27s.
Best Bunkers.....	18s. @ 19s.	19s.

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





## News Items From Field and Trade



### ALABAMA

A. F. Hilleke, manager of the coke department of the Semet-Solvay Co. and manager of the Solvay Process Company, has resigned. His assistant, J. H. White, has been appointed assistant to the vice-president of the Semet-Solvay Co. only, with jurisdiction over the Southern plants and those operated by the company elsewhere. Mr. Hilleke was district manager of the Semet-Solvay Co., having charge of all Southern plants, during the war. He supervised the construction of the North Birmingham plant of the Sloss-Sheffield Steel & Iron Co., where the Solvay process of coke manufacture is used. He was promoted to the Syracuse offices in charge of all coking plants in America five years ago.

The Pratt Fuel Corporation has made another addition to its active operations and coal land holdings by the purchase of the properties of the Nelson Coal Corporation for a consideration reported at approximately \$250,000. The lands of the Nelson corporation adjoin some of the holdings of the Pratt corporation recently acquired and carry one development on the Mary Lee seam at Red Star mines and consist of about 1,200 acres of coal-bearing lands on the Southern Ry. in Walker County. Frank Nelson, former president of the Nelson Coal Corporation and a well-known operator in the district for many years, becomes a director of the Pratt Fuel Corporation.

### COLORADO

John F. McDermott, formerly with the Leyden Coal Co., has been appointed assistant to W. F. Oakes, president of the Sunnyside Coal Mining Co., with mines at Strong, in Huerfano County. Mr. McDermott is spending a few days with R. T. Bell, the general superintendent, at the mines, to acquaint himself with the personnel, the operation, and particularly the preparation, as on him will devolve to a great extent the sale of Sunnyside coal. The company is just completing the installation of a Link-Belt Knox loading boom and a box-car feeder. The loading boom installation will deliver lump to open cars, or to the box-car loader, with a minimum of breakage.

H. H. Pinckney, of West Virginia, has succeeded J. C. Cheyney as vice-president and receiver of the Canon Reliance Coal Co. The Denver office has been closed and the sale of the coal put in the hands of the Colorado Agency Co. Mr. Pinckney makes his headquarters at Canon City. The company is oper-

ating only the Canon mine. The Reliance mine at Ojo is being worked by the Purity Coal Co., of Pueblo, of which John W. McGovern is president, Andrew McGovern, secretary and treasurer, and P. G. Cameron, vice-president and general manager.

Despite adverse conditions in the shape of very soft rock in the west side, work on the Moffat tunnel is being pushed by Hitchcock & Tinkler, the contractors. The face on the west side is in 4,400 ft. and on the east side 4,900 ft. These distances have reference to the narrow bores.

### ILLINOIS

Coal for the St. Louis city water works has been contracted for with a Marion mine for approximately \$2.75 per ton. Other mines in Franklin, Williamson and nearby counties have obtained contracts aggregating about \$400,000 from the City of St. Louis for the coming season.

The Old Ben Coal Corporation is about to reopen a number of its mines in Franklin County. Mine No. 12, commonly known as the East Mine, located near Christopher, will resume operations in a few days. Mine No. 10, also at Christopher, known as the Old North Mine, is being cleaned up and was to resume coal hoisting on Sept. 22. About six hundred men are employed at each of the two mines.

The mine of the Valier Coal Co. at Valier, owned by the Chicago, Burlington & Quincy R.R., has again resumed operations after six weeks' idleness. The mine has a daily average of approximately 6,000 tons and is one of the most modern and best equipped mines in the state.

James McSherry, for the past several years assistant superintendent of the Equitable Coal & Coke Co.'s three mines in southern Illinois, has resigned effective at once. His future plans have not yet been announced. He has been closely connected with the coal trade in the southern part of the state and is widely known. The Equitable concern is owned by the Crear-Clinch interests, of Chicago.

### INDIANA

The Indiana mining examinations for mine boss, fire boss and hoisting engineer will be held Oct. 11, beginning at 9 a.m. at Garfield high school in Terre Haute, according to announcement by John Stevely, deputy state mine inspector, of Clinton. Citizens who are 21 years old or over are eligible to take the examinations.

The Dixie Vein Coal Co., Indianapolis, has increased its capital from \$50,000 to \$100,000.

The Indiana Public Service Commission has granted permission to the Evansville, Indianapolis & Terre Haute Railroad Co. to construct six miles of switch track from Somerville to Francisco to open a new mining district. Under the plans the railroad would cross nine roads, but only six will be grade crossings. One of the grades is eliminated by a subway and the railroad will build a new highway which will eliminate two other crossings.

### KANSAS

Mine No. 6 of the Hamilton Coal & Mercantile Co., near Cherokee, has been reopened. It employs 200 men.

The Crowe Coal Co. has announced its intention to open another of its deep shaft mines in the Pittsburgh district within a few days, but has not yet determined which mine it shall be.

Representatives of the international executive board, United Mine Workers, who, on Sept. 13 completed a survey of conditions in District 14, found miners of the district employed 49 per cent of full time. The investigators, John O'Leary and W. D. Van Horn, recommended that national officers send a board of organizers into the district immediately to work for "100 per cent membership" in the organization.

### KENTUCKY

Within the next few days official notification of the sale of various of the properties of the Jewett, Bigelow & Brooks Company in Harlan, Perry, Bell and Pike counties, will be made by the receivers, E. S. Douglass and J. C. Richey. A court order to this effect has been given by Judge A. M. J. Cochran of the U. S. District Court of the Eastern district of Kentucky. It is understood that the date of sale for some ten of the mines has been set for the last week in October.

No successor to replace the late C. D. Boyd, as manager of the coal traffic bureau jointly operated by the Southern Appalachian, Hazard and Harlan coal operators' associations, will be named soon, due to the fact that none of these organizations has meetings scheduled for some time to come. In the meantime, Roy Carson, Mr. Boyd's assistant, is looking after the affairs of the office.

The Rogers Elkhorn Coal Co., which was recently incorporated, will develop 1,100 acres of coal land near Virgie, to a daily output of 500 to 700 tons.



## NEW MEXICO

The Rio Grande Eastern R.R. has requested authority of the Interstate Commerce Commission to construct a line between Santa Fe and Albuquerque, which it is said will enable the Hagen Coal Mines, Inc., to market 20 cars of bituminous daily; permit the Sloan Coal Co. to resume operations and enable the construction of a power plant which will furnish power for mines in that district.

## NEW YORK

Quarterly dividends of \$1.75 have been declared on the preferred stocks of Burns Brothers. The dividend on the ordinary preferred is payable Oct. 1 and that on the prior preferred Nov. 1.

The Rochester & Pittsburgh Coal & Iron Co., general sales department, 1 Broadway, New York City, announces that effective Sept. 15 John M. Nelson, formerly general sales agent of the company and more recently sales agent in Buffalo, was appointed assistant to J. Noble Snider, vice-president in charge of sales, with headquarters in the Prudential Building, Buffalo. Charles Braun, Jr., has been appointed sales agent in charge of the Buffalo sales organization.

## OHIO

A. C. Ingersoll, president of the Philadelphia & Cleveland Coal Co., in passing through Cincinnati said that the large wharves, dockage and unloading facilities which have cost more than a quarter of a million dollars and which will be one of the most up-to-date plants on the river would be opened for business by his company about Oct. 1. These will be used for transshipping coal down the river from the Logan County (W. Va.) mines. The head offices of the company will be moved from Cleveland to Cincinnati, new quarters having been taken in the Dixie Terminal Building.

The Brush Fork Coal Co., of Athens, has opened a sales office in the Atlas Building, Columbus, with H. H. Sisson in charge, with the title of sales manager. The mine is located at New Pittsburgh, in the Hocking Valley. The output is 600 tons daily.

Bellaire officials of the Cleveland & Western Coal Co. have received orders to place in operation three Belmont County mines owned by the concern. The mines, which are located at Stewartsville, Johnson and Powhattan, have been idle several months. About 750 men were given employment when the operations were started.

Lincoln Mine of the Lorain Coal & Dock Co., which was fired by an electrical wire several weeks ago, is now working 60 per cent, according to James Watson, chief inspector of mines of Ohio, following an inspection. The burning entries have been sealed and it is believed the flames will be extinguished soon. The Ohio mine rescue car Black Diamond was called in an effort to extinguish the fire.

Several conferences between operators' and miners' representatives in the Pomeroy field have been held at Pomeroy with a view of signing up an agreement containing concessions in the cost of dead work, similar to the Hocking Valley agreement made at Logan. The meetings were brought about upon invitation of the Pomeroy Chamber of Commerce. It is likely that an agreement will be reached soon.

Machines for loading coal in the mines made in Pittsburgh are being tried out in a number of the mines in the southern Ohio field, principally by the Essex Coal Co., in the Pomeroy field, and the Central West Coal & Lumber Co., in the Hocking Valley proper. The first-named concern has been using the machines for only a short time and would not venture an opinion as to costs of operation compared with hand loading, but the Central West Coal & Lumber Co. has been operating two machines for 90 days and has ordered a number of others. In case the machines prove successful costs may be reduced to a point where it will be possible to compete with other fields, principally the non-union fields of West Virginia and Kentucky.

Mine No. 25 of the New York Coal Co., located at Chauncey, started operations recently with about 200 men. The Luhrig operation of the same company, employing about as many men, also started operation last week.

## PENNSYLVANIA

Operations have been resumed at the colliery of the Tip Top Coal Co., Mountain Grove, after an idleness of several months. Many farmers from nearby valleys have been given employment at the plant.

Dr. Royal K. Meeker, State Secretary of Labor since Feb. 26, 1923, has presented his resignation to Governor Pinchot, it was announced at the Governor's office Sept. 11. The resignation becomes effective Oct. 15. Dr. Meeker, before taking the State office, had been chief of the scientific division of the International Labor Office of the League of Nations.

The H. C. Frick Coke Co., subsidiary of the United States Steel Corporation, have fired 125 additional ovens at its Phillips plant, making half of the 400 ovens at that place now making coke.

No. 15 colliery of the Lehigh & Wilkes-Barre Coal Co., one of the largest in the Plymouth district, will resume operations this week. Nearly 1,000 men were thrown out of work when the colliery was closed last Monday for repairs. Other operations of the Lehigh & Wilkes-Barre company are working with normal forces, officials state.

The quarterly dividend of the Westmoreland Coal Co. was cut in half when directors declared a dividend of 1 per cent, or 50c. a share, payable Oct. 1 to stockholders of record Sept. 25. In 1917 the Westmoreland company consolidated with the Penn Gas Coal Co. and Manor Gas Coal Co. The old Westmoreland Coal Co., incorporated in 1854, owned all the capital stock of the Penn Gas Coal Co., and with the latter company owned all the capital stock of Manor Gas Coal Co. The company now owns more than 15,700 acres of coal land situated in the Irwin Basin, Westmoreland County. It also owns and operates ten coal-producing mines, with a daily capacity of 15,000 tons. On June 19, 1923, directors declared a quarterly dividend of \$1 per share. The company prior to that time had been paying \$1.25 quarterly. This reduction followed the payment of a stock dividend of 33½ per cent in May, 1923.

### Town Site of Frances Mine, Franko, W. Va.

This newest operation of the Consolidated Fuel Co. is one of the most modern in regard to equipment in the Moundsville district. It comprises 1,671 acres underlain with the Pittsburgh and Sewickley seams. The mining camp contains seventy houses in all constructed with a view to comfort, neatly painted and generously provided with ground area.



Courtesy Bertha-Consumers Co.

The Cascade Coal & Coke Co., an auxiliary of the Buffalo & Susquehanna Coal Co., put its mines and coke ovens at Sykesville in operation on Sept. 17, after a suspension of three months and will as soon as possible have the entire force of 500 men at work. Practically its entire output is taken by the Buffalo & Susquehanna furnace of Rogers, Brown & Co. in Buffalo.

Buck Mountain, the little anthracite mining town which furnished the smokeless coal which was burned on the Monitor when it engaged the Merrimac in one of the deciding naval battles of the Civil War, is practically a deserted village due to the fact that all fuel mined there now is taken to the Eckley and Drifton breakers of the Lehigh Valley Coal Co. One of the oldest collieries in the anthracite field is located at Buck Mountain.

The Lehigh & Wilkes-Barre Coal Co. has declared a dividend of \$3 on the common stock and a quarterly dividend of 1 1/4 per cent on the preferred stock of the company.

**UTAH**

Daniel Harrington, formerly supervising mining engineer with the U. S. Bureau of Mines, has opened an office in the Newhouse Building, Salt Lake City, where he will practice as a consulting mining engineer.

The Utah Supreme Court has ruled that the Utah Fuel Co. had the right to close the road up Miller Canyon in Carbon County. The court held that the coal company was justified on the ground that the road was on its own property. The action against the company was brought by a man who owns a store on the road

The Sevier Valley Coal Co., Richfield, reports good progress in the development of its properties in Salina Canyon. The company expects to place considerable coal on the market in the near future. Machinery is being installed. It is the opinion of the officers of this company that coal mining will before long be one of the chief industries of this county.

L. F. Rains, president of the Carbon Fuel Co., Salt Lake City, acted as grand marshal in the twilight parade in Salt Lake City on Defense Day.

Utah mines produced 386,192 tons of coal during August compared with 359,527 tons in August of last year. In August, 1922, 498,285 tons were mined.

**WEST VIRGINIA**

Although the Kanawha & Hocking Coal & Coke Co. won its suit in the court of Magistrate Hastings, at Montgomery, on Sept. 8 and by an agreement between counsel the one case tried was made to apply to 275 others involving unlawful detainer, nevertheless the company will not be able to get possession of its houses at Harewood, Oakland and Carbondale for a time, as the union has appealed the cases on behalf of the miners to the Circuit Court of Fayette County.

The Chaplin Collieries Co., having mine openings in the vicinity of the Osage plants of the Brady-Warner

Corporation, in the Scotts Run field of West Virginia, has followed the latter company's lead and posted notices that operations will be resumed on the basis of the 1917 wage scale. Although the Brady-Warner Coal Corporation announced a resumption a few weeks ago there has been no actual operation so far.

Output of coal in West Virginia during the fiscal year ending June 30, 1923, according to the annual report of the State Department of Mines of West Virginia, which has just been published, was 87,031,408 gross tons, as compared with 70,888,203 gross tons during the previous fiscal year, the increase amounting to 18.55 per cent. Production of coke amounted to 823,912 net tons as compared with only 175,156 tons during the fiscal year ending June 30, 1922. There were 1,110 companies reporting 1,02 operating mines. The total value of the coal and coke produced together with other interesting figures are given in the following table:

Total value of coal produced (87,031,408 gross tons)...	\$276,759,877.44
Value of coal used in operating (886,455 gross tons).....	2,818,926.90
Value of coal sold local trade and tenants (1,698,205 gross tons).....	5,400,291.90
Value of coal used in coke ovens (1,212,742 gross tons).....	3,856,519.56
Value of coal shipped from mines.....	261,504,139.08
Value of coal mined by small country mines (1,000,000 gross tons)...	3,180,000.00
<b>Total .....</b>	<b>\$276,759,877.44</b>
Value of coal sold (84,932,211 gross tons).....	\$270,084,430.98
Value of coke sold (823,912 net tons).....	5,882,731.68
<b>Total .....</b>	<b>\$275,967,162.66</b>
The increase in value compared with the previous year is as follows:	
Coal .....	\$92,094,061.23
Coke .....	4,856,317.57
<b>Total increase in value .....</b>	<b>\$96,950,378.73</b>

The coal produced was disposed of in the following manner:

	Gross tons
Produced by small country mines	
—sold at mines .....	1,000,000
Used in operation of mines.....	886,455
Furnished local trade and tenants from commercial mines..	1,698,205
Used in coke ovens.....	1,212,742
Shipped from mines .....	82,234,006
<b>Total .....</b>	<b>87,031,408</b>

The Algonquin Coal Co., operating at the head of Widemouth Creek near the Clarks Gap Tunnel, on the Virginian Ry., has been forced into bankruptcy. M. A. Kingsley, of the Kingsley Steamship Co., of New York, is the president and principal stockholder. John B. Rock, of Neal, W. Va., has been named as receiver of the company. It is believed that it will be possible to effect a reorganization of the affairs of the company by issuing long-term bonds in settlement of the claims of creditors.

**WASHINGTON, D. C.**

In order to bring together into one administrative unit the related work of the sections of coal and of oil and gas in the division of geology, the old fuel section of the U. S. Geological Survey has been revived by combining the separated sections. W. Taylor Thom, Jr., has been placed in charge of the section on geology of fuels thus formed, with the title of geologist in charge.

**CANADA**

Nearly all of the bituminous mines in the Cape Breton area have resumed normal activities. Although no official announcements have been made by the various companies including the Dominion Coal Co., subsidiary of the British Empire Steel Corporation, it is understood the mines are working to fill railway orders, which have been heavy since early in the spring.

The annual financial statement of the Blue Diamond Coal Co., operating in Alberta, for the fiscal year ending June 30 shows a loss from operations amounting to \$75,144, as compared with a profit of \$157,343 in the preceding year. The liabilities for taxes, royalties, interest, etc., brought the total loss up to \$124,950 as compared with a net profit of \$40,732 a year ago.

The city of Montreal has let a contract for 4,500 tons of American anthracite to the Ogdensburg Coal & Towing Co. at \$12.85 per ton. The fact that in asking for tenders American anthracite was specified to the exclusion of importations from Great Britain, aroused a good deal of criticism. L. O. Pion, city purchasing agent, when asked for an explanation, said: "The only reason is that we know of old that American anthracite has done the work required and we do not feel that we should begin experimenting. Until we can be shown that some other coal can do the work for the price we shall have to abide by the old standard."

The Chu Chua Coal Mining Co., with holdings near the City of Kamloops, B. C., is unwatering its workings and expects to be able to resume production this winter. Development is in progress on the property of the Wigham Collieries, which also is in the Kamloops field.

George Watkin Evans, a recognized authority on coal mining, has been retained to examine and submit a special report on the No. 8 mine, Cumberland, Canadian Collieries (D), Ltd. This mine was opened, but not extensively exploited and was closed down shortly before the war. Recently a start was made toward unwatering it and Mr. Evans now has been asked to furnish the management with independent advice as to the economic possibilities of the enterprise.

After being shut down for nine weeks after the explosion of July 1 the shaft of the Allan mine of the British Empire Steel Corporation went into operation Sept. 15. Mining has been resumed from the 500 ft. level and Manager Blue expects to raise 600 tons of coal daily and gradually to increase the amount.

Efforts to force the Sydney Mines Council to resign *en bloc* have failed. Representatives of the local Communist organization in the United Mine Workers' ranks sought to force the entire council to hand over the administration of the mining town to the Communist group. This action was taken because the miners charged that the Council was not sufficiently active against the Dominion Coal Co. and the parent concern, the British Empire Steel Corporation.