

COAL AGE

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Those Terrible Mines?

EVERY ONCE in a while comes the plaint of the miner against the unfortunate conditions under which he works. He really does not wish to labor in the open with the carpenter and mason, but he does want extra pay for toiling underground. It is true, mining work is done in the dark and in the dirt, but it is not done under a wilting sun or in the frost. The carpenter and mason have much harder physical conditions than the miner. The plasterer, the grader and the trench digger and backfiller have just as dirty work and have to face the climatic variations also.

The miner is really fortunate. He has no hot and no cold days. True, he may have a wet place, and if the water falls from above he may have to put up sheet iron or wear slickers, but carpenters, masons, graders and trench diggers often work in the rain and when it gets beyond their endurance they quit work and lose pay for the days or part days they are idle. We all irk somewhat under the compulsions of industry, whatever we may be doing, and the miner is to be excused for his long-drawn sigh, but that is no reason why he should receive sympathy, instead of the congratulation to which he is entitled. He knows he has the better fate, for he almost never leaves the industry, and when he is asked to work outside he refuses or he accepts the new occupation with more complaints than he ever leveled at his accustomed job and with the intention of getting "below" again as soon as he can.

Before or After Taking

CONTACT with the actual problems of mining before or after receiving collegiate training in engineering is necessary if a man would be a successful and competent mining engineer. The technically trained man must either start from the earth or come down to earth before he can be successful at supervision. It is true that the young man who has worked in the mines is sometimes so enamored of his job that he resents being sent to college "to cram" as he expresses it and that the man who goes to college first wants to sit behind the mahogany and issue orders as soon as he returns. But neither plan gives good results.

Not only technological training specific to the industry but information that can be attained only from personal contact with the actual work is necessary for the man who walks around and gives orders. It is just as well to make up one's mind to that. Even in Europe actual experience of this kind is customary. One would say that the "physical training" should be as long as the academic and the closer it is to the actual work the better, the more the atmosphere is absorbed and the closer are the observations that are made.

Six to eight years, half academic and half in actual field contact, is not too long a period in which to make a real start. A man thus trained should be occupy-

ing a really responsible position at the age of 30. Many a man by the old route without college training and with hard work gets to such a position in less time, but such advancements are usually made in small corporations, and the men that get them usually stay for the rest of their lives either just where they are or find employment with a company of no larger size.

Less than One in a Thousand

GREAT BRITAIN REPORTS that the fatality rate per thousand in its coal mines is lowered to 0.98. Last year it was 1.06. In the same year the fatality rate in the United States was 2.87 per thousand employees or nearly three times as high as in Great Britain, and that in a year of relative depression. It must be remembered, however, that Great Britain also suffered from a depression and that the number of working hours in a day is only seven.

Perhaps it would be best to make a comparison per thousand 2,000-hr. workers. The British rate in 1924 we figure as 1.20, whereas our rate during 1923 was 3.63 or about three times as great. Many believe the British miner is exposed to more natural hazards than the American. That is always difficult of proof, but the figures given are disquieting, to say the least, and only by an investigation of the rate per million tons produced can any relieving consideration be found.

The fatality rate per million tons of coal mined in this country was 4.15, whereas in Great Britain it was 4.36, so the tonnage was obtained in the United States at a lower blood cost per ton. In the matter of ease of production America certainly has the advantage, so it can hardly be wondered that it has a lower rate per million tons mined. The marvel is that we have not been able to make the difference more considerable.

If Coal Cutting Failed This Is the Reason

SAYS John L. Lewis, the president of the United Mine Workers, in his book "The Miners' Fight for American Standards," which should read for "Standards Higher than Those Normal to American Labor:—" "Fifty years have passed into history [it should be only a little over half that length of time but let that pass] since the first undercutting coal machine designed to relieve the strength-sapping strain on the miner's body and [to attain] materially lowered production costs was introduced; yet coal mines continue to be opened, the owners of which have neither the capital nor intention to provide this essential machine."

In judging the conclusion that this is a "sin of management in the bituminous-coal industry" we will pass by the generally admitted fact that the mine workers opposed this great innovation and are still opposing it where it is not introduced, though it saves a "strength-sapping strain on the miner's body," and we will proceed to call attention to the fact that the

miners through their unions repeatedly have attempted and almost everywhere succeeded in establishing a differential that makes the introduction of the machine a doubtful source of profit and the use of the better classes of cutters productive of only indirect gain. Machine coal in many instances is more economical than what is termed "hand-mined coal" (but rather should be called "powder-mined coal") only because it is not so badly shattered and because its production reduces the area to be developed and maintained and saves in the construction of houses.

In cases where the use to be made of the coal does not demand the production of large sizes the advantage of the machine is slight except in so far as it removes the danger of solid shooting. The union is responsible largely for this being a hazard. There is little evidence that "powder mining" is strength-sapping. Its chief disadvantage is its danger, and where the coal is soft and easily shot and precautions are taken, as in the Connellsville region, which, by the way, is non-union and uses proper methods of shooting, the statistics show that the dangers can be avoided. In union fields, where the union men insist in overloading their holes and in firing them or having them fired, and where face sprinkling is unknown, the hazard of "powder mining" is extreme.

This charge of Mr. Lewis falls to the ground. We rejoice to see machine mining develop, but only because of secondary, almost impalpable economies and because of safety and not because the mining by machine is *per se* any cheaper in most cases than "powder mining" or true "hand mining." In the cost of machine mining the cost of powder, repairs, interest and depreciation have, of course, to be considered and when they are the machine has only incidental advantages over hand mining. The union has seen to that. Yet Mr. Lewis uses the fact that the use of machines is only 67 per cent instead of 100 per cent as a club against the operator. Being with his back to the wall, we suppose he will be excused for using what weapons come to his hand to the best advantage, even though he cannot prove the right of ownership.

In the anthracite region the use of the mining machine has been made practically impossible by the action of the union. It has introduced into the contract made with the operators a provision that has caused the arbitrator in his belief no option but to give such a decision to the mine workers as makes the operation of mining machines unprofitable. Mr. Lewis has uncovered a mare's nest. His attack on coal operators calls renewed attention to the union's studied opposition to mine-operating efficiency.

Waiting for Others

FROM COLONIAL times the farmer has waited for others to find a way for him. Fortunate, indeed, it is that the Department of Agriculture and the state agricultural colleges have developed fertilizers, insect poisons, new systems and plant varieties so that the farmer has been able to overcome the steady impoverishment of his soil, droughts and the attacks of plant plagues.

Coal men have followed a similar course to the farmers. They have left progress in the use of their product to chance. It is true that the early anthracite companies urged and assisted the consumer, or possible consumer, to make use of anthracite. In the early days

the Delaware & Hudson Co. was quite active in inducing steamboat owners, householders and industries to use that fuel instead of wood. The anthracite companies are fostering the use of fine coal, but they have invented few or none of these devices. Eckley Coxe, it is true, made important efforts to put the automatic stoker in the steam field, but on the whole, coal men have left to the manufacturers the work of devising new stokers and ascertaining the best method of employing them.

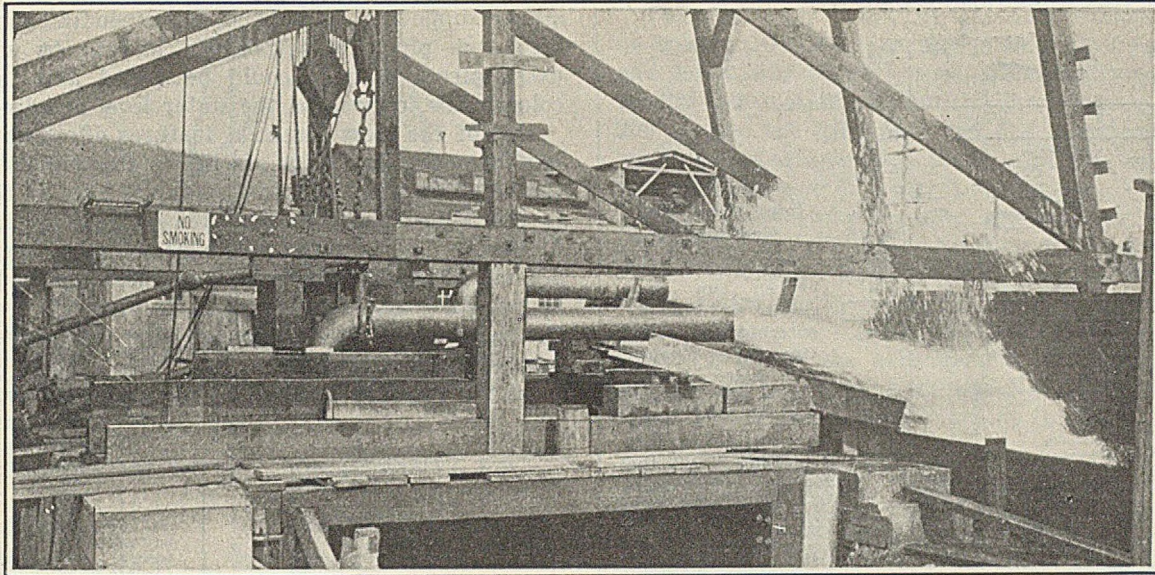
By and large, the coal men have done little. They wanted the consumer to provide his own expansion of the coal industry, and the development that made the small sizes saleable slowly came about, thanks to the consuming public, not to the operator.

In Great Britain the mine owners are contributing to research. They are trying to expand their narrowing market. As the British and Continental industries are more wasteful of fuel than ours, they have to face a greater restriction in the sale of coal than we have. Our operators probably already have encountered the worst of their troubles, but in Europe the long period that has passed without much advance in combustion methods will make conditions desperate when once the tide sets full for economy with our progress serving the economizers as a guide. In the United States almost the only studies being made are those of the National Coal Association and the Bureau of Mines. It is only a beginning but it is suggestive of a brighter future. It looks forward to the time when petroleum will be driven not only from the steam field but also from the internal combustion and lubricating fields. This is only a small part of the progress necessary. Coal should have a leading place in our organic chemistry field and that industry should be immensely more important than it is now.

The electrical industry is taking time by the forelock with its Society of Electrical Development which is finding further uses for electricity. Fortunately the problems of the public utility companies are small compared with ours, for theirs is largely an attempt to hurry the inevitable change in the habits of mankind, whereas the coal industry is seeking to find new devices for the conversion of one chemical substance into another. Probably the coal industry would do well to try also the method of that electrical society, inducing the public to use more heat, to refrigerate their houses, offices and public buildings, to cease burning wood and to use small, instead of large, coal, paying a better price for the small sizes. The Copper and Brass Research Association and the American Zinc Institute are promoting the use of copper and of zinc respectively. The brick manufacturers are associated in an endeavor to popularize brick. Coal men have a lot of good exemplars to follow and they should get in touch with them and learn their ways and, where possible, co-operate with them, especially the Society of Electrical Development, in the promotion of the refrigeration plan.

The natural means for doing this work as far as the bituminous field is concerned is the National Coal Association. It can be the bituminous coal men's Coal Research Institute and its Society of Coal Development.

Why wait for others? Let us find a place for our coal and instead of the present ruinous competition we can find employment for all. But let us be practical, tackling the easiest roads to increased demand most energetically and leaving the larger and less obvious problems for secondary consideration.



Air-Lift Pumping System Quickly Raises Water From Flooded Anthracite Mine Areas

Ordinary Dewatering Methods Could Not Easily Be Used at First — Now Air Lifts Water Part Way Up Shaft and Centrifugal Units Pump to Surface

By E. J. Gealy

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UNUSUAL METHODS are being employed to reopen the Neilson mine of the Shamokin Coal Co. in the city of Shamokin, Pa. For many years the property had been idle and the water had risen in the shaft to within about 30 ft. of the ground level. All of those parts of the coal beds which had been previously mined were, therefore, full of water and it was necessary to start any unwatering operations from the outside.

The officials of the company decided that the best way to start unwatering the mine was by means of an air-lift pumping system. Probably the fact that the mine will need air-compressing equipment when it gets into operation had much to do with selecting this method of raising the water. Nevertheless, something different from ordinary mine-pumping machinery had to be used so as to obviate the necessity and expense of providing preliminary structures for pumps and buckets.

On Nov. 9, 1924, one air lift was started. It consisted of a 190-ft. column line of 10-in. wrought iron pipe supported in the old mine shaft. This length of pipe was considered sufficiently long to obtain satisfactory submergence, although the shaft was 1,200 ft. deep and the vertical depth of the water was greater than this because of the basins in the steeply pitching beds.

The air supply for the lift was furnished by a com-

pressor located in a large building a few feet from the shaft. In December another similar air lift was installed in the shaft and the two lifts were kept in operation as much of the time as possible. The air lifts were stopped only when it became necessary to add extra lengths of pipes to maintain sufficient submergence to obtain satisfactory results.

In the air-compressor house two large compressors driven by 2,300-volt synchronous motors supplied the air. One compressor was a 1,500-cu.ft. per minute unit driven by a 300-hp. motor and the other a 3,500-cu.ft. per minute machine connected to a 600-hp. motor. Both machines were directly connected to their respective drives.

The cooling water for the compressors was circulated to a tank located on a hillside a short distance from the compressor house where it was cooled by being discharged upon a screen mounted a few feet above the top of the tank. The water dropped through the perforations in the screen and separated into fine streams which permitted the particles to cool and then drop into the tank and be conducted back to the water jackets on the compressors.

Passing from the compressors, the air was conducted through an 8-in. wrought iron pipe. Near the top of the shaft this pipe was connected to two 4-in. pipes which supplied the air to each lift. Suitable control valves were placed in the air lines so that the quantity of air could be regulated or stopped whenever it was necessary.

Several novel features were incorporated in the design and operation of the lifts by B. C. Osler, superintendent of the mine. The foot piece was constructed

The view in the headpiece shows the two air lifts in operation. At first the water was within 30 ft. of the ground level. By means of these lifts the water was lowered to a point 505 ft. below the surface of the ground. Now air lifts raise the water to the No. 12 level and it is relayed to the surface by two 1,000-gal. per minute centrifugal pumps.

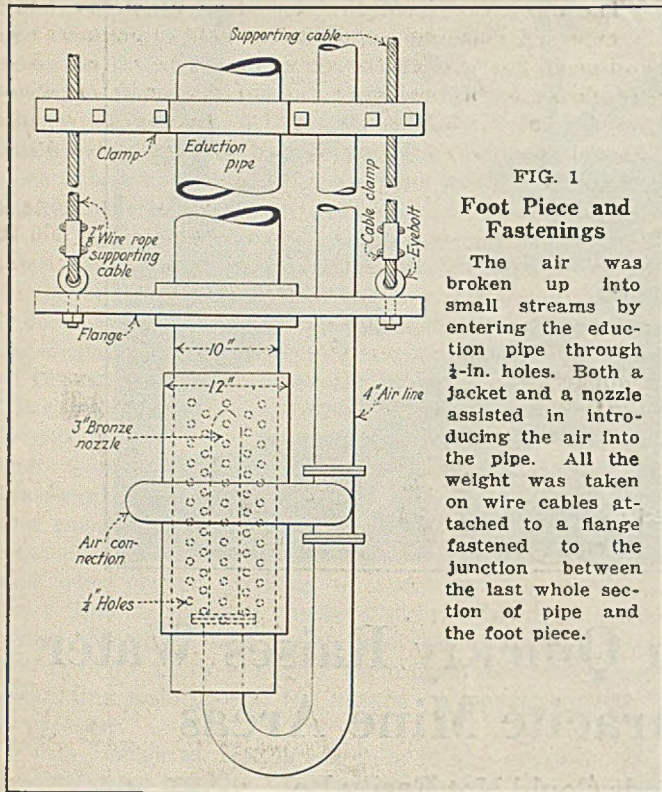


FIG. 1
Foot Piece and Fastenings
The air was broken up into small streams by entering the eduction pipe through 1/4-in. holes. Both a jacket and a nozzle assisted in introducing the air into the pipe. All the weight was taken on wire cables attached to a flange fastened to the junction between the last whole section of pipe and the foot piece.

out of a straight 5-ft. section of 10-in. pipe drilled full of 1/4-in. holes except near each end, as shown in Fig. 1. Around the perforated part of the pipe a short section of 12-in. pipe was welded in such a manner as to form a jacket or chamber. At diametrically opposite points in this outer pipe connections were made to the air line. An additional part of the foot piece was a 3-in. bronze nozzle also connected to the 4-in. air line. Thus the construction of the foot piece was such that a large volume of air broken up into many fine streams had easy access into the eduction pipe.

The ideal design of an air lift eduction pipe or discharge line is one which properly tapers throughout its whole length in proportion to the expansion of the air bubbles as they rise in the pipe. Such a tube is hardly practical because the length and taper of the pipe would be different for every different air lift. However, to approach such a characteristic the air lift discharge lines at the Neilson mine were made of three different size pipes. When the air lifts were stopped from pumping directly to the outside surface they consisted of a lower section of 10-in. pipe 200 ft. long to which was attached another 200-ft. section of 11-in. pipe and at the top was still another section of 12-in. pipe about 240 ft. long.

The ultimate total weight of one of these eduction pipes was nearly 20 tons and, consequently, required

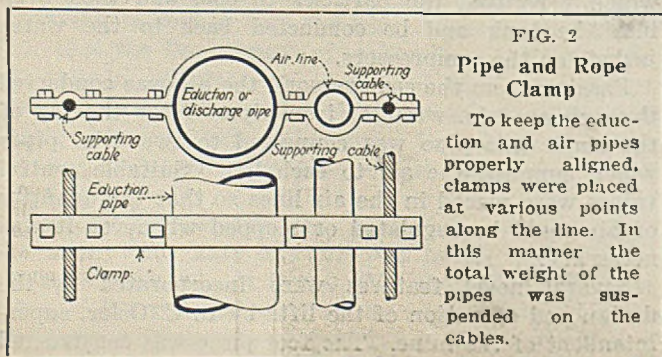


FIG. 2
Pipe and Rope Clamp
To keep the eduction and air pipes properly aligned, clamps were placed at various points along the line. In this manner the total weight of the pipes was suspended on the cables.

strong supports. In addition to suspending the air and discharge pipes, arrangements had to be such that extra pieces of pipe could be added and the whole column line lowered as the water level receded.

One of the most essential features effecting the successful operation of an air lift is the submergence of the eduction pipe. Obviously, as the level of the water in the Neilson shaft became lower the pipes had to be dropped so as to maintain sufficient submergence. To accomplish such adjustments as efficiently and quickly as possible, all extra sections of pipe were added to the top and the whole eduction pipe was suspended on 1/2-in. steel hoisting cables.

At the junction of the foot piece and bottom section

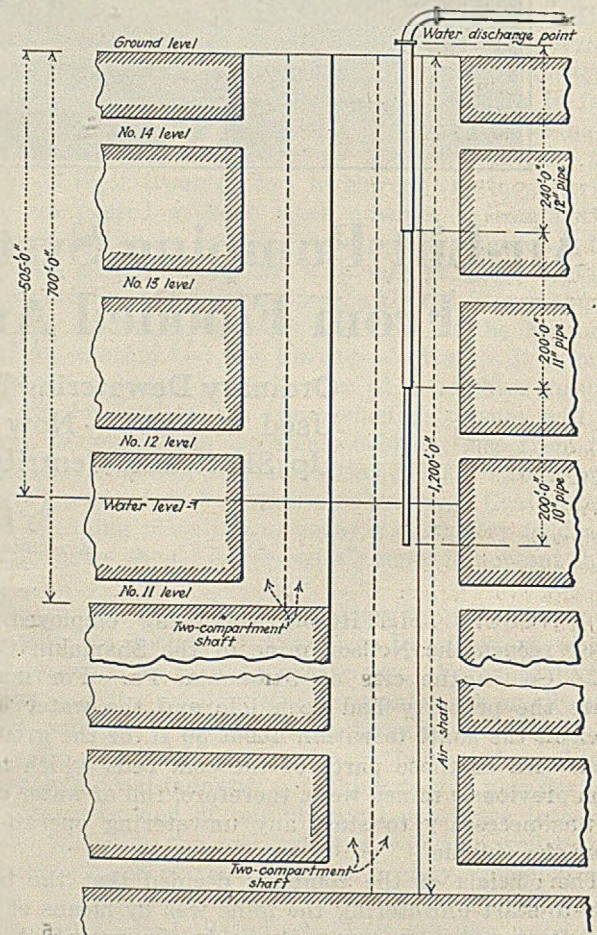


Fig. 3—Sketch Showing Air Lift and Shaft

Two compartments extend to the No. 11 level and two to the bottom level. The air lift was first used to discharge the water to the ground level as shown here. Now pumps are located on the No. 12 level and the air lift has been moved down the shaft so that it discharges into a basin in the No. 12 level from which it is relayed to the surface by two 1,000-gal. per minute, centrifugal pumps.

of pipe a large round collar or flange was inserted. Sufficiently spaced from the outer edge of this ring two eye-bolts were attached as shown in Fig. 1. To these bolts the 1/2-in. supporting ropes were attached. At various positions along the discharge pipe, clamps similar to those shown in Fig. 2 were used to hold the pipe to the ropes and also tie the 4-in. air line to the large pipe.

The support at the top of the shaft was as shown in Figs. 4 and 5. Two rope clamps 10 in. long were attached to each rope and the weight of the pipes was supported on a yoke or cross member which in turn rested on heavy beams. Each rope extended over the headframe onto a reel from which it was unrolled as required.

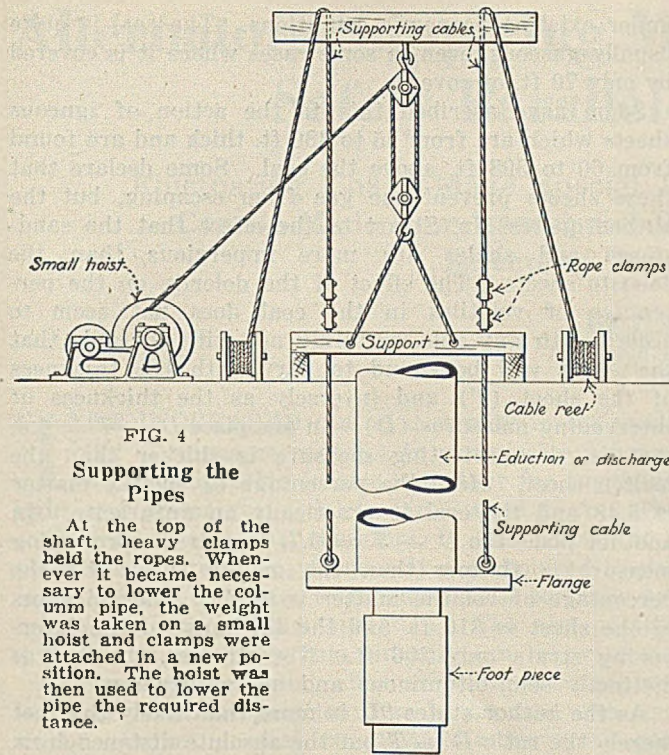


FIG. 4

Supporting the Pipes

At the top of the shaft, heavy clamps held the ropes. Whenever it became necessary to lower the column pipe, the weight was taken on a small hoist and clamps were attached in a new position. The hoist was then used to lower the pipe the required distance.

When it became necessary to attach additional sections of pipe and lower the column line, other clamps were placed on the ropes farther up near the top. When this was done the weight of the pipe was placed upon large pulley blocks which operated through a cable connected to a small hoisting engine. In this manner the pipes were lowered until their weight again rested on the new clamps. See Fig. 4.

During the period between Nov. 9, 1924, and Feb. 19, 1925, one or the other or both of the air lifts were in almost continuous operation. As a matter of fact, only about 65 hr. of operating time was lost in making the various changes to the lifts.

On Feb. 19, when the lifts were stopped from pumping to the outside surface, the eduction pipes were 640 ft. long and the water had been lowered about 475 ft. This indicates that the water level dropped at the rate of about $4\frac{1}{2}$ ft. every 24 hr. It has also been estimated that during part of the time 5,000 gal. per minute was pumped and a total of about 335,000,000 gal. was raised to the surface.

The discharge from the air lifts varied, as would be expected, depending upon the amount of submergence and depth from which the water had to be raised. Best results were obtained when the submergence was about 200 ft. and the lift about 100 ft. Averaged over the whole range of operation the cost of raising the water was slightly over 6.5c. per 1,000 gal.

Although the total depth of the shaft at this mine is about 1,200 ft., the mine workings extend about 200 ft. lower. Obviously, the work of unwatering the mine was not complete when, on Feb. 19, the air lifts were stopped from pumping to the surface.

Fig. 3 shows the arrangement of the shaft. Two compartments go down to the No. 11 level which is about 700 ft. from the surface at this point. The two

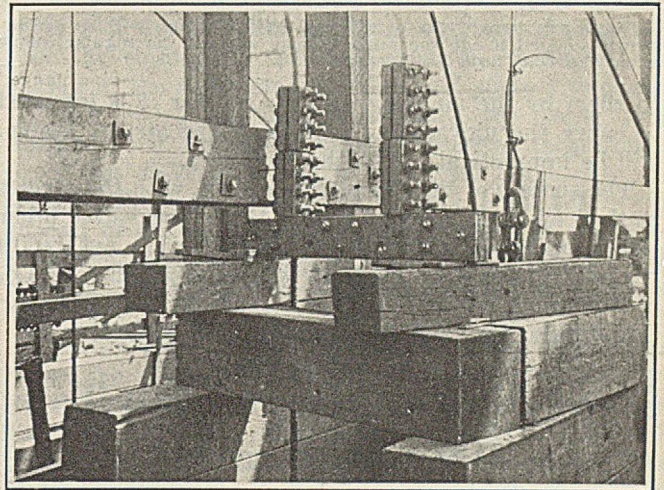


Fig. 5—Rope Clamps Prevent Cables from Slipping

Two large clamps were fastened to each wire and the weight of the pipes supported on cribbing which spanned the mine shaft.

other hoisting compartments extend to a point 1,200 ft. from the surface. An airway also goes to the bottom level. In all, probably sixteen coal beds are cut by the whole shaft.

The dewatering of the mine having reached the point attained on Feb. 19, air-lift pumping to the surface was discontinued so as to finish the job as efficiently as possible. Since then two 1,000-gal. per minute pumps have been set up in the No. 12 level and the air lift discharges to these units which in turn relay the water to the surface. In time, two more centrifugal pumps will be located in the No. 11 level and the water relayed

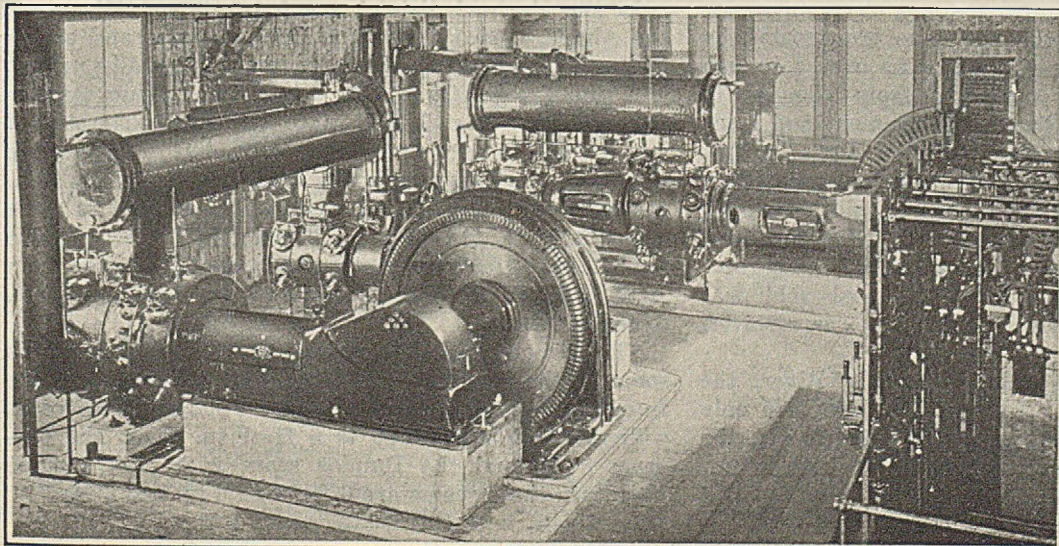


FIG. 6

Compressors for Air Lifts

Both of these units worked together to supply air to the two air lifts. An 8-in. pipe conveyed the air to the shaft and from there it was dropped into the shaft through two 4-in. air pipes. Each air line was attached to the outside of the discharge pipe.

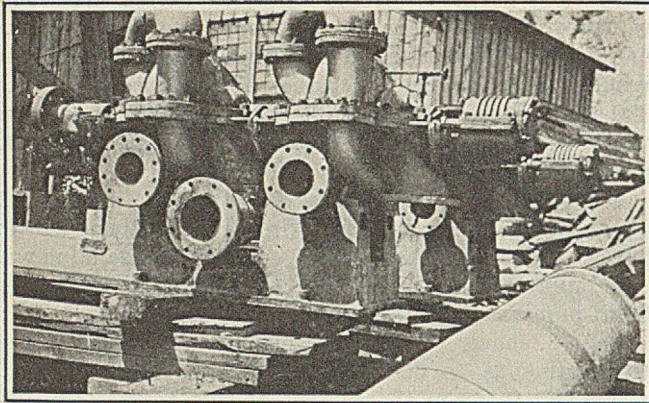


Fig. 7—Units for Permanent Mine Service

These are two of the centrifugal pumps which will be permanently located inside the mine to take care of the regular inflow after the coal beds are unwatered.

to them by the air lift. In this manner it is intended to carry the unwatering plan until the air-lift system will be impractical for further use here.

The success of the Shamokin Coal Co. with the air-lift method of raising water recalls to memory three other important applications of the system in the anthracite region. These were made by the Glen Alden Coal Co. at Hampton Water Shaft, the Hudson Coal Co. near Carbondale, Pa., and the Madeira, Hill & Co.

Natal Mines Four Million Tons Of Coal Yearly

Seams Are Thin and in Most Cases Split—Volatile Matter Varies Widely but Is Always Low—Dolerite Sheets and Dykes

Coal was discovered in Natal in the year 1838, but beyond this bare statement no further information is obtainable. "On Aug. 20, 1842," says W. J. Wybergh in his small monograph on "The Inland Coalfields of Natal," Vol. II of "The Coal Resources of the Union of South Africa," published by Geological Survey of that commonwealth, "Captain Smith, writing from Pietermaritzburg to Sir George Napier, stated that there was no doubt that coal existed in considerable quantities about 130 miles from the coast and advocated the formation of a company to work it." In 1888 a number of mines were opened, of which the Newcastle Colliery, Elandslaagte Colliery and Dundee Coal Co. mine still exist.

During the first year the coal was transported by bullock wagon, but before the year was over a branch was constructed by the company from Glencoe to Dundee, since taken over by the Government and made part of the Glencoe-Vryheid-Piet Relief Ry. In that year the bunker trade was successfully inaugurated on a commercial scale, a total of 686 tons being taken by six steamers. The total tonnage, coal and rock mined in 1923 was 5,618,404, of which 1,124,947 short tons was classified as waste. The total coal sold was 4,302,892 short tons for which \$8,251,390 was received, or \$1.92 per ton.

There are three main fields—the Klip River, the Vryheid and the Utrecht. In the Klip River are only two seams of commercial value the "Top" and the "Bottom." In only a few collieries can both seams be worked over the whole area, though in most cases at least a portion of both have been considered workable

under existing economic conditions. The coal is quite usually gaseous, even in some cases where it is covered by only 70 ft. of cover.

Some have ascribed this to the action of igneous sheets which are from 25 to 380 ft. thick and are found from 60 to 398 ft. above the coal. Some declare that these sheets prevent the gas from escaping, but the author quotes Mr. Steart to the effect that the sandstones and shales are more impervious than the dolerite sheets. The effect of the dolerite on the percentage of volatiles in the coal does not seem to accord with any rule, certainly not with the rule that the effect will be found to vary with the thickness of the sheet (T) and inversely as the thickness of intervening measures (D). In one place $D \div T = 1.8$, that is, the protecting measure is thicker than the molten sheet. Here the percentage of volatile matter is 8.48 and the coal is practically an anthracite. In another place the $D \div T = 0.7$, that is the protecting measure is thinner than the molten sheet, yet the percentage of volatile matter is 20.77. The thickness of the sheet is 310 ft. and the thickness of the intervening strata only 206 ft. Nevertheless, the coal is distinctly semi-bituminous and not anthracite.

As the author states "It is more than likely that not merely the ratio $D \div T$ but the absolute distance from the coal irrespective of thickness" must be considered.

"Of course," says Mr. Wybergh, "where the percentage of volatiles is unexpectedly low, this may, in some cases, be due to the proximity of a vertical or highly inclined dyke not disclosed by the borehole, or conceivably, but improbably, to the existence of another sheet below the coal." At the New Campbell colliery a dyke over 1,200 ft. thick was struck about 100 ft. from the shaft, at which point the coal contained 4 per cent of volatile matter. At a distance of 1,200 ft. from the dyke it had 15 per cent of volatile matter and at 1,400 ft. it had 19 per cent, and the coal showed indications of coking.

SPLITS REDUCE VALUE OF SEAMS

The coal is extensively faulted and the parting between the Top and Bottom coals varies from a few inches to 40 or 50 ft., and even in a single colliery from one foot to 50 ft. The thicknesses of these splits vary from less than 2 ft. to 10 ft. or more but in the greater part of the area are between 3 ft. and 5 ft. thick. The ash percentage in the coal as used at Capetown varies from 9.89 to 15.60.

In the Vryheid district are four commercial seams, the Alfred, Gus, Dundas and Coking seams and others of lesser importance. The Gus seam is usually unsplit and runs from 4 ft. to 6 ft. 8 in. The Coking seam is thin and runs from 1 ft. 2 in. to 2 ft. 6 in. The Alfred and Dundas seams frequently split, but in one place the latter contains two layers 4 ft. 7 in. and 4 ft. 3 in. respectively, with a shale parting. The sulphur in these seams is quite low, 0.50 to 1.20 per cent. The ash runs from 7.44 to 15.95 per cent and the volatile matter from 10.22 to 26.06 per cent. Here, also, are igneous sheets, dykes and faults.

The Utrecht coal field has no railroad, but it contains some of the best coal in Natal. The same seams are found as in the Vryheid district. Thus at the Utrecht colliery the Alfred seam is 6 ft. 1 in. thick, the Gus seam 5 ft. and the Dundas seam 2 ft. At Dumb Mountain these seams are 6 ft., 3 ft. 6 in. and 6 ft. 5 in. respectively, with the Coking seam 3 ft.

Alternators Supplying Mine Loads Are Easily and Safely Paralleled and Operated

Fluctuating Loads Make Special Precautions Necessary—Synchrosopes Can Be Made from Lamps and Voltmeters—Diagrams Explain Bad Effects of Poor Power Factors

By J. A. Erskine

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THE INCREASED use of electricity in the working of mines necessitates in many cases a power plant comparable in size with that for supplying light and power for a fairly large sized town. The colliery electrician has, therefore, to take charge of a plant where alternators frequently are required to run in parallel and connected to a load which is certainly not helpful to good parallel operation. The aim of this article is to show how this difficulty can be overcome.

The work of paralleling alternating-current machines is a more difficult operation than is the case with continuous-current generators. With direct-current generators the only important point is that the voltage of the incoming machine should be the same as the busbar voltage.

With alternating-current machines not only must the voltage be the same but the periodicity also. Further than this, the machines must be in phase; that is to say, it is not sufficient for the periodicity of the machines to be exactly the same, but the voltage of the machines must rise and fall at the same instant.

The process of bringing machines into phase is called synchronizing. "Synchronous" means that the pressures and currents rise and fall exactly at the same time. Two alternators to be connected in parallel, must both be of the same pressure and current at the same instant; each must be at the positive maximum of pressure and current at the same instant; each must be at zero pressure and current at the same instant. At any instant the pressure furnished by each machine must be exactly the same.

When connecting three-phase machines in parallel, like phases must be connected together; that is to say, referring to Fig. 1, phase 1 of the two machines to be paralleled must be connected together; phase 2 of the two machines connected together, and so also with phase 3. If phase 2 of one machine is connected to phase 3 of the other machine, and, say, phase 3 of the first machine to phase 2 of the second machine, the machines will not parallel, and large currents will pass between them.

Fig. 1 shows diagrammatically the three phases of

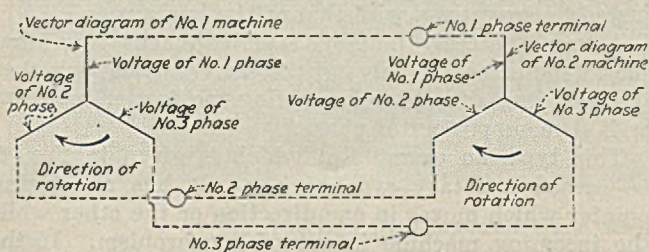


Fig. 1—Three-Phase Machines Connected in Parallel

It is important that each phase be properly arranged so that the circulating current will be low.

two machines that are to be paralleled, and how the connections should be made. It will be noticed that phase 1 of the left-hand machine is connected to phase 1 of the right-hand machine, phase 2 of the left to phase 2 of the right-hand machine, and phase 3 to phase 3. Fig. 2 shows diagrammatically the same two machines, but with their phases connected incorrectly. From this diagram it will be seen that while phase 1 of the left-hand machine is connected as before to phase 1 of the right-hand machine, phase 3 of the left-hand machine is connected to phase 2 of the right-hand machine; and phase 2 of the left-hand to phase 3 of the right-hand.

The difference in the arrangement of the phases between the right-hand machine and the left-hand one will be recognized as that which is used to reverse the direction of rotation of an induction motor. And this provides the test for ensuring that the phases are in proper sequence. Before connecting two alternators to run in parallel, if there is any doubt as to the sequence of the phases of the two machines, each of them should be tried upon an induction motor. If the motor runs in the same direction with the currents from both machines, they may be safely connected in parallel; if not, it will be necessary to alter the connections of one of the alternators, so as to bring them into the proper sequence as shown in Fig. 1.

When an alternator is to be connected in parallel with others that are running, it is first brought up to about the speed at which it will run when taking its share of the load. The exciting current of the field magnets is then brought up to the strength that will give the pressure the machine is to furnish when running in parallel. The third step is to bring the machine into exact synchronism. Synchronism is obtained by varying the speed at which the incoming alternator is running. Having the speed near that at which it is to run, the revolutions are slightly increased or decreased, until the phases of the incoming machine are exactly in synchronism with the machine already at work.

The main object of synchronism is to prevent the

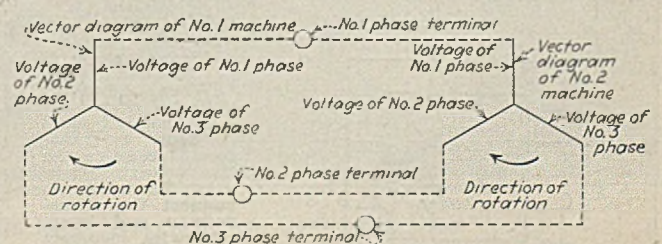


Fig. 2—Incorrect Phase Arrangement

The phase rotation in each circuit must be the same before the machines are switched together.

passage of useless current between two or more alternators when running. If any alternator is out of step with the others, currents will pass between the machines, the power for which has to be furnished by the prime movers. These currents operate against the successful working of the units. The operation of getting the incoming machine into exact synchronism requires a certain amount of nerve to throw in the switch at the right moment, and, of course, some form of synchronizing apparatus is required. When a lamp synchronizer is used, it is the usual custom to also have a synchronizing voltmeter. The lamp synchronizer is not so good a guide as the voltmeter, but the two together should enable the engineer in charge to know the exact moment to close the switch.

With low-tension machines, the lamp is connected between two similar phases of the two machines; or say, between a certain phase of the incoming machine and the same phase of the busbars. This arrangement is shown diagrammatically in Fig. 3, and for simplicity

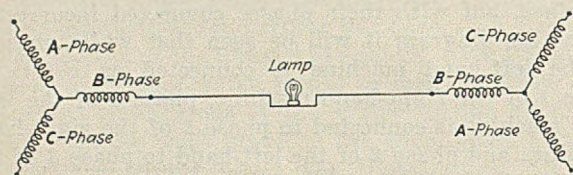


Fig. 3—Lamp Used to Synchronize Generators

Note that the lamp is connected into one conductor only. If the phase rotation, voltage and frequency are correct, a lamp in one line is all that is necessary to determine when to close the paralleling switch.

the connections between the other phases are omitted. When the machines are in synchronism, the pressures delivered by the phases of the two machines to which the lamp is connected are exactly equal at all parts of the cycle, and therefore no current passes through the lamp.

For high-tension machines, a modification is shown diagrammatically in Fig. 4. A transformer is wound with a primary coil for each generator; or, say, a primary for the busbars and another primary for the incoming machine. The secondary of the transformer is connected to the lamp. The primaries are so wound that they oppose each other; and when the two machines are in phase, no lines of force are created in the magnetic circuit of the transformer. Therefore, there is no secondary pressure at the terminals of the lamp, and no current flows.

In a further modification of the arrangement shown in Fig. 4, the primary coils are so wound that when the machines are in phase, sufficient pressure is induced in the secondary coil to light the lamp to which it is connected to its full brilliance.

In another arrangement connections from the different phases are made so that certain lamps light and

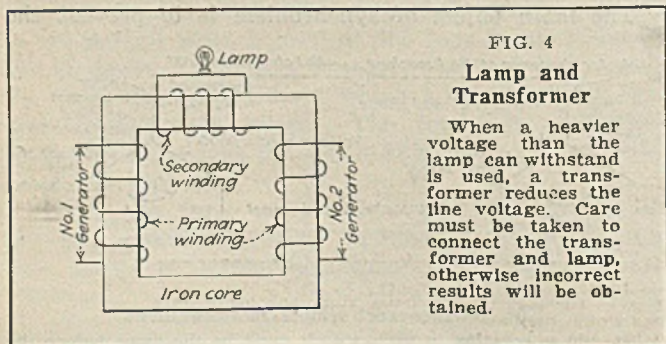


FIG. 4
Lamp and Transformer

When a heavier voltage than the lamp can withstand is used, a transformer reduces the line voltage. Care must be taken to connect the transformer and lamp, otherwise incorrect results will be obtained.

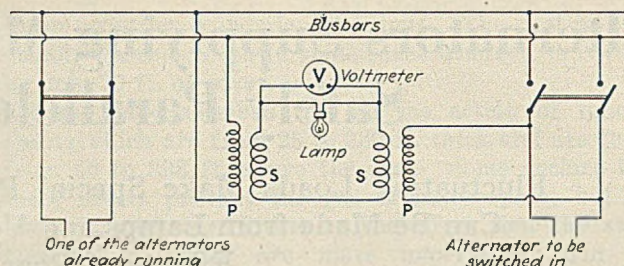


Fig. 5—Voltmeter Aids Work of Synchronizing

The light of a lamp varies and, therefore, it is sometimes quite difficult to tell when it is at its maximum brilliance; a voltmeter is often used with a lamp to overcome this difficulty.

certain others are dark when the machines are in synchronism.

With the lamp and voltmeter synchronizer shown in Fig. 5, the method of synchronizing is as follows: The primaries *pp* of the two step-down transformers are connected, one to the two busbars, and the other to the machine to be synchronized; while the secondaries *ss* are joined in series and connected to an incandescent lamp and a voltmeter, as shown in Fig. 5. The lamp should be a carbon-filament one, so as to be very susceptible to changes in the current through it. It also must be suitable for the full voltage of $s + s$.

The windings of the transformers are so connected that when the voltages in the secondaries are in step, they work together; but if out of step, they oppose each other more or less. If the frequency of the alternator to be switched in is not correct, the lamp lights up and goes out at rapid intervals. The speed of the machine must then be adjusted until the light of the

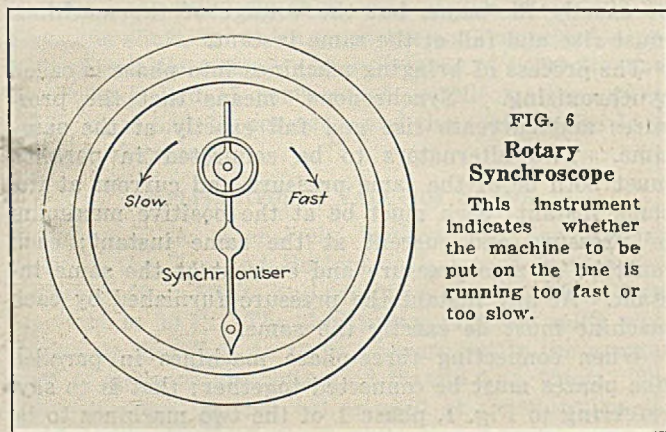


FIG. 6
Rotary Synchronoscope
This instrument indicates whether the machine to be put on the line is running too fast or too slow.

lamp rises and falls only a few times a minute. This shows that the speed and, therefore, the frequency also are correct. The machine is then switched in at the moment the lamp is fully lighted and the voltmeter reading is at its maximum. This indicates that the machine is in synchronism with the others. Before closing the switch, the alternator voltage must, of course, be adjusted to correspond with that of the busbars.

A more recently developed arrangement than that shown indicates not only synchronism but also whether the incoming alternator is running too fast or too slow, or if it is simply out of phase.

This type, an example of which is given in Fig. 6, is termed a rotary synchronizer. It has a rotating pointer which moves in one direction or the other while the incoming machine is out of synchronism. If the pointer rotates clockwise, the incoming machine is too fast; if counter clockwise, the machine is too slow.

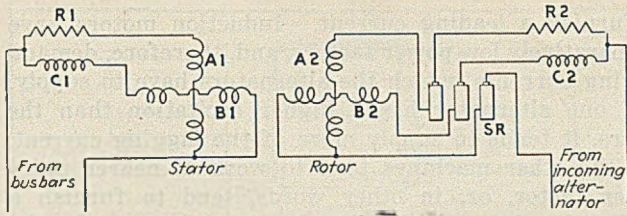


Fig. 7—How the Synchroscope Works

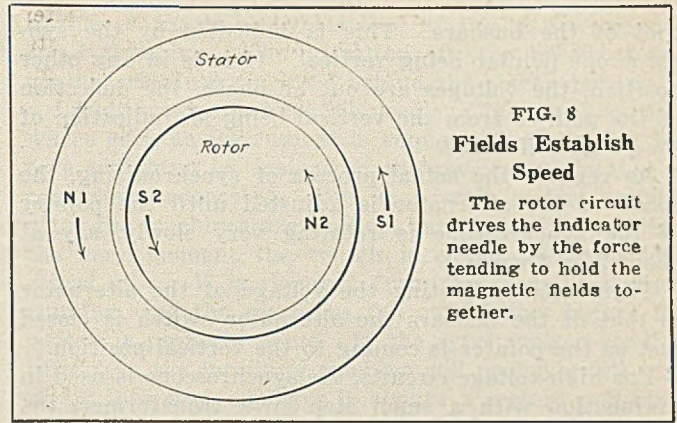
The device contains a simple slip-ring motor which runs at a speed and direction depending upon the frequency of the current supplied to its stator and rotor.

The principle of this instrument is shown in Figs. 7 and 8. The essential part of the apparatus consists of a miniature slip-ring motor. The stator and rotor are both wound for two phases, and in series with these are connected non-inductive resistances $R1$ $R2$ (in the form of incandescent lamps) and choking coils $C1$ $C2$; The connections to the rotor being made by means of three slip-rings marked SR .

In Fig. 7, the windings $A1$ and $B1$ produce a rotating field, the speed of which depends upon the frequency of the busbar supply; and windings, $A2$ and $B2$ also set up a rotating field, whose speed corresponds to the frequency of the incoming alternator.

The device is arranged so that these two fields, indicated by $N1$ $S1$ and $N2$ $S2$ respectively in Fig. 8, shall rotate in the same direction; and it will be evident that owing to magnetic attraction between $N1$ $S2$ and $N2$ $S1$, the rotor field $N2$ $S2$ will always try to follow the stator field.

If the two fields are rotating at the same speed, that is, if the frequency of the incoming machines is the same as that of the busbars, the rotor will remain



**FIG. 8
Fields Establish
Speed**

The rotor circuit drives the indicator needle by the force tending to hold the magnetic fields together.

stationary. But suppose the two frequencies are not the same, and that $N1$ $S1$ is rotating at, say, 1,500 r.p.m., and $N2$ $S2$ at 1,400 r.p.m., when the rotor is at a standstill; then, in order that $N2$ $S2$ may still keep pace with $N1$ $S1$, the rotor must turn in the same direction, namely, counter clockwise in Fig. 8, at the rate of 100 r.p.m. The pointer which is attached to the rotor would thus travel around the dial in Fig. 6, at 100 r.p.m. in the direction marked "Slow." On the other hand, suppose $N2$ $S2$ is rotating at 1,600 r.p.m. when the rotor is held stationary due to the incoming alternator running at too high a frequency; then for $N2$ $S2$ still to keep in step with $N1$ $S1$, the rotor will turn backward, or clockwise, at a speed of 100 r.p.m. This would be indicated on the dial by the pointer indicating "Fast."

Now, in addition to equality of frequency, the voltage of the incoming alternator must also be in phase with

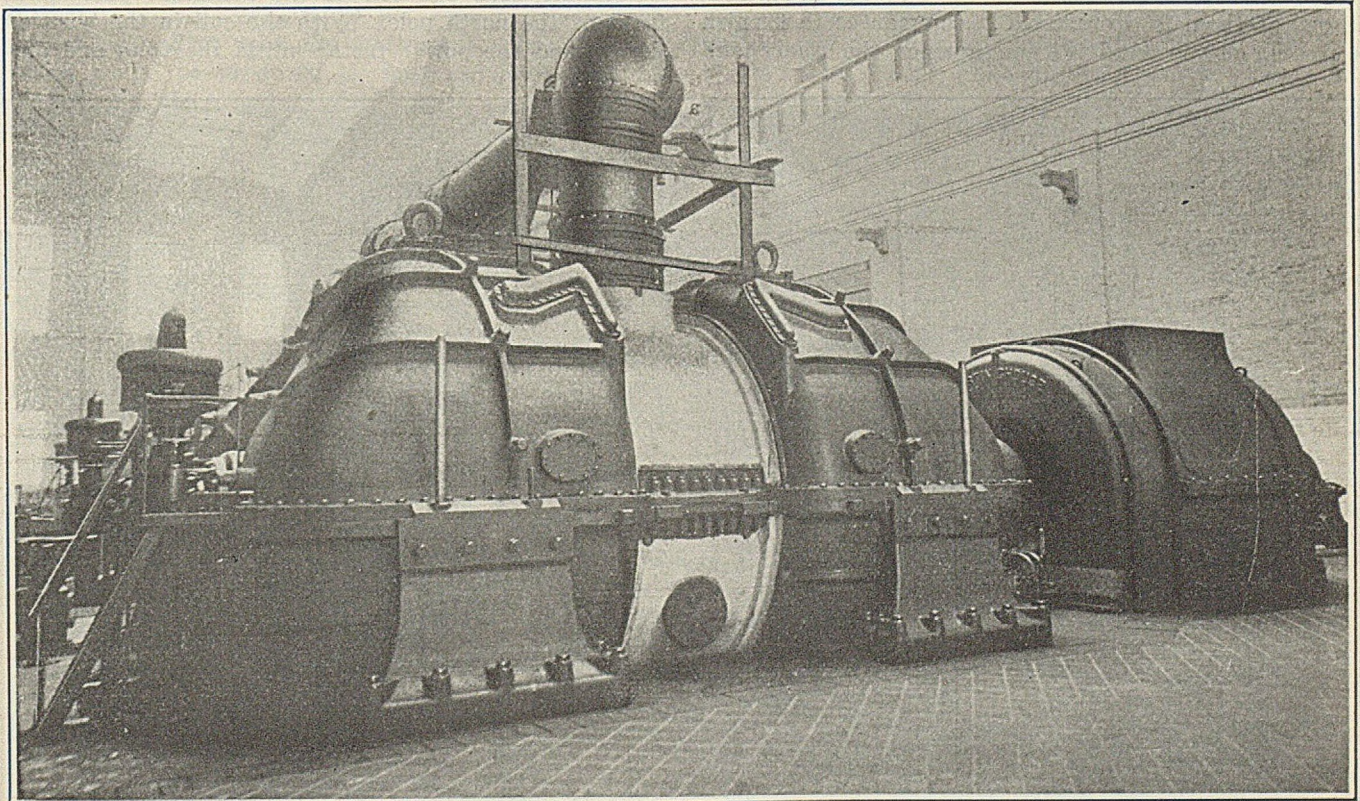


Fig. 9—High Fuel Economies and Reliability Have Reduced Power Generating Costs

Only by using modern type generating units can a power house supply electrical energy at an economic rate today. Recent advances in the design and construction of large turbo-generator units such as this have made them so highly efficient that the savings which they make over old types justify the expense of replacing the old units

that of the busbars. This is indicated by the synchroscope pointer being vertical. If it is in any other position, the voltages are out of phase, the deflection of the pointer from the vertical being an indication of the phase difference.

As regards the actual process of synchronizing, the speed of the alternator is adjusted until the pointer of the synchroscope is rotating very slowly, say at about 2 or 3 r.p.m.

Then, after adjusting the voltage of the alternator to that of the busbars the alternator switch is closed just as the pointer is coming to the vertical position.

For high-voltage circuits, the synchroscope is used in conjunction with a small step-down transformer, the secondary voltage of which is usually arranged for about 100 volts. The transformer used for this purpose is referred to as a potential transformer.

In collieries there is usually a large number of induction motors, and the power factor is low. Where the power factor is less than unity the current lags behind the pressure, and the exciting current has to be larger than with unity power factor. The lagging current tends to weaken the field, and an increase of the exciting current, therefore, is necessary to make up for this weakening.

Following this idea it will be found that if any particular alternator is overexcited, it will furnish a lagging current. In this matter its action is the reverse of that of a synchronous motor, which is, of course, an alternator run as a motor. When a synchronous motor is overexcited, it furnishes a leading current to the service, and on this occasion such a motor is often employed for the purpose of raising the power factor of a particular service.

When two or more alternators are running in parallel, if one of them is overexcited it commences to furnish a lagging current, and as a consequence, the others tend

to furnish a leading current. Induction motors have comparatively low power factors, and, therefore, demand lagging currents, which the alternators have to supply.

If one alternator has a higher excitation than the others, it tends to supply more of the lagging current, and the other machines tend to work at nearer unity power factor, or, in other words, tend to furnish a smaller lagging current, or a leading current. On the other hand, an alternator, if under excited, gives a leading current, which is again the opposite to the action of a synchronous motor.

The question of the action of its excitation upon each particular alternator must not be confused with the action of the speed. It is the speed which practically determines the amount of load which each alternator takes to itself. Any increase of speed of an individual alternator causes it to take up more of the load and the other machines to drop a portion of it. But it is the variation of the exciting current of each alternator which causes the variation in the power factor of each alternator.

When the current is constantly changing in a circuit forming part of an electro-magnetic system, as in an alternating-current generator or motor, a voltage is induced in the circuit, which opposes the change of current. This pressure depends upon the rate of the change of current, its maximum value occurring when the current is passing through its zero value, that is where the maximum rate of change takes place. The minimum value occurs when the current is at its maximum, or when the rate of change is least. This induced voltage, therefore, is in quadrature with the current.

Fig. 11 shows diagrammatically three poles of an alternator, with one coil of the armature passing in front of the north pole. With the coil in the position shown, and the power factor unity, the volts and am-

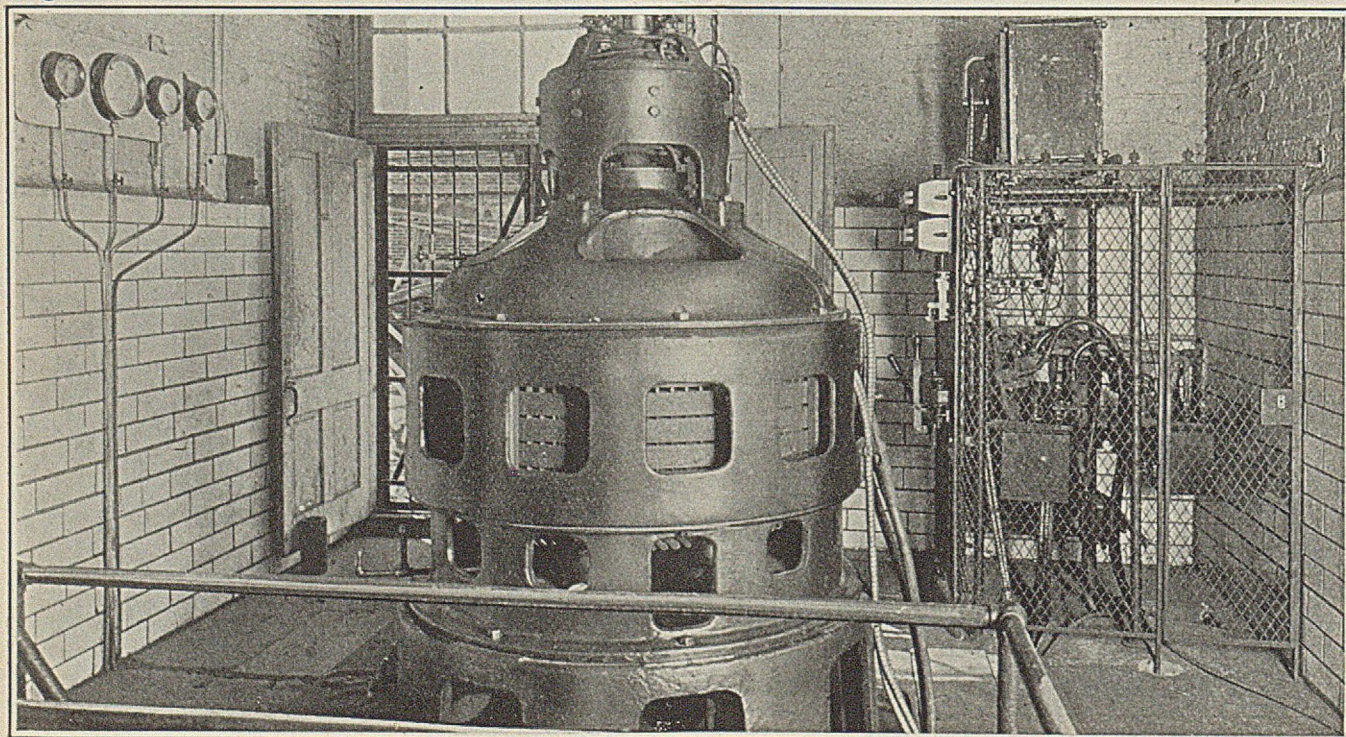


Fig. 10—Many Different Types of Alternators Must Sometimes Be Paralleled Together
Automatic vertical type alternators are still in large demand in many industries. Coal mining companies are turning to the use of more automatic equipment because it usually is more reliable than manually operated types.

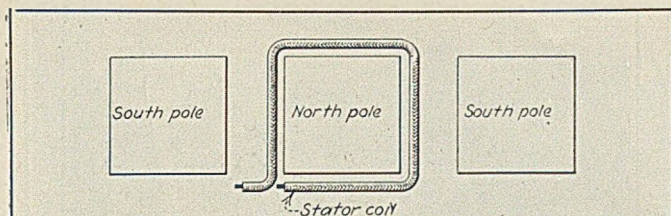


Fig. 11—Unity Power Factor Load Requires a Normal Field

With a unity power factor load, an alternator coil in this position exerts no dampening effect on the field pole, but when the current lags the voltage, the current in the stator coil when it reaches this position demagnetizes part of the field.

peres are passing together through their zero values; but should the generator be working on an inductive load, the current tends to lag behind the voltage. As the coil approaches the position shown in Fig. 11, it will still have a current flowing in it which was induced by the last south pole. The direction of this current will be such that its magnetic effect will be in opposition to that of the north pole; consequently, the actual magnetic effect produced by the north pole will be the resultant of these two magnetic influences. It must be less than when the north pole is not opposed by an armature coil carrying a current. This partly explains why an inductive load weakens the field of the generator, and necessitates a larger exciting current to maintain a voltage constant.

Machines which have the same armature reaction run better in parallel than those differing in that respect, because the latter require constant alteration of their exciting currents. When two alternators which have not the same armature reaction are run in parallel, if their exciting currents do not receive constant attention, the effect upon the machine is similar to that which would be produced by improperly varying the excitation. The armature reaction will vary with every change in the inductive load, because the power factor of the circuit—and, therefore, the strength of the lagging current—will be changing.

The protection of alternators while they are running in parallel, and while being synchronized, is an important detail and deserves some consideration. In colliery work, continuity of supply of power is the most important matter to be considered. It is, therefore, essential that, in case of poor synchronizing, both generators shall not be disconnected from the circuit. This is guarded against by fitting reverse current relays on each generator.

These reverse current relays protect either machine from being motored. The relays are set to operate on a small percentage of the full-load current of each machine. They are made on the same principle as an ordinary wattmeter. In case of a reversal of current, the instrument also reverses, and closes a load circuit in which the machine circuit-breaker is included. It is also essential that time-limit relays should be fixed for each generator. The time limit should depend upon the load. Should an incoming machine be running too fast when switched in, and it snatches all the load, a time limit gives the machines a chance to right themselves before they are cut out.

In the working of a colliery power station, synchronizing is often difficult, owing to the inability of the loaded generators to run absolutely steady; this, again, being due to the fact that the prime movers are

unable to follow the variations of the load without a small time lag. The variations in the speed of the engine are always a little behind the power demand.

I find it better to have the needle of the synchroscope, where such an instrument is employed, a little fast before switching in, instead of the reverse method, as is sometimes advocated. One may wait a few seconds after the machines are in step, but it may happen that the very moment the switch is closed, either a load comes on, or it is removed from the machine already running, and the machines fall out of step before the switch is properly home. If the synchronizer reads a little fast, the incoming machine will probably fall very nicely into step, as there is always a certain pull upon any machine when first taking its load.

The diagrams apparently relate only to single-phase alternators, since there are only two wires from the machines. But as a matter of fact, these arrangements are also applicable to two- and three-phase alternators, as connection has only to be made to one phase in these cases. Three-phase alternators, for instance, are connected to three busbars, and the two busbar wires of the synchronizer are joined up to two of these bars. The other pair of wires from the synchronizer goes to the corresponding phase of the incoming machine.

Woodward Iron Co. Develops Crockard Mine to Produce 5,000 Tons

The plans of the Woodward Iron Co. for the development of the Crockard mine, announcement of which has previously been made in *Coal Age*, call for a shaft operation with an ultimate capacity of 5,000 tons per day. This mine is located fifteen miles northwest of Bessemer and about three miles from Mulga mine, one of the company's largest producers. The shaft will be 509 ft. deep, with a concrete lining, making a single compartment, equipped with double skips. The shaft measures 7 ft. 1 in. by 17 ft. 8½ in. in cross-section. A manway slope 17 ft. wide by 8 ft. high and 1,024 ft. long will be driven on an angle of 30 deg. The mine is said to tap the thickest coal in the Pratt seam and will have a tributary area of 40,000,000 tons of Pratt coal recoverable through the shaft.

The underground layout of the shaft bottom is somewhat unusual, providing for an elliptical yard with a six-entry system radiating therefrom. Coal will be extracted on the room-and-pillar system, blocked out in panels 2,600 ft. long. Coal will be recovered retreating.

Two commodious dormitories and a dining hall are now under construction, and additional buildings, including a hoist and power house, boiler house, machine shop and blacksmith shop will be provided as needed.

The mine will be served by a spur track four and a half miles long, which will connect with the company's coal railroad at Bone Gap, and over this line the output of the mine will be shipped to the company's large washery at Woodward. There it will be converted into coke at the Woodward byproduct plant and used in the company's district furnaces.

The initial dirt was shoveled from the shaft opening by Joseph and Alan Woodward, sons of Chairman A. H. Woodward, of the Woodward Iron Co., being representatives of the fourth generation of Woodwards, who have owned and operated this property continuously. The new mine is named in honor of Frank H. Crockard, president of the company and one of the most able mine executives in the district.

New Kentucky Mine Has Some Cost-Reducing Features

Drop-Bottom Cars and a Single Dump-House for Two Seams Help Justify Investment Made in Face of Trade Depression

New mines opened in the face of the prevailing depression usually are marked by features designed to reduce the cost of coal. The new mine of the Columbus Mining Co., at Allais, Ky., has such features. About two months ago the company, which for some time has operated four other mines in Perry County, Ky., opened No. 5-B directly across the hollow from old No. 5-A.

Each mine has openings in two seams which are separated by an interval of 60 to 70 ft. In both cases rope-and-button conveyors are used to retard the coal in its passage down the mountain side to the common tippie. At the older mine are two dump houses, one equipped with a rotary dump and the other with one of the cross-over type; while at the new mine there is but one dump house for the two seams and this is equipped exclusively for the use of drop-bottom mine cars. This may reduce coal-handling costs.

The rope-and-button conveyor and the common dump house of the new mine are shown in Fig. 1.

The conveyor is 840 ft. long and the average grade is 24 per cent. It is designed for a normal carrying capacity of 1,500 tons in 8 hr. From the illustration it might be construed that the conveyor structure is entirely of steel; but on the contrary the only steel used is that of the several towers or high bents at the bottom end near the tippie. The framing of the rest of the structure is of wood. The roof and sides are covered with galvanized iron.

The upper part of the dump house at No. 5-B is a sheet-iron house covering two through tracks, one of these, the load track, being equipped with a scale and a long pit, the bottom of which forms the conveyor feed hopper. The elevation of the dump house track is somewhat below the center point between the two coal seams, the approach grades being 2 per cent in favor of the loads from the upper seam and $1\frac{1}{2}$ per cent against the loads from the lower seam. Fig. 3 shows the convergence of the two tram roads.

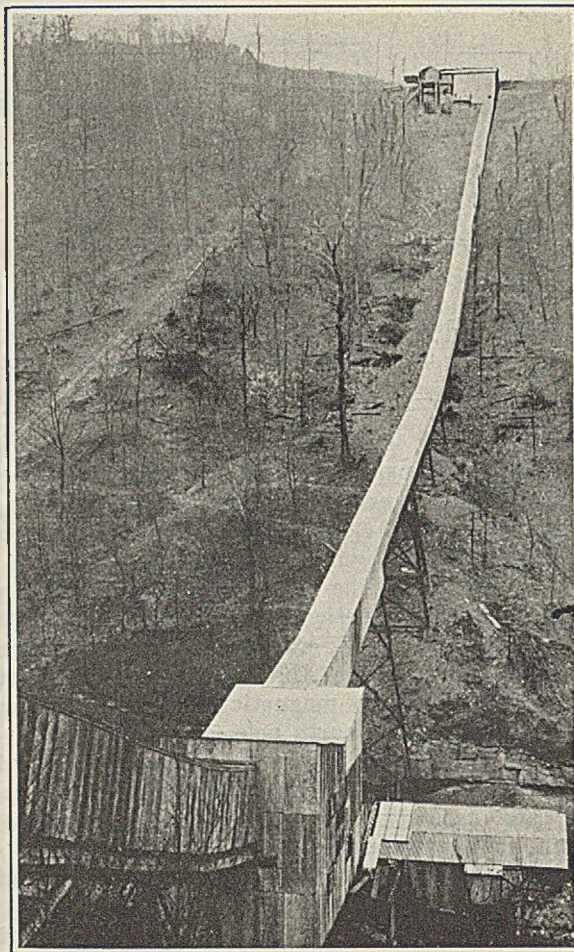


Fig. 1—New Mine Feeds to Old Tippie

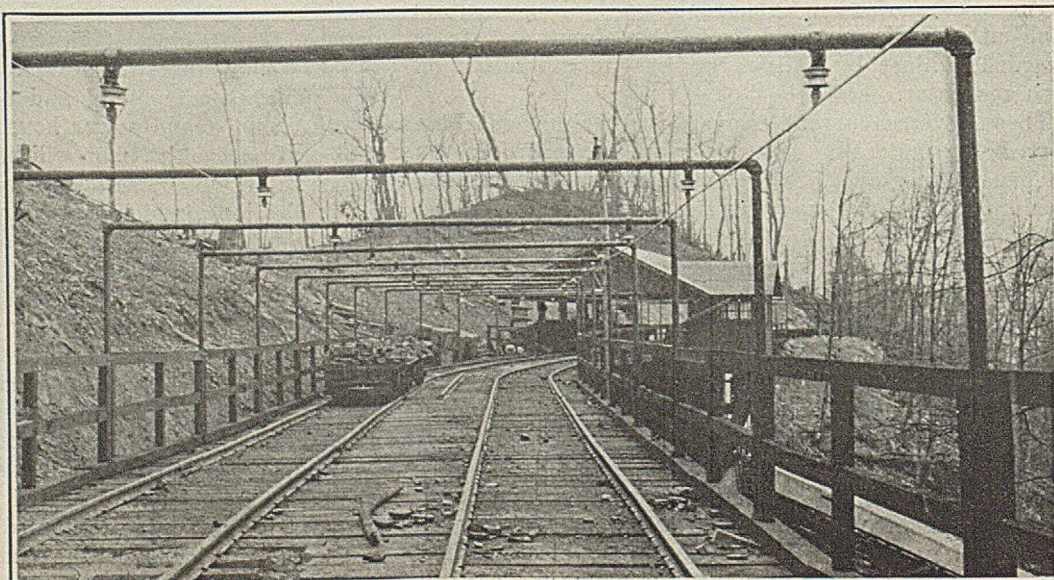
No. 5-B started to produce about two months ago. The 840-ft. rope-and-button conveyor is designed for a normal capacity of 1,500 tons in 8 hr. Excepting the galvanized iron covering and the few steel bents at the bottom, the conveyor structure is of wood. The metal discs or buttons of the conveyor proper are 10 in. in diameter and are spaced 38 in. apart on the wire rope.

The two features of the new mine, the use of drop-bottom cars, and the one common dump house for the two seams, simplifies the installation to a marked degree. The simplicity is the more marked in this case because of the contrast afforded by the old mine directly across the hollow.

At the new mine, precautions are taken to lengthen

FIG. 2
New Mine's
Outlet

Another view of the dump house and its approach. The trolley suspension construction is simple, neat, and of a permanent nature. The creosoted wooden railings are made up of gate-like sections of uniform dimensions set up between, and fastened to, the metal trolley posts.



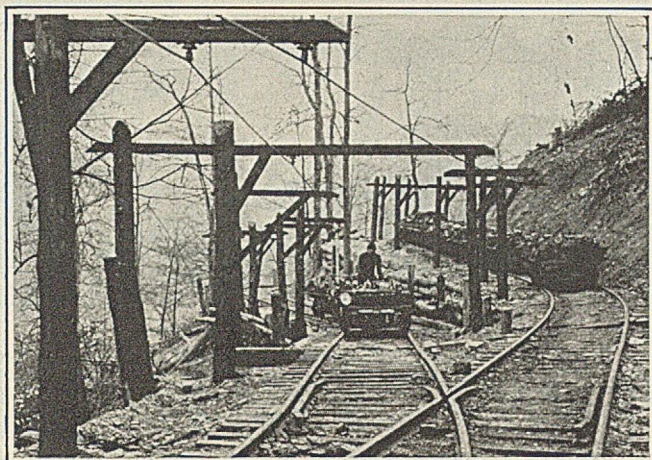


Fig. 3—Where Coal from Two Seams Flows Together

The tippel is at an elevation somewhat below the center point between the two seams, which are separated by an interval of 60 to 70 ft. The tracks, from the two veins converge at a point about 300 ft. from the tippel. The grade from the upper seam is 2 per cent in favor of the loads and that from the lower seam 1½ per cent against the loads.

the life of the wood structures. All of the weather-exposed wood construction of the conveyor and tippel, and all wood used in the tippel approaches and tram road trolley-line supports has been given a thorough brush treatment of creosote preservative. A. F. Barbieux of Hazard, Ky., general superintendent and electrical engineer of the company's Perry County operations, estimates that the creosote coating will lengthen the life of the wood structures from three to four years. Another precaution is the setting of trolley posts in concrete, which, besides increasing the life of the posts, keeps them plumb.

Hutton Blasting Gun Newest Device for Shotfiring

A DEVICE for firing shots in coal to reduce the quantity of explosive used and thus to raise the factor of safety in mines has been patented by Ernest Hutton of Fairmont, W. Va. It is, essentially, a firing barrel equipped with a detonating mechanism at the "breach," a cartridge chamber at the end which is inserted in a shothole in coal and an expanding rubber sleeve to close the hole. Mr. Hutton perfected it to be used on a combination shooting, loading and conveying machine not yet manufactured but he hopes the gun will find a place for itself in coal mining whether the machine does or not. He thinks mining methods now developing may require small and frequent shots rather than the ordinary heavy charges fired at infrequent intervals.

It has been determined that the best results with the gun are obtained by shooting a block of coal not exceeding, in size, a 3½- to 4-ft. cube which is open on three sides—these three sides being the face, an open end and the undercut. This of course is a small amount of coal per shot as compared with the common methods of shooting where two or three sticks of permissible explosive per shot are used, and it is not anticipated that the gun will displace the present methods of shooting where the old methods of mining obtain.

In general appearance the gun is a piece of 2-in. pipe. It consists essentially of the following parts: First, a piece of steel tubing, 6 to 8 ft. long; second, a firing pin at the inner end where the cartridge is attached

which is operated by a hammer inside of the tube, the hammer being tripped by a trigger at the outer end of the gun; third, a rubber sleeve about 18 in. long fitted over the tubing at the proper point to close the outer end of a shothole; fourth, means for expanding this rubber sleeve in the hole, preferably by compressed air, to hold the gun in position and to serve as the tamping.

The cartridge used with the gun is fitted on the inner end so that the firing pin of the gun may come in contact with a combination percussion cap and detonator. The cartridge consists of the following essential parts when ready to be fitted to the gun for



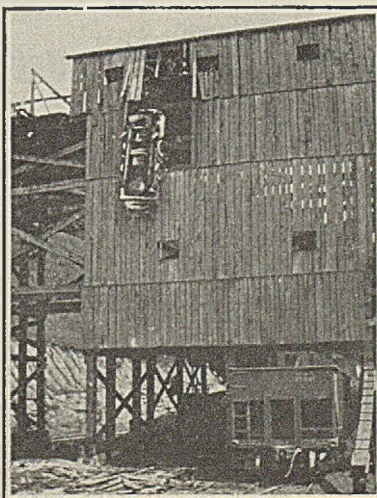
Hutton Blasting Gun

This device is designed to shoot down 4-ft. cubes of coal. It consists of a steel barrel, an expanding rubber sleeve to close the shothole, a firing mechanism and a cartridge (lying in foreground).

firing: First, the shell of the cartridge which is of the proper diameter to receive the ordinary stick of permissible explosive and which has its base arranged to receive the combination percussion cap and detonator; second, the combination percussion cap and detonator which is fitted into the base of the cartridge, and third, the explosive proper, which may be any length from one-third to one full stick of permissible.

It is estimated that the cost of shooting coal with this gun will not, in general, exceed the cost of shooting by means of electric detonators or by the cap and fuse method, and there is a great probability that the cost per ton will be less. This, however, is not the vital consideration so far as the use of the gun is concerned.

If it finds a wide field as a shooting device, its inventor believes, it will be because of its safety of operation due to the small amount of explosive used, the proper "tamping" which it assures, and the improved quality of the coal it may produce.



After the Wreck

This 4-ton locomotive left the track in the tippel of Allock mine of the Carrs Fork Coal Co., at Allock, Ky., in the Hazard field. The motor-man was not injured but had a narrow escape. The locomotive remained suspended by its hitching to a mine car. Instead of rerailing it in the tippel, it was lowered through the hole it had smashed in the siding, then it went back up to the mine level on a supply incline.

New Snubber Increases Yield Of Lump Coal

Shoulder or Notched Kerf Causes Coal to Break Advantageously and to Be Well Rolled Out Onto Mine Floor

KEEN competition in the production of coal demands that the mine product shall contain a large percentage of lump. Furthermore, the operation of the average loading machine is most efficient and can effect real savings only when the coal to be handled is properly shot and rolled out on the mine floor. The individual pieces of coal must not be too small or they cease to be lumps; on the other hand, they must not be too large or they will bind between the machine conveyor or the car and the roof. In short, present conditions demand a better mining of coal than has heretofore

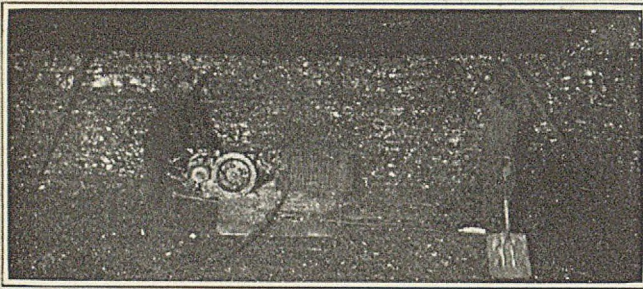


Fig. 1—The New Machine at Work

In every respect the snubber resembles the standard undercutter except that it carries a short secondary cutter bar above the regular one and the base is higher. Most of the component parts of the standard machine are interchangeable with those of the snubber.

been necessary, and at no material increase in cost. Undercutting the face with the new type 114 Goodman snubbing machine accomplishes this result. This machine, which is shown in the accompanying illustrations, has been thoroughly tested in service with highly gratifying results.

A snubbing machine is one capable of cutting a kerf resembling that made with a hand pick by the old-time miner. The old hand-made kerf was triangular in section, as shown in Fig. 2. The general shape of a hand cut kerf, with its adequate dimensions, greatly assisted in breaking down the coal and rolling it well out on the floor. It also yielded a goodly percentage of lump with a minimum expenditure of powder. With hand cutting light shots shattered the coal less and

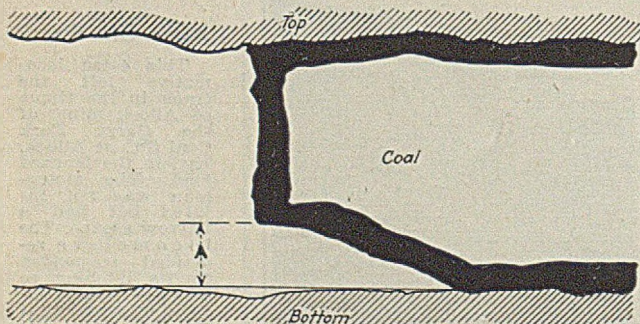


Fig. 2—Kerf Cut with Hand Pick

A kerf of this kind is triangular in cross-section. When the coal is shot down it naturally falls and rolls out upon the mine floor instead of merely settling in a compact mass. Light shooting with a cut of this kind therefore is equally as effective as heavier shots in a face that has been machine undercut in the ordinary manner and more lump is produced.

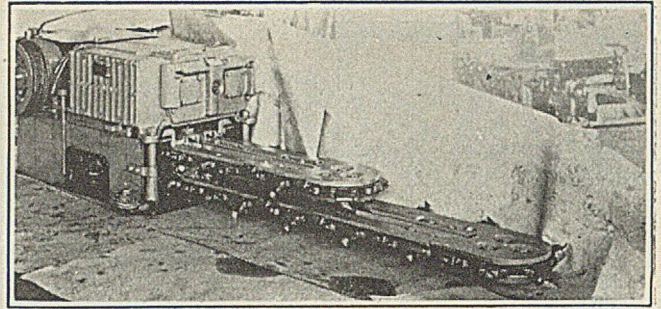


Fig. 3—Front View of the Machine

This well illustrates the comparative lengths of the two cutter bars. While it may be advantageous to vary the length ratios of these bars to suit local conditions the upper one usually is made about half as long as the lower.

produced a larger proportion of lump than usually is obtained with machine mining. Mechanical undercutting, however, has so many important advantages well recognized throughout the coal industry that it has become indispensable.

As shown in Fig. 3 the new snubber is practically a Goodman universal-control shortwall machine equipped with high underframe and two cutter bars carrying similar cutter chains but of unequal length. Necessary reinforcements have been added to withstand the increased load arising from this construction. Wearing parts, however, have not been materially altered and are interchangeable with those of the universal short-

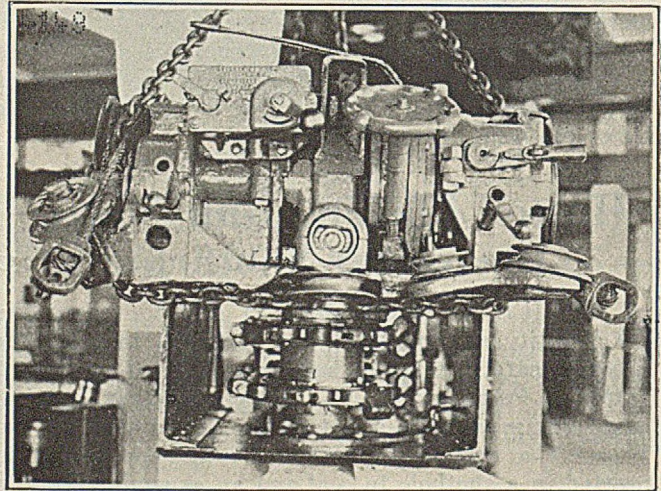


Fig. 4—Rear View of Snubber

The high sub-base is here well illustrated. The greater height as compared to the standard undercutting machine is made necessary by the addition of the upper or secondary cutter bar.

wall machine. For this reason adoption of the snubber does not necessitate any great extension in the list of repair parts that should be kept in stock at any mine where the universal-control shortwall machine is now in use.

This new snubbing machine may be adapted to either direct or alternating current. It has a 50-hp. motor of either the open or government approved inclosed type. Its electrical equipment throughout is interchangeable with that of the universal machine of the same specification. The over-all dimensions also, except for an increase of 7 in. in height, are the same.

As shown in Fig. 3, this machine has an upper bar about half the length of the lower one. The relative lengths of the two bars, however, are subject to variation to suit local conditions. Tests indicate that the irregular shape of the kerf cut by the snubbing ma-

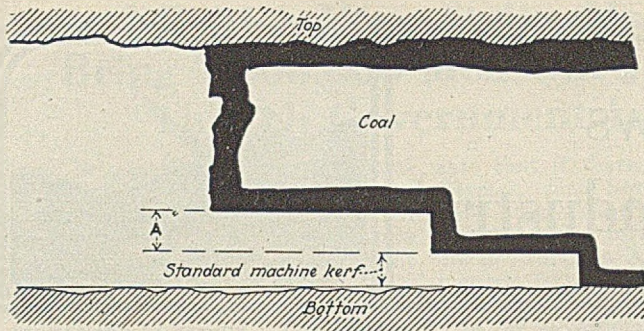


Fig. 5—Kerf Cut by Snubbing Machine

This is practically two standard undercutter kerfs of different depths superimposed one upon the other. In cross-section this kerf approximates that made by the hand pick or by the pneumatic puncher.

chine, as shown in Fig. 5, is more desirable than the plain wedge-shaped undercut made with hand picks. The sharp offset, corner or ledge, formed by the upper chain near the middle point of the kerf length appears to have an excellent effect in rupturing the coal when it strikes the floor, just as a notch cut into any hard substance usually forms the starting point of a break.

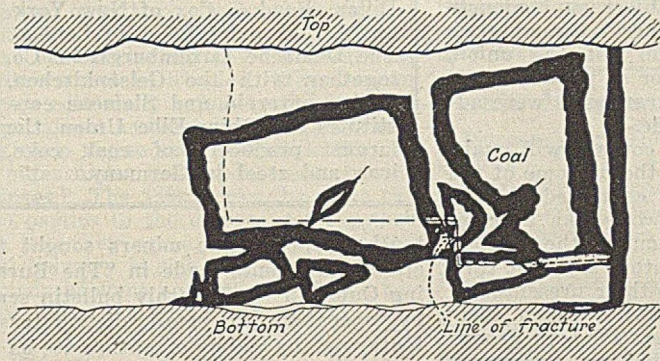


Fig. 6—Action of Kerf Offset in Blasting

When coal undercut by a snubbing machine is shot down the shoulder on its lower face, coming in contact with the floor rock imparts an extra shock to the falling mass. Thus not only is the tumbling action of the hand-cut kerf effected but equal results are obtained with less powder.

It seems that this ledge ruptures the coal and causes it to fall in two sections, as shown in Fig. 6, with the result that a smaller amount of powder is required than is necessary with the plain wedge-shaped undercut.

Thus the use of this machine gives a double powder

saving, assures an ample rolling action and secures a maximum proportion of lump. Of course this is possible only when the shotholes are effectively placed, the explosive loaded in proper quantity and the shots correctly fired.

This new snubbing machine has given an excellent account of itself under actual mining conditions. It is easily adaptable—principally by varying the length of the two cutter bars—to meet the requirements of divergent mining conditions and the varying natures of different coals.

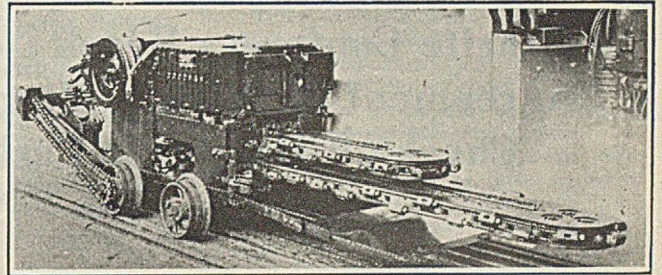


Fig. 7—Ready for a Move

The truck and other equipment provided for transporting the snubbing machine is practically identical with that with which the standard undercutter is equipped. The new machine may thus be moved about loaded and unloaded as easily as the machines intended for making ordinary undercuts.

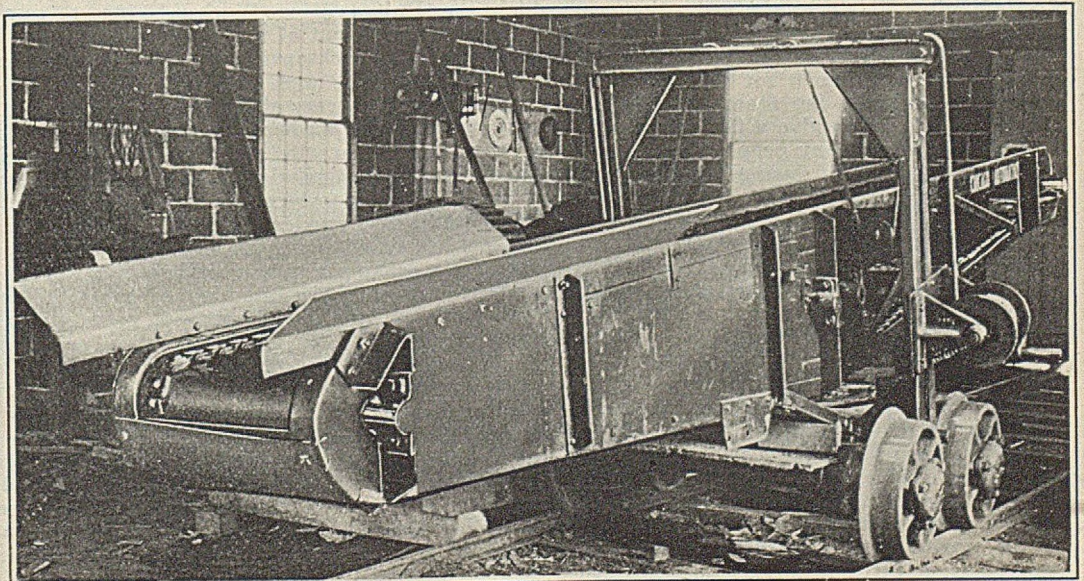
Wagon Loader Helps Solve Entry Problems Underground

When N. H. McClevey, manager of the Pike County Coal Corp., Petersburg, Ind., decided to speed up entry work in developing territory for his long-face Ace loaders, he purchased an ordinary wagon loader, took it off the regular mounting and mounted it on mine car wheels. The upright frame was pivoted on the base plate of the truck so that this frame can be let down to pass under low places in the mine.

The photograph, from which the accompanying illustration was made, was taken in the coal company's shop at Petersburg, just before the loader was taken into the mine. In actual use the machine has proven to be very satisfactory, loading over 60 tons per shift. In reality the machine is not a loader but is only a conveyor which elevates the coal after it has been shoveled by hand on to the lower end. The entire cost of the unit was not over \$700.

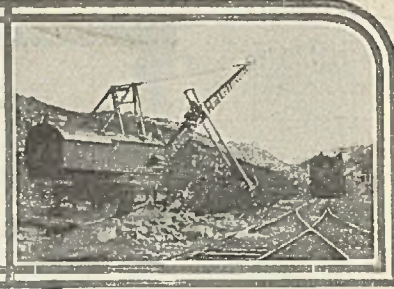
Wagon Loader Goes in Mine

This outdoor machine was taken off its regular mounting and put on a mine car truck, reducing its headroom requirements. Then it went underground and loaded 60 tons of coal a day in entry work.





News Of the Industry



Anthracite Conferees Reach No Agreement on Miners' Wage and Check-off Demands; Parley Runs On

By Sydney A. Hale

Special Contributor, *Coal Age*
New York City

Concentration upon the two major planks in the miners' demands—wage increase and check-off—featured the second week's negotiations of the subcommittee of the anthracite operators and miners at the Hotel Traymore, Atlantic City, N. J., July 21-24. The union representatives fought hard to break down the position of the employers that the competitive situation facing hard coal made it impossible to agree to changes in wage rates which would increase the cost of coal to the domestic consumer. Although spokesmen for the operators have conceded the initiative to the Mine Workers by stating that the latter were, in effect, "the plaintiffs" in the negotiations, the union men were on the defensive, seeking to combat the arguments set forth by S. D. Warriner in his reply to the miners' demands made when the scale committee first convened on July 9.

That reply indicated clearly that the operators have in mind a number of counter-demands to present to the miners. They have, however, consistently refused to disclose these demands until the miners have completed the presentation of all the arguments in favor of the program that was framed by the tri-district convention at Scranton the first of July. This does not mean that the operators on the subcommittee have not vigorously answered the contentions made by the spokesmen for the union on that committee; far from it. But they have refused to give a flat acceptance or rejection to any proposition advanced by the miners during the meetings.

Operators Sidestep Rate Issue

The operators, it is true, have declined to assent to the proposal for a joint petition to the Interstate Commerce Commission to investigate anthracite freight rates. But, aside from the fact that that question is already before the commission, the operators do not feel that it is properly a part of the present negotiations. Their opposition to the check-off also has shown no signs of weakening, so that their position on that question is so well known to the miners that a definite restatement of their attitude would add nothing

to the general understanding of the situation. The greater part of the sessions last week were devoted to a discussion of that subject, euphoniously phrased in the miners' demands as "complete recognition" of the union, and it is not a matter of public knowledge that any new arguments were advanced by either side.

Neither side, of course, will make any prediction as to the outcome of the negotiations. It is estimated that it will take another two weeks to complete the presentation of the miners' demands. The operators say that they think they can make their presentation in less time than it has taken their opponents. Spokesmen for both groups express the hope that an agreement will be reached by the present committee, but when Major W. W. Inglis, chairman of the operators' group, asked the miners to eliminate all danger of a suspension on Sept. 1 by joining with the operators in an agreement to continue work after that date, the miners rejected the offer as "premature."

Discount Bittner Telegrams

Major Inglis' proposal followed the publication of the Van Bittner telegrams to Secretaries Davis and Hoover in which the United Mine Workers' official renewed the threat of a general strike to enforce the Jacksonville agreement. These telegrams were not seriously regarded by observers at Atlantic City, but a statement credited to Mr. Bittner that both anthracite and bituminous workers were included in his threat caused the operators to seek further light. Vice-President Murray of the union disclaimed any intent upon the part of his organization to involve the hard-coal region in the bituminous troubles arising out of the Jacksonville agreement.

In the consideration of the demand for a 10 per cent increase in contract rates and an advance of \$1 per day to day men the subcommittee entered into an extended discussion of competition between anthracite and other fuels. The competition between the steam sizes of anthracite and bituminous coal was outlined. Working time and conditions in the soft-coal regions also were

Americans and British Buy Half of a Stinnes Company

American and British bankers on July 27 bought a half interest in the Deutsche Luxemburgische Co., one of the largest of the group of Stinnes concerns in Germany, for approximately \$4,000,000. This is the first time British and American interests have combined to invest in any German industrial on such a scale as this. The buyers are Dillon, Read & Co., of New York, and J. H. Shroder & Co., of London. The Deutsche Luxemburgische Co. together with the Gelsenkirchen, Bochumerverein and Siemens constitutes the Rhine-Elbe Union, the largest producers of coal, coke, iron and steel in Germany.

touched upon. The miners sought to stress statements made in "The Burning Question" (a monthly bulletin sent by operators to retail distributors) featuring the claims of anthracite as a domestic fuel and the high cost of gas.

Engineers who have looked into the gas question predict growing competition from this source and a material reduction in the cost of gas heating. This prediction is based upon the rapid development of coal-gas manufacture—a development which means the substitution of bituminous coal for anthracite in gas manufacture, as well as a large increase in the tonnage of coke to be marketed through domestic channels—and the work being done in perfecting a combination gas and fuel-oil burner.

In connection with the general discussion on the wage demands there was some argument in the committee on present and past working time in the anthracite regions and the outlook for the future. The miners also sought information as to retrenchment policies evidenced in the closing down of certain collieries and the reasons such action was taken. There also was debate upon the original cost, depletion and present value of the anthracite producing properties. The official communiqués of the week, however, were barren of any suggestion that the miners had offered any economic justification of their demand for higher rates of pay, although Mr. Murray, after the sessions had adjourned over the week-end, promised the press that such an effort would be made.

The subcommittee resumed its sessions on July 28.

General British Mine Strike May Bring 1,200,000 Men Out July 31 Though Government Is Mediating

Great Britain may experience a general coal-mining strike July 31. Four days before the deadline it appeared possible that the coal-mine operators and the men would continue a joint conference which had begun with a short session on July 24, but there were no indications of results. This conference—the first that had taken place since the operators several days earlier had posted notices at the pitheads all over Great Britain that reduced wages and longer working days would be put into effect Aug. 1—was arranged through government mediation. The mediator was the First Lord of the Admiralty, W. C. Bridgeman. Up to the moment he brought representatives of both sides together neither faction had been willing to grant a single point and each seemed obdurate. Whether the conferences, if they continue up to the night of July 31, will soften the position of either remains to be seen.

Many keen observers in England have been declaring that a general coal strike cannot be avoided. The London *Times* editorially refers to the resumed negotiations as "amiable delusions resting upon vague recollections of former disputes under totally different circumstances." The *Times* says the more the two parties to the dispute get together the less they agree. It holds that the coal industry is sick and that a radical remedy of some sort must be found before labor difficulties can be removed. It warns the English people to awake to this fact. The Archbishop of Canterbury on Sunday issued an appeal to the people of England to pray for guidance that some way may be found to prevent the industrial chaos toward which Great Britain is headed. "Never, so far as I can judge," said he, "has the danger been so grave and so urgent as it is today."

Not only are England's 1,200,000 coal miners on the verge of laying down their tools on the order of the Trades Union Congress, which has the miners' case in its hands, but it is broadly hinted that transportation unions will quit in sympathy. Herbert Smith, president of the Miners' Federation,

said that if there was a strike and if German coal began to come in, he "could trust the transport workers" and railwaymen to refuse to handle it. He did not refer to American coal, though inquiry from American shippers was becoming brisk.

In the government's struggle to stave off the mine strike Premier Baldwin agreed to meet the Trades Union Congress special mine committee on the 27th. There was some hope pinned to this meeting. However, the situation seemed to be at deadlock. The nearest thing to negotiation was a proposal made rather indefinitely from the operators' side that wages be adjusted so that allowance be made for the size of a miner's family.

The Miners' Federation has agreed that even if there is a strike, maintenance men shall be left on the job to save the mines from flooding, provided these men receive the present scale of wages no matter how long the strike may last.

Ohio Merger Not Dead Yet

Merger discussion in the eastern Ohio No. 8 field has come to a standstill largely on account of the absence from Ohio of officers of companies whose consolidation has been talked of. Edward Johnson, of the Lorain Coal & Dock Co., Columbus, is in Europe.

The impression got around the coal trade in Cleveland that the merger had been given up or indefinitely postponed, but this is incorrect. The report resulted from the decision on the part of some of the parties to the plan to sell certain properties not needed in the consolidation.

It is expected the project will be taken up in September. Plans call for a \$40,000,000 company controlling nearly all the big operations in a field whose business is now principally railroad fueling. The effect of the Interstate Commerce Commission's refusal to alter the freight rates on lake cargo coal is expected, if anything, to increase the sentiment in favor of a merger.

Ten Dead from Fire and Blast In Tennessee Mine

William J. Snow, superintendent of the Roane Iron Co. coal mines, and nine other men were imprisoned by an explosion in the company's mine at Rockwood, Tenn., early July 23. Two were killed outright by the blast and no hope is held out for the others.

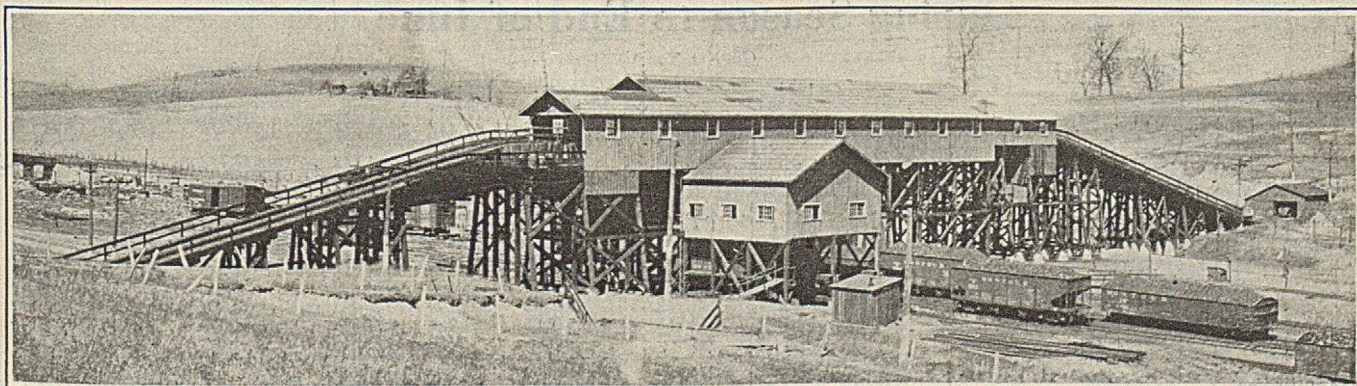
The men had gone into Bryson Dip on the No. 7 entry to combat a fire that broke out some time ago and was walled up in an attempt to extinguish it. The barricade was removed last week in the presence of state and federal mine inspectors, who pronounced conditions satisfactory. At 11 o'clock the old blaze broke out again and a fire-fighting party was organized.

The bodies of Claude Tindell and Raymond Watkins were later brought to the surface. The bodies were horribly mangled and were identified only by their clothing. Another rescue party entered the mine, but hope of finding the other entombed men alive has been abandoned.

The entrance to Bryson's Dip mine of the Roane Iron Co. was sealed July 24 and all efforts to recover the bodies were abandoned until the fire raging in the mine burns itself out. Rescue workers said that the flames may not subside for a month.

Pauley Named President of J. K. Dering Coal Co.

J. B. Pauley, for several years vice-president and operating head of the J. K. Dering Coal Co., of Chicago, has been made president of the company, succeeding the late J. K. Dering. Mr. Pauley also is executor of Mr. Dering's estate. Mr. Pauley has been a rising figure in the coal field of the Middle West ever since he left an important connection with the International Harvester Co. to join Mr. Dering. His dominating strength, keenness, tact and good humor have aided him to become one of the logical leaders among coal operators. He has represented coal operating interests in various capacities, chiefly during negotiations between operators and miners. He is now a director-at-large of the National Coal Association. His company operates both in Indiana and Illinois.



Tipple Destroyed by Lightning and Fire

Montour No. 9, of the Pittsburgh Coal Co., two and a half miles northwest of McDonald, Pa., set afire by lightning July 10, causing a loss of about \$100,000. The tipple was built in 1917 and was one of the largest in the district, serving two shafts. It was equipped with modern machinery.

Railroads Put 83,291 Cars in Service in Six Months

The largest number of freight cars on record was placed in service during the first six months this year by Class 1 railroads of this country, according to a report by the Car Service Division of the American Railway Association.

The total number installed during the first half of this year was 83,291, exceeding by 12,417 the number placed in service during the first six months last year and by 4,051 the number placed in service during the first six months in 1923.

Box cars placed in service during the six months period totaled 43,627, an increase of 12,191 over the number installed during the same period last year and 10,541 in excess of the same period in 1923. Coal cars placed in service this year numbered 29,504, an increase of 7,029 above last year but 2,240 below two years ago.

Freight cars on order on July 1, 1925, totaled only 28,197 compared with 60,315 on July 1, 1924, and 96,855 on July 1, 1923.

Class 1 railroads during the first half of 1925 placed in service 927 steam locomotives compared with 1,071 during the same period last year and 1,998 during the same period in 1923. The same roads on July 1, 1925, had 279 locomotives on order compared with 360 on the same day last year and 1,902 two years ago.

These figures as to cars and locomotives include new, rebuilt and leased equipment.

The average capacity of the freight cars owned by the Class 1 railroads on July 1 this year was 44.56 tons compared with 43.88 tons on the same date last year, or an increase of 1.5 per cent.

A. B. Lewis, state director of the Department of Mines and Minerals of Illinois, has announced the August itinerary of the Illinois Miners' Examining Board as follows: Aug. 3, Collinsville; Aug. 4, Harrisburg; Aug. 5, Herrin; Aug. 6, Marion; Aug. 7, West Frankfort; Aug. 8, Duquoin; Aug. 10, Staunton; Aug. 11, Springfield; Aug. 12, Taylorville; Aug. 13, Danville; Aug. 14, La Salle; and Aug. 15, Peoria.



Keystone View Co.

Lady Rhondda

Addressing the first conference of women in science and commerce at Wembley, England, Lady Rhondda pleaded for fathers to take their daughters into partnership. There should be more names reading "John Brown & Daughters" instead of "John Brown & Sons." Lady Rhondda herself was trained in business by her father, one of the richest coal operators in Wales, and she is a director in many companies.

N. & W. Orders 1,000 Coal Cars

The Norfolk & Western Ry. has ordered 1,000 hopper coal cars from the Ralston Steel Car Co. and is understood to be buying 30 tender engines from Baldwin Locomotive Works. The Richmond, Fredericksburg & Potomac also has ordered two mountain type and two switching engines from the American Locomotive Co.

Plans of C. P. White, chief of the Coal Division, Department of Commerce, and secretary of the Advisory Committee of the Bureau of Mines, call for a meeting the latter part of this week of the Advisory Committee. Not more than four of the seven members are expected at this meeting, which will be preliminary to a meeting of the full committee to be held about ten days later, at which Secretary Hoover, who will return from California the first week of August, will be present.

Industrial Coal Stocks Gain Slightly

Coal stocks on hand in industry July 1 are estimated by the National Association of Purchasing Agents at 39,432,000 tons, sufficient for forty-one days' supply based on the amount consumed daily during June. The June 1 estimate of stocks was 39,317,000 tons.

A survey throughout the United States and Canada shows that 18 per cent of industrial consumers carried about the same amount of coal on hand July 1 as on June 1; 37 per cent had more on hand and 45 per cent had less. Those carrying more coal than on the first of the previous month did not have abnormally large stocks on hand, showing that the increase was due simply to a normal replenishment of used stock.

It is estimated that 28,050,000 tons of coal were used in industry during June. This figure does not include any coal used for heating buildings. This is about one and a half million tons less than May consumption. The difference in daily consumption was only 10,000 tons less for June, however, as May contained 31 days. About 2,000,000 tons less coal was used in June, 1925, than during June, 1924, a decrease of 7 per cent.

U. P. Old Timers Organize

Nearly three hundred employees of the Union Pacific Coal Co. who have been in the service of the company from twenty to forty years have formed an organization known as the "Old Timers." The organization meeting, at Rock Springs, Wyo., late in June, was featured by a musical program, recitations and a banquet with speeches by notables, George B. Pryde, vice-president and general manager of the company, acting as toastmaster.

The climax of the affair came when Eugene McAuliffe, president of the company, expressed his appreciation of the long and faithful service of the men in the new organization and presented gold buttons to twenty-one men who have been in the company's employ forty years or more. Three of the latter are Chinese.

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

(In Net Tons)

Ports	Railroads	1925			1924			1923		
		Cargo	Fuel	Total	Cargo	Fuel	Total	Cargo	Fuel	Total
Toledo.....	Hocking Valley.....	3,003,070	86,759	3,089,829	2,283,927	67,447	2,351,374	1,553,478	45,717	1,599,195
	Big Four.....	517,657	1,651	519,308						
	N. Y. C.-Ohio Central Lines.....	259,298	24,050	283,340	4,505	227	4,732	642,792	19,653	662,445
Sandusky.....	Baltimore & Ohio.....	1,002,569	30,378	1,032,947	468,692	14,834	483,526	723,174	21,577	744,751
	Pennsylvania.....	1,677,960	51,178	1,729,138	637,844	19,219	657,063	835,312	24,321	859,633
Huron.....	Wheeling & Lake Erie.....	272,100	12,629	284,729	262,486	12,726	275,212	504,478	18,071	522,549
Lorain.....	Baltimore & Ohio.....	**135,913	41,239	177,152	454,962	42,758	497,720	968,567	58,641	1,027,208
	Pennsylvania.....	45,587	49,720	95,307	350,273	55,631	405,904	641,445	53,040	694,485
Cleveland.....	Baltimore & Ohio.....	18,138	1,252	19,390	113,021	3,631	116,652	358,487	15,176	373,663
	Pennsylvania.....	111,785	32,133	143,918	151,589	33,491	185,080	224,947	20,860	245,807
Fairport.....	New York Central.....	1,108,673	36,812	1,145,485	326,648	38,807	365,455	1,372,834	79,608	1,452,442
	Pennsylvania.....	151,160	19,945	171,105	321,273	27,629	348,902	640,104	26,908	667,012
Ashtabula.....	Bessemer & Lake Erie.....	371,597	82,636	454,233	557,685	81,011	638,736	958,390	58,164	1,016,554
	Pennsylvania.....	56,047	19,838	75,885	137,330	24,161	161,491	207,098	26,551	233,649
Totals.....		7,731,546	490,218	8,221,764	6,070,235	421,612	6,491,847	9,631,106	468,287	10,099,393
Storage Loading.....		133,017	1,048	134,065	*182,060	4,940	187,000			

* Coal loaded into vessels in December, 1923, after close of navigation and forwarded from Lake Erie ports during 1924.

† Coal loaded into vessels in December, 1924, after close of navigation and forwarded from Lake Erie ports during 1925.

‡ Includes 5,142 tons cargo, 56 tons fuel diverted from Lorain, B. & O.

** Includes 27,863 tons cargo, 1,697 tons fuel dumped at Huron on account of fire at Lorain, June 12, 1925; also 3,631 tons fuel dumped over ore dock at Lorain.

Compiled by Ore & Coal Exchange, Cleveland, Ohio; H. M. Griggs, manager.

Anthracite Shortage Unlikely Even If Miners Strike, Washington View; Soft-Coal Threat Not Taken Seriously

By Paul Wooton

Washington Correspondent of *Coal Age*

Observers of the coal situation with headquarters in Washington are at a loss to understand articles in the daily press intimating that a severe shortage of coal would follow promptly on the heels of an anthracite strike. The opinion of specialists both inside and out of the government service is to the effect that any such a shortage is highly unlikely. While stocks on June 1, when regarded generally, were no more than normal, the probabilities are that they will be built up rapidly before the end of the anthracite agreement. The time is ample to provide a comfortable reserve against a possible shutdown.

The stocks of bituminous coal on June 1, according to the recent report of the U. S. Geological Survey, aggregated 38,000,000 tons. During the time which will have elapsed by Sept. 1 consumers easily could add 2,000,000 tons a week to their stockpiles without straining either the productive capacity of the mines or the carrying capacity of the railroads.

Few of the Washington observers expect the threatened strike in the bituminous mines to materialize. They realize that there are some operators in both the union and non-union camps who would welcome a strike, but the belief is that the great majority of them feel that it would be a great calamity. The sacrifices made to deflate the industry under the Jacksonville agreement would be in vain if a period of high prices should ensue. The thousands of mines now closed would spring back to life. At the end of its debauch the industry would awake with more excess capacity than ever.

Strike Might Save Lost Cause

It also is appreciated that some of the leaders among the mine workers would welcome a strike as the only way out of an impossible situation, which otherwise spells defeat and ruin for their personal fortunes. Here also wiser counsel is likely to prevail, it is believed. The leaders must take into account the heavy losses which their ranks have suffered. Practically 70 per cent of the current output of coal now is being furnished by non-union workers, as compared with 40 per cent two years ago. The situation in northern West Virginia is typical of union loss of ground. A coal miner from that section says:

"None of the coal in northern West Virginia which ordinarily is referred to as union tonnage is produced in strict compliance with the terms of the Jacksonville agreement. Modifications permit that coal to be produced at a cost much lower than would be possible were the agreement followed exactly. It permits the so-called union mines to

compete with non-union operations in that part of the state. They are thirteen in number with a total output of 200 railroad cars per day, which is 12 per cent of northern West Virginia's current production."

To provoke a strike under such conditions obviously would benefit chiefly the non-union operations. The expanded non-union area can produce more than the railroads can haul away. The railroad capacity is 8,000,000 tons a week—enough to keep the country going for a long time. A bituminous strike, all agree, would be the signal for the signing of many new contracts with non-union shippers.

Had it not been for the experience in 1922, when such strong non-union centers as Somerset, Cumberland and Westmoreland were closed, as much to the surprise of the United Mine Workers as to the employers, no one would consider the possibility of non-union men going out this year. The knowledge of the great depression in union fields will be a restraining influence on the non-union miners who might otherwise join in the movement.

Hard-Coal Stocks for 52 Days

Even in the matter of anthracite supplies are ample for some time. The stock report shows fifty-two days' supply on hand. This does not include stocks in the bins of the ultimate consumer. While few householders buy winter fuel before June 1, the surplus from the preceding winter makes a sizable aggregate. It is admitted, however, that rationing of anthracite would have to begin before the winter was over. The experience of 1922 and 1923 furnishes a yardstick. At that time a five months' strike caused a 40-per cent shortage. While stocks probably are no larger now than then, a large number of consumers have been educated to use substitutes. New England, by reason of experience in the previous strike, has learned that coal can be landed in an emergency in considerable amounts at most of its smaller ports. For these reasons it is believed that a longer suspension would be necessary to bring New England to the point that it was at the end of the last strike.

Bituminous coal mines in 1924 used 165,543,000 lb. of all classes of explosives, states W. W. Adams, statistician, Bureau of Mines. This quantity represented 342 lb. of explosives for each thousand tons of coal produced. Of the 342 lb. of explosives, 73 lb. was permissible, 20 lb. was other high explosives, and 249 lb. was black powder. Permissibles, therefore, constituted about 20 per cent of the total quantity of all explosives used in mining bituminous coal. In 1917 permissibles formed only 11 per cent of the total quantity of explosives used.

Pittsburgh Coal Co. to Centralize Four Mines

Pittsburgh, Pa., July 28.—The Pittsburgh Coal Co., it was learned today, has started work on centralization of four of its mines at an approximate cost of \$600,000. The mines are the Warden, located in Douglas Hollow, near Douglas station on the Pittsburgh, McKeesport & Youghiogheny branch of the Pittsburgh & Lake Erie R.R.; Ocean No. 2, Lovedale and Forest Hill mines. The last three, it was said, will be connected by tunnels with the Warden Mine, at which a steel tippel will be constructed. In this way all coal taken from the four mines can be loaded on cars at the mouth of the Warden Mine.

Construction work has been started at the entrance of the Warden mine. The project includes the construction of a concrete wall and the laying of a railroad spur through Douglas Hollow from the mine to the Pittsburgh, McKeesport & Youghiogheny branch.

Of the total amount of money appropriated for the work, it was said, \$200,000 will be for mine cars.

There is no expectation, company officials said, of opening the mines by Nov. 1, as reported in the press.

Lake Cargo Rates to Stand

There will be no change in bituminous lake cargo rates to Lake Erie ports this season.

The Interstate Commerce Commission, in a decision by Commissioner Hall, has dismissed the complaints of the operators associations of Ohio, Pittsburgh and the Fairmont district seeking reductions in transportation charges and a widening in the spread in the differentials between the rates from those fields and the charges in effect from southern West Virginia and Kentucky. In taking this action, the commission reversed the report of its examiners, whose tentative opinion (*Coal Age*, March 12, p. 403) was, on the whole, favorable to the contentions of the complainants.

The decision of the commission reiterates, as in the Boileau case, that cost is not the only factor to be considered. Taking all the elements into account, it finds that the existing basis is neither unreasonable nor unduly prejudicial. It points out that the rates from the Southern fields, which formed the gravamen of the complaints in these proceedings, are made by carriers who have no voice in the making of rates from Ohio and western Pennsylvania, so that a finding of unjust discrimination cannot lie. While the minimum rate powers of the commission were invoked, the federal tribunal declined to exercise them. Such powers, it declares, must be used sparingly.

Commissioners Eastman, Lewis and McManamy dissented to the majority decision. Commissioner McChord filed a brief opinion repeating his conviction, expressed in the Ohio-Michigan Coal cases, that Ohio and Pittsburgh rates are still out of line.

Open-Shop and Union Mines Resume In West Virginia Strike Zone

More mines resumed operation in the West Virginia strike region recently. The Consolidation Coal Co. reopened New England mine, at Watson, near Fairmont. This is one of the older and best known operations of the company and produces thirty cars of coal daily under normal conditions. No difficulty is being encountered in obtaining men for work at the mine, it is reported. With the resumption of work on the 1917 wage scale the New England mine is the most picketed mine in the region at present. Every morning from 300 to 600 pickets, including women and children, are appearing on the picket line, urging miners not to return to work.

The work of cleaning up Riverdale mine of the Consolidation Coal Co. was under way last week and coal will be loaded there soon. The mine has been idle 1½ years.

Rosedale mine No. 2 of the Rosedale Coal Co., at Poland, Pa., resumed work on a non-union basis last week. The tipple of this plant was burned down several weeks ago.

Two Mines Start Union

Davis & Gilbert Coal Co. mines Nos. 1 and 2, in Scott's Run, resumed operation on a union basis July 23, according to officials of the United Mine Workers. Efforts to work there previously resulted in a disagreement and the union withdrew the men. The mines, it is reported, will employ 450 men. A day shift will be worked at mine No. 1 and a night shift at No. 2, according to reports. The company recently completed a modern tipple at its plants.

Miners employed by the Consolidation Coal Co. under the so-called company contract plan held a meeting in Shinnston on Thursday night of last week, when great satisfaction was expressed over the progress of the new labor organization in this field, according to reports. The plan now is to start a district organization among the miners employed by the company, it is announced, and another meeting has been called for this week to perfect the organization. Grievances were presented and disposed of and minor difficulties were settled, according to press reports. The men are well satisfied with the check weighman plan as used by the company union and it is said that this will be one of the more important features of the big union. John B. Wyatt of Shinnston, counsel for the miners working at company contract mines, has been retained for the big union.

Alleging that he was attacked and beaten up by men carrying out the order of J. W. Devision, of Grant Town, general superintendent, and other officials of the New England Fuel & Transportation Co., Daniel Cronin, Jr., has brought suit through his attorneys in the sum of \$25,000, with attachment proceedings, against that concern.

The United Mine Workers continues to hold miners' mass meetings in the field. Meetings were held last week at

Everson, Zeizing, Downs, Kingmont and Monongah. Week-end meetings were arranged for Carolina, Barrackville and Laura Lee.

A blast of dynamite which exploded in the early morning of Wednesday, July 22, caused reports to be circulated that depredations were being committed in the region. The charge was set off by Baltimore & Ohio employees, to dislodge accumulations of tar and debris which clogged up a culvert near Fairmont, causing the water that was dammed to wash out a portion of the roadbed. All traffic was tied up 11 hours and the coal movement to the east on both the M. R. branch to Clarksburg and the main line to Grafton was cut off.

Officials of the United Mine Workers issued a statement last week in which they alleged that the non-union coal operators were padding their production reports for the purpose of weakening the morale of the union miners. The statement set forth also that merchants in northern West Virginia realized that the state of business did not lead them to believe that the coal production had reached such dizzy heights as claimed.

Patrick Buckley, president of local union No. 1,643, of Monongah, the largest local union of the United Mine Workers in the region, issued a statement last week in which he asserted that only twelve members had deserted the ranks to work non-union at the New England mine at Watson, and these men, according to Buckley, had gone back to work on the 1917 wage scale at Scott Mine of the Bethlehem Coal Co. prior to this.

Lull in Panhandle Region

The Panhandle strike has quieted down again. A temporary injunction was granted by Judge J. B. Somerville of the Circuit Court in behalf of the Pittsburgh, Virginia & Kentucky Coal Co. of Wellsburg, Brooke County, against John L. Lewis, Philip Murray, William Roy, Frank Ledvinka, Lee Hall, Joseph Angelio and 50 other members of the United Mine Workers, prohibiting them from picketing, intimidating employees or in any way interfering with the operation of the company's mines. According to last reports the union officials are making preparations to take an appeal from the decision of the court.

Threat of a general strike in the anthracite and bituminous coal fields in a telegram to the government by Van A. Bittner, West Virginia international representative of the United Mine Workers, who was in Atlantic City, attending the anthracite wage conference last week, caused a mild stir. Much of the sting was removed, however, when hard-coal miners expressed the belief that each industry must stand on its own feet and that the hard-coal fields could not be depended upon in the proposed strike plans.

Deputy sheriffs arrested twelve union men at the New England mine of the Consolidation Coal Co. on

Smelter Shifts to Coal

The Phelps Dodge Co. will spend approximately \$100,000 within the next few months in remodeling its furnaces at the Clifton (Ariz.) smelter to use pulverized coal instead of oil, according to a recent statement by J. P. Hodgson, general manager. The company believes that a material saving can be effected by the change. The equipment to be installed will include a coal pulverizer. Coal from the Phelps-Dodge mines at Dawson will be used by the Clifton smelter and will be prepared for use here exactly as it comes from the mine.

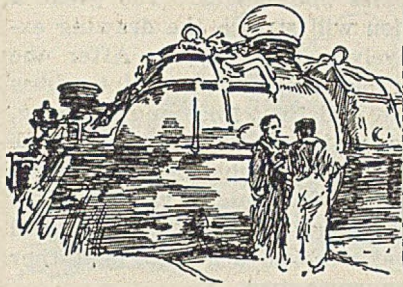
July 24, on charges of being disorderly incident to picketing at the plant. Each man was held under \$200 bond for a hearing before a magistrate in Fairmont.

Operations in Northern West Virginia produced 5,571 cars of coal in the first four days of last week. Union mines had an output of 856 cars. A new daily peak for non-union coal production was reached July 22, when 1,427 cars, were loaded. Production continues heavy on the Monongah Division, B. & O., where a new daily loading level was reached July 22, when 726 cars were produced. Non-union production continues heavy along the Monongahela Ry.

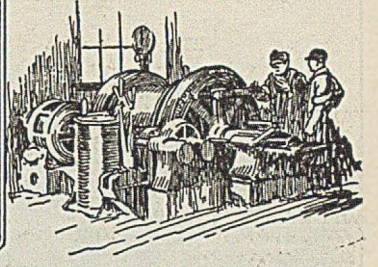
Drop Injunction Proceedings

Injunction proceedings to prevent directors of the Harmon Creek Coal Co. from extending the lien on a \$1,500,000 mortgage, executed in August, 1917, to cover additional properties have been dropped upon the agreement of the majority of the directors that such extension would not be made. A temporary restraining order against H. F. Sinclair, of New York, and J. T. M. Stoneroad, George H. Flinn, R. B. Haverstick and B. H. Jones, of Pittsburgh, had been issued by the Court of Common Pleas at Pittsburgh, Pa., last Friday (July 24) on petition of the Creditors' Committee of the Carnegie Trust Co. The committee charged that the proposal to extend the lien was a conspiracy to deprive creditors of their equity in coal lands sold to the Harmon company by John A. Bell but not completely paid for. A statement issued by Mr. Flinn declared that he and Mr. Sinclair had disposed of their interest in the coal company to Mr. Bell over four years ago and had received mortgage bonds in payment.

The Great Valley Anthracite Mines, Inc., which holds leases on 371 acres of coal land at McCoy, Va., on the Virginian Ry. and facing the New River is offering for sale through the Union Trust Co. of Maryland, Baltimore, Md., half of an authorized issue of \$500,000 general-mortgage 7-per cent sinking-fund gold bonds. This company recently entered the property and now has a 30-deg. slope down 900 ft. in what is said to be "tough coal over 8 ft. thick."



Practical Pointers For Electrical And Mechanical Men



Inexpensive Filter Device Prevents Clogging of Water Mains

Many mining operations and camps experience considerable difficulty in keeping their water mains and pipe lines free from a deposit that eventually will obstruct the water passage and thus prevent a free flow of water. Frequently, this deposit is the result of a certain reaction between calcium or other members of the alkaline earths when they come in contact with the iron in the pipe. Such conditions usually necessitate the digging up of the old line and replacing it with new pipe. This operation is sometimes difficult and is always expensive.

The purpose of this article is to tell the maintenance engineer of a cheap device that has proven efficient. However, the reader must bear in mind that such an arrangement is not suitable for a water softener but is merely intended to prevent the obstruction of water lines.

MATERIAL EASY TO OBTAIN

The material required for such a device or trap, over and above the equipment already employed in the water system, may be listed as follows: One length of 10- or 12-in. iron pipe about 10 ft. in length, a flange coupling fitted to each end of this pipe, two end plates drilled to correspond with the bolt holes in the flange couplings and one hole drilled and tapped in the center of each plate to accommodate the water main; also an ample supply of ordinary coarse slag. The material listed above usually can be found somewhere about any property. Hence the material cost is lowered to a minimum. As for the slag, after it has been polluted with the deposit

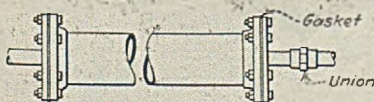


Fig. 1—Chamber for Slag

The water which is passed through this pipe comes in contact with materials which take the impurities out of solution.

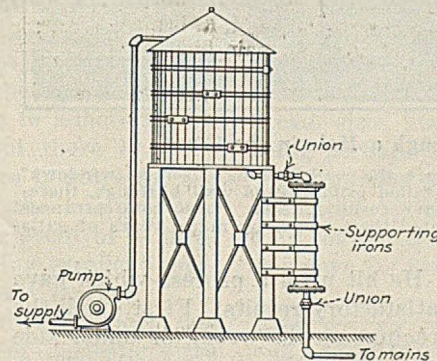


Fig. 2—How the Filter Is Connected Into the Water System

Note the filter is connected to the discharge piping of the tank. Here the water travels slower and provides more time for the separation of the impurities from the water.

it may still be used for roadbeds and many other purposes. Although, I cannot recommend it for any kind of cementing project.

Fig. 1 shows the assembly of the materials listed above. Now let us make a mental picture of this iron pipe or cylinder, as shown in Fig. 1, full of coarse slag which is porous and rough, ready to collect any solid matter that might pass its way, and connected in series with a water supply system, as shown in Fig. 2; then, we have a clear understanding of the principle on which it operates.

CONNECT FILTER IN SERIES

It is preferable that this filtering device be connected in series with the discharge line rather than between the pump and the tank, due to the fact that the water usually does not pass out of the tank with as great pressure and speed as it is forced into the tank. Therefore, the slag is given more time in which to collect the sediment and little of it is likely to pass on into the pipe lines.

It is desirable that the cylinder be supported from the tank in a perpendicular position, thus leaving the end plates free for removal when

changing the slag. The end plates should be connected to the line by means of pipe nipples and unions so that they may be removed easily. However, when the cylinder stands in an upright position it will be necessary to cover the lower opening with a screen of small mesh to prevent the slag from passing on into the outlet pipe.

The removal and renewal of slag in the cylinder can only be determined through careful observation and experience, as it is obvious this requirement will be governed wholly by the amount of slag employed, the volume of water passing through the cylinder and the amount of solid substance that the water may contain.

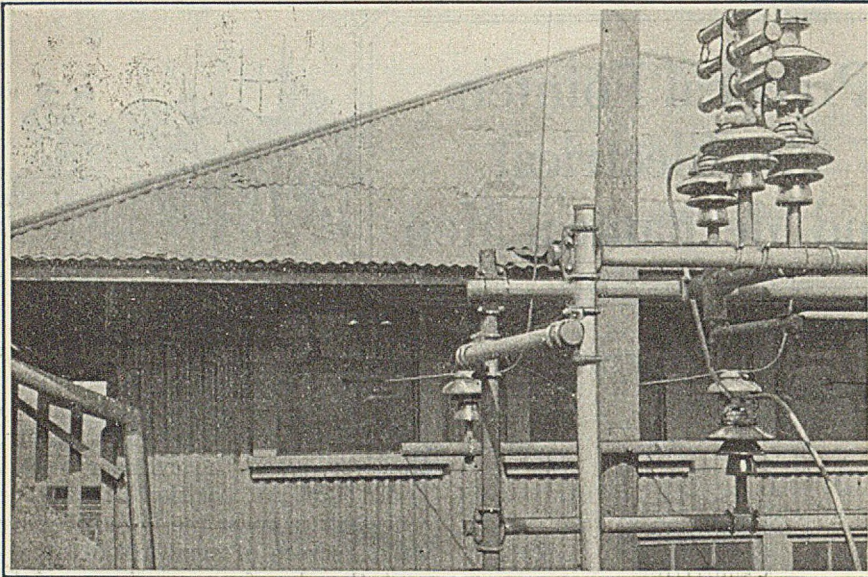
R. L. GRIMES.

Plate Glass Windows Serve As Wall Bushings

The insulation of high voltage wires at the point where they enter a building is more important when the walls are of wood or metal than when they are of brick or stone. The latter are in themselves fairly good insulators and are not combustible. With a wood or metal-covered building lack of proper insulation may be the cause of a short-circuit or a fire or both. An entrance of rather unusual type is used at the Wayland, Ky., substation of the Elkhorn Coal Corporation.

Here the three-phase 40,000-volt line is brought in through panes of glass rather than through the usual porcelain wall bushings. A 26- x 26-in. single-pane, 1/4-in. plate-glass window is provided for each of the three wires. The conductors, which are of solid copper, enter the substation through small holes drilled in the centers of the panes. The three windows are located close to the roof and are protected in a measure from the weather by broad overhanging eaves.

This installation, which no doubt cost less than if porcelain wall bushings had been used, has demonstrated its worth by 12 years of service. It is interesting to note that the leak-



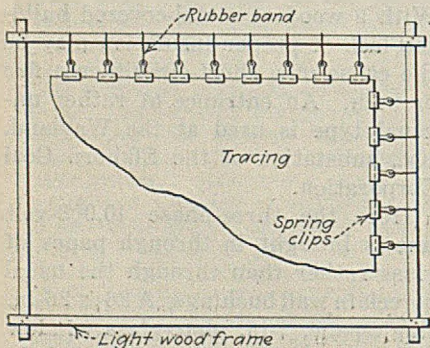
Each Wire Is Carried in Through a Hole in the Glass

Are the windows used as wall bushings or are the wall bushings used as windows? In this case the three upper windows were installed primarily as wall bushings, therefore the light admitted was merely a secondary result. These 40,000-volt entrances which are of 1/4-in. plate glass have demonstrated their worth by many years of satisfactory service.

age surface on the 40,000-volt plate-glass insulators is 13 in., as compared to 19 in. on present-day porcelain wall bushings rated for use on lines operating at 60,000 volts. In these two cases the length of the leakage path, commonly spoken of as the leakage surface, is practically proportional to the line voltage.

Home-Made Frame Restores Water-Soaked Drawings

A way to flatten tracings which have been wrinkled and bulged from contact with water is suggested by H. N. Clendening, West Virginia Coal & Coke Co., Logan, W. Va.



This Frame Is Easily Made

The proper tension around the edges of the drying sheet is maintained by twisted rubber bands to which each clamp is attached.

Several years ago, after a fire he had on his hands a number of tracings which, from severe wetting, resembled bedraggled rags. But the lines, letters and figures on these sheets were still legible, which led him to search for a method to restore the tracings and save the cost of re-inking or perhaps even laying out anew maps from stale notes.

He hit upon a process which gave satisfactory results. First of all the tracings on the wrong or under side are moistened with a sponge. Then each is stretched on a frame, being held by compression spring clips, arranged at close enough intervals to insure a fairly even stretch on all parts of the cloth, in somewhat the manner of squaring up a house curtain on a stretcher frame. Rubber bands may be utilized to keep the cloth taut, these being tied to the clips on one end and to the frame on the other. The scheme is shown in the accompanying illustration.

Care should be taken to provide uniform tension at all points of suspension so as not to distort the drawing; and only sufficient tension should be provided to take out the

wrinkles and bulges. Too great a tension will stretch the drawing excessively out of scale. After the cloth has dried it is well to draw in the indistinct lines and lettering, after which the cloth should be coated with a flexible and transparent water-proofing fluid or varnish. The same general process can be applied to water-soaked drawings on rather heavy paper stock.

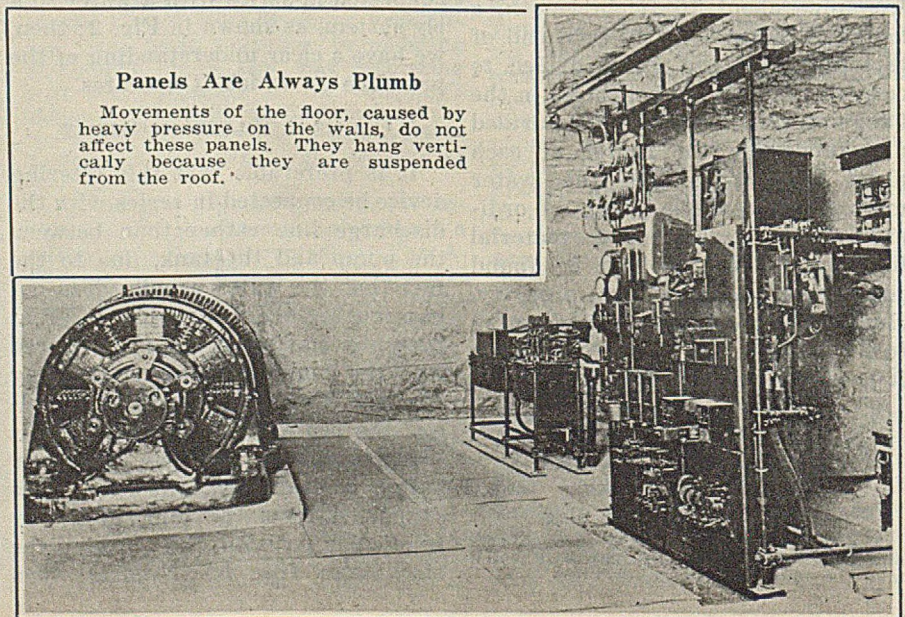
The accuracy of the finished job depends upon the degree of care taken. The lines are bound to be at least slightly distorted and more or less out of scale, but on the whole the drawings will serve their purpose for, after all, what drawing can be scaled accurately to a hair?

Panels Suspended from Mine Roof Hang Vertically

Some coal mine electrical man may get a helpful idea from the accompanying photograph. It shows a substation in a salt mine. The overhead pressure on the pillars around the substation room was so great that the floor tended to bulge. This unusual condition was met by supporting the automatic substation control panels from the roof.

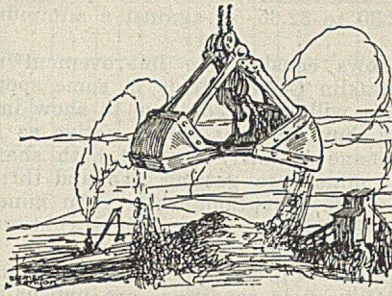
Holes were drilled in the roof of the mine chamber and hangers similar to those used for suspending trolley wires were utilized. By this means the control panels hang in a vertical position. Because the switching equipment provides automatic control it was essential that the panels be plumb at all times.

The motor-generator set was mounted on a massive block of concrete in no way attached to the side walls.

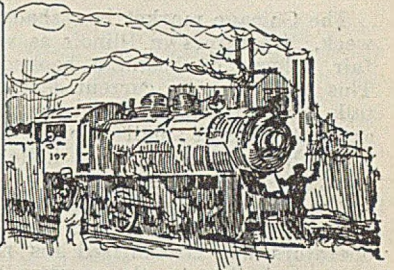


Panels Are Always Plumb

Movements of the floor, caused by heavy pressure on the walls, do not affect these panels. They hang vertically because they are suspended from the roof.



Production And the Market



Sentiment Improves in Soft-Coal Market; Anthracite Trade Gains Steadily

Sentiment in the soft-coal trade continues to improve gradually but steadily. Demand is picking up and inquiries are increasing, and the market is better off for the fact that there is nothing of the spectacular in developments. If producers continue to adhere to the present conservative volume of output there is every reason to believe that better things are in store for the trade. As usual, some elements in the business are speculating on the possibilities in the event of a hard-coal strike, but with the railroads giving excellent service there is little likelihood of a runaway market.

The Midwest market exhibits further strength due partly to increasing retail demand for domestic sizes based on strike talk. Steam coals are quiet, demand being spotty. In Kentucky increasing industrial and domestic demand has brought about a generally improved spirit. Screenings prices in western Kentucky have weakened further, however. The situation at the head of the lakes is disappointing—some inquiries are afloat, but orders are scarce. The docks are heavily stocked, but prices hold firm. Conditions have changed little during the week in Utah, Colorado, Kansas and the Southwest.

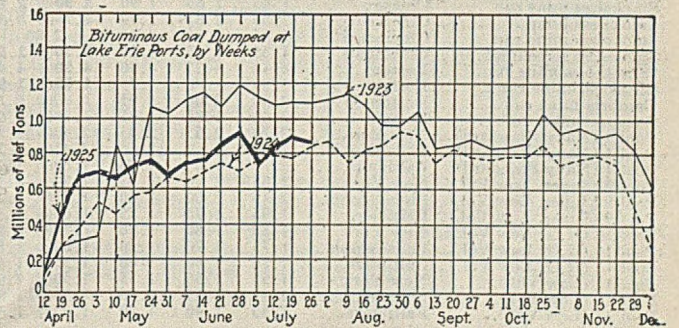
Outwardly the Cincinnati market is calm with virtually no change in prices, but a report that part of a big lake contract went to Kentucky and West Virginia producers at 10c. to 15c. under the spot market served to dampen optimism and the hope of better prices. A slight upward tendency is in evidence in southern and eastern Ohio. Apathy still reigns in the Pittsburgh market. The recent betterment in New England, New York and the other Eastern markets continues.

Hard-Coal Trade Gains Strength

Increasing strength characterizes the anthracite market, stimulated by news of the wage negotiations and

the possibility of a suspension. Better demand has stiffened independent prices, but in no case has the advance been extreme. Stove and egg are most active, pea also is moving well, but chestnut is rather slow. Steam sizes likewise are in better demand, buckwheat being perhaps the least active.

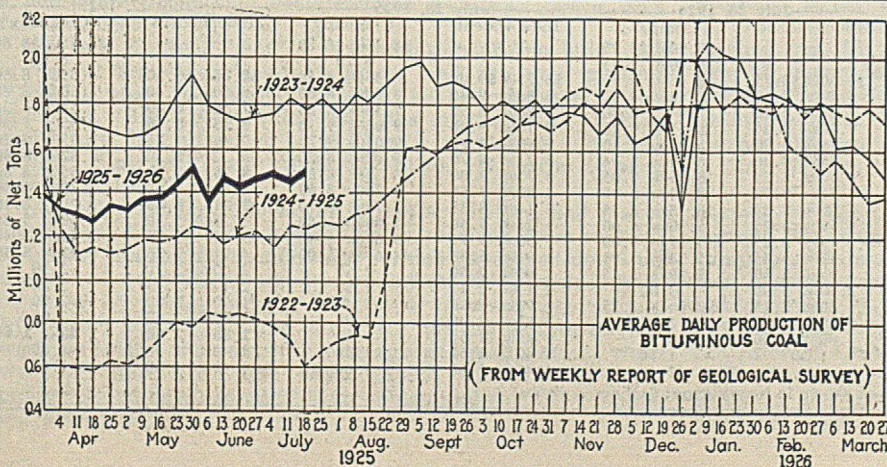
Bituminous coal output in the week ended July 18 is estimated by the Geological Survey at 8,972,000 net tons, compared with 8,640,000 tons in the previous week, as shown by revised figures. Anthracite production in



the week ended July 18 totaled 1,985,000 net tons, compared with 1,854,000 tons in the preceding week.

Coal Age Index of spot prices of bituminous coal made a fractional advance during the past week, standing on July 27 at slightly above 160, the corresponding price being \$1.94.

Dumpings at Lake Erie ports during the week ended July 26, according to the Ore & Coal Exchange, were: Cargo, 798,567 net tons; steamship fuel, 47,139 tons—a total of 845,706 net tons, compared with 881,383 tons in the preceding week. Hampton Roads dumpings in the week ended July 23 totaled 408,064 net tons, compared with 351,037 tons in the previous week.



Estimates of Production

(Net Tons)			
BITUMINOUS			
	1924	1925	
July 4.....	5,913,000	7,351,000	
July 11 (a).....	7,742,000	8,640,000	
July 18 (b).....	7,644,000	8,972,000	
Daily average.....	1,274,000	1,495,000	
Cal. yr. to date.....	251,071,000	256,743,000	
Daily av. to date.....	(c) 1,495,000	1,526,000	
ANTHRACITE			
July 4.....	1,296,000	1,514,000	
July 11.....	1,871,000	1,854,000	
July 18.....	1,840,000	1,985,000	
Cal. yr. to date.....	(c) 50,152,000	49,788,000	
COKE			
July 11 (a).....	106,000	129,000	
July 18 (b).....	103,000	126,000	
Cal. yr. to date.....	(c) 6,307,000	5,606,000	

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

Midwest Market Gains Strength

The Chicago market is a shade stronger than it was last week. Operators in Illinois as well as in Indiana report a fair volume of business booked from their retail trade.

Mail-order competition has not cut into the retail trade to any great extent as yet. One of the progressive Illinois operators has circularized his retail dealers with printed matter similar to the mail-order "ads" and has quoted prices which will enable them to compete with the mail-order firms at their own game.

The steam market is quiet, demand being spotty. Some operators are able to maintain prices on screenings and are refraining from forcing sales.

Anthracite is moving in good volume, companies reporting heavy bookings for early August shipment. Smokeless coals are strong at \$3 for prepared sizes and \$2 for mine-run.

Kentucky block coal eased a little last week, and prices for 4 in. now vary from \$2.30 to \$2.65, as against a minimum of \$2.45 last week.

Domestic business shows considerable improvement in the Williamson and Franklin County fields in some spots and at some mines. This will likely continue to show improvement from now on, but steam is not as active as it has been.

In the Duquoin field there is practically no change since last week. In the Mt. Olive field conditions are unusually quiet, the only activity being a little steam, and the mines are still crushing for their steam contracts.

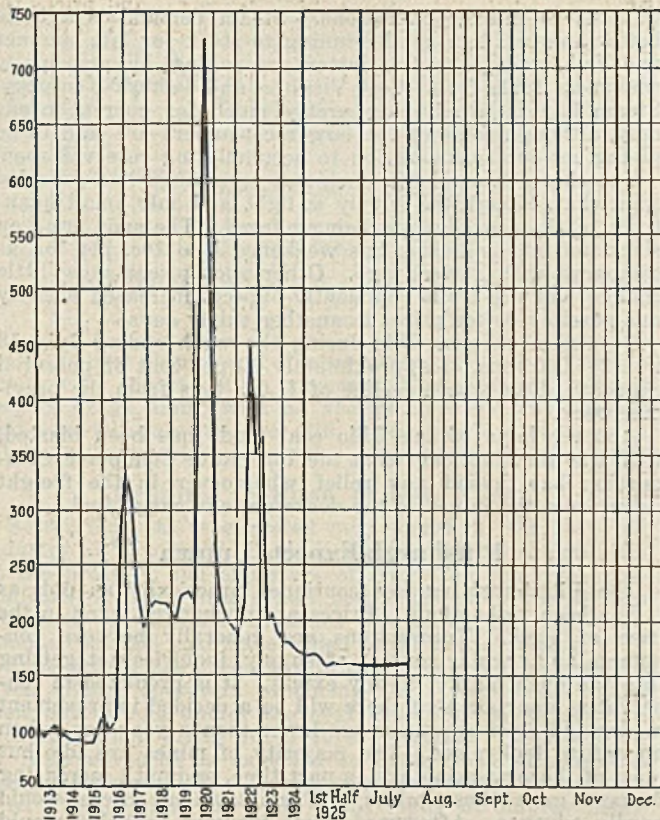
At St. Louis there is a little summer activity in the storage of coal, principally of high-grade Illinois. Anthracite, smokeless and coke continue slow and there is very little demand for Mt. Olive, but some summer apartment

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

Table with columns for Market Quoted, July 28, July 13, July 20, July 27 1925†, Midwest, and South and Southwest. Lists prices for various coal types like Smokeless lump, Pool 1, and High-Volatile Eastern.

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

Table with columns for Market Quoted, Freight Rates, and prices for July 28, 1924, July 20, 1925, and July 27, 1925†. Lists prices for Broken, Egg, Stove, and other anthracite grades.



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

Index	1925		1924	
	July 27	July 20	July 13	July 28
Weighted average price	160	160	160	163
	\$1.94	\$1.93	\$1.93	\$1.98

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

and school Standard coal is being put in. Local wagonload steam is unusually easy and carload is slowing up. Country steam is quiet and country domestic begins to show activity on different grades in different sections. A good tonnage of western Kentucky seems to be moving into the St. Louis territory, while in Illinois, eastern Kentucky seems to be moving fairly well.

Outlook Brighter in Kentucky

The Kentucky situation is gradually improving and the outlook is much better than it has been, more confidence being shown and a generally improved spirit in the trade. Industrial, utility and railroad consumption continue active. Movement of fuel to retailers and domestic consumers also is more active in many sections. Lake movement has been very good, and with \$1 the minimum on screenings, block selling up to \$2.50 and special coals higher, the field on a non-union production basis eastern Kentucky has a very fair business.

Western Kentucky has no accumulation of "no bills" but operators reduced screenings prices and are now getting 80@95c., when they might just as well be getting \$1 a ton or better. Block coal, which was at a maximum of \$1.50 in early July, has advanced to \$1.85 as a maximum and \$1.60 as low. Egg and lump are \$1.50@\$1.60. Mine-run is very low at \$1.10@\$1.25.

Generally speaking, however, prices are better, and movement much better. Reports are being received from eastern Kentucky stating that some mines which have been down on account of poor prices and weak markets have secured new business at better prices and have resumed operations. In western Kentucky some mines are now up to four days a week or better, whereas not long ago not many mines were working more than two days, except where large companies closed down some of their mines and ran the remaining ones full time.

Northwest Finds Orders Scarce

Trade remains slow at Duluth, anthracite being practically at a standstill and bituminous showing signs of life as far as inquiries are concerned, but with a deplorable lack of orders.

Strike threats do not worry anyone in either hard or soft coal. The docks are so full that a stopping of shipments might come as a relief.

Dock men evidently expect to sell all the coal that they bring up as prices are holding firm throughout the lists in both hard and soft. In the recent opening of bids for school coal Youghioghney screenings were bid at \$5.10 delivered, which is \$1.10 above dock; run of pile was offered at \$6.25, anthracite dust at \$4.85 and Pocahontas at about the dock price plus cartage. All the dock companies bid the same and the business will be divided among them. Ford bid 20 to 30c. higher than the docks.

Outside towns are expected to ask bids soon for winter coal.

It is reported that 15,000 tons of bituminous coal a day have been landed during the past month at Two Harbors by the Duluth & Iron Range Ry. It is thought that the railroad will sell this coal to employees, use some on the railroad, and consume the balance at the mines on the iron range.

Last week forty-eight cargoes of coal were brought into the port, of which nine were hard coal, and thirteen were reported on the way from lower lake ports—all bituminous. The anthracite situation is getting serious, with storage space becoming limited. It is reported that two docks had to pay demurrage charges on anthracite shipments last week because unable to handle ships when they arrived.

It is estimated that there are 575,000 tons of hard coal on the docks and 3,700,000 tons of soft coal. This is a large stock for this time of the year.

The coal trade in Milwaukee apparently is reaching the end of the annual period of summer dullness. Dock managers report a stronger and steadier outflow of coal to consumers and are looking forward to better demand between now and the winter of 1925-26. Thus far Milwaukee has received more coal by cargo than during the season of 1924. Receipts up to and including July 23 this year total 1,453,469 tons—372,855 tons of anthracite and 1,080,614 tons of bituminous coal. Last year the receipts to the same date totaled 1,191,556 tons—347,238 tons of anthracite and 844,318 tons of bituminous coal.

Southwest Sticks to Old Groove

Conditions have changed but little in the Southwest since last week. The threshing demand, a small factor at best, is about ended, but dealers still are buying in small quantities. Kansas production is about as it has been for the last two months. Production in the Henryetta (Okla.) field is more or less stable under the 1917 scale and under protection of the national guard. The McAlester (Okla.) district is more free from opposition to the lower scale. In the last two weeks two Paterbaugh mines have been opened in Arkansas under the 1917 scale, one near Greenwood with forty-eight men, and one near Russelville, with twenty.

Colorado reports a slight improvement in the orders for domestic lump and nut coal, but no change in steam coal. Operators expect to increase production the latter part of this month in anticipation of the cut in freight rates to Missouri River territory. Aug. 1 prices on Walsenburg-Canon City coal are: Domestic lump, \$5.25; nut, \$4.50; washed pea, \$3; semi-coking 8-in. lump, \$4.85; nut, \$3.75; pea, \$3; Segundo Salamander coke, \$7.50; Segundo nut, \$6; Crested Butte-Elk Mountain Nos. 1 and 2 (furnace size) anthracite, \$7; Nos. 3 and 5 (base burner size), \$7.50; Horace anthracite Nos. 1 and 2 (furnace size), \$8.75.

Utah dealers report storage orders as coming in faster than they were, but they say the storage business is below normal for the time of year. Furnace lump is in greatest demand for storage, with nut leading for immediate consumption. A heat wave such as Utah has rarely seen before has hurt the trade. One of the largest producers with headquarters in Salt Lake City reports its best business coming from California now. There seems little doubt that the price of coal will be higher in Salt Lake City this fall.

The best industrial buyers now are the metal mines and smelters and the cement plants, and they are taking slack, dust and coke. Railroads seem to be buying a little, but

only for immediate consumption. Here and there an order is being received from the sugar companies for storage purposes. Although the sugar beet acreage this year is well behind that of 1924, present crop estimates place the tonnage as considerably larger than a year ago and the sugar companies will buy more coal than was generally anticipated.

A few coal contracts are being advertised, but there is no big contract business at this time.

Cincinnati Outwardly Calm

Cincinnati was surprised to hear that part of a large contract for the head of the lakes was allotted to Kentucky and West Virginia producers at from 10c. to 15c. under the spot market for lump, egg and 2-in. This tended to put a damper on optimistic talk and to the hopeful price current that had been backtracking the anthracite wage conference.

High-volatile people had a good place to fall back on in stiffer prices on slack and mine-run and a better situation at tide, which allowed them to put coal there instead of forcing the inland market. In spite of seeming opposing forces, the market maintains outward calm. There has been virtually no change in prices.

The smokeless market still seems to be feeling its way. With August at hand standard producers say they are inclined to hold the figures "as they stand" with a definite demand for \$3 on lump and egg. Other companies that have been quoting \$2.75 on egg and \$3 on lump and making the spot on the latter somewhere between, say that they see no cause to change their attitude. As with domestic lump the urge of the buyer is lacking. There is a disposition to "play the market" with the supposition that retailers and country dealers will come with a rush, and then they will have to pay for the "spot" coal that is available.

Several local retailers have advanced the price on smokeless lump to \$8 for August delivery though the general price runs at \$7.50; mine-run is quoted at \$5.75@ \$6; bituminous lump \$6 and slack \$4.25@ \$4.50.

A slightly better feeling in domestic circles in Columbus has developed as a result of better buying of prepared sizes. Retailers have stiffened their prices materially and levels probably will go higher when mine prices are increased. Several advances were announced early in July and other producers, mostly in West Virginia, are preparing to make advances dating from Aug. 1. Preference is being shown for the larger lump coals, ranging from 4 in. upward.

The steam trade is still rather quiet, although some inquiries about contracts have been received. Most purchasers, however, are content to buy on the open market and thus take advantage of any cheap offerings. Railroads are using a considerable tonnage and the same is true of public utilities. Rural dealers are buying some threshing coal, but that is far from important. Municipalities and public institutions are asking for bids and that is helping the situation to a certain extent. But on the whole little life has developed in steam circles. Reserves are still about normal although some of the consumers report reserves lower than usual.

Production in the southern Ohio field has not increased during the past week. Some co-operative mines are being worked and there are also more mines opening under the 1917 wage scale. But the output is less than 25 per cent of capacity with most of the larger mines closed indefinitely.

Lake trade is rather brisk, but Ohio mines are not partaking to any extent. The shipments from Toledo and Sandusky far overshadow those from the other lake ports, showing how West Virginia is gaining on Ohio as far as lake tonnage is concerned.

The eastern Ohio coal trade manifests a slight upward tendency, but it is not as yet reflected in any sustained

impetus to mining operations. Steam demand is a trifle better and retailers are beginning to stock for late summer and fall trade, but the latter are laying by principally smokeless fuels from West Virginia and eastern Kentucky. Steam buyers are buying pretty much for current needs only, although some of the larger consumers are said to be giving serious consideration to accumulating reserves soon.

The sharp demand for slack and screenings has subsided somewhat, though the supply is light and only small quantities of these grades are being offered. The spot price on slack and nut-and-slack has weakened 5 to 10c. per ton as compared with a week ago. Other spot prices show little change, but the trade confidently expects increased activity and possibly better prices in another thirty days.

Output in eastern Ohio during the week ending July 18 was 215,000 tons, or approximately 30 per cent of potential capacity. This was a decline of 11,000 tons from the previous week.

Another hope of the Ohio coal trade has been blasted, with the announcement that the Interstate Commerce Commission has denied any relief whatsoever in the freight rates from the mines to the docks on lake cargo fuel.

Pittsburgh Expects Upturn

The Pittsburgh market continues practically as dull as it has been right along. Prices are unchanged, even in the case of slack. Transactions are generally between consumers and regular sources of supply, inquiries not getting into the open market to any extent. It is predicted in conservative quarters that there will be a decided improvement in demand soon, as stocks are lower than a year ago, when an upturn took place. The majority of mines are idle but most of those working are on part time, and until increasing demand gave these mines full employment prices would hardly advance. Afterward, some increase probably would be requisite to induce idle mines to start.

At Buffalo the coal trade drags along. Now and then a shipper shows a good list of orders, but even he finds trade dropping off again after a little. Several new concerns, mostly organized by members of the trade left flat by retiring agencies, are getting complimentary orders, which make them feel pleasant for the time, but they may find it hard to keep up that sort of trade very long.

The slack market is a little better. Gas slack is a few cents higher, but the demand is not much, if any, larger.

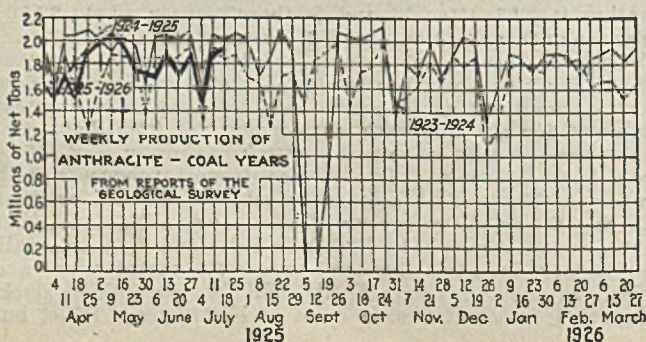
Quotations are \$1.60@ \$1.75 for Fairmont lump, \$1.40@ \$1.50 for mine-run and \$1.25@ \$1.40 for slack; \$2.25@ \$2.50 for Youghiogheny gas lump, \$2@ \$2.25 for Pittsburgh and No. 8 steam lump, and \$1.30@ \$1.50 for slack; \$1.75@ \$2 for Allegheny Valley mine-run. Cambria County smokeless sells for \$6 at the curb for domestic use.

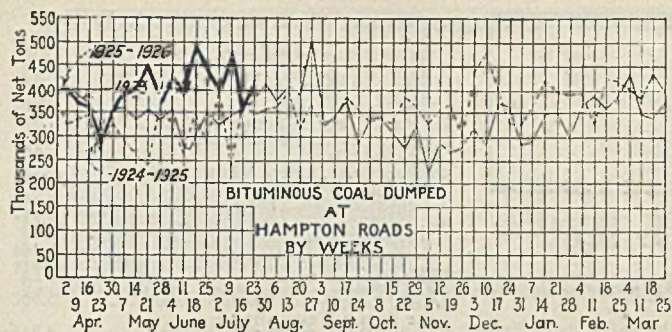
New England in Better Shape

The New England trade feels that production is now under better control and that soft spots are gradually being ironed out. It is clear that much less coal is accumulating at the Hampton Roads piers, and it is a fact that receipts here are being restricted to tonnages well within the ability of the local market to absorb. Quotations are evenly on a firmer basis and the market seems definitely in better shape.

At Hampton Roads there is apparently no chance now of buying high-grade coal at less than \$4.25 per gross ton f.o.b. vessel, and several agencies are holding their output firmly at \$4.35@ \$4.40. Slack is now commanding more than \$4 at the same point, although as yet there is little buying at any such figure. There are hopes of increased demand offshore, but no considerable tonnage has yet materialized. The bulk of the coal dumped continues to be applied on contracts, and there are few spot sales. Undenially there is a better tone to the whole Pocahontas and New River industry, but the situation still calls for careful handling in that the possibility of overproduction is still threatening.

At Mystic Wharf, Boston, there is a disposition to get \$5.40@ \$5.50 on cars both for spot coal and for deliveries over 30 to 60 days, but it is quite likely this will have to be modified if the rehandlers are to attract current business. Sales have been made at \$5.35@ \$5.40, but for small tonnages; in no case have we heard of lots being placed that would exceed 1,000 tons. At Providence the average of the market is perhaps 5c. less than at Boston, while at Portland it is 10@ 15c. more. In none of this territory is there any rush of buyers to take on coal.





Only a few shippers of Pennsylvania coals all-rail are in position to report better business. The situation in that respect drags along with no special improvement. Mines that are in operation are still making a few sales on a minimum basis, with no very favorable prospect for August.

Brighter Outlook at New York

Better business is expected next month in the soft-coal industry at New York. There is considerable more optimism at the prospect and exporters of American coals see possibilities of more orders and better prices in the British situation. In addition inquiries concerning screened bituminous coal and coke have added to the better feeling.

Spot orders are freer but prices remain on last week's level. Some operators producing the better coals report their output sold up for the next couple of weeks and are seeking higher prices for future deliveries. Replenishing of reserve stocks is expected to begin soon although at present consumers do not appear anxious about the matter.

At Philadelphia there are faint signs of improvement, shippers reporting that they are moving a little more coal. Though they are unable to get better prices, the increase in volume is putting them in better financial condition.

Spot prices are somewhat firmer. Shippers have lightened the pressure on consumers to take contracts, being disposed to hold more of their production for the spot market if trouble does develop.

At tide there has been a slight pick-up in the loading of pier coal, although there is not the least sign of permanency to the improvement.

Real optimists in the soft-coal trade are rare at Baltimore, though in the last week an increasing line of inquiry has been developing from former regular customers on the other side of the water and distributors of coal who for the most part use English fuels but are looking for possible trouble. One effect of this situation has been an increase in vessel rates. The threatened strike in the union soft-coal fields of this country, complicated by the possibility of an anthracite strike, has not greatly disturbed the soft coal trade. The price list for both gas and steam coals continues about the same as for the past several weeks. A decided improvement in the export situation has been noted.

Steam coal is moving fairly well at Birmingham for this season, though not a great amount of spot business is being taken on. Buying in the open market is scattering and confined to individual orders for a few cars here and there for current use, but this business in connection with contract requirements is keeping some of the mines on practically full time.

The domestic market is extremely dull, lump and other domestic sizes being very hard to move. An unusual number of domestic contracts have been canceled altogether and deliveries on a large number are being severely restricted. Retailers have ample stocks for some time to come. Spot buying of domestic fuel is practically at a standstill—or rather has never assumed any worth-while proportions.

Quotable prices are without change over a week ago, and although there is scant demand for domestic fuel the better grades are maintaining a stable schedule. Big Seam lump and the like is quoted \$1.75@2.25 per ton mines, with little call. Output for the week of July 11 was 358,000 tons, an increase of 42,000 tons over the same week in 1924.

Hard-Coal Market Improving

Further improvement is noticeable in the anthracite trade at New York. Demand as well as prices for independent product are better and a brisk market is expected. Inquiries from New England were frequent last week and some orders resulted.

The situation, however, is not as lively as dealers would like it. Egg and stove are the most active sizes, with chestnut dragging somewhat but not sufficiently to cause any serious trouble. Some operators are said to have asked as much as \$10 for stove coal when taken alone, but no sales were reported. Pea is moving well and is short with some producers for line trade. The smaller coals are in better condition. One of the large companies advanced its price for barley 10c. to \$1.60 per ton for spot business.

A cargo or two of Welsh anthracite is expected in this harbor soon at a cost said to be around \$10 c.i.f. It is estimated it will cost about 55c. more to put this coal in small boats alongside the piers.

The trade in Philadelphia is holding its own, and a fairly steady run of orders is being received by retailers. As all of them are intent upon keeping stocks up the shippers also are feeling better about the situation. The improvement is entirely due to the strike threat. Distant markets also seem to be awakening to the need of coal. This is particularly true of New England and New York State. Due to this a few independents have added 25c. to 50c. to their prices for shipment to that market.

Steam sizes are somewhat stronger, as the companies are finding a market for more of their tonnage, and the independents are moving theirs with no very deep cuts, although a considerable tonnage is still selling off circular.

The Baltimore public and dealers refuse to get excited over strike talk. Though many cellars are not fully stocked and some have not laid in any stock, nevertheless a fair proportion of coal has already been delivered. In addition dealers' yards have fair stocks on hand, and should there be a strike the first emergency conditions could be cared for. While nothing definite has been decided as yet, retail prices will undoubtedly advance Aug. 1.

Demand for hard coal at Buffalo continues pretty good, though there is no rush, as the public is divided on the question of a strike. In the event of a suspension it is expected that there will be an increase in the output of soft coal, especially smokeless, but that is likely to hurt the coal trade generally.

The price of domestic coke to wholesalers has already stiffened a little and it is said that an advance to consumers will be made on the day the miners go out, no matter what the plan is.

Lake shipments are still light, being for the week 56,800 tons, of which 18,500 tons cleared for Duluth and Superior, 23,200 tons for Milwaukee, 8,700 tons for Green Bay, 3,000 tons for Marinette and 1,500 tons for the Sault. Rates are unchanged.

Connellsville Coke Market Slightly Firmer

The spot market on furnace coke at Connellsville advanced last week, various small lot sales and one 25-car sale having been made at \$2.90 compared with a quotable market since the middle of June of \$2.75@2.85. One rather small-sized contract to the end of the year has been made at a higher price for the period after Oct. 1 than for the period before. Otherwise the contract market has remained dead. There is no likelihood of anything occurring until the merchant pig-iron trade improves and there is no prospect of that in the near future. Few furnaces are running but there are stocks from which shipments are being made, the stocks decreasing but slowly.

Spot foundry coke is a trifle more active than thirty days ago but is still relatively dull. The movement has been restricted for many weeks by a considerable tonnage of 48-hour coke, partly selected, being sold for foundry use, this coke having lately been going at as low as \$3.10 or \$3.15. Standard foundry coke, which means 72-hour selected, remains quotable at \$3.75@4.25, where it has stood since early May. Sales at \$4.25 have been gradually diminishing and now are only occasional.

Car Loadings, Surpluses and Shortages

Week ended	Cars Loaded	
	All Cars	Coal Cars
July 11, 1925	982,809	160,444
Previous week	864,452	134,030
July 12, 1924	909,983	146,179

Date	Surplus Cars		Car Shortage
	All Cars	Coal Cars	
July 14, 1925	309,560	111,449	
July 7, 1925	311,572	112,256	
July 14, 1924	355,720	169,697	

Foreign Market And Export News

Uncertainty of Supply Has No Effect On British Demand or Prices

The coal market has not been materially affected by the past week's events. Some concern is shown by inland consumers, who, solely dependent on home supply, are taking in extra stock. On the export side the only increase in business is on coaling depot account, where bookings are better. The aggregate volume of demand, however, is poor and insufficient to influence prices. All transactions are for this month's loading, both buyers and sellers showing no desire to enter into business for August in view of the uncertainty of supply. The Continental demand continues restricted and despite the unsettled outlook in United States coal fields, there is no extra demand from South America.

At Newcastle there has been no change in the coal position for Northumberland and Durham during the past week except in the raising of quotations by sellers for July fuel. It has not had any effect on buyers one way or another. The possibility of a stoppage in the local coal fields by the end of the month has not sent them hurrying to buy, as is usually the case when such a crisis arises. Meanwhile collieries continue to close, though some are on a day to day notice and others on notice are carrying out negotiations with a view to local settlements.

Output by British collieries in the week ended July 11, a cable to *Coal Age* states, totaled 4,320,000 tons, compared with 4,675,000 tons in the preceding week.

Unrelieved Dullness Pervades French Coal Market

The French coal market is extremely calm and nothing points to any improvement in the near future. The North and Pas-de-Calais collieries maintain price schedules at the July 1 level, there having been no official change in over a year and a half. Everyone knows, however, that in slack periods it is easy to obtain concessions. At the national congress recently held at Carmaux the men's delegates for all the basins adopted a motion that if the employers reduced wages—indeed if the last measures relative to them were not

cancelled—a strike would be decided upon by the whole corporation. But in spite of this threat the collieries appear quite assured, particularly in the North and Pas-de-Calais.

The British situation is being watched in France with much anxiety. A number of importers of British coals are of the opinion that a strike cannot be averted.

From June 1 to 20 the O.R.C.A. received from the Ruhr 351,300 tons of indemnity fuels, including 158,900 tons of coal, 176,300 tons of coke and 16,100 tons of lignite briquets.

During the first eight days of July the O.R.C.A. received from the Ruhr 55,700 tons of coke, a daily average of 6,960 tons. Receipts for June totaled 215,844 tons, an average of 7,000 tons per day.

Strike Upsets Belgian Market

The general situation in the Belgian coal market is worse, owing to the strike in the Charleroi Basin. Conditions are particularly bad in the Borinage, the Center and the Charleroi regions. More men have been dismissed and some more pits may be closed down. The rise of exchange has paralyzed imports, except with regard to France. On Aug. 1 the salary question is to be settled.

Hampton Roads Market Firmer On Expectation of Strike

Little change was apparent last week in the market at Hampton Roads, although there were appearances of a stronger market soon in view of the likelihood of a hard-coal strike. Prices remained practically unchanged for small lots for immediate dumping, although large lots for future dumping were far above the market.

A number of inquiries for foreign coal shipments were reported by shippers, though no large sales were made. Foreign business is expected to boom in case a strike of miners takes place. Supplies on hand were slightly below normal at the piers, but dumpings for the month were normal, if not better.

Export Clearances, Week Ended July 25, 1925

FROM HAMPTON ROADS		Tons
For Newfoundland:		
Nor. Str. Tosto, for Botwoodville.....		1,988
Nor. Str. Thomas Haaland, for Botwoodville.....		4,400
Nor. Str. Certo, for St. Johns.....		3,278
For Italy:		
Ital. Str. Valsalice, for Bagnoli.....		5,147
Ital. Str. Villa Ada, for Genoa.....		7,124
For Nova Scotia:		
Nor. Str. Sigdal, for Halifax.....		1,140
Amer. Sehr. Wellington, for Yarmouth.....		1,510
For Brazil:		
Br. Str. Carspey, for Rio de Janeiro.....		5,982
For French West Indies:		
Nor. Str. Dioto, for Fort de France.....		4,963
For Cuba:		
Dan. Str. Viborg, for Havana.....		2,927
Br. Str. Sheafpear, for Antilla.....		1,740
For Canada:		
Br. Str. North Anglia, for Montreal.....		5,508
Br. Str. Hochelaga, for Sydney.....		7,184
Br. Str. Lingan, for Port Alfred.....		7,109
Nor. Str. Landward, for Montreal.....		4,271
Br. Str. Wabana, for Quebec.....		7,309
Br. Str. Twickenham, for Quebec.....		7,505
Br. Str. Blackheath, for Quebec.....		7,618
Ital. Str. Fidelitis, for Montreal.....		6,025
For France:		
Fr. Str. P. L. M. 12, for Rouen.....		5,475
Fr. Str. P. L. M. 16, for Rouen.....		5,270
For China:		
Br. Str. City of Peking, for Shanghai.....		2,685
For New Brunswick:		
Amer. Str. Suffolk, for St. John.....		7,572
Amer. Sehr. J. O. Webster, for St. Stephen.....		614
For Jamaica:		
Amer. Str. Levisa, for Kingston.....		2,414

FROM BALTIMORE

For Canada:		
Nor. Str. Samanger.....		6,326
For France:		
Ital. Str. San Giuseppe.....		7,083
For Italy:		
Br. Str. Hypatia.....		5,748

FROM PHILADELPHIA

For Cuba:		
Br. Str. Gibraltar, for Havana.....		—
Br. Str. Firpark, for Havana.....		—

Hampton Roads Pier Situation

N. & W. Piers, Lamberts Pt.:		July 16	July 23
Cars on hand.....	1,552	1,731	
Tons on hand.....	99,667	110,850	
Tons dumped for week.....	118,937	103,714	
Tonnage waiting.....	10,000	20,000	
Virginian Piers, Sewalls Pt.:			
Cars on hand.....	1,018	866	
Tons on hand.....	68,950	60,800	
Tons dumped for week.....	59,976	90,205	
Tonnage waiting.....	5,318	1,679	
C. & O. Piers, Newport News:			
Cars on hand.....	2,853	2,690	
Tons on hand.....	142,650	126,720	
Tons dumped for week.....	134,513	170,424	
Tonnage waiting.....	6,360	4,620	

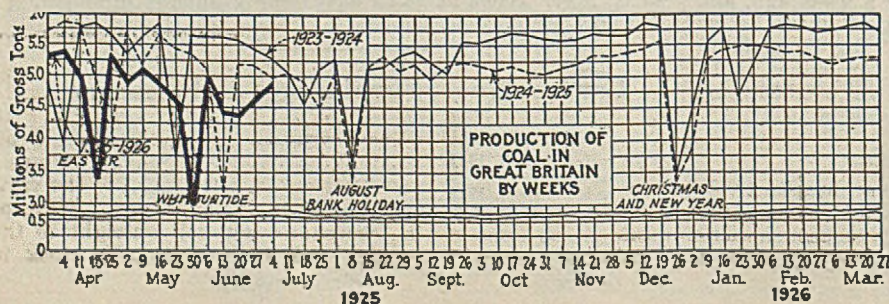
Pier and Bunker Prices, Gross Tons

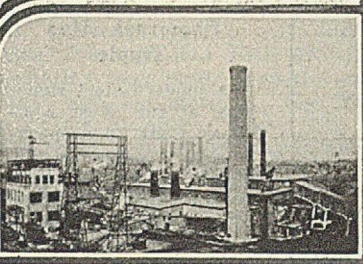
PIERS		July 18	July 25†
Pool 1, New York....	\$5.35@5.60	\$5.30@5.60	
Pool 9, New York....	4.75@5.00	4.75@5.00	
Pool 10, New York....	4.50@4.60	4.50@4.60	
Pool 11, New York....	4.25@4.50	4.25@4.50	
Pool 9, Philadelphia..	4.65@4.90	4.65@4.90	
Pool 10, Philadelphia..	4.35@4.55	4.35@4.55	
Pool 11, Philadelphia..	4.25@4.30	4.25@4.30	
Pool 1, Hamp. Roads..	4.25	4.25	
Pool 2, Hamp. Roads..	4.10	4.10	
Pools 5-6-7, Hamp. Rds.	4.00	4.00	
BUNKERS			
Pool 1, New York....	\$5.60@5.85	\$5.55@5.85	
Pool 9, New York....	5.00@5.25	5.00@5.25	
Pool 10, New York....	4.75@4.85	4.75@4.85	
Pool 11, New York....	4.50@4.75	4.50@4.75	
Pool 9, Philadelphia..	4.80@5.05	4.80@5.05	
Pool 10, Philadelphia..	4.60@4.80	4.60@4.80	
Pool 11, Philadelphia..	4.45@4.65	4.45@4.65	
Pool 1, Hamp. Roads..	4.35	4.35	
Pool 2, Hamp. Roads..	4.20	4.20	
Pools 5-6-7, Hamp. Rds.	4.10	4.10	

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

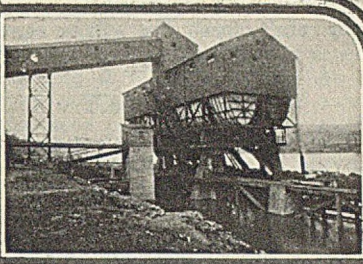
Quotations by Cable to Coal Age		July 18	July 25†
Cardiff:			
Admiralty, large....	25s.6d. @ 26s.	25s.6d.	
Steam smalls.....	23s. @ 26s.	26s.6d. @ 27s.6d.	
Newcastle:			
Best steams.....	17s. @ 19s.	22s.6d.	
Best gas.....	18s.6d. @ 19s.	25s.	
Best bunkers.....	17s. @ 18s.	25s.	

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





News Items From Field and Trade



ARKANSAS

The Greenwood Coal Co. will resume operations under the 1917 rate scale with conditions of the 1924 contract to be enforced wherever possible, according to notices posted in Greenwood July 17. The mine is one of the largest in the state and has been closed for several months. Although the exact date of opening was not given it was unofficially announced that several days would be required for cleaning up the mine, as it has been inactive for a long period. Soon after the Backbone Coal Co., of Excelsior, announced its intention of operating under the 1917 wage scale, the tippie of the mine was burned. Everything now is quiet around the mine and there have been no disturbances. Mine No. 2, which is to be opened, according to the posters, is said to have a normal capacity of from 500 to 750 tons daily and employs 300 men.

COLORADO

The Ajax Coal Mining Co., operating a mine near Louisville, in Boulder County, notified the state Industrial Commission July 20 that an agreement had been reached between the operators and miners for a 20-per cent reduction in wages, effective immediately. This action is believed by officials to be the first step in breaking the apparent deadlock in the northern field. Most of the operators have asked the commission for permission to reduce wages 30 per cent, the men generally objecting to more than a 20-per cent reduction.

When the Moffat tunnel is completed and the proposed extension of the Moffat road made from Craig, Colo., to Provo, Utah, valuable coal beds, covering an area of 450 square miles southwest of Craig, along the Yampa River, will be tapped, according to a report by government engineers to the Department of the Interior. There will be no extensive exploitation of the coal fields until there is a railroad through or near the area, the report indicates. Coal to be found there is bituminous, and the beds occur in the Mesa Verde geologic formation. There are many thick beds of coal in the area mentioned, the report says.

A committee of workers from the Leyden coal mine, in Jefferson County, where a strike is in progress reported to the State Industrial Commission on July 18 that hoist men, pumpers and others remaining on the job to afford safety of the property had refused to assist into the mine men said to have been employed to succeed workmen now

striking. The Industrial Commission is powerless to act in the dispute. It recently permitted the company to cut the wages of miners 20 per cent. The company had asked for a 30 per cent reduction. The miners, it is said, agreed to take the 20 per cent cut, but objected to an alleged attempt on the part of the company, to put in effect a 30 per cent arbitrary reduction. Ninety miners walked out July 13.

Colorado coal mines produced 599,302 tons in June compared with 565,335 tons in the same month a year ago, a decrease of 33,967 tons. The total output in the first six months of the current year was 420,000 tons less than for the same period a year ago. The average number of men employed in and about the mines for June was 11,731. The number of days worked per mine was 82.4.

The Colorado Fuel & Iron Co. reports net earnings of \$1,649,944 for the second quarter of 1925, compared with \$1,037,050 in same period last year, and surplus of \$684,157, compared with surplus of \$58,635 reported last June.

The National Fuel Co., Denver, was placed in the hands of a receiver July 16, following the institution of foreclosure proceedings in the District Court by the International Trust Co. H. Van Mater, president of the company, was named as receiver by District Judge Charles C. Butler, who fixed bond in the sum of \$100,000. The bank alleges that the company is wholly unable to pay its debts and obligations, and that its financial affairs are in an embarrassed condition. In an answer, the fuel company admitted the allegations of the bank, and agreed to the appointment of the receiver.

ILLINOIS

Orders for resumption of work at Mine No. 2 of the Bell & Zoller Coal Co., at Zeigler, have been issued from the main office of the company in Chicago. The opening of this large mine is attributed somewhat to the results of the recent 1,600-mile "Good will tour" made by citizens of Ziegler three weeks ago, starting in St. Louis, passing through five states and terminating in Chicago six days later.

Formal announcement has been made by officials of the United Electric Coal Co., Danville, of the abandonment of its No. 6 mine, located west of that city. The strip mines of the company are all working, however. The mine has been idle for practically two years although it was maintained and kept in condition in the hope that the coal mar-

ket would improve sufficiently to warrant operations. Such hopes, however, have not materialized and as a result J. C. Anderson, general superintendent, announces that the supplies and equipment are being removed.

The Jay Coal Co., mine, at Bethalto, which has been closed down since Dec. 15, 1923, when it failed to meet its payroll, will be sold under a mortgage foreclosure on Aug. 17 at the courthouse in Edwardsville, to the highest bidder. The Bethalto mine is the largest mine in this section of the county. In January, 1924, H. E. Kelsey, cashier of the Bethalto State Bank, which is the mortgagee, was appointed receiver of the mine, to preserve it. Three acres of ground upon which the mine property is located and the mine shaft is sunk will be sold in addition to all the mining property.

INDIANA

A hearing on the petition of the Chicago & Eastern Illinois R.R. to increase the fares on its miners' trains in the Clinton coal field from a monthly commutation rate of \$1.10 to \$2.50 and to suspend train operation when mines are idle was heard last week by the Indiana Public Service Commission. A delegation of miners attended the hearing to protest against the proposed changes. The miners contend that the increase of fares is not warranted because the work of the miners gives the railroad company a heavy coal tonnage which produces large revenues to the company. They also assert that enough miners are employed on idle days to warrant operation of the trains.

The Patoka Coal Co., Petersburg, has closed a contract for 500 acres of stripping coal land just north of Winslow, and surveyors are arranging for a switch from the Southern Ry. to the new property. The company is a pioneer in the stripping coal industry in Indiana. It now is operating a mine at Blackburn and has taken over a large acreage near Hartwell. Machinery will be installed as soon as the switch is completed.

IOWA

Merger of fourteen Iowa coal companies, controlling 20 mines which yield 85 per cent of the coal mined in Polk County, will be completed about Sept. 1, according to a recent report by operators interested. Appraisal of the various properties is under way. Some of the companies will sell outright to the merger and others will take stock in

the consolidated concern. The mines will be under a single management and their retail offices also will be combined.

KENTUCKY

The Great Western Coal Co., Madisonville, has changed its name to the Hawley-McIsaac Coal Co., with C. R. Hawley as president. The company has acquired by purchase and lease about 10,000 acres of additional coal land in Hopkins County, and is about to open another strip pit equipped with a five-track steel tippie and will later open two other strip pits as well as some shaft mines.

L. L. Hazelwood and sons, who have been at work sinking a coal shaft at Graham hill, on the Zion road, east of Henderson, report that at an early hour July 11 they struck a bed of No. 11 coal over 4 ft. deep. The firm is known as the Graham Hill Coal Co. and it mined coal there a year ago, but the bed was shallow and the new shaft was sunk.

Three suspicious looking fires have occurred in western Kentucky recently. The Beaver Dam Coal Co. lost a commissary store building last week and the Huff Coal Co., at McHenry, lost a tippie. On the morning of July 21 fire destroyed the big four-track tippie of the Dawson Daylight Coal Co., near Dawson Springs, causing a loss of about \$25,000. The fire occurred at a time when the big strip operation, which is comparatively new, was loading on an average which would have given over 20,000 tons for the month. In June production was over 17,000 tons. Rebuilding will start at once, on the same foundations, and the new tippie will be of wood, as it would take too long to install steel. The company probably will erect a temporary structure for handling mine-run until the plant can be rebuilt.

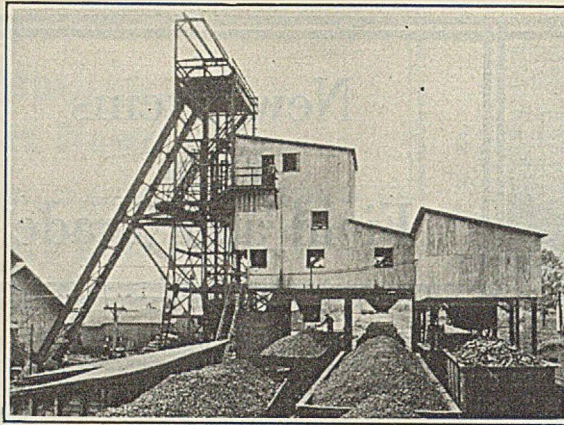
MISSOURI

The Mulkey Coal mine at Macon is being cleaned out preparatory to loading coal this week. About 65 men will start in, and more will be added as the demand increases. The manager, Horace Whetsel, expects the mine to run steadily through the summer and fall with an increased output during the winter. The mines at Bevier, 5 miles west of Macon, are still closed down, but it is hoped that arrangements will be made for the resumption of work there by fall.

Marceline Mine No. 2, at Marceline, is again in operation. A company of miners of the city have leased the property from the owners and are busy preparing everything for the production of all coal which will be needed to supply the market. The lessees will retain the old name, the Marceline Miners' Co-Operative Coal Co. John Stewart will be the foreman. The Sunshine Coal Co. also is working more than thirty men.

OHIO

The Pittsburgh Coal Co. is gradually increasing its operating forces at its three mines in the Pomeroy field where



**Shamrock Mine
Tippie**

A modern steel structure at the West Kentucky Coal Co.'s operation at Providence, Ky. This mine is five years old and has a capacity of 2,000 tons per day. Acquisition of the St. Bernard mines has made the West Kentucky Coal Co. one of the largest producers in the country.

the 1917 wage rate is in force. The last semi-monthly pay roll totaled \$22,000, which was \$4,030 more than the previous pay.

Two mines at Wainwright, six miles south of New Philadelphia, owned by the Midvale Goshen Coal Co., Cleveland, resumed operations July 16 after being idle since June 1. The mines started up with 200 men and are working three or four days a week. Three mines of the Underhill Coal Co., Cleveland, at Mullins, idle fourteen months, also will resume soon. Fifty men will be employed and the number increased to 150 in a year.

F. W. Braggins, president of the Lorain Coal & Dock Co., of Columbus, gives interesting figures on lake tonnage loaded up to the end of June at the various lake ports. Up to July 1 the ports of Huron, Lorain, Cleveland, Fairport, Conneaut, Cleveland and Erie loaded 1,560,000 tons of lake coal, both cargo and bunker, as compared with 6,650,000 tons loaded at Toledo and Sandusky in the same period. The ports of Toledo and Sandusky handle West Virginia and Kentucky coal almost exclusively while the first mentioned ports handle Ohio and Pennsylvania coal. In the same period of 1923 Toledo and Sandusky loaded 3,866,000 tons as compared with 6,233,000 tons loaded at the other ports, and during the same time in 1924 Toledo and Sandusky loaded 3,496,000 as compared with 2,995,000 tons loaded at the other ports.

In the second annual Ohio first-aid contest, held at Zanesville, July 18, the team representing the Maher Collieries Co., of Glencoe, won first place among 29 teams participating. The miners' team from Lore City, which won the contest last year, was completely outclassed and finished fifth. A large crowd was attracted to the meeting, which will be held yearly from now on.

The Western office of the West Virginia Coal & Coke Co., which was located in the Atlas Building, Columbus, previous to the merger, has been consolidated with the Cleveland office. R. D. Jeffers, who was in charge of the Columbus office, has become connected with the Cleveland office. The change took place early in July.

Deputies from the Ohio Mine Department recently removed the seals on the Blue Rock Mine, owned by the Blue Rock Coal Co., of Zanesville, which caught fire about six months ago. It

was found upon inspection that the fire was extinguished and since the company desired to start operations the seals were removed. The work of ventilating the mine is going on and the equipment is being repaired. Active operations will start about Aug. 1.

Several hundred miners were idle for more than a week because of the flooding of the Provident mine of the Clarkson Coal Co., located near St. Clairsville. The flooding resulted from a cloudburst in the neighborhood.

OKLAHOMA

An organization known as the Henryetta Coal Operators Association has been perfected by the operators in the Henryetta field. J. G. Reid, with the Wise-Buchanan Coal Co., the largest producing company in the field, was the choice for president, and J. Henton was named secretary. Practically all operators in the field are members of the new association. With one or two exceptions, the 1917 wage scale is being paid. Records for hoisting coal were said to have been broken here one day last week, when the daily amount exceeded that for any other day in the last two months. Coal loaded in June exceeded the amount loaded in June, 1924.

PENNSYLVANIA

Strike talk in the anthracite field has increased the possibility for prepared sizes of bituminous coal in the central Pennsylvania field, which could furnish several million tons monthly of low-volatile coal for domestic use. During the last few years many tipples have been equipped to make different sizes of prepared coal.

On account of the industrial depression in the Broad Top field, and especially in the vicinity of the mines of the Colonial Iron Co., a large number of men normally employed in the mines are working on the state road under construction between Bedford, Pa., and Cumberland, Md. The men are camping near the scene of construction.

An application of the East Broad Top Railroad & Coal Co. for the construction of a dam in Hill Valley Creek at Mt. Union made to the State Water and Power Resources Board is being held up for investigation and a hearing may be ordered as part of the state's plan for preventing stream pollution. The State Sanitary Water Board is now investigating the matter and because of

the belief that coal-mine discharges would pollute the Juniata River the State Conservation Council and the Central Pennsylvania Fish and Game Association may enter formal protests against the application. The Water and Power Resources Board has been active recently in attempting to prevent pollution of streams which are now clear and to reduce pollution of other streams.

Through the efforts of the Davis Coal & Coke Co., the Boswell mine, in Somerset County, is 100 per cent first aid. The mine rescue car of the Department of Mines has completed instructing the men and Boswell mine has the distinction of being the first mine in Pennsylvania to be certified 100 per cent first aid.

The Wilkes-Barre court is co-operating with mining companies in the anthracite field in an effort to prevent smoking by miners while at work in gaseous mines. Under a state law, smoking is prohibited in such mines and the attempt is being made to enforce the law. For the first offense a fine must be paid to some charitable institution. The offender also is warned that a repeated offense will bring a larger fine as well as a sentence of imprisonment. Foremen have been instructed to exercise special vigilance to prevent smoking and in cases where the regulations are violated repeatedly, they will discharge the offenders. Years ago the clay pipe was the friend and companion of the miner, but the present generation, mine officials say, have almost discarded the pipe in favor of the cigarette.

Miners employed at the Kinloch mine of the Valley Camp Coal Co., at Parnassus, near Pittsburgh, accepted a proposal of the company that they forego receipt of their semi-monthly wages for a period of six weeks, or until such time as the company shall be in a position to pay them. It was stated, however, that in no circumstances shall the agreement provide for payment later than Aug. 28. The payroll of the company's mine, which operates union, is about \$30,000 a month.

Fire, believed to have been of incendiary origin, last week destroyed the chute leading from the pit mouth of the Scott Haven Coal Co. mine at Scott Haven to the Pittsburgh & Lake Erie railroad tracks, compelling the mine to suspend operations for a time until the chute is rebuilt. The damage amounts to several thousand dollars. The chute was discovered on fire in three different

places. The mine is a small one that has been operating non-union.

Only three of the nine railroads that traverse the Pittsburgh district are loading less coal than at this time last year, it is learned from roads' records. These three lines are the Pittsburgh & Lake Erie, Montour and the Union. The Pennsylvania, Baltimore & Ohio, Pittsburgh & West Virginia, Buffalo, Rochester & Pittsburgh, Monongahela and Bessemer & Lake Erie are loading more coal than at the same time last year.

A plan whereby the Chamber of Commerce of Pittsburgh undertook to solve the coal situation in western Pennsylvania, looking to the reopening of the mines, probably was abruptly checked on July 22 when Patrick T. Fagan, president of District No. 5, United Mine Workers, announced that the miners would refuse to join the operators in any plan that would involve a district agreement or any change from the Jacksonville agreement. The Chamber of Commerce proposed in resolutions, and followed this with the appointment of a committee to carry them out, that the operators and miners each form new organizations for ironing out of differences which are keeping the mines closed.

Rinaldo Cappelini, president of District 1 of the United Mine Workers, was re-elected to that office over William J. Brennan by a majority of 18,408, according to the report of the tellers of the biennial convention, July 24.

The State Water and Power Resources Board has undertaken a study of the culm question in Pennsylvania. Dr. George H. Ashley, State Geologist, is in charge of the inquiry and said he will make a complete survey to show the effects of culm on the streams and the reclaimed culm upon the fuel supply.

Joseph J. Walsh, State Secretary of Mines, and David Williams, chief of the bureau of industrial relations of the Department of Labor and Industry, delegated by Governor Pinchot to be state observers at the Atlantic City conference of the anthracite operators and miners, were called to Harrisburg to make a report when the Governor returned from his Western trip. The Governor, who during his trip had been assailing the super-power plans of Herbert Hoover and advocating his own giant power plans, explained that he had not been in touch with the wage scale conference and desired informa-

tion. Richard H. Lansburgh, Secretary of Labor and Industry, attended the meeting with the Governor. While none of the men present would discuss the meeting it is understood that the observers told the Governor that a compromise does not seem possible at this time.

TEXAS

For six months ended June 30, 1925, the Texas Pacific Coal & Oil Co. reports net earnings of \$1,081,380 before depreciation and depletion, compared with \$1,267,858 in first six months of 1924. Net earnings for the second quarter of 1925 were \$588,254 comparing with \$493,126 in the preceding quarter and \$686,184 in the second quarter of 1924. The company closed the first half year with more than \$1,000,000 in cash, while its current obligations consisted entirely of current expenses, there being no bank loans.

UTAH

On July 16 the committee appointed to take charge of the public fund raised last year for the dependents of the victims of the big mine explosion at Castlegate handed in their report. The amount raised by subscription was \$104,925.76. Twelve families left without fathers were helped back to their relatives, more than half of them in foreign countries. The fund was raised at the call of Governor Chas. R. Mabey, now out of office.

An amendment of the city ordinance forbidding the use of oil burners as heating plants in residences of Salt Lake City was recommended to the City Commission on July 17 by the retiring City Engineer, Mr. Cannon, who stated that a more general use of oil burners throughout the city would be desirable on the grounds of economy, cleanliness, convenience and as a help in controlling the smoke nuisance.

Coal mined in Utah in June totaled 280,830 tons, compared with 261,975 tons for same month last year and 251,874 tons in May of this year. In the first half of the present year 2,019,046 tons were produced compared with 1,946,766 tons for the same period of 1924. The heavy production of 531,600 tons of June, 1920, has not been equalled since.

VIRGINIA

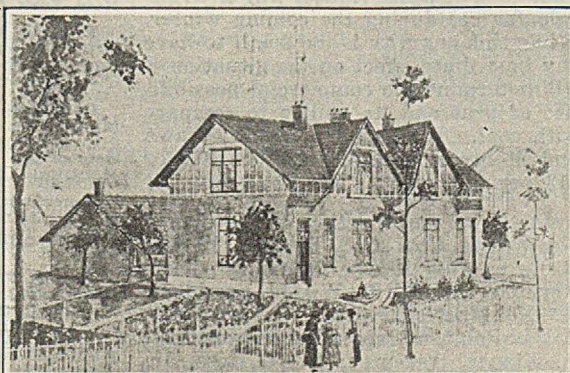
S. B. Hall, sales manager of the Smokeless Fuel Co. at Norfolk, is seriously ill in a Norfolk hospital.

Captain Inslee T. West, for a number of years Norfolk representative of several steamship lines and tugboat companies engaged in the coal trade, has gone to Savannah, Ga., and R. M. Foster is now handling the business.

The Virginia Iron, Coal & Coke Co. reports gross earnings of \$671,634 for the three months ended June 30, 1925, against \$760,242 in the same period last year. After all expenses and reserves for interest and taxes, the company reports a net loss of \$70,264 for the June quarter, against a loss of \$51,199 in the

Workmen's Residences

Design for a mine worker's residence in the environs of Lens, France. The French miner may not have an automobile but he expects to live in a good house.



June quarter last year. For the first six months of 1925 the company reports gross earnings of \$1,510,886, against \$2,180,986 in the first six months of 1924. After similar deductions the company reports net profit of \$147,041 for the half year equal to 84c. a share earned on the common stock after preferred dividend requirements. In the first half of 1924 a net loss of \$45,407 was reported.

WEST VIRGINIA

After an idleness of two years, Delmar Mine No. 1 of the Delmar Coal Co., in Flemington, is being cleaned up preparatory to a resumption of operations. Since the mine was closed down a good deal of rock and slate has fallen on the tracks and it will require about 25 men more than two weeks to clean up the débris. When operations are resumed 200 men will be employed, it is stated. The plant was formerly operated by the Pittsvein Coal Co. Charles Dawson, of Flemington, has been appointed to act as superintendent in charge of operations.

The Island Creek Coal Co., operating in the Logan County field, loaded 525,000 tons of coal in June, exceeding May production by 4,000 tons. Output for the first half of the year reached a total of 2,765,200 tons, compared with 2,050,907 tons in the first six months of 1924 and 1,278,818 tons in the first half of 1923.

These coal corporations were launched in West Virginia in June: The Copen Creek Collieries Co., of Gilmer, with a capital stock of \$25,000; Mercer Coal & Supply Co., Inc., capital, \$25,000; Booth Coal Co. of Clarksburg, capital \$25,000; Lake & Export Coal Co., of Huntington, capital of \$30,000 of stock with par value and 200 shares of no par value; Lecony Smokeless Coal Co. of Huntington and Besoco, capital, \$100,000; Pascal Coal Mining Co., of Morgantown, capital, \$50,000; Lanark Fuel Co. of Beckley, capital, \$100,000; Thornton Coal Co. of Bluefield, capital, \$100,000, with chief works in Kentucky; Pittsburgh-Kanawha Coal Co., organized by J. H. Roelofs, of Pittsburgh, capital, 1,000 shares of no par value.

A new issue of \$850,000 West Virginia-Pittsburgh Coal Co. first closed mortgage 6 per cent sinking fund gold bonds, due July 15, 1930, was announced last week by Paine, Webber & Co., New York. The offering price is 98 and interest, to yield 6.45 per cent. The property of the company is located in Brooke County.

The Holly-Elk Coal Co. has increased its capital stock from \$350,000 to \$500,000 and the following companies have reduced their capital: Forest Coal Co., from \$300,000 to \$20,000; Diamond Coal Co., from \$200,000 to \$10,000; Dale Coal Co., from \$150,000 to \$50,000; Soper-Mitchell Coal Mining Co., from \$150,000 to \$25,000; Elm Grove Mining Co., from \$3,000,000 to \$2,000,000; Kelly's Creek Colliery Co., from \$2,000,000 to \$1,600,000; New Gauley Coal Corporation, from \$10,000,000 to \$5,000,000.

Notices have been sent from the West Virginia Department of Mines to coal companies throughout the state of West Virginia calling attention to the fact that recently enacted changes in the mining laws became effective on July 21. Much importance is attached to an addition to the laws with reference to the ventilation of mines, the new provision reading as follows: "In all mines, accumulations of fine coal dust shall, as far as practicable, be removed from the mine and all dry and dusty sections kept thoroughly watered down at all times, or rock-dusting or other approved means used for allaying dust."

WYOMING

The annual first aid and mine rescue field day of the Union Pacific Coal Co. will be held at Rock Springs first-aid park on Saturday August 8th next. Teams from the several U. P. camps will compete for honors, and the winners of the meet, in addition to being showered with honors locally, will represent the Union Pacific Coal Co. at the national meet in Springfield, Ill., on Sept. 10, 11 and 12, next.

CANADA

On July 21 Premier E. N. Rhodes and Col. Gordon Harrington, Minister of Mines in the new administration of Nova Scotia, held a conference at Sydney, N. S., with President Roy M. Wolvin and Vice-President J. E. McLurg of the British Empire Steel Corporation, and the executive board of District No. 26, U. M. W., with the view of effecting a settlement of the coal strike. After two days' deliberations the conference was adjourned for a day. The parties to the conference agreed to leave the issuing of any statements to Premier Rhodes, who stated that he did not see that any purpose could be served by giving out any report.

Peat Fuels, Ltd., a Montreal company, has taken over the experimental peat plant at Alfred, Ont., where tests were carried on by the Dominion government for several years to ascertain the feasibility of producing peat as a domestic fuel as a substitute for anthracite. The company has undertaken to operate the plant and put the product on the market through the regular commercial channels. About 5,000 tons of peat briquets will be available for use during the coming winter. While this quantity is too small to have any immediate effect on the situation it will determine the commercial possibilities of peat and its ability to compare with coal. The retail price at Ottawa and Montreal probably will be \$11 or \$12 per ton.

At the annual meeting of the Crow's Nest Pass Coal Co., held at Fernie, B. C., on July 10, the following officers were elected: W. R. Wilson, president; A. H. MacNeill, first vice-president; A. H. Robinson, second vice-president; A. Klauer, treasurer; G. H. Hess, Jr., comptroller, and J. S. Irvine, secretary.

Traffic

The brief of the government, filed in answer to the suit brought by the Ford interests against the Interstate Commerce Commission's ruling in the assigned car case, states that it is merely a question of whether the Ford interests will regulate cars in the interests of the automobile industry or in the interest of the public in time of car shortage.

Obituary

Captain Frederick Ebersbach, one of the best known coal operators and capitalists in southeastern Ohio, died at his residence in Pomeroy, Ohio, recently, after an illness of several months. He was 66 years of age and had been a resident of Pomeroy all of his life. Captain Ebersbach, who received the title from his steamboat experience on the Ohio River, owned a number of mines in the Pomeroy Bend field which were sold about five years ago to the Great Lakes Coal Co. Since that time he had been engaged in other enterprises, notably being chairman of the board of the Nell House Co., of Columbus, which has just completed a 12-story modern hotel. He was engaged in years past in towing coal on the Ohio River and was the first to transport coal by water from the Pomeroy field. Funeral services were held July 14 at his late residence.

Col. William T. Clark, manager of the Empire Fuel Co., Buffalo, died July 11, after a long illness, aged 87, leaving one daughter. He was uncle to Eugene C. and William T. Roberts, in the coal business in Buffalo, and Clark T. Roberts, in the coal business in Chicago.

Coming Meetings

Rocky Mountain Coal Mining Institute. Summer meeting, Aug. 26-29 at Price, Utah. Secretary, Benedict Shubart, Denver, Colo.

American Institute of Mining and Metallurgical Engineers. 132d meeting, at Salt Lake City, Utah, Aug. 31 to Sept. 3. Secretary, H. Foster Bain, 29 West 39th St., New York City.

Oklahoma Coal Operators' Association. Annual meeting, Sept. 10 at McAlester, Okla. Secretary, A. C. Casey, McAlester, Okla.

New York State Coal Merchants' Association. Annual convention, Sept. 10-12, at Richfield Springs, N. Y. Executive Secretary, G. W. F. Woodside, Arkay Bldg., Albany, N. Y.

Association of Iron and Steel Electrical Engineers. Annual meeting at Philadelphia, Pa., Sept. 14-19. Secretary, John F. Kelly, Empire Bldg., Pittsburgh, Pa.

National Safety Council. Annual meeting Sept. 28 to Oct. 2, at Cleveland, Ohio. Managing Director, W. H. Cameron, 168 No. Michigan Ave., Chicago, Ill.

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

Electric Power Club. Fall meeting at Briarcliff Manor, N. Y., Oct. 19-22. Secretary, S. N. Clarkson, B. F. Keith Bldg., Cleveland, Ohio.

Canadian Institute of Mining and Metallurgy. Annual western meeting Nov. 3-5, Winnipeg, Manitoba, Can. Secretary, George C. Mackenzie, Drummond Bldg., Montreal, Que., Can.

American Society of Mechanical Engineers. Annual meeting at New York City, Nov. 30-Dec. 3. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

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

Coal Mining Institute of America. Annual meeting, Dec. 9-11, Pittsburgh, Pa. Secretary, H. D. Mason, Jr., P. O. Box 604, Ebensburg, Pa.