

COAL AGE

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Needed More Than Ever

AT THE MEETING of the committee on engineering education of the American Institute of Mining and Metallurgical Engineers it was remarked that too many men are studying electrical and petroleum engineering to the neglect of coal mining. This drift comes just at the time that the new developments in modernization and mechanization in coal mines tend to increase the desirability of taking more engineering graduates into the coal-mining industry. This situation suggests the necessity for closer co-ordination of the mining engineering colleges and coal-mining operating officials. No industry can progress that lacks technically trained men.

Miami in Retrospect

IN FAILING to reach an agreement at Miami the joint conference of operators and miners of the Central Competitive Field justified the prophets of discord. Looking to the future, however, the conference was far from hopeless. Despite the operators' insistence upon "a continuously competitive scale" as the price of the preservation of the four-state compact and the miners' demand that the Jacksonville basis be recognized as the irreducible minimum in wages, there were unmistakable signs that many of the conferees had a broader view of the fundamental problems facing the unionized bituminous districts than the immediate results of the Miami conference would seem to indicate.

Possibly the most concrete expression of this development was the recommendation made by Mr. Lewis on behalf of the United Mine Workers that the joint conference should become a continuing body to function throughout the life of the next agreement. As it stands today, of course, the proposal is little more than a gesture—but a gesture in the right direction. If accepted as a starting point for honest co-operative effort, it would be necessary to mark out the scope of the jurisdiction of this continuing body—particularly in the matter of labor relationships—in terms far more definite than the generalized language of the Lewis draft.

Adequate consideration of the possibilities of the Lewis plan was denied at Miami for the same reason that the Toledo program failed to win a non-partisan examination. Both, unfortunately, were so phrased that acceptance of a specific wage proposal appeared an inescapable condition precedent. Neither side seemed willing to hurdle this initial obstacle and to seek a common ground upon which social justice and brutal economic necessity might be reconciled without doing violence to the rights of either employer or employee. Because of this, conciliation and co-operation never had a chance. That was the tragic side of the conference.

And yet, unless both operators and miners are committed to a policy that promises nothing more hopeful

than self-destruction, it is along the lines of conciliation and co-operation that a solution must be found. Neither side has anything to gain by a trial of strength. Industrial warfare would make them both the easy prey of their non-union competitors and would further disorganize the bituminous coal industry. There is enough real leadership among the men who gathered at Miami to warrant the belief that some program less suicidal than strife is possible.

Of Men and Mechanism

GRADUALLY THE CONTROL of mines has advanced from the ordering of men to the regulation of mechanisms. The strength and capacity of men is so puny and inconsequential; the power of mechanism is so vast, that success in operation more and more depends on the latter and less and less on the former. Our industrial progress is bound up in the engineer. Without him we would still be in the Middle Ages, barely able to obtain a living for the vast populations with which the world is thronged.

It has come so gradually, this revolution, that the public hardly realizes it and still regards the manager of men as the supreme official in industry. Until we begin to see the facts as they are, and not as they used to be, we shall fail to get the best results. That we have not made greater progress in placing the engineer where he belongs is because the latter has not impressed the importance of his services on the public. He still gets an indifferent hearing, due partly to prejudice and partly to his halting and inadequate presentation of his case. The most successful of industries are those where the engineer is most greatly appreciated, where he operates not with a "by your leave" but unhampered. Where he does his work, less men per unit of output are needed, yet output increases demanding the same number of men or more. The scarcity of labor is no less today than in the machine-less age. There is less unemployment now, less indigence than in those days when everything had to be accomplished by the unaided or little-aided efforts of men, when a man's strength, sweat, effort and ingenuity were needed for every operation. And today the engineer is applying the sciences of management and accounting to his duties.

Engineers there are without diplomas, with nothing but experience in the work of engineering to fit them for its practice, but usually such men labor under a disadvantage. They have wrested victory from defeat under unfavorable circumstances and have shown themselves the bigger men for that. But there is much technical knowledge to which they never attain and more often this fight against odds ends only in failure, for only a few men can teach themselves; learning by that method is a slow and painful experience.

In the main, a man today in industry must be judged by his engineering ability, however attained. If he

can handle engineering problems in an engineer's way, he is an engineer and should be placed ahead of those whose idea of industry is merely a place where men are driven or wheedled into energetic action. There is science in all true management and engineering. Without that science, all efforts are vain.

The engineer must recognize this. He must not labor under the obsession that his place in the new order of things must continue as in the past. He must not visualize the inadequacy of his knowledge so much as the greater lack of those who are without his fund of information and experience. Every engineer recognizes how far and how often he fails to reach the goal of his ambitions—the attainment of a clear understanding of physical facts—but this should not cause him to underrate the value of the knowledge he has.

He should learn how to sell his services and how to commend to officials and bankers the value of his plans, projects, estimates and records. Most engineers fail to realize they have a selling job. They expect recognition to come without any definite declaration and demonstration of performance. They begrudge the time spent in marshalling such facts. They want to get back to the physical problems and deplore time spent in conference and parleying. Of all the intangible things for sale, service is the most incorporeal and needs the greatest adeptness in marketing. Almost any one can sell a horse or a plow, but few can sell their experience, training, ability and resourcefulness. The engineer is beginning to realize this keenly. He is wondering how he can dress the window in which he displays his talents without losing dignity in the process.

“Hopping” a Freight

PHYSICAL and mental discomforts are not the only disadvantages of “hopping” a freight. Compared to “a seat on the cushions,” it means a lonesome ride with little chance to make new and perhaps influential acquaintances, and without opportunity to pick up important business information through contact with business men.

The position of a coal company which does not belong to the local operators' association is somewhat like that of the man who “hops freights.” Apparently such a company is getting something for nothing but in reality it pays and pays heavily in more ways than one.

The officials are handicapped by lack of contact and by the natural feeling of disdain—which is difficult to hide—that the paying passenger has for the fellow who fails to pay. A non-member company derives much benefit from association activities but loses by failing to receive specific information and by the restriction that its failure to join places on the activities and prestige of the association.

Practically all industries have found it necessary or desirable to form associations to protect and further their interests in the complex struggle for existence. Coal, because of its wide use but small production areas and because it is purchased grudgingly by the domestic user instead of “with pleasure” as, for instance, is a new automobile, is a favorite target for the politician.

Only by means of an association can unreasonable legislation be forestalled, and only by greater broad-mindedness on the part of mining company officials can associations become more effective. Every company should be a member of its local association.

Not Exactly Wasted

SEVERE CRITICISM of the coal industry for failure to realize approximately 100-per cent recovery shows a lack of understanding on the part of the critics concerning the related financial and engineering problems involved. Similarly the branding of the practice of leaving pillar coal as an unqualified waste indicates a lack of practical knowledge and perhaps a dearth of thought.

Every industry must obey economic laws or cease to exist. What would be the cost of coal today if every company engaged in its production were obliged to obtain 100-per cent recovery? The financial drain on the present generation, for the questionable benefit of some remote and uncertain future populace, would be truly enormous. Complete recovery of some thick beds might easily double inside costs while in some instances, at least, heavy additional expenses would be entailed through the surface subsidence of valuable farm lands or other property.

Who is more anxious to realize high recovery than the owner of a mine? His profits depend directly on quantity as well as inversely on production costs. If anything will promote a change in methods the lure of profit will do it. It would seem therefore that it could safely be left to those in the industry to develop every possibility that promises to economically increase recovery.

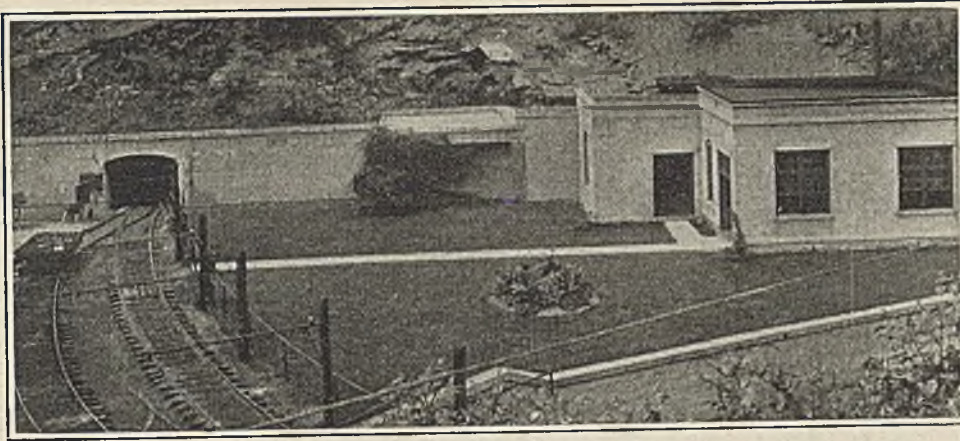
Reason and experience alike fail to prove that coal left in the ground today is wasted. What is there to prevent some future generation from recovering present-day pillars even though every room and entry has become tightly closed? Several mines which were considered worked out years ago are today yielding up the coal that someone doubtless insisted at one time was being wasted. Examples of this kind of recovery are to be found in the Georges Creek region of Maryland and near Corning, Ohio.

Let it be assumed that the cost to some future generation of salvaging “our leavings” is much higher than the cost of coal production today. It is quite probable that if the economies now made by leaving some coal in the ground were put at compound interest the fund thus created would far exceed the higher cost entailed in “second mining” several generations or possibly even centuries hence.

May it not be barely possible that those mines that today recover 90 per cent of the coal in the ground come actually nearer to wasting natural resources than do those that get out only 50 or 60 per cent? If ever an economic necessity arises for generally reworking coal areas that are being mined today those sections that contain 40 to 60 per cent of the original coal will certainly be worked first.

Perhaps the day when economic necessity will demand the reworking of old mines is much farther away than is generally imagined. Assuming that anthracite and bituminous coals become scarce some hundreds or thousands of years hence, lignites and oil shales can unquestionably supply the world's heat needs and supply them in abundance for centuries.

If it were the general practice to allow all unrecovered coal to be destroyed—by fire, for instance—the coal producers of today might well be guilty of a grave crime against future generations. As it is, the coal left in the ground is, in most cases, virtually left in storage, there to remain until changed economic conditions warrant its recovery.



Room and Pillar Methods at Several Stonega Mines Are Transition Toward Long Face Principles

Pillars Mined "Open-Ended"—Under Heavy Cover Rooms Are Short, Narrow and on Wide Centers—Fans and Tubing Eliminate Crosscuts—Very Long Pillar Line Shows No Advantage—Timbering Standardized

ALL OF THE NINE MINES of the Stonega Coke & Coal Co., lie within easy driving distance of Big Stone Gap, in southwestern Virginia, yet they offer a combination of physical and operating features not often encountered within so small an area. On the properties, five workable beds of coal occur, only two of which are now being mined. Of these, the Imboden bed, is of lowest elevation. About 440 ft. above it occurs the Taggart seam which also is being worked. Five mines are operating in the Imboden bed and four in the Taggart.

The cover over these mines varies through wide limits ranging from nothing to 2,000 ft. This, together with other variations in physical conditions, necessitates the employment of several schemes of mining. The company is highly successful in the drawing of pillars by open-end methods under both light and heavy cover. In the latter case pillars are made wide with rooms and entries narrow. Under the heaviest cover in one of the mines all but the last crosscut in the rooms is omitted and ventilation prior to the completion of a room is provided by blower fans and tubing. In these mines timbering is performed in accordance with company standards.

The Exeter mine is operating in the Imboden seam which consists of a 1½-ft. bench of coal at the top, and a 3-ft. bench at the bottom with a 1- to 1½-ft. band of rashings between them. These rashings are conveniently and satisfactorily separated from the coal in the mining operation. In driving rooms and entries, also to a large extent in the pocketing of pillars, arcwall machines with 9-ft. cutter bars are employed. The kerf is made in the rashings, directly above the bottom bench of coal.

First of all, however, it should be stated that the coal provided by one-half of the cut is completely loaded out before that which remains is brought down. The miner is given the choice of either the left or right half of

the cut for the initial operation. This practice enables him to set props sooner than would otherwise be possible and therefore to work in comparative safety during a greater proportion of the time.

The steps taken in loading out a room cut are illustrated in Fig. 1. The procedure is as follows: (1) A safety prop is set at the end and in the middle of the track in front of the cut, as indicated by *A*. (2) The machine cuttings are removed. (3) The left half of the bottom bench is drilled, blasted and as much of it loaded out as can be removed with safety. (4) The left half of the top bench is drilled, blasted, and loaded out; simultaneously, and as quickly as possible, the permanent props *B* and *C* and the temporary safety prop *D* are set. (5) The right half of the bottom bench is drilled, blasted and as much of it loaded out as can be removed with safety. (6) The right half of the top bench is drilled, blasted and the coal remaining is loaded out; simultaneously, and as quickly as possible, permanent props *E* and *F* are set. (7) After the place is cleaned up, safety props *A* and *D* are removed; finally, any loose slate is taken down and the place prepared and made safe for the machine men.

WEAK RASHINGS FACILITATES RECOVERY

The weakness of the rashings under the roof pressure exerted along the break line makes the recovery of pillar coal easy without the use of cutting machines. Pick-mining, consequently, requires no great manual effort and is largely practiced in the recovery of pillars by a system of open-end cuts. However, cutting machines are employed in the driving of the wide pockets or buttoff places in the pillars.

Withdrawal of pillars in the Exeter mine is governed by two rules. These in substance, may be stated as follows: Open-end cuts are made only in places where the roof comes down close up to the coal being mined. Where the roof hangs menacingly above the working places, a system of pocketing is practiced. Pockets are driven either 12 or 14 ft. wide, leaving 10- and 8-ft. stumps respectively.

For the most part the top is sandstone. In certain

The mine portal, retaining walls, fan house and sub-station at the Exeter mine are joined as a unit. This job was well done ten years ago and has the appearance of having been completed only yesterday. The buildings are of hollow-tile construction faced with cement plaster.

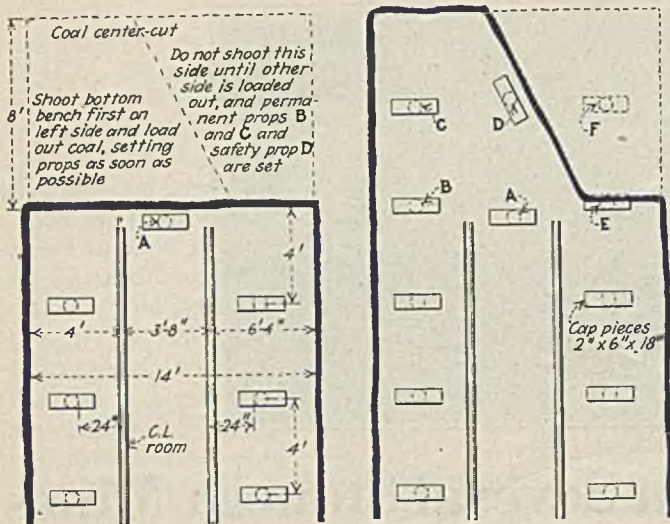


Fig. 1—Loading Out and Timbering a Center-Cut in Room

Every precaution is taken to make the working places safe at all times. The miner is required to load and timber, progressively across the cut. He is instructed to set each roof support as soon as possible in accordance with company standards.

sections of the mine, however, the coal makes contact with a bed of shale which varies from nothing to 3 ft. in thickness. The bottom is fairly hard. So-called kettle-drums of slate frequently occur in, and readily fall away from, the shale roof. If composed of sandstone, as they sometimes are, these kettle-drums do not immediately separate from the roof. They remain in place for some time and are dislodged finally by the slacking action of the air on the shale which surrounds them. Kettle-drums of sandstone in a shale roof, consequently, are not nearly so treacherous as are those of shale in a roof of like material.

SANDSTONE ROOF SLIPS EXPENSIVE

Planes of weakness or slips occur in the roof in sandstone areas and are a source of considerable expense for timbering. Fortunately, these slips are fairly regular as to direction, usually running parallel with the face of the coal or perpendicular to the center line of the rooms. The bodies included by these slips, as in other mines, are termed "horsebacks." In rooms they form cross-beams, which can be safely supported by posts located on either side of the track. In places on the butt, however, as in entries, crossbars are in many cases required for their support. An example of a typical horseback roof formation is presented in Fig. 2.

On first thought the impression might be gained that trouble is encountered in handling the overhanging strata when a pillar is retrieved by open-end methods, because of the presence of horsebacks. This is not the case, for when this method is followed pick mining is practiced. This enables the miner to maintain timbers close to the face. In mining a pillar he takes comparatively small "bites" of coal. Furthermore, he is instructed to set crossbars, in addition to posts, whenever they add to safety. Posts are not staggered, but are set at regular intervals in both directions. In this manner lanes are left open in which the miner works with comparative freedom of movement.

In the mines of this company all timbering is done in accordance with standards, one of which is broadly applicable to each general conditions. However, these specifications are standard only insofar as they indicate the minimum timbering requirements. They demand that posts in a line shall be placed at intervals no greater

than 4 ft. As against this minimum requirement, miners are free to locate additional roof supports when and where they may be deemed necessary.

Each foreman and assistant foreman is provided with a book of convenient size in which are contained sketches of layouts pertaining to methods of working, timbering and track work. The standards for the mines in one seam are in many respects different from those provided for those in another. One of these standards, dealing with the general layout of a room in high coal, is shown in Fig. 3. In the Exeter mine rooms are 300 ft. long and 14 ft. wide. They are driven on 50-ft. centers.

OPEN-END CUT TIMBERING SHOWN

In Fig. 4 is shown the arrangement of timbers in an open-end cut. All posts are on 4-ft. centers. Those on the inside of the track curve are placed 30 in. and those on the outside 24 in. from the nearest rail. In addition to the posts, as already mentioned, crossbars are erected where necessary, as at A. After the crossbar has been erected, it is permissible to remove the post adjacent to it on the pillar side as at B, but the mate of that post on the open side, at C, must remain in place.

J. D. Moore, assistant mine foreman at the Exeter operation has concluded that the recovery of timbers is a profitable undertaking after a trial lasting over a year. Where timbers in pillar sections are recovered systematically, he has found that more uniform conditions are maintained; that the ends of pillars bear less weight and, best of all, that fewer timbers are needed. This applies especially to crossbars, which form a sizable item inasmuch as the setting of one of them takes two men 30 minutes.

In recovering timbers he uses about 75 ft. of 3/4-in. steel rope and a gathering locomotive. He always supervises the job himself and uses two men as the crew. This complement of equipment and men recover about 30 posts in as many minutes, often taking three or four at one tug of the rope. One of the posts already in place is chosen as the anchor about which the direction of the rope is changed. It must be firmly lodged and for best results should sustain some weight from the roof.

Recovery of timbers requires care and skill. No



Fig. 2—A Horse-Back in Roof Along an Entry

In the Exeter mine slips in the roof are encountered with great frequency. Fortunately, they parallel with fair uniformity the direction of the room entries and can therefore be carefully watched. Until they show an initial set, they are carefully supported, chiefly by cross bars, but eventually they have to be taken down.

great danger is attached to the operation inasmuch as the timbers are "snaked" out by means of the rope and the locomotive. However, timbers are not taken promiscuously. An attempt is made to pull only those that no longer serve a useful purpose and, of course, not even all of these are recovered. Referring to Fig. 4, the timbers within the confines of the brackets M and N can be taken without jeopardizing subsequent steps in the winning of the pillar. No attempt is made to pull those in the confines of brackets O and P, as these serve to protect the goaf side of that portion of the pillar yet remaining.

As a general proposition, mining men frown on the practice of establishing one break line in close proximity to another, particularly when the two converge to a common point. The reasons for their objections are in many respects well-grounded. At the point of two converging break lines excessive pressure is exerted, pillar work is difficult and dangerous and much of the coal is likely to be lost.

As against these contentions, circumstances best met by the use of two converging pillar lines sometimes

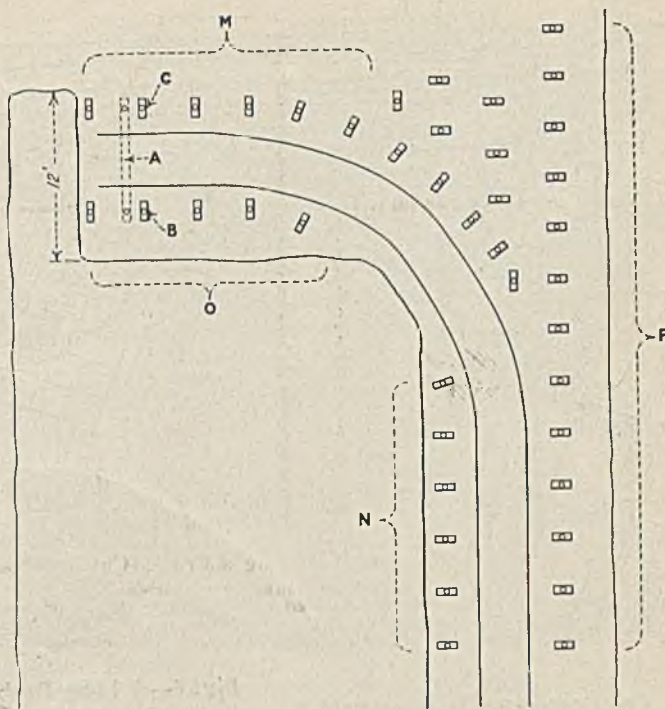


Fig. 4—Timbering an Open-End Pillar Cut

Rules pertaining to timbering are standard only insofar as they specify minimum requirements. The miner is free to set additional timbers when and where they are needed. If a crossbar is set for additional safety, as at A, it is permissible to remove prop B but not prop C.

Cover as heavy as this requires a layout of narrow rooms on wide centers. In this mine rooms are as a rule pitched on 80-ft. centers; they are driven to the maximum width, which is 14 ft., and to a maximum length of 300 ft. The roof is good and robbing operations are applied directly to the goaf end of the pillars. The pressure exerted by the cover loosens the coal to such an extent that machine-mining is unnecessary. Since the coal from this bed is utilized for by-product purposes, the crushing effect of the cover at the end of the pillars does not detract from its merchantability.

In one section of the mine recently developed the cover is unusually thick. Here, the rooms are driven on standard centers of 80 ft., but they are narrowed down in width to 10 ft. and shortened in length to 200 ft. Neighboring rooms are connected by only one breakthrough, which is located at the inby end. While these rooms are being driven, and until the breakthrough is completed, ventilation is furnished by a blower fan and canvas tubing. As in other sections of this mine, pillars are attacked and recovered by open-end cuts.

This last-mentioned system is a distinct departure from ordinary room-and-pillar mining and a close approach to longface operation. It is not conceived in the desire to try something new but rather to overcome

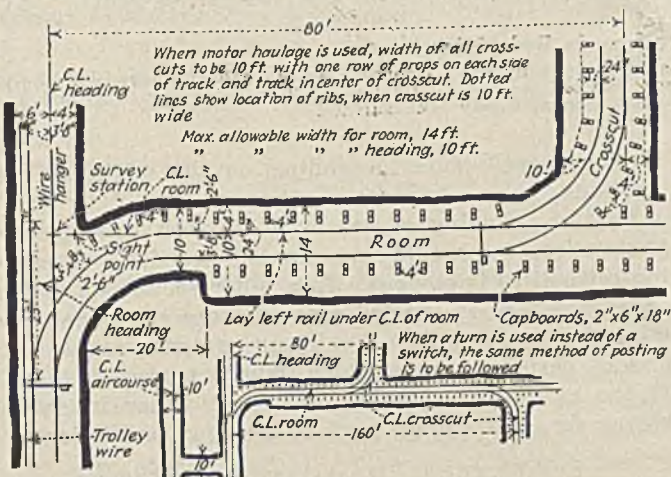


Fig. 3—Standard Room Timbering and Track Work in High Coal

The engineering department exercises a direct influence in the operation of the Stonega mines. It is responsible for the layout of new workings and directs recovery in the older ones. The company is particular concerning the timbering of working places. In all rooms a row of props on 4-ft. centers must be set on each side of the track.

arise—specifically where, for one reason or another, a rate of extraction greater than that afforded by a single pillar line is desirable. The Stonega Coke & Coal Co. never allows two pillar lines, inclined acutely, to meet at a common point. Between them is maintained a connecting pillar line (see Fig. 5), at least 200 ft. long.

In the Dunbar mine, where the Taggart bed is being worked, pillar coal is won from pockets and stumps. Here, the maximum thickness of cover is about 500 ft. and above the seam, which is about 54 in. thick, is an 8- to 12-in. band of slate, that would have to be gobbed if the pillars were mined open-ended. Most of this slate can be held in place by posts when the pillars are mined by pocketing.

The Roda No. 3 mine is also winning coal from the Taggart seam. But conditions in this operation are decidedly different from those in the Dunbar mine for the bed is considerably thicker—about 70 in.—and the overburden attains a thickness of as much as 2,000 ft. The cover over large areas in this mine is 1,000 ft. or more in thickness. As the bottom is fairly soft, it tends to heave, depending upon the weight of the overburden.

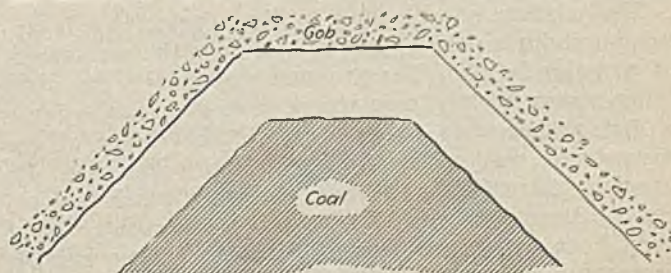


Fig. 5—A Triple-Line Pillar Front

When two pillar lines of normal length converge a third pillar line 200 ft. long is maintained between them to blunt the point which otherwise would be formed.

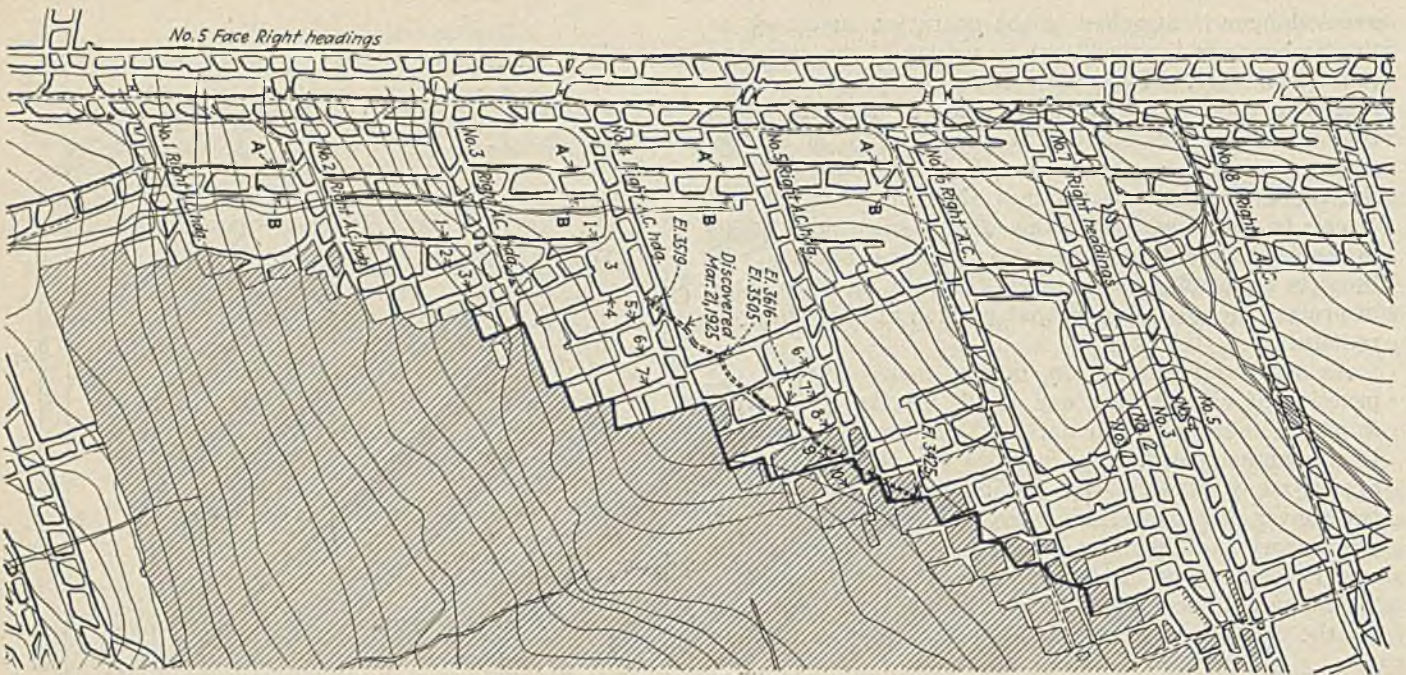


Fig. 6—A Long Robbing Line in Roda Mine

This robbing line is about 3,300 ft. long and the cover over it varies in thickness from 1,400 to 1,600 ft. When this front had progressed to the stage indicated by the heavy solid line, the cover exerted so much pressure that its operation was temporarily stopped. At the end of about two months a major break occurred, which extended to the surface.

difficulties inherent in ordinary room-and-pillar methods. Wide pillars in combination with narrow rooms or entries are the chief requisite for success in mining under heavy cover. The pillars must be wide to sustain the pressure exerted upon them. The utmost support of heavy cover is provided only when the openings between the pillars are made as narrow as possible. Furthermore, these openings must be narrow if the span of roof over them is to exhibit the least tendency to bend or break. The behavior of roof which spans an opening in coal must be considered analagous to the action under load of an ordinary crossbar of a given section. The shorter such a beam the less tendency it displays to bend or break. And if the roof over narrow openings does break, an arch is formed with the removal of the least quantity of rock.

IMPORTANCE OF PRINCIPLES STRESSED

How important these principles are is fully realized by only some of those who have had experience in mining under cover 1,500 thick and more. Even though working under conditions such as these, not a few operators are disregarding the principles of large pillars and narrow openings, with the result that the recovery of coal is less than it should be, timbering cost is higher, long stretches of airways are more or less completely closed by falls of roof and the cost of maintaining haulways is abnormal.

The wisdom of adhering to these principles is appreciated during the approach, and upon the occurrence, of a major break. The pressure exerted by the overlying strata during these stages is so great as to cause a disturbance over a large area. The limits of the disturbance may extend far beyond the pillar line. Its intensity is not sufficient, necessarily, to crush the coal remote from the break line, but it is frequently great enough to cause weakening of the roof over entries, rooms and crosscuts throughout a wide zone. If proper precautions are not taken, falls are apt to occur in these places within the zone and the roof may be arched 5 to

15 ft. or even more, depending on the width of the openings.

That the driving of crosscuts through wide pillars at close intervals would be costly and attended by operating difficulties is obvious. In a pillar section on which great pressure is exerted crosscuts are the bane of a mine foreman's existence. Their presence causes the loss of certain stumps which cannot be safely taken. If the crosscuts are to be driven at wider intervals, blower fans and tubing must be used for ventilation.

LENGTHENING PILLAR LINE PRACTICABLE

The experience of the Stonega Coke & Coal Co. seems to prove that increasing the length of a pillar line beyond a certain limit subtracts little, if any, from the difficulty of operation. In the Roda No. 3 mine there has been established a pillar line which is about 3,300 ft. long, and at another plant of this company one of almost equal length. Constant attention is required to keep the line straight, for which the reward is not noticeably greater than that derived from a shorter pillar line. The company, consequently, is limiting the length of new pillar lines to 1,200 to 1,500 ft.

In Fig. 6 appears the 3,300-ft. pillar line established in the Roda No. 3 mine. The heavy solid line indicates the position of robbing operations as of Feb. 1, 1925. It will be noted that the line at that time was quite straight and that few pillars lagged far behind it. Nevertheless the pressure exerted upon it became so great that the decision to stop its operation so as to allow the roof to settle was reached. The condition as outlined was aggravated by much heaving of the bottom which is quite soft. On March 21, 1925, after the section had remained idle for about seven weeks, a fracture on the surface was discovered. An examination of the soil along this fissure indicated that it could not have occurred more than five days before its discovery.

The surface trace of this fracture—about 800 ft. long in a straight line—is shown by a pair of dotted lines in the figure. The cover over the coal along this

line varies from 1,400 to 1,600 ft. in thickness and the break is therefore one of the deepest on record for mines in this country. Most of the surface trace of this break was located over solid coal and in places as much as 200 ft. from the pillar line. The inclination of the fracture from a vertical plane, of course, could not be ascertained.

A short time after the break occurred operation of workings off headings Nos. 5, 6 and 7 was resumed. The break somewhat relieved the pressure on these operations. However, the workings off headings Nos. 3 and 4 continued to show great pressure and the bottom heaved and practically closed them. Progress of mining in this section, as of June 22, 1926, is indicated by the cross-hatching on the pillar side of the heavy line.

A puzzling feature of this break is that the cover on the left end of the pillar line, where the breadth of the goaf is greatest, was not relieved of its pressure as was the roof on the right end of the line. Both the pillar and the fracture lines are comparatively straight, the latter subtending an angle of about 10 deg. with the former. Perhaps this fact goes to prove the belief held by many operators that, independent of the pillar line, the cover tends to fracture in a certain direction and that close observation of this tendency should be made in order to determine the proper inclination of the pillar line.

The Stonega No. 3 mine of this company is operating in the Imboden seam. The dotted lines *D Y C* and *B X*

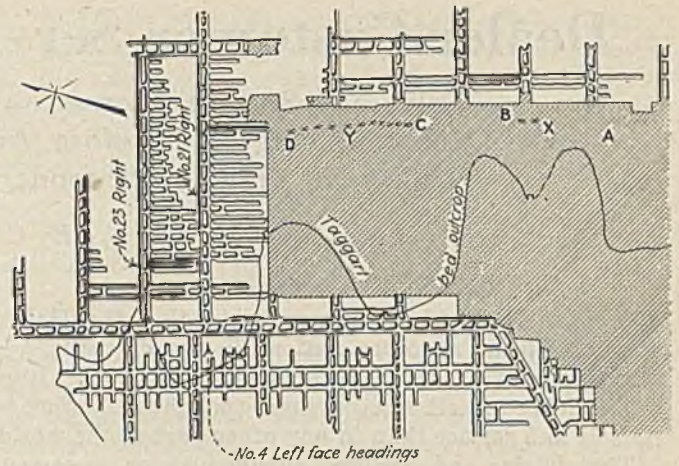


Fig. 7—A Major Fracture at the Stonega No. 3 Mine

The break extended to the surface where it was traced for a distance of about 1,400 ft. The average thickness of cover along this break is about 625 ft.

in Fig. 7 indicate the surface traces of a break which penetrated through 528 to 795 ft. of cover over the workings in this operation. The length of the long and short lines are 800 and 200 ft. respectively, with an interval of about 400 ft. between them where all evidence of the fracture was hidden by much loose soil in a ravine. No doubt the fracture extends from *O* to *X*. The nearest point of outcrop of the seam being worked is roughly 3,500 ft. due west of the latter point.

Three Shovel Weeks Are Saved

Some months ago a representative of a firm making oxy-acetylene cutting and welding equipment by chance called at the plant of a coal company engaged in stripping at a time when one of the steam shovels was out of commission because of excessive wear in the pin hole of the lower boom casting. A new casting had been ordered from the factory but inasmuch as this would have to be made up specially it could not be received for approximately three weeks. This would entail a loss of several hundred dollars.

The welding equipment man examined the casting and suggested that the worn surface be built up by means of the acetylene torch. The casting was accordingly brought into the shop and placed in such a position that it could be easily worked upon. After being carefully blocked in place the flame from a large oil torch was

played upon the worn part. This was done in order to heat up the metal and thus save gas and oxygen.

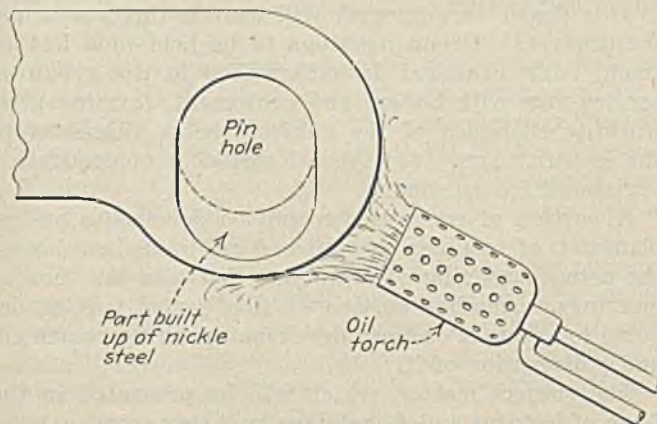
After about 20 min. of this treatment the worn part assumed a dull red heat and welding was begun. In this operation a large tip was employed on the torch and a nickel-steel welding rod was used. The accompanying illustration gives an idea of the relative positions of torch and work during the heating-up process.

As soon as possible after the worn surface had been built out sufficiently and the part had been allowed to cool the hole was machined true. After the job was completed the casting was just as good as a new one would have been and was promptly put back into place on the shovel and this machine put to work. It is still in use.

As a matter of fact the rebuilt casting was better than a new one for the reason that the nickel steel used in the repair presents a much harder, tougher surface than did the original metal. No attempt will here be made to show the saving effected by a few hours' work when its cost is compared to the loss entailed by a steam shovel being out of commission for three weeks. This difference is too obvious to require elaboration.

Clearfield, Pa.

BY J. F. ELDEE.



Relative Positions of Torch and Work

Inasmuch as the casting was a large one much gas and oxygen were saved and the work greatly expedited by this preliminary heating. The flame of the oil torch was played upon the casting until it assumed a dull red color.

Consolidations Aid Markets

To broaden the market will become the chief aim of each industry. The large consolidations will learn that the smaller concerns in the industry, instead of being annoying rivals for a limited amount of business, are the local missionaries who convert new customers to the use of the industry's product. The smaller companies will learn that the consolidations are not monsters to be feared, but fellow members of the industry able to contribute invaluable support to the progress of the industry as a whole.—Charles F. Abbott, American Institute of Steel Construction, Inc.

Dealer-Customer Service Plan Is Inaugurated

"Sales and Service" Forms an Important Part of All Present-Day Merchandising—Heretofore Anthracite Retailers Have Been Much Weaker in Trained Personnel than Dealers in Competitive Fuels

By C. W. Hare

Anthracite Coal Service, Philadelphia, Pa.

IT IS GENERALLY acknowledged that the United States leads all other nations in the diversity and magnitude of its manufacturing industries. Here any article of merit receives more thought and effort in its sale and service than in any other part of the world.

That "Sales and Service" should play an important part in present-day business success can be easily understood. For no matter what the merit of a product may be, no matter how carefully the manufacturing process may be supervised, unless it is sold sanely and then serviced, it is apt to lose some of its market through the introduction of competitive articles. These, while perhaps of less intrinsic merit, have a more carefully devised sales and service plan backing them.

Producers and retailers of anthracite firmly believe in the superiority of the fuel that they are producing and selling. Yet all too frequently when their salesmen are confronted by a dissatisfied customer, or by one to whom the advantages of a competitive fuel have been explained, they are incapable of applying the proper remedy to meet the complaint. This inability on the part of the average retailer to render adequate sales and service, as this term is understood today, sometimes causes the consumer of anthracite to lose confidence in the retail coal company from whom he is purchasing his fuel and renders him constantly less apt to call upon that dealer to aid him in the solving of his difficulty, because he has never been given any reason for believing that the retailer can aid him. He is, therefore, likely to listen to the arguments of the salesmen of competitive products, who promise to remove all difficulties in the operation of his plant by the use of some other fuel or burner.

It is a fact that the average anthracite retailer today does not have in his employ a trained personnel for sales and service comparable in any way to the personnel employed by many of the sellers of competitive fuels.

A retailer in order to satisfy a customer who has complained of the quality of the fuel furnished him, has been known to remove the coal from the customer's cellar and substitute another order, even when he knew that the quality of the anthracite originally delivered was entirely up to standard.

In nine cases out of ten complaints on the part of domestic consumers of anthracite arise either from faulty heating equipment, improper firing methods, or from lack of a proper amount of radiation in the home. Had the retailer been equipped with the necessary knowledge to diagnose these complaints he would have been able to determine that his customer's troubles were not due to the quality of the coal delivered, and would

likewise have been able to convert a dissatisfied customer into one who was entirely satisfied.

Conditions of this kind which have been brought forcibly to the attention of the Anthracite Coal Service during the past two years through the requests of coal dealers for engineering aid have been met in so far as possible by detailing an engineer to the particular job. This man would determine the cause of the trouble, apply the remedy, and retain the consumer as a user of anthracite. The troubles, of course, were widely different in nature, but in the main the diagnosis and the remedy were both simple, requiring a knowledge of the heating plant and the application of such knowledge rather than scientific engineering.

Naturally, it would be impossible with a relatively small personnel, to service every domestic consumer of anthracite; nor is it the practice of the manufacturing company to service its consumers. That is the duty of the retail merchant. At the same time it is an obligation on the part of the manufacturer fully to instruct his sales agents in his product, and in its use, so that they in turn may be able to render proper service to the ultimate consumer.

This obligation is now recognized by the Anthracite Operators' Conference and, through the Anthracite Coal Service, the plan that has been referred to as "the greatest constructive step ever taken by the anthracite industry to aid the retailer," is being put into effect in a number of cities throughout the anthracite-consuming territory. It is planned to extend this service so as to embrace other cities in accordance with the desires of their retail coal merchants.

This dealer service work will include three principal features: (1) Group meetings to be held in a lecture room. (2) Practical demonstrations to the group of service men with boilers and equipment, forming good working examples of the subjects being discussed in the lecture room. (3) Actual servicing of complaints registered by consumers.

A portion of each session will be devoted to an explanation of troubles encountered and remedied during the actual servicing of complaints between the time of meetings. Another portion of this period will be devoted to a lecture on the subject matter being presented, and a discussion of it.

The subject matter, which will be presented in the form of lectures and discussions, will cover explanations of the various types of heating installations, the proper combustion of anthracite coal, a study of the causes of trouble encountered in the various types of heating equipment, and a discussion of the relative merits of

Business is the effort of society to minister to the needs of civilization. Service is its corner-stone. It aids the individual in solving his particular difficulties by bringing to bear a knowledge greater than he possesses. The anthracite operators are now endeavoring to render this kind of service to those who use their product.

anthracite and competitive fuels. This subject matter will be printed and distributed to the dealers in the form of a service manual, which they can retain for future reference.

The third feature of this work will provide experience for the dealer service men in actually meeting and satisfying the complaints registered by consumers. The dealers will supply the coal service engineer with a list of customers who have made complaints. The engineer will visit these plants, accompanied by the dealer service man representing the coal company that received the complaint, and also by one or more service men from other companies. In this way the service men will obtain practical experience.

As the training proceeds the service men will be expected to attempt to answer many of the complaints received. The engineer will check up on the service so rendered, and will aid the service men when required.

The number of weeks that will be required to complete the training of the dealers in any city will be chiefly dependent upon the number of dealer service men there enrolled. This is due to the belief that in addition to the lecture and practical group demonstrations, each dealer service man should, in company with an engineer, actually service about twenty installations. To reduce the time required to accomplish this result, a small group of dealer service men will accompany each engineer on every service call.

In a small city where say, ten retail coal dealers are enrolled in this course of instruction, this will require 100 calls with two dealer service men accompanying the engineer on each call. On the basis of five calls per day and five working days per week, four weeks would thus be consumed in the training program. In a similar manner if twenty dealers are enrolled in the course, eight weeks would be necessary.

DEALER-SERVICE MANUALS PROVIDED

The subject matter presented in the lecture course is condensed into a dealer-service manual with which each service man will be presented. This serves as a means whereby he may refresh his memory in subsequently servicing customers.

The entire system of training has been designed along practical lines and is free from involved engineering. It was prepared by the engineers of the Anthracite Coal Service as a result of their study of the requirements and complaints of domestic consumers throughout a period of more than two years, during which they have been aiding the retailers who desired their help.

This plan was first presented to the coal dealers of Trenton, N. J. Encouraged by the results there obtained the dealer service plan has been extended to Hartford, Conn., to Worcester and Boston, Mass., to Washington, D. C., to Syracuse, and Westchester County, N. Y., to Newark and Phillipsburg, N. J., to Wilmington, Del., and to Philadelphia, Pa.

By taking advantage of the anthracite operators' action, retail coal dealers are placed in the enviable position of being able to guarantee, without qualification, the satisfactory performance of the fuel they sell and of proving anthracite to be, as they claim it is, the best domestic fuel on the market.

President Coolidge in a recent address stated that: "True business represents the mutual organized effort of society to minister to the economic requirements of civilization. It rests squarely on the law of service.

It has for its main reliance, truth and faith and justice. In the larger sense it is one of the contributing forces to the moral and spiritual advancement of the race." The anthracite operators, by the means just described, are endeavoring to render service of the kind to which the president has referred.

Value of Lignite as Fuel Is Cited By Bureau of Mines

The fact that lignite can be satisfactorily burned as domestic and boiler fuel when suitable stoves and grates are provided means that its use is restricted primarily by the advantage of other fuels in price, convenience, storage, bulk, and rate of combustion, states the Bureau of Mines, Department of Commerce. In the regions adjacent to lignite-producing mines storage is not important; relative price of available fuels is the determining factor. In such regions lignite is naturally the principal fuel used.

For domestic use one can buy stoves in which lignite, even the fine sizes, can be burned almost as efficiently as the higher-grade fuels. In order to liberate heat equivalent to one ton of high-grade fuel, approximately two tons of lignite must be burned and a stove large enough to burn lignite at the necessary rate must be provided.

Considerable thought has been given to the use of lignite as boiler fuel. From the progress already made, evidently lignite will always be a competitor of other fuels for boilers in the lignite regions. The use of special grates, step grates, chain grates, and underfeed stokers has made possible a fairly high thermal efficiency in the use of this fuel; this possibility added to the fact of an oversupply, usually of the fine sizes—slack lignite—which sell at a low price, makes lignite attractive as boiler fuel.

Because lignite contains a relatively high percentage of water, approximately 33 per cent, it does not follow that a low thermal efficiency will result from its combustion under a boiler. The actual loss due to the total heat carried away by the water passing out at the usual stack temperature is only 6 to 6.5 per cent of the total heating value of the lignite. Proper combustion facilities only are needed to obtain high thermal efficiency from this fuel.

BOILER DESIGN AIDS COMBUSTION

Bureau of Mines Bulletins 21, 40, 89 and 135, and Technical Papers 137, 205, 217 and 279 give complete details. Under test conditions a thermal efficiency of 80 per cent can be obtained by the combustion of lignite boiler fuels. The boiler capacity with this fuel will be less than with high-grade coals unless large grates and furnaces are provided to accommodate the larger amounts of fuel and ash to be handled. With forced draft giving higher rates of combustion, and approved combustion conditions, the maximum capacity (boiler horsepower developed) is rarely over 140 to 160 per cent of the rated capacity unless a larger grate area is provided than that for bituminous coal. With large grates and furnaces and forced draft, 275 per cent of boiler rating has been attained. It is entirely possible to secure high boiler capacities with lignite with suitable design of grates and furnace, but this can not be done with the usual proportions that have been determined for high-grade coal.

Rock Dusting Is Made Compulsory in Germany

Coal Dust Early Recognized as Dangerous—Sprinkling First Adopted As a Preventive Measure—This Has Been Totally Supplanted by Rock Dusting—Extremely Dirty Beds Excepted from Statute Now in Force

By Raoul Towaide
Ressaix, Belgium

THE GERMANS were possibly the first coal producers to officially recognize the dangers inherent to coal dust. By the regulation of 1898 they enforced water sprinkling in all dusty operations. This was long before the Courrieres disaster. They alone among the coal producing countries of Continental Europe have generally adopted this method of protection, and have tried it out experimentally in the entire Ruhr district.

But after a quarter of a century sprinkling has been completely abandoned and rock dusting adopted. The act of December 23, 1925, which went into force on April 1, 1926, thus recognizes the superiority of rock dusting over watering as a means of explosion prevention. The reason for this change in regulation should be carefully examined, as it is the result of long study by the German mining authorities.

Although dusting had possibly been suggested before, in 1898 sprinkling was the only generally known method of avoiding the rock dust danger. A few years later, however, after the Courrieres tragedy, both France and England studied the coal dust problem and as a result of experiments at Altofts and Lievin the idea of employing rock dust as a preventive for coal dust explosions was formulated.

Although the superiority of rock dust soon became apparent to all mining men, the Germans maintained and even completed their watering regulations. However, in 1908, after the Radbod disaster, experiments with rock dust were begun in the newly erected Derne gallery. The Minister Stein disaster also hastened the adoption of the new regulation which had been in patient preparation for nearly ten years.

Progress of rock dusting in Germany thus becomes easy to follow. The experimental period embraces the years 1911 to 1918; temporary instructions for its use were issued in 1921, and the final act was approved in December of 1925. This evolution, an explanation of which will tend to render the final act more easily comprehensible, will be briefly discussed.

Work in the Derne gallery began in the early part of 1911, but the results of investigations were not published until 1919. In the opinion of Dr. Beyling, chief of the research staff, rock dust can be used in three different ways to prevent coal dust explosions or allay those arising from gas.

First, it may be employed to prevent the initiation of the explosion. Thus rock dust stemming may be used in shotholes, and their surroundings may also be dust

sprinkled. Experiments have shown that although stemming provides against risks from both gas and coal dust, the dusting of the surroundings is effective only against coal dust.

The second method contemplates arresting the propagation of an explosion. With this end in view all parts of the mine where an explosion may be initiated should be rock dusted. Rock-dust zones almost always check an explosion after it has started, but such areas should be at least 100 yards wide.

The third method is well known in America, being the use of rock dust barriers. These should be built at strategic points throughout the mine as they are especially effective in arresting the force of explosions, particularly those of a violent nature.

Temporary instructions concerning the use of rock dust were issued in September of 1921. In these the *Oberbergamt* of Dortmund authorized owners to use either the watering or rock dusting method. The regulation concerning sprinkling remained, but it could be replaced by the use of rock dust under conditions

specified in the instructions. There are two distinct parts in this document; namely, precautions to be taken in the use of explosives, and the measures to be adopted to protect against generalized explosions.

It was recommended that dust stemming rather than the same material strewn around the face should be used. This stemming should amount to at least 3 lb. of rock dust for each shot hole. This had the advantage, as was proved experimentally, of increasing safety when shots were fired in the presence of gas as well as in the presence of coal dust.

After four years' trial the owners in the Ruhr district showed their preference for the rock dusting method. However, for various reasons nearly all of them adopted rock dust barriers only. It was necessary, therefore, to reinforce the temporary instructions. Barriers alone are not sufficient to obviate an explosion. On the other hand, the maintenance of a 50 per cent mixture is likewise insufficient. The *Oberbergamt* of Dortmund therefore adopted the principles recognized by the French, and made the use of both methods simultaneously compulsory.

The act of December, 1925, deals only with protection against general explosions as it is considered that further investigations are necessary before making the precautions to be taken for the use of explosives subject to legislation. The original act as published in 1925 is clear and fairly comprehensive. It is entitled "An



Raoul Towaide



Mathias Stinnes Mine Near Brauck, Germany

This shows the headframes of shafts Nos. 3 and 4. The building in the left foreground appears to be a washery. Many beds of coal now worked in Germany in comparison with the beds of this country contain much impurity. In fact the beds of *Gazflammenkohlen* contain so much foreign matter that the mine dust from them is inexplusive and no rock dusting is therefore needed.

Ordinance for the Use of Incombustible Matter as a Preventive of Gas and Coal Dust Explosions," and reads as follows:

"All pits or districts in which beds of dangerously dusty coal are worked are to be protected against explosion by means of incombustible dust.

"If dangerously dusty coal is confined to certain beds the present ordinance is to be applied to those beds only.

"Dangerous dust, in the sense of the previous paragraph, is any coal dust containing more than 12 per cent of volatile matter in the fresh state, except dust from *Gazflammenkohlen*. All beds above the Zollverein seam are to be considered as *Gazflammenkohlen*.*

"Owners are allowed to prove to the General Director of Mines that coal dust considered as dangerous cannot propagate an explosion. If this point is proved to the satisfaction of the mining authorities these beds need not be rock dusted.

"Dust barriers are to be set up: (1) At all air splits (intake and return airways); (2) In roads leading from one section to another; (3) above and below the working faces of two separate levels; (4) between working places if the distance exceeds 16 yards.

"Rock dust must be strewn in all galleries, roads and airways, the faces excepted.

"This need not be done in roads where natural humidity precludes the suspension of coal dust in the air.

"Rock-dust barriers must be installed in an unobstructed section of the passage where located.

"The containers are to be installed in the upper one-third of the height of the gallery, low enough, however, to leave at least 4 in. between the top of the dust and the roof.

"The following amounts of dust are to be loaded into

*The beds of *Gazflammenkohlen* (gas coals) are extremely dirty, and practically all dust found in them contains naturally more than 50 per cent of incombustible matter. This is the reason why these beds are excepted from this ordinance.

the barriers for each square yard of cross section of the road where they are installed:

"For barriers protecting air splits, the upper and lower roads of the working faces, between levels, and in development workings, 735 lb.

"Barriers separating working places from each other, 125 lb. These are known as main and auxiliary barriers respectively.

"Main barriers are to be represented on the ventilation plan by a colored and dotted line.

"Rock dust must be strewn throughout the mine wherever coal dust can settle.

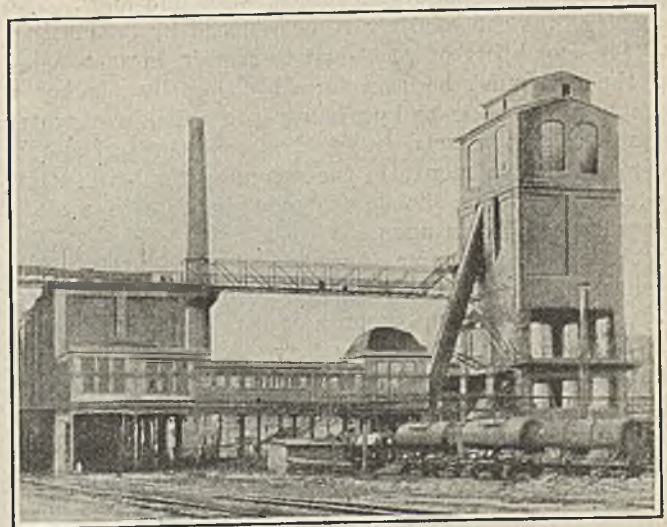
"Coal dust more than 2 mm. thick is to be removed from all workings before the rock dust is applied.

"As a rule, rock dusting, except local applications, should be carried out during the least active shift of the day. Mechanical rock dusting may be prosecuted only when no men are in the districts into which the dust is carried by the air current. The men are to be withdrawn from these districts before rock dusting starts.

"Rock dusting is to be so applied and renewed at such intervals as to keep the proportion of incombustible matter to at least 50 per cent by weight of all dust deposits in the workings.

"In all places where coal dust may be rapidly deposited a supply of rock dust sufficient to last one week must be provided.

"Incombustible dust in the sense here used is dust all of which (1) passes through the gauze of the safety lamp (144 meshes per sq.cm.); (2) at least 50 per cent must be fine enough to pass through the N-80 German standard sieve (6,400 meshes per sq.cm.); (3) it must contain not more than 20 per cent by weight of com-



Radbod Mine at Hamm in Westfalia

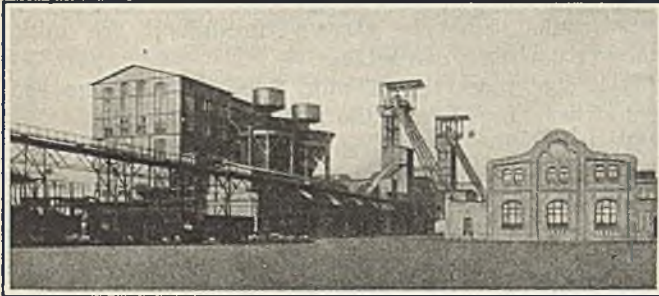
It is characteristic of European mines in general that their upper works are elaborate as compared with operations of a similar output in America. Steel, concrete, brick and glass are the structural materials regularly used for surface works at coal operations.

bustible matter; (4) it must remain capable of being set in suspension in the air; (5) it must be authorized by the mining authorities as being free from substances injurious to the miners' health.

"Prior to being used rock dust that is stored should be examined at least once a month to assure that it is of the proper fineness, capable of remaining in suspension in the air and that it contains the proper proportion of incombustible matter.

"Rock dust in barriers should be tested as often as necessary, special attention being paid to its capability of remaining in suspension in the air. This can be easily ascertained by blowing upon it. Rock dust which is not easily blown away must be replaced. Coal dust deposits upon such barriers must be removed.

"Rock dust deposited in working places must be frequently tested for combustible content. If such dust contains more than 50 per cent of coal dust the mixture



Lothringen No. 4 Mine, Gerthe, Near Bochum

This again gives an idea of the elaborate upperworks installed at the mines of continental Europe. Because of the small cars used the cages are sometimes triple decked and as many as six cars hoisted at one time. Evidently, to judge from the top works, preparation of coal means much to the European fuel consumer.

should be renewed by a fresh application of rock dust. This should also be done should a visible accumulation of coal dust occur at any particular point.

"Tests mentioned in the preceding paragraphs should be carried out on a sample of at least one ton of rock dust.

"For testing the percentage of combustible matter the sample of dust must be taken in at least five places on a length of road equaling at least ten yards. Dust must be brushed from cap pieces, walls and floor. The samples thus collected are to be reduced by quartering.

"The capability of rock dust to remain in suspension in the air must be ascertained either by placing a sample in the mine, or by placing it in a dish over water in an airtight vessel. In the first case the test should be made after a month in the second, after seven days. In either instance the dust should disperse in a cloud when lightly blown upon.

"An air-dried sample of average dust passed through a sieve containing 144 meshes per sq. cm. must be provided for testing the presence of combustible matter.

"The mining authorities have the right to take samples of dust anywhere in the mine at any time and have them analyzed at the owner's expense.

"The results of tests prescribed in the preceding paragraphs must be recorded in a special book with the places and dates in which they were performed. In this book also the dates of erection of the barriers, and the dates of the first dusting operations in each district, as well as those of the last renewal of the rock dust in the barriers and the last operations prior to the taking of the samples must be recorded.

"Rock dusting of working places, development work and roads leading to the faces is carried out on the responsibility of the oldest workman of the shift.

"Everywhere else the dusting operations must be performed by special men, responsible for this work and at least 18 years of age. They should receive from the manager written instructions approved by the state inspector. Their duties must be explained to them by the head deputy. Their names must be entered in the dust book. The dusting operations must be carried out

following the written instructions given by the *Oberbergamt*.

"Men responsible for the performance of rock dusting must give immediate notice to the head deputy if this work for any reason whatever has to be suspended.

"A dusting deputy must be appointed in each independent section. His duties and his relations with the manager and the other deputies are to be specified in written instructions approved by the state inspector.

"All deputies are responsible for the due performance of rock-dusting operations. They must see to the immediate dusting of places where dust is insufficient. If this is not possible, all work must be suspended in these places.

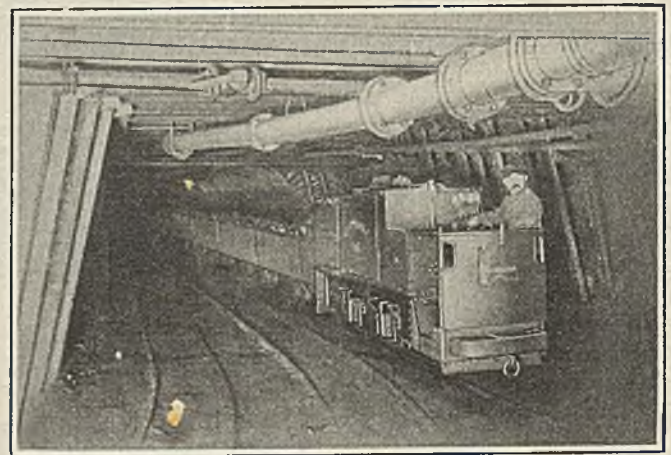
"Responsibility for proper rock dusting rests with the manager, as well as with the ordinary deputies and the dusting deputy.

"On all haulage roads thick deposits of dust as well as the coal which falls from the cars must be regularly cleaned up.

"Where coal dust is especially dangerous, loaded cars must be sprinkled before entering the main haulage roads so as to reduce the quantity of dust held in suspension in the air.

"The mining authorities will notify the owners if the provisions of the previous paragraph must be applied.

"In headings and roadways in which it is not possible



Interior of Germania Mine at Gelsenkirchen

This is a gasoline locomotive used on the main haulage road. Note the extreme neatness of this heading. It is a provision of the law requiring rock dust protection that all dust and coal that has jarred off of the cars on the roads must be cleaned up periodically. As an additional safeguard in particularly dusty mines the loads must be sprayed with water before they are allowed to enter the main haulageways.

to maintain the prescribed percentage of incombustible matter, as much rock dust as possible should be applied and local barriers should be erected at not more than 20 yd. from the face, and throughout the entire length of the gallery at distances not exceeding 55 yd. from each other. The local barriers, if their erection in the cross section is not possible, may consist of shelf boards nailed to wall timbers. These must be loaded with the same amount of rock dust as the main barriers.

"Mines in the Dortmund district that are considered sufficiently dusty to need the protection of rock dust need no longer follow the ordinance for the use of water.

"Rock dusting must be performed as prescribed in the instructions issued by the Dortmunds' *Oberbergamt*.

"Deviations from this ordinance are to be submitted to the *Oberbergamt*.

"Such departures must also be noted in the dust book.

"Infractions of the present ordinance, if no heavier sentence is required by the legal decisions, are punishable on the basis of paragraph 208 of the general law on mines, in agreement with provisions of the act of Feb. 6, 1924, on fines and sentences.

"The same sentences are required for infractions and deviations as imposed by the mining authorities on the basis of the present ordinance.

"The present act will come into force on April 1, 1926."

It will be seen from the foregoing that the German mining authorities fully recognize the dangers inherent to coal dust in the mines, and that careful provision has been made to forestall them. If the provisions herein prescribed are carried out there should be an end to great mine disasters in that country attributable to the explosive properties of coal dust.

Ventilation Is Chief Safety Need Eugene McAuliffe Avers

Eugene McAuliffe, president of the Union Pacific Coal Co., in a discussion of safety in coal mines at a meeting in St. Louis on Dec. 30, 1926, made the following statements:

"Personally I like to think of adequate ventilation as the outstanding requirement (in coal mine safety); other things are important, but they are secondary to ventilation. Because ventilation is not always carried out, there is a crying demand for each of the second line defenses.

"The 'secondary defense' now most prominent in the public mind is rock dusting. To rock dust a mine in part and thereafter to rely on same is like taking an opiate. A five per cent galvanizing of a few entries is a mere soporific, sooner or later a crash will follow and rock dusting will be generously damned. If rock dusting is to be relied upon it must be well done in the beginning and thereafter kept up to the end. A few sacks of dust will not protect a mine.

"When a cold dispassionate comparison of our coal mine death rate is made with that experienced in European countries, the result fails to excite pride; it is, on the other hand, deplorable, and when our progress, or rather absence of progress, is compared with that made in recent years by the railroads, the steel and other great industries, the tragedy takes on another hue; in substance, we find that we lag woefully behind the industries that use our product. I am now speaking of failure to show betterment such as other industries are showing; the European comparisons prove that betterment is possible if we would definitely seek it.

BRANDS "BUCK-PASSING" AS SOURCE OF TROUBLES

"It is quite beside the question to talk about the sins of omission and commission that our mine labor is guilty of. When we take the full responsibility of the leadership that we claim, then the men will follow. It is this refusal to accept the responsibility that attaches to leadership that is at the bottom of all of the problems that surround the work of improving the safety of our mines. Mine labor, like all other labor, will always be moulded by environment, by the character of leadership shown and maintained by the employer. Labor unions never have led labor, rather do they serve as salvaging agencies, as doctors that the laborer turns to when his next of kin, his employer, fails him."

Bituminous Lump Coal Makes Good Gas

In its editorial staff report of the technical sessions at the American Gas Association convention *Chemical & Metallurgical Engineering* makes the following comments on the use of bituminous coal for water gas generation:

"The use of bituminous coal as a generator fuel was reported on by a sub-committee of the water gas committee, under the chairmanship of W. J. Murdock, one of the pioneers in this field. The committee concludes that: "The use of bituminous coal as generator fuel has passed the experimental stage and we believe that every operator in the country can take advantage of the savings to be effected by the use of this fuel and need have no fear of encountering unheard of difficulties, as these have almost all been met and surmounted."

"In order to aid in attaining these obvious advantages the committee has prepared a set of instructions for operation of a carburetted water-gas set with bituminous coal. These instructions emphasize the importance of selecting a properly sized lump grade of coal which does not integrate in the generator. The handling of such fuel should be such as to avoid breaking. The ash and moisture content should be low, but 'the fusion point of the ash does not seem to be very important.' Directions are given by the committee for starting up and operation, with explanations as to the reasons underlying each part of the operating cycle.

"For small sets, up to 6 ft. in diameter, gas-making capacity is not reduced by use of bituminous coal; but above this diameter the use of a cross-wall or pier process is recommended. It is concluded that the results with bituminous coal should show about the same efficiency as when coke is used. The report includes a theoretical discussion as to the coal gas formed and that retained in the mixture. Typical operating results and gas analyses are given."



Powell's River in the Gap of the Cumberland Mountains

"Down in the southwestern corner of Virginia, and just over the Kentucky line," is the Gap, "a ragged gash down through the Cumberland Mountains, from peak to water level," says the late John Fox, Jr., in describing the country of which a portion is here shown. The stream is Powell's River and flows through Powell's Valley, a link of the Gap, which extends northeasterly to the Breaks of Sandy, seven miles distant, where the mountain range crumbles away. The Gap provides the most logical entrance of the Southern and the Louisville & Nashville railroads into the coal fields of Wise County. On the northerly side of the Gap the exposed formations are of sandstone. On this side also, lies Black Mountain under which are several valuable coal beds. On the southerly side, however, the exposed measures consist chiefly of limestone, and coal is consequently absent. The light-colored precipice in line with the river is a quarry-cut in limestone.

Rocky Mountain Men Insistent on Greater Safety; Seek for Lower Cost by Machine Loading

SAFETY took first place in the deliberations of the Rocky Mountain Coal Mining Institute which, with 175 members present, the largest registration in its history, opened its twenty-fourth session at the Cosmopolitan Hotel in Denver, Feb. 23, Horace Moses, the president, being in the chair. A paper by Dan Harrington, acting chief engineer, mining research division, of the Bureau of Mines was the first on the agenda. It presented the accident rate of the four states which comprise the territory from which the institute draws its membership. Mr. Harrington in his paper, as usual, placed the facts bluntly, showing by up-to-date figures, that the accident rate in the Rocky Mountain States is far larger than that in any other district in the United States. He recommended that the institute co-operate with the Bureau of Mines in a study of the causes of accidents and in an effort to reduce their frequency. Edward Bottomley, of the Sheridan-Wyoming Coal Co., criticized his recommendation that all mines use closed lights, contending that it was as ridiculous to demand such lights in his mines at Sheridan as to require that they be used in the room in which the members were sitting. Horace Moses, of the Gallup-American Coal Co.,

said that the operators of the Rocky Mountain region, those of the larger companies particularly, were outstanding in their safety work and declared that the high accident rates were due largely to the accidents in the smaller mines which though they produced only a small percentage of the production added greatly to the number of accidents. T. H. Butler, superintendent, Union Pacific Coal Co., Hanna, Wyo., approved of Mr. Harrington's remarks in the main but made some objections. He advocated that electric cap lamps, rock dusting and permissible powder be used exclusively in every mine, regardless of the natural conditions. In this D. C. McKeehan, electrical engineer, Union Pacific Coal Co., Rock Springs, Wyo., concurred. K. L. Marshall of the Bureau of Mines, said that in his opinion conditions were getting better year by year, but, with this cheering statement, E. H. Denny, also of the Bureau of Mines disagreed, giving figures for late years, showing that on the average little change has been made though several of the states have shown better results.

James Dalrymple, chief mine inspector for the state of Colorado, gave a spirited address, upholding the contention of Mr. Moses that the operator of small mines is largely to blame for the terrible casualty figures in the Rocky Mountain states. By small mines, he explained, he meant the little wagon country banks. These had hitherto been under the control of the state mine inspectorate. Mr. Dalrymple has been an outstanding advocate for safety for many years, one of the vehement crusaders of the West. He is engaged in a tussle with

the legislature of Colorado, now in session, which threatens to pass a bill to take small mines out of the jurisdiction of the state mine inspector entirely. Mr. Dalrymple has fought for the control of these mines. The highest courts have upheld his position, and the small farmer operators have now gone before the legislature demanding that they be exempted from the operation of the law. If the legislature passes this bill, Mr. Dalrymple fears it bodes a still worse accident rate for Colorado. Speaking of mechanical loading, W. C.

Holman, chief engineer, of the Phelps Dodge Corporation, Dawson, N. M., described the work that company was doing with shaking conveyors, entry loaders and belt conveyors. It is having excellent success too with a right-angle drive on a shaking conveyor, driving faces 200 ft. long at right angles to the entry. Much experience is being gained in the continuous loading of coal but so far at no saving in cost. The belt conveyors are doing excellent work in aiding in the drawing of pillars, and the officials of the company are much encouraged, feeling that success will be the ultimate outcome of their experience. D. A. Stout, manager, Colorado Fuel & Iron Co., B. W. Snodgrass, general manager, Victor Ameri-

can Fuel Co. and Benedict Shubart, secretary of the institute, said that the conditions in the southern part of the state were unfavorable for mechanical loading of any description. Mr. Snodgrass reported one operation in Routt County, Colorado, where excellent results are being obtained. The equipment has been operated for several years; much valuable experience has been gained, and cost has been reduced by the innovation. Axel E. Anderson, of Denver, Colo., gave a brief description of the methods of steel timbering in the Pittsburgh seam where heavy drawslate is being supported under bad roof in advancing long face work.

LACK OF FLEXIBLE SHOVEL "DEPLORED"

Charles M. Billington spoke humorously about the need for a flexible shovel that would get around the props and into the tight places in the mine, saying that there was no machine on the market, or in sight, that can work in most of the mines of Colorado, but Fred Koelling was more hopeful. He believed the time was coming when such a machine would be built.

A. W. Dickinson, general superintendent of the Union Pacific Coal Co., described the personnel work of his company. The three companies which had made outstanding successes in the use of mechanical loading devices and that were represented at the meeting were the Sheridan-Wyoming Coal Co., the Union Pacific Coal Co. and the Phelps Dodge Corporation. Their representatives, Messrs. Bottomley, Brennan and Dickinson all agreed that the first and most important duty in-

With a new technique, due to the arrival of the loading machine, training of employees is needed, so as to hasten the time in which they will become acquainted with the work. Miners have attained their knowledge of the old methods by long experience. Now come new problems that they may ultimately learn in the same way to solve satisfactorily, but at what cost of time meanwhile, and at what loss from blundering? For this reason need is felt for a study of teamwork in mechanical loading.

stalling mechanical devices for loading was to educate the men by which the work had to be accomplished. This was considered in a paper on vocational training delivered later. Mr. Brennan spoke at length on the importance of considering carefully the cost of coal on the car. One might get low mining and loading costs and lose more than was gained because of the cost, on the tipple, of cleaning coal that had been mechanically loaded. This has been a trouble that has long beset the loading-machine manufacturers.

HOT DISPUTE OVER USE OF BLACK POWDER

Once again the report of the safety committee, which has been in dispute for two years, aroused much controversy. Three Scotchmen, James Dalrymple, William Littlejohn and Hugh McLeod, members of the committee, were present to defend the document. A hot discussion but no agreement resulted, much of the disagreement centering on the use of black powder. Mr. Dalrymple contended that, if all the shooting was done when the men were out of the mine, he was favorable to the continued use of black powder. Some operators said they should be permitted to use it whether men were in the mine or not. Others maintained that permissible powder could do anything that black powder could do and much more safely. They could not see any excuse for retaining the use of black powder for shooting. This and other points were referred back to the committee with instructions to reach a decision before the meeting ended.

A decision of importance in the history of the institute was taken early in this meeting. It has been rec-

ognized ever since the institute was founded, fourteen years ago, that it was not on a satisfactory financial basis. As its importance grew this became increasingly obvious. As a result a committee was appointed with W. D. Brennan, general manager of the Phelps Dodge Corporation, Stag Canon Branch, Dawson, N. M., as chairman, and A. C. Watts, assistant to the senior vice-president, Utah Fuel Co., Salt Lake City, Utah; P. J. Quealy, general manager, Kemmerer Coal Co., Kemmerer, Wyo., and J. B. Marks, of the Colorado Fuel & Iron Co., Walsenburg, Col., as members, to arrange for a permanent financing of the institute through operator memberships.

Hitherto, the institute has been supported by individual members with small dues, the actual financing depending on the ingenuity of the secretary. The first recommendation of the committee was the retention of the present secretary, Benedict Shubart, and the appointment of Frank Sandstrom, now secretary of the Colorado-New Mexico Operators' Association, as assistant secretary with compensation suitable to the duties involved.

The meeting adjourned early to allow the members to dress for the banquet and ball at the Cosmopolitan Colorado Room. The banquet was followed by speeches, some humorous and some informative. At 9:30 the floor was cleared, and dancing continued till the small hours of the morning.

The last two days of the meeting, in the course of which Edward Bottomley, of Sheridan, Wyo., was elected president for the coming year will be reported in the succeeding issue of *Coal Age*.

Coke Being a Bulky Fuel and Speedy, Needs Good Damper Control

Describing coke as being speedy in burning but slow in kindling in a horizontal direction, Prof. E. H. Lockwood, of Yale University, told the Metropolitan Section of the American Society of Mechanical Engineers, in New York City, that "coke is an excellent fuel for domestic heating and can be successfully used in furnaces designed for anthracite. This fuel makes a hot fire, is smokeless and contains only a small quantity of ash. In addition, it usually costs less than the large sizes of anthracite. The disadvantages are that coke is more bulky and hence requires a larger coal bin and firepot to hold the same weight of fuel. It is usually available in cities but not always in smaller communities. Sometimes the heating equipment contains an extra large firepot, and such furnaces are well adapted to burning coke.

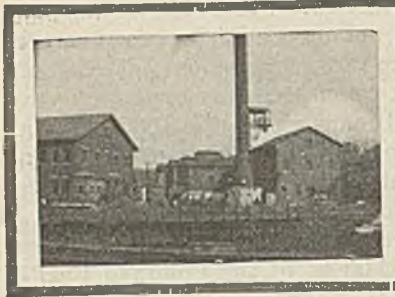
"Coke requires but little draft, and when kindled will burn too fast unless checked by good damper control. The fuel bed itself acts as a restraint on the draft, if the firepot is filled to the top as it should be. After such a firing the draft should be left on until the coke is well kindled and flame shows at the top; then it should be reduced so that the fire will give the desired emission of heat. Contrary to the usual assumption, a hot coke fire will keep a long time if properly checked by dampers. If the coke fire burns out too fast and gives too much heat, it indicates insufficient damper control or air leakage into the ash pit.

"Coke apparently has failed to win favor in domestic heating as compared with large-size anthracite. One

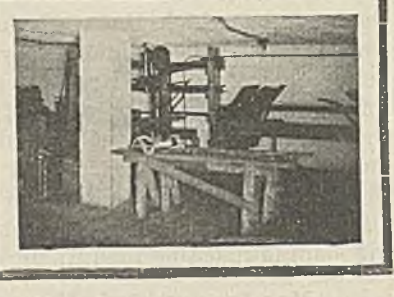
reason has been given, its bulkiness and the inability to get enough weight of fuel into the firepot. Another reason for disliking coke is its extreme slowness in kindling when about half the fire is burned out. A coke fire does not travel readily in a horizontal direction, hence it is difficult to get the fire to cover the whole grate when once partly burned out. Another reason may be the slightly greater difficulty in controlling a hot fire by dampers.

"By combining buckwheat coal with coke one of these objections is removed in part at least, as the particles of buckwheat fill the spaces between the larger coke pieces, increasing the weight of fuel without much increase in bulk. This combination also assists the damper control, for the denser fuel has greater resistance to air flow, hence less demand is made on the damper. The objection to the slow kindling of buckwheat can be met by the use of a little coke or wood after removal of ash or whenever the fire is partly burned out and needs to be revived quickly."

THE RELATIVE SAFETY of cushioned blasting as compared with shots in which no air space exists between the explosive and stemming is being studied by the Bureau of Mines at its Pittsburgh experiment station. During the past fiscal year series of tests have been partly carried out to determine the charge limit or a permissible explosive in 8 per cent natural gas-air mixtures under the different methods of loading in the borehole, and using different kinds of stemming. During the present fiscal year it is planned to complete the above series and include natural gas-air mixtures of less than 8 per cent gas.

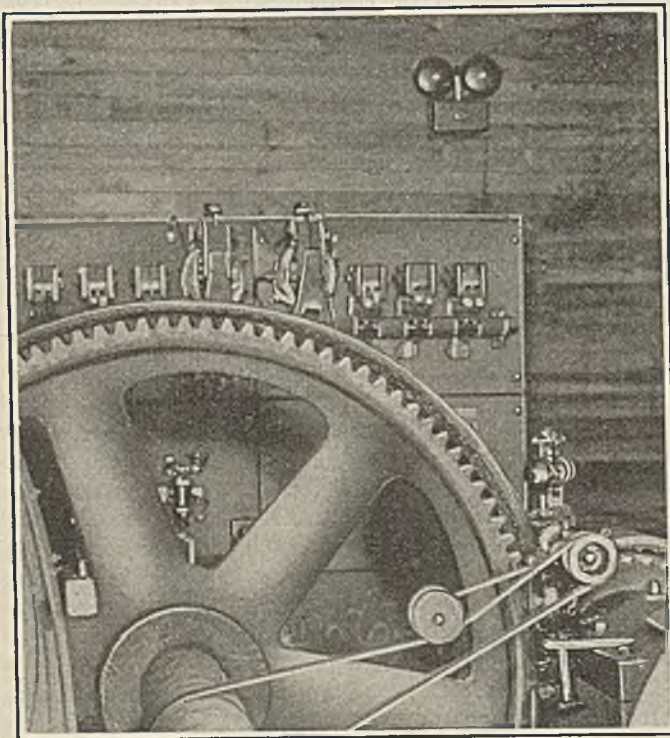


Practical Pointers For Electrical And Mechanical Men



Engine Governor on Electric Hoist Warns of Overspeed

Overspeed has damaged many motors driving slope hoists. Usually this damage is confined to the windings but in some cases bearing housings are broken and the motor completely wrecked. In few instances is a spare motor available for driving the hoist, therefore in addi-



Showing Governor Belted to Intermediate Shaft

On the wall back of the control panel is the electric gong that rings in case the hoist speed increases to 5 per cent above normal. No repetition of the overspeed damage has occurred during the several years since this device was installed.

tion to the expense of repairing or replacing the motor, there is a loss due to shutdown of the mine.

As a rule cases of overspeed-damage to motors have occurred on single-rope tight-drum hoists, while lowering trips. Among the principal causes are the following: hoistman's idea that "a little overspeed" will do no harm; his misjudging the speed; and delayed application of the hand brake following failure of power or opening of the motor circuit, where regenerative braking is used.

Few practical men realize that the mechanical stress in the rotating element of a motor increases as the square of the speed. This means that at twice normal speed the stress tending to bend or throw out the rotor coils or bars is four times that at normal speed.

A few years ago a 125-hp. hoist motor at the No. 11 mine of the Galloway Coal Co., at Carbon Hill, Ala.,

was badly damaged by overspeed. To minimize the chance of a reoccurrence of this mishap D. C. Johnson, the chief electrician, utilized a fly-ball governor from an old steam engine to ring a bell in case of overspeed.

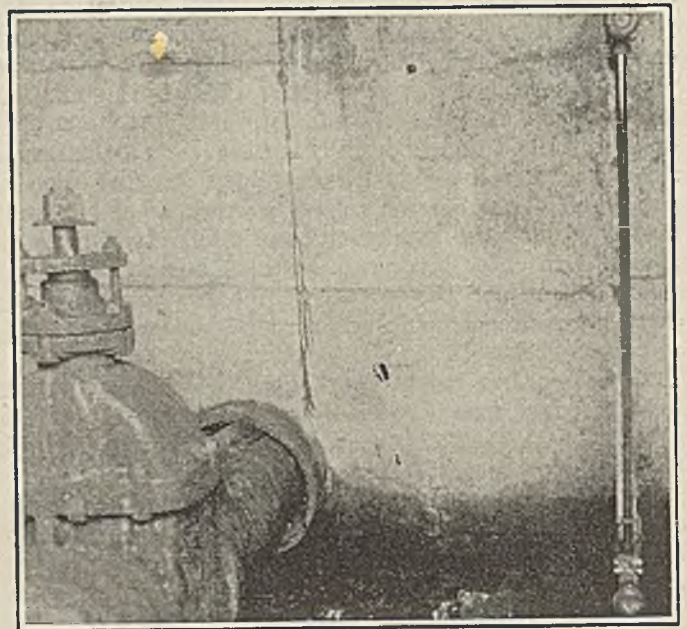
The governor is fastened to a bearing cap of the motor-shaft extension, and is belted to the intermediate shaft. Attached to the end of the governor stem, but insulated therefrom, is a copped brush which makes contact across stationary carbon blocks. This completes a circuit from a dry-cell battery to a gong mounted on the wall.

The governor spring is adjusted so that the gong will begin to ring at a motor speed 5 per cent above synchronous. This warning leaves no excuse for the operative to allow a dangerous overspeed so long as the hoist brake is in good operating condition.

Pump Station Has Renewable Suction

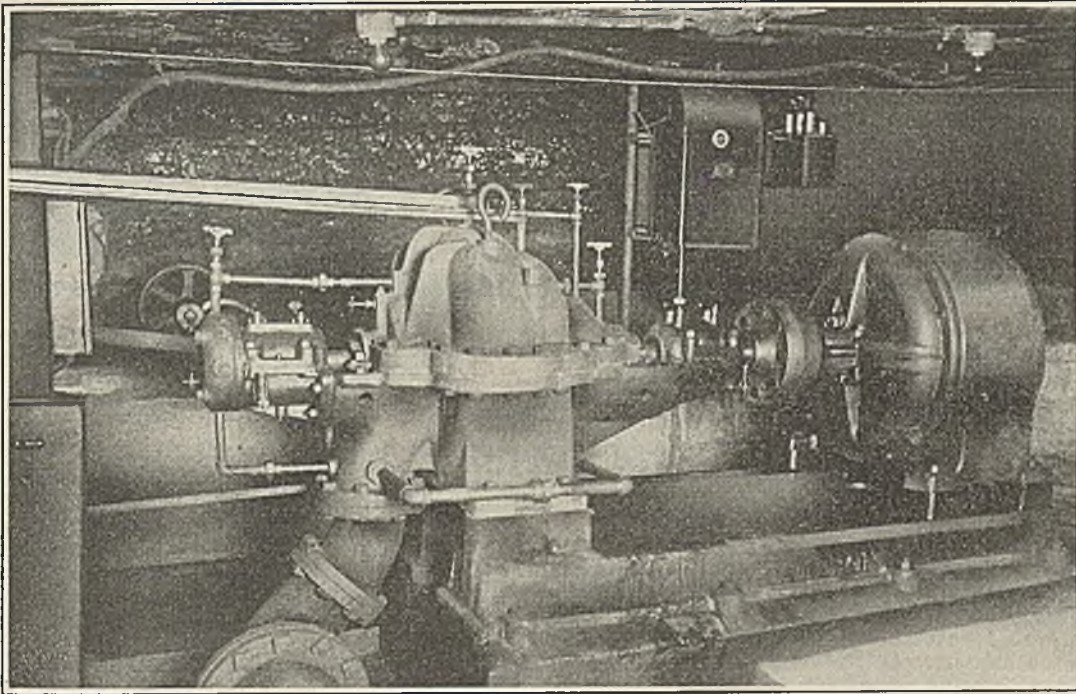
Drainage problems in mines having acid water are quite different from those in operations where the water is practically acid free. The pump, pipe and fittings should be of special material, and certain differences in the details of the installation are desirable.

Not long ago a new central pump was installed in the slope mine of the Newcastle Coal Co., at Newcastle, Ala. The water contains considerable acid; hence a special method was employed in connecting the suction pipe to the concrete wall of the sump so as to facilitate renewal.



Suction Pipe and Water Glass at Sump Wall

At the left around the 10-in. pipe can be seen the end of the 14-in. pipe which was cast into the wall. Before the wall was built some one asked the practical question "How can we tell how high the water is in the sump?" As a result connection pipes were cast into the wall for the gage glass at the left.



Pumping Unit

The pump is a two-stage machine rated at 880 gal. per min. and is of solid bronze. The motor is of the squirrel-cage induction type rated at 125 hp., 440 volts, 1,755 r.p.m. Mounted beside the starting compensator is an oil switch which is used instead of a common knife switch. The pump is in a 30-in. pit but the base is mounted on a foundation which extends about 12 in. above the floor.

A piece of 14-in. cast-iron, bell and spigot pipe was cast into the wall with the end of the bell flush with the sump side. A 10-in. pipe of the same type was then slipped into the 14-in. pipe from the sump side and the annular space between the outside of the 10-in. bell and the inside of the 14-in. bell calked with jute and lead. This 10-in. pipe forms the suction line.

With this arrangement the line through the wall can be renewed at small expense. The old pipe can be driven back into the sump and a new length installed in the same way as was the original. Only the end surface of the bell of the 14-in. pipe is exposed to the corrosive water. It is therefore unlikely that this pipe will ever have to be renewed.

The new pump, which is of solid bronze, is a 2-stage centrifugal machine rated at 880 gal. per min., and is driven by a 125-hp. 440-volt 1,775-r.p.m. squirrel-cage induction motor. The unit is set within about 30 ft. of the sump wall and low enough so that it does not need priming if the sump is fairly full.

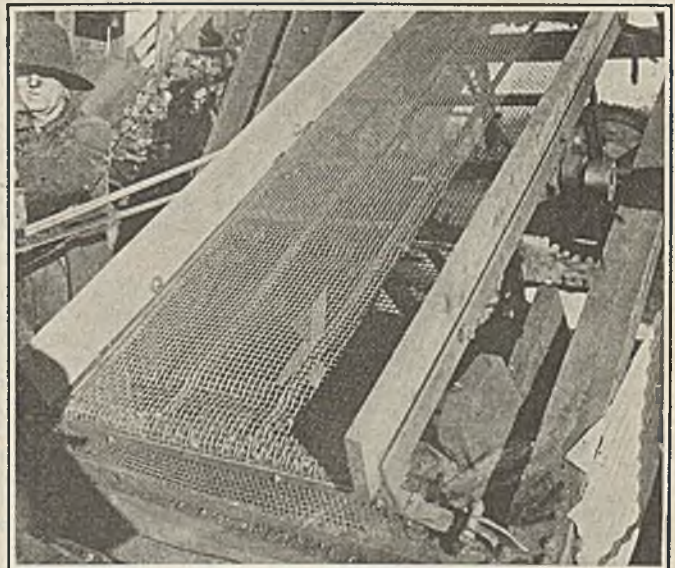
On the sump wall and within sight from the pumping unit, a 3/8-in.x48-in. water glass is mounted to show the water level in the sump. This is a rather unusual application but answers its purpose well.

Because the pump is driven by a 440-volt motor it might be assumed that the energy is brought into the mine at this voltage. Instead it is brought down through a borehole at 2,300 volts. The transformers are located several hundred feet from the pump and in a concrete vault adjoining a motor-generator room at the foot of the borehole.

Springs of Vibrating Screen Are Regular Ford Parts

It would be a long list that included all the uses that have been made of Ford car parts. The illustration shows a vibrating screen which is mounted on two Ford front springs. The hangers, which are bolted to the stationary frame, were apparently cast especially for this work.

This screen is being used by the Mill Creek Coal Co., Carbon Hill, Ala., to separate 3/8-in. and less, from the

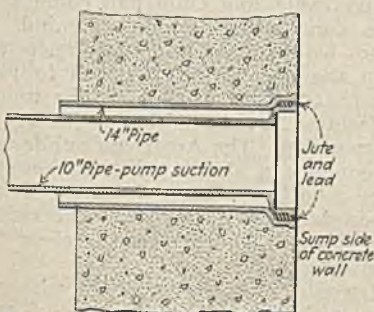


Vibrating Screen Used by Mill Creek Coal Co.

Arrows added to the illustration point to the springs, eccentrically-drilled weight, and spring hanger. At the left is the belt by which the weighted shaft is driven from a small motor.

3-in. size preparatory to washing on a flat table. The screen dimensions are 36 x 96 in., and the vibration is secured through the effect of eccentrically-drilled weights mounted on a belt-driven shaft at the center of the screen.

A small motor supplies the power necessary to drive the weighted shaft.

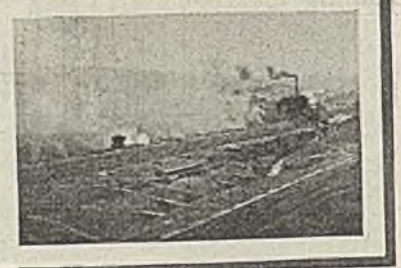


Suction Pipe in Sump Wall

Both pipes are of cast iron and the space between bells is of convenient dimension for calking with jute and lead.



News Of the Industry



Next Move in Wage Muddle in Doubt; Many Foresee Long Shutdown of Mines; Some Hope for Early Renewal of Parley

By Sydney A. Hale
Associate Editor, *Coal Age*

Central Competitive Field operators and miners, back from their fruitless conferences at Miami, Fla., are taking stock of the situation and wondering who will make the next move to bring them together again for the purpose of discussing a new wage agreement.

Those who look at the future darkly see no hope for any action prior to the expiration of the Jacksonville contract, the end of this month. In fact, many foresee a prolonged suspension. This forecast is based upon the attitude displayed at Miami and upon the fact that the country has been accumulating reserve stocks of coal at such a rate that it would be many months before the consumer would feel any pinch—assuming, always, that the non-union fields are able to operate without transportation or labor interference.

Others less pessimistically inclined believe that another conference will be called at an early date. Illinois producers would be willing to participate and there seems to be little doubt that Indiana would trail along with Illinois. Ohio, in its present temper, would want some assurance of a new deal before attending. Western Pennsylvania operators would be the hardest to line up. Some of the Pittsburgh group are reported to be ready to make an out-and-out fight for an open shop.

Spokesmen for the Ohio operating interests, who journeyed down to Miami infected with the belligerency of their western Pennsylvania associates, seemed less disposed to force the issue when the conference closed. Certain of the larger producers had about reached the conclusion that they would make only a passive fight. Unless they discovered a genuine demand among the miners to make terms on a basis acceptable to the operators they proposed to close down their mines on April 1 and await developments.

Nominally all of the operators in the four states are committed to the "continuously competitive wage scale" plan of the Toledo conference. There is no question that many of them would jump at the chance to sign up under such an arrangement. Actually, however, there is an influential group that entertains no hope that such a proposal will ever be accepted by the union. This group is willing to consider other avenues of relief. As to just what

these avenues should be, however, there is difference of opinion. The particular situation of the individual operator enters the picture at this point.

All of the producers, however, are agreed that the Central Competitive Field as a wage-making unit is dead. It is their opinion that the justification for the original grouping of Illinois, Indiana, Ohio and western Pennsylvania no longer exists. Competition, they point out, has changed from a rivalry between Eastern and Western districts to a ruthless warfare between Southern and Northern fields. Therefore they are more interested in working out an adjustment which will put them on a competitive basis with the Southern non-union operators.

Admittedly the United Mine Workers would like to preserve the Central Competitive Field intact. But no indication has been given that the union will carry this desire to the point of refusing to sign up with individual districts. In fact, it is strongly hinted that the union will go a step farther and permit the outlying districts to continue to work on the Jacksonville basis after April 1 pending a final adjustment in the major fields.

Strategy of 1922 Recalled

Such a policy would permit the union to wage a stronger fight to regain the Central Competitive Field as the workers in the outlying districts would be subject to unrestricted special assessment by the international executive board of the United Mine Workers. Moreover, it is not to be supposed that the union leaders have forgotten the strategy of 1922. At that time, too, it was openly asserted by the operators that the Central Competitive Field had been dismembered beyond reconstruction. Nevertheless the outlying producers who rushed to sign up at Cleveland under the impression that they had won autonomy later discovered that the Central Competitive Field still lived.

The final obsequies over the Miami conference were decently brief. When the joint conference reconvened at the Hotel Everglades on the morning of Feb. 22, Chairman Rice Miller announced that the sub-scale committee had been unable to reach an agreement. George M. Jones (Ohio) moved for an

Renewal of Negotiations Is Davis' Hope

James J. Davis, Secretary of Labor, is hopeful that negotiation of a wage scale in the Central Competitive Field will be renewed at another conference between the operators and union miners before the present agreement expires, on March 31. This was made known in an announcement by Secretary Davis following a conference in Washington Feb. 26 between Labor Department officials and John L. Lewis, president of the United Mine Workers.

Mr. Lewis made no statement other than to say that the statement had his approval. Others who took part in the conference were Hugh L. Kerwin, chief of conciliation of the Labor Department, and W. H. Rogers, a conciliator, who attended the convention of the miners' union at Indianapolis, beginning Jan. 25.

adjournment sine die and the motion was seconded by W. H. Haskins (Ohio). John L. Lewis, for the miners, protested against precipitate action and insisted that the report of the sub-scale committee be acted upon. Phil Penna (Indiana) thereupon moved the acceptance of the committee's report and Mr. Haskins seconded the motion.

Mr. Lewis said that the mine workers would vote to accept the report of the committee, not because they desired to do so but because they had no alternative. He expressed regret that the conference was ending without any constructive action. The miners, he said, had come to Miami with open minds, prepared to stay as long as necessary and still willing to remain indefinitely "if such action would contribute to the stability of the industry."

"I cannot refrain from voicing the wish that our friends from western Pennsylvania and Ohio had come in a more conciliatory frame of mind. I cannot believe that this conference will mean the end of negotiations to prevent chaos after April 1." The union, he declared, wants neither a strike nor a suspension. The American public will not condone a strike policy or countenance a battle to break down the living standards of the workers. The union, he concluded, stood ready to renew negotiations at any time.

"I would have preferred an adjournment without further discussion," said

Mr. Penna, "but it is only fair to say that the operators came here with a desire to make a settlement and to make a scale and fully conscious of their public obligations, but, like the miners, willing to settle if they could make the terms."

The union, he continued, began the negotiations with a criticism of the operators. "The operators resented and still resent that criticism. They have managed their business as well as the union has its own. I would call it a 50-50 split." He admitted that neither side had given proper consideration to the proposals of the other side. It had been a case of mutual fault-finding rather than constructive criticism.

Indiana, he maintained, had been plagued by petty strikes and hampered by one-sided interpretations of the wage contracts made by men many of whom did not properly understand the English language. This provoked a reply from Harvey Cartwright, president-elect of district 11, who held that some of the strikes against which Mr. Penna complained had been forced by the attitude of the operators. "There is no such thing as a legal strike under our contract," retorted Mr. Penna. Hugh Shirkie (Indiana), who also sought to get into the discussion in defense of his company, was taken off the floor on a point of order.

Further debate was cut short by a renewal of the motion to adjourn sine die. The motion was unanimously adopted.

Says Renewal Would Be Suicidal

Following adjournment the Illinois and Ohio operators issued statements defining their respective positions. Illinois, said George B. Harrington, has lived up to the letter and spirit of the Jacksonville contract and Mr. Lewis has acknowledged that fact. But, despite the artificial stimulus of the anthracite and British strikes, the state has suffered so severely and progressively that "none can contemplate a renewal of the same terms as otherwise than suicidal both to operators and miners.

"Under the inflexible and out-of-date Jacksonville contract the unionized states have almost ceased to compete and have been forced to yield their position and markets to rapidly growing production from non-union fields working under labor relationships permitting reasonable flexibility and adjustments. The operators all believe that competitive conditions as between the Central Competitive Field and West Virginia and Kentucky must be recognized in making a new wage contract if such contract is to afford any relief. The operators' resolution asks agreement on this principle and invited the miners to help work out some entirely possible and practical solution recognizing this principle.

"The mine workers' counter proposal suggests some constructive features for future betterment of labor relationships in which the operators would be glad to acquiesce and co-operate. But acceptance is made impossible by a 'without-which-nothing' first paragraph which Mr. Lewis has acknowledged means a two-year extension of the Jacksonville scale. His proposal is un-

To Cut Wages 10 per Cent In Sarre Mines

Sarre Valley coal operators, who report that they are confronted with an economic crisis, announced on Feb. 26 that the wages of their employees would be reduced 10 per cent on March 16. The mine workers lodged a strong protest against the proposed reduction. Similar wage cuts are said to be contemplated in other industries.

acceptable in failing to recognize competitive necessities and also in having no provision for arriving at necessary decisions and preventing strikes when equal representation of mine workers and operators fail to agree.

"The operators do not seek or favor low wages. They believe the welfare of employees is essential to the welfare of the industry. But we do feel, unanimously, that the present wage contract forces an unnecessarily high cost of producing coal and crucifies the operator by rendering his cost non-competitive, without benefiting the miner, who, under the Jacksonville contract, has taken a drastic reduction in annual wages through loss of working time. No wage scale is of value without work.

"We have been and are ready to discuss and act on these problems, in a broad and fair way, but in the light of experience we would prefer some provision for unbiased arbitration of points on which operators and mine workers are unable to agree without resorting to strikes destructive of our mutual interests and irritating and costly to the public."

The Ohio statement insisted that the Ohio operators had come to the conference in good faith to negotiate an agreement. It denied that the Toledo plan was intended to or would weaken the union or give the union operators any undue advantage. "Its purpose was to restore to the operators their ability to compete in their natural markets on a scale of wages fair alike to operator, miner and the public. The mine workers refused to give this suggestion any serious consideration."

Ohio the Chief Sufferer

After reciting that Ohio had suffered more than any other union state under the Jacksonville agreement and that union officials had repeatedly declined to meet in joint conference to modify that agreement, the statement said that "the miners' position in demanding a renewal of a scale that has lost for them a large number of members and destroyed the markets for union mined coal is indefensible." Such a position "does not reflect credit upon their ability to recognize competition and adjust themselves to the inevitable acceptance of a wage agreement that will permit them to earn a livelihood and restore prosperity to the industry in the State of Ohio. A continuance of the Jacksonville scale for two more years would practically eliminate the union fields from the markets."

Cosgrove-Meehan Coal Corp. Buys Rachel Mine

Rachel mine of the Bertha Consumers Co., at Rachel, W. Va., was sold early this week to the Cosgrove-Meehan Coal Corp., with offices at Johnstown, Pa.; New York and Chicago, and mines in Pennsylvania and Illinois. John H. Jones, president of the Bertha Consumers Co., stated that the sale would be effective March 1 and that it was the forerunner of two "substantial mergers" and the formation of a large sales organization.

When the sales agency plan has been completed, said Mr. Jones, his company will have the marketing of about 1,000,000 tons of coal monthly from its own mines as well as additional tonnage from other mines located in Ohio, West Virginia, Kentucky and Pennsylvania. The Bertha-Consumers president said he could not divulge details of the other mergers, but he did make known that northern West Virginia and eastern Kentucky interests would be concerned. He said announcement of the mergers probably would be made soon.

The Rachel mine is a modern electrically-equipped shaft operation, within the town of Rachel, near Fairmont, W. Va., and close to one of the Bethlehem Mines Corp. plants in that field. It has a daily production of 2,500 to 3,000 tons, employing about 500 men.

The Cosgrove-Meehan Corp., of which John C. Cosgrove is president, will have no interest in the further mergers of production and sales organizations mentioned by Mr. Jones. With the West Virginia gas-coal production the Cosgrove-Meehan output this year will be about 4,000,000 tons. The consideration for the Rachel mine was \$1,500,000, it is reported.

Ephraim Creek Company Sold To Berwind-White

The Ephraim Creek Coal & Coke Co., Thayer, W. Va., has been sold to the New River & Pocahontas Consolidated Coal & Coke Co., controlled by the Berwind-White interests. The transaction, which is reported to be effective March 1, is believed to involve a consideration in excess of \$1,500,000. Officers of the selling company were: President, A. A. Houghton, American Ambassador to Great Britain; vice-president, A. B. Houghton, and treasurer, M. C. Jones, New York City.

The property of the Ephraim Creek Coal & Coke Co. comprises about 8,000 acres in the New River district operating in the Fire Creek seam. Acquisition of this property by the New River & Pocahontas Coal & Coke Co. will increase the daily output of that company by about 1,200 tons.

Eliot Farley, president of the Delaware, Lackawanna & Western Coal Co., has issued a notice that, effective March 1, that company's anthracite shipped into Ontario via the Buffalo gateway will be handled through the office of E. H. Read, general northern sales agent, Prudential Building, Buffalo, N. Y.

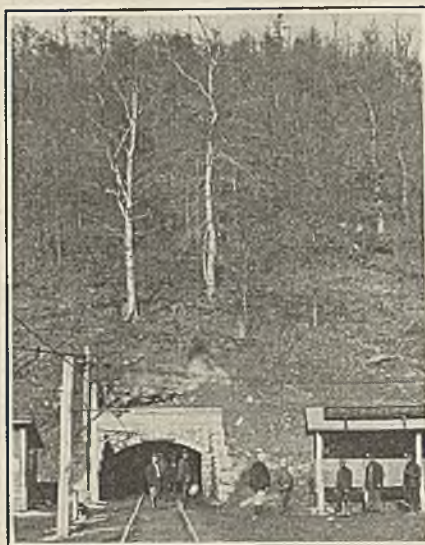
Empire Mining Congress Completes Its Plans for Extended Canadian Trip

With the Canadian Institute of Mining & Metallurgy as host, the Second (Triennial) Empire Mining & Metallurgical Congress will meet in Canada from Aug. 22 to Sept. 28. During that time two simultaneous tours will be made in special trains.

Congress opens at Montreal, Monday, Aug. 22. On the day following is the official banquet and departure for Ottawa. The next two days will be spent in Toronto. Saturday will be devoted to Niagara Falls and the plant of the International Nickel Co. On Sunday, Aug. 28, the guests will arrive at Sudbury and visit the Algoma Steel Corporation plant. Monday visits will be made to nickel mines and smelters. Tuesday the party will arrive at South Lorrain. The afternoon will be spent at Cobalt. The last day of August will see the party at Kirkland Lake with its gold mines and mills. Gold will greet them also at Timmins, which will be reached Sept. 1. The Hollinger, McIntyre-Porcupine and Dome mines will be visited. After this visit and the return to Cochrane the party splits, part going east. The others arrive at Minaki on Friday, some taking an aeroplane to the Bulldog Lake district from the latter point. Saturday and Sunday, Sept. 3 and 4, will be spent in Winnipeg with technical sessions on the former day.

To See Many Points of Interest

Coal greets the party on Sept. 8 with their arrival at Bienfait. The Beinfait and Taylor coal tipples and mines of the Manitoba & Saskatchewan Coal Co. and of the Western Dominion Collieries respectively will be visited. Two days, Sept. 6 and 7, will be spent at Banff, where the coal-cleaning plants at Lethbridge and Coleman are within reasonable distance. Friday should see the party at Fernie, where the mines, tipples and coke ovens of the Crows Nest Pass Coal Co. will be viewed. Kimberley will be reached Sept. 10, where the Sullivan lead-zinc mine and the concentrator of the Consolidated Mining & Smelting Co. of Canada are scheduled for a visit. On Sept. 12 Tadanac is reached where the smelters and refineries are to be inspected. Sept. 13, the Allenby mill at Princeton reveals modern copper-refining processes. Vancouver is reached Sept. 14 where is to be viewed the copper flotation mill of the Britannia Mining & Smelting Co. The next three days are to be spent at Victoria, Vancouver and Jasper Park. Sterco is reached on Sept. 19. Here are the coal strippings of the Sterling Collieries Co. and the Coal Valley Mining Co. Cadomin follows in the same afternoon with the mines and tipples of the Cadomin Coal Co. From Sept. 20 till Sept. 26 is to be spent on the return to Quebec, through Edmonton, Winnipeg, Fort William, Taschereau and Noranda (Rouyn) with some entertainment by the way and visits to the University of Saskatoon and the Noranda Mines, Ltd. On Sept. 27 the trippers leave for Sherbrooke, where



Portal of U. S. Coal & Coke No. 4 Mine

At the right is the daily accident report board, on which each section foreman endeavors to keep a "clean slate" for the month. On this board there is a line for each foreman and a column for each day of the month. Accident reductions are a matter of close supervision by the mine officials.

they view the asbestos mines, returning to Quebec.

The other party splits the main body and goes east from Cochrane, spends Sept. 2 at Noranda (Rouyn), the following day at Chicoutimi, the works of the Aluminum Co. of America, pulp and paper mills and hydro-electric plants. Quebec is again reached Sept. 5 and Thetford on Sept. 6. The next day the party reaches Minto, N. B., and the collieries of the Minto Coal Co. Sept. 8 is spent at Moncton. Friday and Saturday, Sept. 9 and 10, are to be devoted to Sydney with the works of the British Empire Steel Corporation and its submarine coal mines. On Sept. 12 the train arrives at St. Johns, N. F., and the submarine iron mines of the British Empire Steel Corporation. On Wednesday noon, Sept. 14, the party doubles straight back to Quebec, arriving Sept. 17.

The Congress is held by ten "constituent institutions," all British, of course, as the name of the Congress implies. The Cunarder "Alaunia" has been selected as the official ship to bring the delegates to Montreal.

Production Economy Project To Cheapen British Coal

A project to cheapen the cost of coal in Great Britain has been launched with a capital of £1,000,000 by W. R. Morris, automobile manufacturer. Mr. Morris has organized a company called the Morris Collieries, Ltd. One mine has already been acquired, and by the introduction of the most modern mechanical methods he hopes to be able to produce coal at a price that will result in an appreciable reduction in cost to all consumers.

A co-operative arrangement with the workmen whereby the latter will benefit from the profits of the new project also is contemplated by Mr. Morris.

Total January Coke Output Gained Slightly

Production of byproduct coke in the United States during January remained practically stationary, the total estimated output being 3,700,000 net tons, a decrease of 6,000 tons when compared with December. There were 76 active and one idle plant, and these plants produced about 86 per cent of their capacity.

Output of beehive coke showed a slight increase when compared with December, the total for the month being estimated at 787,000 tons. Production of all coke was 4,487,000 tons, the byproduct plants contributing 83 per cent and the beehive plants 17 per cent.

Monthly Output of Byproduct and Beehive Coke in the United States*

	Byproduct Beehive		Total
	Coke	Coke	
1924 monthly average..	2,833	806	3,639
1925 monthly average..	3,326	946	4,272
1926 monthly average..	3,712	957	4,669
October, 1926.....	3,814	867	4,681
November, 1926.....	3,743	860	4,603
December, 1926.....	3,706	780	4,486
January, 1927.....	3,700	787	4,487

* Excludes screenings and breeze.

The total quantity of coal consumed at coke plants in January was about 6,557,000 tons, of which 5,316,000 tons were consumed in byproduct ovens, and 1,241,000 tons in beehive ovens.

Estimated Coal Consumed Monthly in Manufacture of Coke

	Consumed in By-		Total Coal Consumed
	product Ovens	Con- sumed in Beehive Ovens	
1924 monthly average..	4,060	1,272	5,332
1925 monthly average..	4,759	1,452	6,211
1926 monthly average..	5,334	1,509	6,843
October, 1926.....	5,480	1,367	6,847
November, 1926.....	5,379	1,356	6,735
December, 1926.....	5,325	1,230	6,555
January, 1927.....	5,316	1,241	6,557

Of the total production of byproduct coke during January, 3,001,000 tons, or 81.1 per cent, was made in plants associated with iron furnaces, and 699,000 tons, or 18.9 per cent, was made at merchant or other plants.

Railroad Fuel Cost Higher In December

The average cost per net ton of coal used by Class I railroads in the United States in locomotives in transportation train service during December was \$2.76, according to figures prepared by the National Coal Association. The averages for the different districts were as follows: Eastern, \$2.88; Southern, \$2.31; Western, \$2.92. These averages show an increase over November of \$0.08 per net ton in the Eastern district; \$0.02 in the Southern District; a decrease of \$0.01 in the Western district, and an advance of \$0.06 per ton for the entire country.

These average costs are \$0.22 higher in the Eastern district than in December, 1925; \$0.11 higher in the Southern district; \$0.01 lower in the Western district, while the total for the United States shows an increase of \$0.13.

The average cost represents the invoice price paid for the coal plus any freight charges incurred by the purchasing railroad.

Possibilities of Co-operative Selling As Coal-Price Stabilizer Discussed In Report of British Investigators

By Paul Wooton

Washington Correspondent of *Coal Age*

An interesting byproduct of the British coal strike is the report of an official committee appointed to consider co-operative marketing by the coal-producing companies. The committee was appointed by the Secretary for Mines, a British Cabinet officer. The chairman was Sir Frederick William Lewis, but the guiding spirit probably was Sir Alfred Mond, who is one of the principal producers in South Wales and who recently has effected important consolidations of anthracite producing properties in the same region. It was Sir Alfred who suggested the need of some form of arrangement to stabilize prices and prevent excessive competition. The committee consists of eleven leaders of the coal industry, eight of whom joined in a majority report. Their conclusions are summarized as follows:

Committee Outlines Plan

(1) The development of organized marketing in the coal-mining industry is desirable in order to avoid excessive competition, to effect economies and improvements in the marketing of coal and to help to stabilize the industry.

(2) The present lack of consolidation in the industry is a serious impediment, and the full development and benefits of organized marketing cannot be realized unless the industry can be consolidated, by amalgamations, into a much smaller number of units.

(3) Organized marketing is only immediately practicable in those localities and districts where there is a fairly general desire among the coal owners to develop it.

(4) The voluntary development of local arrangements—more particularly selling pools—among neighboring colliery owners is advocated.

(5) District organizations, of wider scope than local arrangements, are the next stage of development. Where, in any particular district, a fair and equitable scheme for more efficient marketing is supported by a majority of 75 per cent or more, calculated on a tonnage basis, powers should be vested in a tribunal to make the scheme compulsory, subject to effective safeguards for the minority.

(6) The co-ordination of district associations will be ultimately a desirable development, but can only be justified to the community by the industry effecting and sharing with the consumer economies, not only in the marketing of coal but in all phases of its production and transport.

(7) The government is advised to consider the question of revising and clarifying the law on restraint of trade so as to remove the present uncertainty as to the status in law of marketing organizations.

(8) In the export trade, local selling pools and the possibilities of closer co-operation between colliery owners and exporters should be developed.

A dissenting report was filed by three of the members, who argue that the essence of the scheme is to increase prices, if necessary, by control of output, which would lessen demand. The minority feels that the plan would not work unless there were a worldwide arrangement with competitors. It also is held that the plan would interfere with the existing organization of British export trade.

The report, which just has reached the United States in printed form, is of interest to the American coal producer because of the discussion here of plans for the formation of district marketing associations or other forms of co-operative marketing. It always has been recognized here that some amendment to the anti-trust statutes must be made before any such plan can be undertaken. In England the laws are much less stringent, but even there the committee is of the opinion that the government will have to revise and clarify the laws covering restraint of trade, so as to clear the legal status of such centralized marketing.

Special Law May Be Needed

It also is interesting to note that the British committee realizes the difficulty of drawing all production into such a scheme and recommends that if as much as 75 per cent of the tonnage of the district is ready to participate, means must be provided by law to bring in the other 25 per cent. In Great Britain, therefore, as well as here, centralized marketing seems to require public assent in the shape of special legislation. There is much doubt if the British with their inborn habits of individualism are willing to go so far in the direction of group control. It is a road which the Germans have travelled to the end in their coal syndicates, apparently much to the advantage of their coal producers, but in Great Britain, as well as in this country, the objections always raised indicate that the plan is somewhat alien to the Anglo-Saxon conception of business methods.

Order 1,600 Mine Cars

Orders for 1,600 mine cars were placed last week. The Ebensburg Coal Co. gave a contract for 600 mine cars to the Bethlehem Steel Corp. Stonega Coke & Coal Co. placed 1,000 cars, of which 450 went to the American Car & Foundry Co., 450 to the Watt Car & Wheel Co. and 100 to the Enterprise Wheel & Car Corp. The Mid Continent Coal Co. has purchased 10 gondolas from the American Car & Foundry Co. The Southern Pacific R.R. has put out an inquiry for 1,000 gondolas.

Work has been started by the Cambria Steel Co. at its plant in Johnstown, Pa., on 1,000 steel hopper cars for the Baltimore & Ohio R.R.

Distribution Waste to Go, Says A. E. Dodd

War on waste in business distribution is the next step in the economic progress of the nation, and it already has been started, "with heavy fighting all along the line," according to Alvin E. Dodd, of the United States Chamber of Commerce, in an address at Atlantic City on Feb. 24 before the annual convention of the Wholesale Stationers' Association.

"The waste in distribution," he said, "is as obvious as the waste in production. It must be dealt with by business collectively. To be successful, the war must be carried on incessantly with unremitting vigor.

"Production must know the capacity of its market. It is the business of distribution to determine what this capacity is, and the most economical and expeditious way to supply it."

Reopens Inquiry on Lease Of B. R. & P. by Loree

Inquiry on the petition of the Delaware & Hudson R.R., of which Leonor F. Loree is president, for permission to lease the Buffalo, Rochester & Pittsburgh Ry. was ordered reopened Feb. 28 by the Interstate Commerce Commission. W. T. Noonan, president of the B. R. & P., has been requested by the Commission to extend for ninety days the option which the D. & H. holds.

Commissioner Myer explained to Mr. Noonan that the Delaware & Hudson had brought forward a project to take trackage rights over the Pennsylvania system on 228 miles of line from Buttonwood to Dubois in Pennsylvania. This would enable the Delaware & Hudson to make actual connections with the Buffalo, Rochester & Pittsburgh. The two projects should be considered together, Mr. Myer said.

It is believed that the Commission virtually had decided to rule adversely on the lease until the trackage agreement with the Pennsylvania was called to its attention, as lack of physical connection between the Delaware & Hudson and the Buffalo, Rochester & Pittsburgh was the cause of the Commission's tentative refusal of Mr. Loree's original application.

Despite the possibility that the B. R. & P. may consent to the extension of the D. & H. option, many railroad men see a further chance for the New York Central, the Baltimore & Ohio, the Nickel Plate, and even the Pennsylvania, to step in and bid for control of the road. It was remarked in one source that possibly the Commission's hesitation would not be displeasing to L. R. Loree provided the Pennsylvania could "beat the others to it" and obtain an option on the Buffalo, Rochester & Pittsburgh. In this event, it was said, action no doubt would be forthcoming in Mr. Loree's trackage agreement with the Pennsylvania and an important stride be taken toward completing his fifth trunk-line system.

Coal-Mine Fatalities Total 194 in January; Rate Lower than Usual

Accidents at coal mines in the United States in the month of January, 1927, caused the loss of 194 lives, according to information received from state mine inspectors by the U. S. Bureau of Mines, Department of Commerce. Thirty-seven of this number were killed in the anthracite mines of Pennsylvania, the remaining 157 deaths occurring in the bituminous mines in various states.

Based on the total production of coal during the month, the fatality rate per million tons was 3.06. The rate for the preceding month was 3.80. The output of bituminous coal alone was 56,881,000 tons in January, showing a fatality rate of 2.76, while that for anthracite was 6,561,000 tons, with a fatality rate of 5.64. During January, 1926, the production of bituminous coal was 53,662,000 tons, the deaths were 322 for that branch of the industry and the fatality rate per million tons was 6. This high rate was due to four "major" disasters—that is, disasters causing 5 or more deaths each—which caused the death of 142 men. January, 1927, was free from these major disasters. Owing to a strike in January, 1926, only 173,000 tons of anthracite was produced and 3 men were killed, making a fatality rate not comparable with a normal rate. The major disasters in the bituminous mines in January last year were mainly responsible for a fatality rate for all

General Strike in Britain To Get Criminal Ban

That legislation is contemplated in Great Britain that will make the calling of a general strike a criminal conspiracy against the state was indicated in a speech by Lord Birkenhead at Birkenhead on Feb. 26. He pointed out that leading members of the legal profession had already pronounced a general strike against the law and Constitution of Great Britain.

In the legislation contemplated it was the government's purpose, he said, to make it evident to those who took part in the organization of a general strike that they would be participants in a criminal conspiracy against the state.

mines combined that was practically double the rate for January of this year.

An examination of the principal causes of accidents in January, 1927, shows a marked decrease in mishaps due to falls of roof and coal, haulage, and gas or dust explosions, and a slight increase in explosives and electricity. Comparative rates for the two years were as follows:

	Year 1926	January 1926	January 1927
All causes.....	3.789	6.037	3.058
Falls of roof and coal....	1.829	1.988	1.497
Haulage.....	.650	.743	5.68
Gas or dust explosions..	.636	2.823	.189
Explosives.....	.143	.056	.158
Electricity.....	.143	.130	.158

St. Louis Asks Cut in Spread Over East St. Louis

The Traffic Bureau of the St. Louis Chamber of Commerce in a brief filed with the Interstate Commerce Commission asks that the freight differential on coal shipments from Illinois mines to St. Louis compared with East St. Louis be cut to 10c. The present difference in rates is 11c. and 21c. because of a recent reduction in the Illinois intrastate rates ordered by the Illinois Commerce Commission.

The St. Louis rates are \$1.16 and \$1.38½ a ton, depending on the zone in which the coal mine is located. These were not disturbed by the reductions ordered by the Illinois commission. For many years the differential between St. Louis and East St. Louis was 25c. a ton.

The St. Louis organization contends the spread in the coal rates to St. Louis is too great when compared with East St. Louis and that 10c. per ton is sufficient compensation for the Terminal Railroad Association in switching the cars in St. Louis.

East St. Louis civic organizations plan to resist the claims of St. Louis and will endeavor to maintain the present differentials.

Loading of lake anthracite cargoes has begun at Buffalo in preparation for the coming season of navigation. Three boats have been loaded and it is expected that others will follow. An early opening of navigation is looked for as ice conditions are not nearly as bad in lake channels as a year ago.

Coal-Mine Fatalities During January, 1927, by Causes and States

(Compiled by Bureau of Mines and Published by Coal Age)

State	Underground										Shaft				Surface					Total by States						
	Falls of roof (coal, rock, etc.).	Falls of face or pillar coal.	Mine cars and locomotives.	Explosions of gas or coal dust.	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes.	Railway cars and locomotives.	Other causes.	Total.	1927	1926
Alabama.....	6											6													6	37
Alaska.....																									0	0
Arkansas.....					2							2													2	10
Colorado.....	2	3										6	1												8	10
Illinois.....	6				2				2			16			2										19	19
Indiana.....			2									2													1	0
Iowa.....		1										1													1	2
Kansas.....																									0	0
Kentucky.....	9		6	4	1		2		1			23													23	18
Maryland.....																									0	0
Michigan.....												1													1	0
Missouri.....	1											1													1	1
Montana.....			1									1													1	1
New Mexico.....	2											2													2	2
North Dakota.....																									0	4
Ohio.....	4								1			6											1	1	7	4
Oklahoma.....	2											2													2	95
Pennsylvania (bituminous).....	10	3	6			2	4					25					4							4	29	35
South Dakota.....																									0	0
Tennessee.....	3											3													3	3
Texas.....																									0	0
Utah.....	1											1													1	0
Virginia.....	2											2													2	5
Washington.....	1											1													1	1
West Virginia.....	19	2	13	4			1		1	1		41												41	86	
Wyoming.....		3			1							4													4	3
Total (bituminous).....	68	12	33	8	6	2	9	1	4	1	2	146	1		2		3	5				1	2	8	157	322
Pennsylvania (anthracite).....	14	1	3	4	4						3	30										1	3	7	37	3
Total January, 1927.....	82	13	36	12	10	2	10	1	4	1	5	176	1		2		3	8			2	5	15	194		
Total January, 1926.....	103	4	40	152	3	1	7	1	3	1	2	316	1				1	4			3	1	18			325



News Items From Field and Trade



ALABAMA

Yolande Improvements Under Way.—A contract has been awarded for the construction of a steel tippie at the Connellsville mine of the Yolande Coal & Coke Co., near Yolande, Tuscaloosa County. In the near future a manway and air course will be driven about 1,300 ft. from the new slope, contract for which has not been let. A rock tunnel 8x21 ft. and 250 ft. deep to reach the coal basin is being sunk. A large coal washery, contract for which will be let at an early date, will practically complete the improvement program at the Connellsville mine, which will start production as soon as the necessary structures and equipment are ready for use. The Blue Creek seam will be mined. J. B. McClary, Birmingham, is president of the Yolande company and subsidiaries.

Superintendent and Foreman Crushed.—Falling rock in the Aldrich Mine of the Montevallo Coal Co., operated by the state with convict labor, instantly killed S. P. Stearnes, state mine superintendent, and Frank Norris, mine foreman, Feb. 21. The men were making an inspection tour at the time and the rock fell without warning, crushing them to death. Stearnes had been connected with the mine for about twelve years and since July 1, 1925, had been superintendent for the state under its contract with the owners for the operation of the mine.

J. F. Callbreath, secretary of the American Mining Congress, Washington, D. C., has called a meeting of the Southern Industrial Conference at the Tutwiler Hotel, Birmingham, March 21 and 22, 1927. Industrial development problems of the South and recommendations for their solution will be considered and papers on this theme will be read by prominent Southern industrial leaders, after which an open forum will be held for the discussion of plans suggested and recommendations made. The conference will be under the auspices of the Southern division of the American Mining Congress.

Electric Cap Lamps in Dixie Mine.—The Moffat Coal Co., Moffat, Bibb County, has equipped all workers in its Dixie mine with electric cap lamps, the installation calling for about 400 lamps.

Surveys for Coal Road.—The St. Louis & San Francisco R.R. is making tentative surveys for a new branch line in Walker County, which will tap the coal fields at Sunlight and vicinity, opening up a large acreage of virgin coal lands. The line will radiate either

from Jasper or Empire, if constructed. The section is now served by the Alabama Central R.R., a subsidiary of the Manchester Sawmill Co., which desires to discontinue operation of its line.

COLORADO

Ambitious Developments Planned.—Extensive development is contemplated by a number of coal companies in Routt County, the plans being brought about by the certainty of early completion of the Moffat tunnel. Among the companies about to place contracts for improvements are the Pinnacle-Kemmerer Coal Co., at its mine on Wolf Creek; the Fraker Coal Co., at Bear River mine; Colorado-Utah Coal Co., at Mount Harris, and the Moffat Coal Co., which is about to start an ambitious program.

Sink New Shaft Near Lafayette.—The Hartman Exploration & Development Co., Denver, is sinking a shaft on a 1,520-acre tract three miles south of Lafayette, in Boulder County. The shaft, which is 9x16 ft., will be 375 ft. deep to work a seam of hard lignite 6 to 7 ft. thick. Electric power from a public service line nearby will be used. A railroad spur from Lafayette is nearly completed.

January Output Tops Year Ago.—Colorado coal mines produced 1,168,229 tons of coal in January, an increase of 84,564 tons over the corresponding month of last year but 149,979 tons less than in the last month of 1926.

ILLINOIS

Two hundred and twelve Illinois mines operating in January mined 8,099,596 tons of coal. A total of 72,259 men were employed, working an average of 20.2 days during the month. Eighteen miners were killed and 2,523 injured while employed in mines for the month. Franklin County led in the total production with 1,845,089 tons, followed by Williamson County, with 940,611 tons.

Henrietta Mine Again on Rocks.—The Henrietta mine, near Edwardsville, which has had several financial setbacks under its various owners, is again shut down. This time the owners were forced to cease operations when they could not meet a \$1,400 payroll due the few men who were still working at the place. Formerly the mine employed between 125 and 175 men, but its latest term of operation, which was financed by Mr. and Mrs. William Hale of Sawyerville, employed only about 50 men. It is not likely that an attempt will be made to resume work at the mine before next fall, if at all.

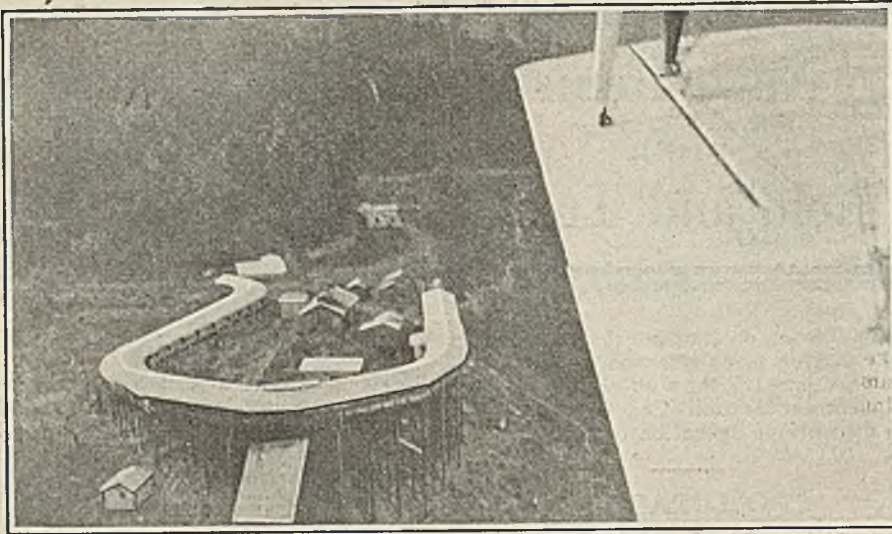
Three specially built cutting machines for low coal have been installed in Blair Mine No. 2, Murphysboro, which will double the output of the mine.

The North Shore Coal & Coke Co. plans the erection of a huge new coke plant at Waukegan to cost \$3,000,000. W. A. Baehr is president of the company. It is said that the plans of the



Conferences Like This Reduce Maintenance Costs

W. H. Cook (left), chief electrician of the West Virginia Coal & Coke Co., brings the head electricians and maintenance foreman together at an evening meeting once a month. The illustration is of a recent meeting of men from the Logan division, held at Omar. Geo. E. Sulter, assistant to Mr. Cook, is seated in the foreground, third from the right.



New Headhouse at Pruden, Tenn.

At the right is the wing of the airplane from which the photograph was made. This headhouse of the Pruden Coal & Coke Co. was built especially for drop-bottom cars. The bin at the center will hold 750 tons.

company call for a rapid expansion of the Waukegan plant as soon as the new unit is completed.

The Interstate Commerce Commission has authorized the Missouri Pacific R.R. to lease the Marion & Eastern R.R. The line serves several coal mines in Williamson County.

KANSAS

Banks Hit by Coal Investments.—Seven banks and two savings associations in Crawford County and in Fort Scott, are closed as a result of overinvestment in coal lands in this section by John Miller, according to the State Bank Commissioner's office. Miller and his relatives held controlling interest in the institutions. The banks are the Pittsburg State Bank, Miners' State Bank of Mulberry, Opolis State Bank, First State Bank of Cherokee, Englevale State Bank, Commercial State Bank of Alma, and West State Bank of Fort Scott. The banks involved had combined resources totaling almost \$1,000,000.

KENTUCKY

Start Work on Coal Road.—From Harlan it is reported that work has just started on a two-mile extension of the railroad from Louellen up Main Clover Fork, according to a statement by officials of the Harlan Splint Land Co., of which John B. Carter is president. The Clover Splint Coal Co., financed by Pittsburgh interests, is preparing to open a coal development on about 2,000 acres of land, and to install a modern plant, tippie, etc. It is planned to have a production of about 25 cars daily.

Sixty Strike for More Pay.—About 60 men employed in the mines of the Elkhorn Junior Coal Co. at Millstone, Letcher County, walked out last week following refusal by the company of their demands for increased pay. Some of the men have returned to work, according to advices from Whitesburg, while others have left the field. C. Bascom Slemp and other Virginians are interested in this property.

MINNESOTA

To Enlarge Briquet Plant.—The Stott Briquet Co. is preparing to increase the capacity of its plant at Superior by about 40 per cent this spring. Demand for briquets was far in excess of production during the last season. The company is reported to have perfected an improvement in its product to the extent that it will admit of storing. In that event it is reported that dealers will arrange to take deliveries of briquets during the summer months instead of as required for consumption, as has been the case heretofore.

Ralph McGee is promoting an enterprise to sink a coal mine at Holt. He is obtaining leases and finds much interest in the project. Drilling operations in the vicinity for oil and gas proved conclusively that coal will be reached at a depth of 338 ft. The shaft will be sunk as near the railroad tracks as possible, to eliminate the necessity of building spur tracks.

The St. Louis Coke & Iron Co. has moved its main offices from the Planters Building to larger and more commodious quarters in the newly finished Bell Telephone Building, St. Louis. Several of the office force in St. Louis have been transferred to the Chicago offices of the company.

NORTH DAKOTA

Big Lignite Stripping Planned.—The Truax Traer Coal Co., of Columbus, has completed tentative plans for the construction of a ten-mile railroad spur costing \$200,000 from its mine to Voltaire on the Minneapolis, St. Paul & Saulte Ste. Marie Ry. The mine, which was recently purchased, will start operations on a 1,000-acre tract 29 miles south of Minot. The mine site and equipment, exclusive of the railway, will cost about \$700,000, according to Elmer M. Truax, president of the company. All operations will be electrified. Construction work will be started in the spring and it is expected that by September the machinery will be set

for stripping lignite on a 24-hour basis. The company also plans to buy an 8-yd. stripping shovel, erect a large capacity tippie and install a 2½-yd. loading shovel.

NEW YORK

Net income of Burns Bros. for the three months ended Dec. 31, 1926, totaled \$295,284, after making deductions for charges. That was equivalent, after allowing for preferred dividends, to \$2.25 a share on the class A common stock and to 25c. a share on the class B common. The company earned 12c. a share on the class A common stock the previous quarter. The earnings for the December quarter bring the total net income for the nine months ended Dec. 31 up to \$930,424, after deducting charges and federal taxes. That was equivalent to \$6.92 a share on the class A common stock and to 92c. a share on the class B common.

OHIO

Agree on Mining Reforms.—All interests affected by Senate Bill No. 209, introduced by Senator Roberts of Belmont County, have agreed on provisions seeking to codify existing mining laws and to amend the law in the interests of safety. Jerome Watson, Chief Mining Inspector of Ohio, believes that the bill will be passed in its present form. The chief provisions are for the use of rock dust to prevent explosions, compulsory use of props where the coal is overlaid with slate, provisions for drilling and closing wells and for the operation of underground fans. Other points make it a misdemeanor to use more than 220 volts on stationary motors in the mines and to overcrowd cages in shaft mines. At the committee hearing representatives of the Ohio Operators' Association, United Mine Workers and the Ohio Department of Mines agreed on the provisions.

PENNSYLVANIA

L. C. & N. to Keep Railroads.—In spite of opposition led by New York shareholders represented by Watson Washburn, stockholders of the Lehigh Coal & Navigation Co. on Feb. 23 rejected at the annual meeting a proposal to revise the financial structure of the company by segregating the railroad properties from the coal-mining and other holdings. By a unanimous vote the officers of the company were re-elected. Mr. Washburn offered a resolution asking the 100 shareholders to go on record as favoring separation of the railroad holdings. His plea was beaten, 3,288 shares favoring it and 344,394 opposing.

To Raise Mine Chief's Salary.—Among numerous changes proposed for the administrative code, supported by Governor Fisher, in a bill introduced in the House by Representative W. C. Alexander, of Delaware County, is the fixing of the salary of the Secretary of Mines at \$10,000 a year. The code as passed during the Pinchot administration fixed the salary of the head of the

Department of Mines at \$6,000. Reorganization of the Department of Mines will be accomplished through executive order. This will provide for an anthracite and a bituminous bureau and it is possible that the salaries of these division heads will be as great as the Secretary of Mines has received in the past. At the present time the office of Secretary is vacant, although Joseph J. Walsh, who was head of the department during the past administration, is acting in an advisory capacity with Frank Hall, Deputy Secretary, in the conduct of the department.

To Amend Compensation Act. — Amendments to the Workmen's Compensation Act of 1915 probably will be ready for presentation in the Legislature within the next week or two, according to Governor Fisher. In his inaugural address the Governor advocated readjustments, but did not specify what they should be. The compensation scale of payments probably will be raised in keeping with the present day higher wages and higher living costs. In discussing the proposed changes the Governor said that the amendments are now being worked out by representatives of the state's industrial and labor interests.

Anthracite Producers Heavily Taxed. —The State Tax Commission has filed its report with the Legislature and with it presented recommendations of numerous changes. One of the interesting features of the report is an analysis of the tax burden resting upon different classes of business in Pennsylvania. This shows that anthracite companies are paying 35 per cent of their net income in state and local taxes, while manufacturing companies are paying only 5 per cent.

Hard-Coal Tax Repeal Unlikely. —The anthracite tax repealer has made its appearance in the Legislature of 1927. Representative Evan J. Wolfe, Luzerne County, introduced it. It is brief and after citing the tax law of 1921 by title contains merely the usual repealing clause. There is little possibility of the act being repealed unless some other revenue measure is enacted. Governor Fisher, when told the bill had been offered, said: "The repeal of any tax measure has to carry with it the substitution of other revenues of at least equal amount. The budget is predicated upon the revenues as they now exist, and any change of revenue would necessarily be reflected on the budget."

A bill intended to protect the waters of the state was offered in the House by Representative E. B. Goehring, Allegheny. It provides that all entries and airshafts of bituminous coal mines be sealed.

Back Pay for Inspectors?—A bill making good the payment of anthracite and bituminous mine inspectors for the portion of the biennium of 1921-1923, when they were not paid in full, has been introduced in the House by Representative Elder Peelor, of Indiana County. During the early part of the Pinchot administration, when the appropriation to the Department of Mines became exhausted, Governor Pinchot got the inspectors to agree to temporary leaves of absence or to continue

work without pay as a part of his program to keep down the administration's expenses. The Peelor bill appropriates \$8,884 to the State Department of Mines for the payment of the inspectors.

A counter-current demonstrator machine for washing coal has been donated to the Carnegie Institute of Technology, Pittsburgh, by the Hydrotator Company of New York, Prof. James Aston, head of the department of min-



Plant of the Bryson Coal & Coke Co., Bryson, Tenn.

In the foreground is the office and commissary, and in the background the shop and tipples. This mine is in the Middlesboro section of the Southern Appalachian field.

ing and metallurgical engineering, has announced. The equipment, which is valued at about \$4,000, has been installed in the mining laboratories of the department in the Science Building.

Confer on Compensation Law.—Governor Fisher last week discussed with W. L. Mellon, Republican State Chairman, and U. S. Senator David A. Reed the proposed changes to the workmen's compensation law. Senator Reed has long advocated amending the present law, which he helped to frame. The Governor said he is in general accord with the Senator regarding the changes. These have been turned over to representatives of the state's industry and labor who have so far been unable to agree on the terms of the proposed changes.

P. C. & C. Earnings Up. — The Pennsylvania Coal & Coke Corporation's report for last January shows net earnings of \$100,864, after charges but before taxes, against \$18,599 in January, 1926. Gross earnings in the month were \$745,547, against \$660,502 last year and \$566,735 two years ago.

VIRGINIA

Half Million Dollar Project Begun.—Work on a new electrically operated coal-handling, sorting and preparation plant for the Great Valley Anthracite Corp. has begun at McCoy. A new development also will be opened near Belspring, Pulaski County, with the installation of power and mining machinery. The entire project will require an outlay in excess of \$500,000. E. C. Searles is president of the company, the main office of which is in the Calvert Building, Baltimore.

WEST VIRGINIA

R. M. Lambie, chief of the State Department of Mines, last week ordered the sealing of the mine of the Connellsville By-Product Coal Co. in Scott's Run where a fire has been raging for several weeks. It was believed that the fire had been extinguished by the more than a hundred million gallons of water which had been poured into the pit, but another slight explosion occurred

in the mine Feb. 21. No one was in the plant at the time and no material damage was done by the blast, as far as is known, but the explosion indicated that there is still some fire in an isolated section of the mine.

Coal companies recently dissolved in West Virginia include the Bottom Creek Coal & Coke Co., the Pocahontas Red Ash Coal Corp. and the Wise Pocahontas Coal Co.

CANADA

Preference for Coal Proposed.—A bill amending the Canadian Railway Act of 1919, was recently introduced in the House of Commons, at Ottawa, according to a report to the Department of Commerce from Trade Commissioner L. W. Meeking. This measure seeks to establish a national coal policy for Canada by placing the transportation of coal on a preferential basis with grain and flour in order to enable the Maritime Provinces and Alberta to increase their trade in central Canada.

Coal output in Alberta in 1926, according to figures just furnished by the provincial mines branch, was 6,508,908 tons, as compared with 5,883,394 tons for the year preceding. Only twice before has this total ever been exceeded, in 1920 and 1923, the former being the peak year with an output of 6,908,000 tons.

There are definite indications of large deposits of a fair grade of bituminous coal in northern Ontario, north of Cochrane, according to an announcement made by H. W. Sutcliffe, of New Liskeard, vice-president of the Association of Ontario Land Surveyors.

Among the Coal Men

C. H. Perry, of Hillsboro, Ill., coal mine operator, was named chairman of the newly appointed State Mining Investigation Commission of Illinois at its first session at Springfield. The commissioners, comprising three operators, three miners and three representatives of the public, were appointed by Governor Len Small and will pass on all bills affecting the coal industry presented to the State Legislature. In addition it will investigate mining methods and conditions in the state, with especial reference to safety of life and property and conservation of coal deposits. The other members are Edward Cahill, Duquoin, and George Solomon, Springfield, operators; Charles Melvin, Duquoin, Frank Johnson, Christopher, and Marion Hull, Tovey, miners; C. B. Sawyer, Kankanee; J. E. McMacklin, Salem, and E. A. Landers, Oregon, representatives of the public.

Don D. Walker, formerly district manager at Louisville, Ky., for the St. Bernard division, West Kentucky Coal Co., who about a year ago took over the New Albany (Ind.) and Jeffersonville (Ind.) yards of that company, which he has been operating as the Don D. Walker Coal Co., has been ill for several days. He suffered a stroke at his office, but is reported to be showing improvement.

Clifford L. Harrod, of Indianapolis, Ind., consulting electrical engineer of the Indiana Coal Operators' Association for the last seven years and regarded as an expert on purchase of power, has been named general manager and industrial commissioner of the Indianapolis Chamber of Commerce. Selection of a man with the combined qualifications of being an Indianapolis man, having a knowledge of transportation and extensive experience in public utilities and power, was made by the committee after holding eighteen meetings in which more than thirty prospects were interviewed. The appointment will become effective about the middle of March.

George C. Nelms, of Marlboro, for years a leader in mine safety and rescue work and formerly sales manager of the Mine Safety Appliances Co., has resigned to become general sales agent in all bituminous territory for Koehler Mfg. Co., Marlboro, Mass., makers of Wheat storage-battery mine lamps.

R. P. Gillham has been elected president of the Campbell's Creek Coal Co., Cincinnati, one of the oldest companies operating in the Kanawha Valley. Mr. Gillham formerly was vice-president of the company and has been directing its affairs since the death of Col. E. O. Dana, last autumn.

J. W. Turner, Paintsville, Ky., associated with the Consolidation Coal Co., and also cashier of the Paintsville National Bank and a leader in the Big Sandy valley district, has announced that he will be a candidate for the nomination for Governor of the state.

Jerome C. White, who for the last nine months has been a member of the editorial staff of *Coal Age*, has resigned, effective March 1, and accepted a position on the engineering staff of the Pittsburgh Coal Co. Mr. White was born at Sonman, Cambria County, Pennsylvania, in 1896; was graduated from Allegany College, Allegany, N. Y., and gained his early experience



Jerome C. White

in engineering at the operations of the Rochester & Pittsburgh Coal & Iron Co. and the Buffalo, Rochester & Pittsburgh R.R. In his first year out of college he worked in mines in Colorado and British Columbia. He became mine foreman for the Penker Mining Co., Portage, Pa., later enlisting in the U. S. Navy. After the war he returned to the Penker Co. In 1922 he was associated with the purchasing department of the Lorain Steel Co., at Johnstown, Pa. He assisted in the planning and development of the Lindsey Coal Mining Co., of Corinth, W. Va. In 1924 he attended the Graduate School of Business Administration at Harvard University and at the end of the year joined the staff of R. P. Maloney, vice-president and general manager, Davis Coal & Coke Co.

Leonard Everett, formerly purchasing agent of the West Virginia Coal & Coke Co. at Elkins, W. Va., and more recently with the purchasing department of the Kelly-Springfield Tire Co. at Cumberland, has become identified with the West Virginia Southern Coal Co. at Huntington, W. Va., in which Everett Drennen, former president of the West Virginia Coal & Coke Co., and others are interested.

Earl Shagley, treasurer of Walter Bledsoe & Co., Terre Haute, Ind., in a recent address before the merchants' association in that city, stressed the main points in coal advertising. The first, he said, is the ability to serve the customer, the second is to get and keep the good will of the customer and

the third is a mutual benefit between seller and buyer. Mr. Shagley also talked on coal production, past, present and future. Statistics he cited showed that while Indiana was not producing as much coal now as in 1918, more was being produced than before the war. Regarding the future of the coal industry, a radical change in the method of production and a corresponding change in the method of use was predicted by Mr. Shagley.

George H. Reinbrecht has been appointed coal traffic manager of the Erie R.R., with offices at 71 West 23d St., New York City.

Morris W. Bush, president of the Alabama By-Products Corporation, Birmingham, has been named as a member of the commission created by an act of the recent Legislature to construct a new Jefferson County (Ala.) courthouse costing \$2,500,000. Herbert S. Salmon, of the firm of Salmon & Cowin, industrial and mining engineers and contractors, has been appointed secretary of the commission, which is composed of five members.

T. S. Crockett, president of the Leckie Coal Co., of Columbus, Ohio, a large distributing concern, who has been seriously ill for some time, left recently for a sojourn at Atlantic City, N. J. Word received from that place indicates a steady improvement.

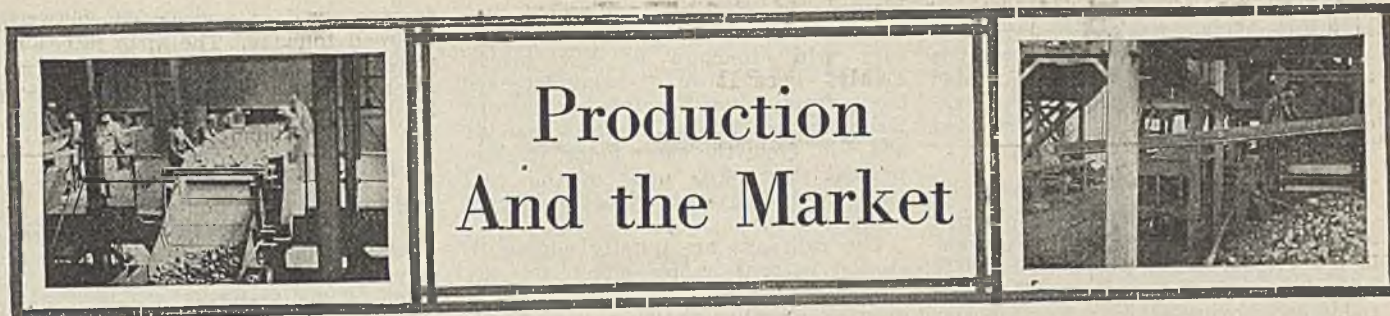
Obituary

O. S. Richardson, for years a coal operator in the Brazil (Ind.) field, died recently at his home in Glendale, Calif. Mr. Richardson was 83 years old. He was a veteran of the Civil War and for several years lived in Chicago. He was at one time a heavy stockholder in the Jackson Coal & Mining Co. Later he embarked in the coal business west of Brazil, where he operated two large mines until the coal was worked out.

Frank Fournier, age 81, widely known as a coal miner in the Birmingham (Ala.) district and first president of the United Mine Workers local there, died on Feb. 15. Mr. Fournier was a native of France but had resided in Alabama practically his entire life. Prior to his retirement several years ago he had been connected with various courts of the country in a clerical capacity. He is survived by his widow, four sons and four daughters.

Albert Ball, for nearly fifty years chief engineer of the Sullivan Machinery Co., Chicago, died at his home at Claremont, N. H., on Feb. 7, at the age of 92. An inventor of marked ability, he was principally known for his invention of the Sullivan diamond core drill and of numerous improvements to it, such as the single-cylinder hydraulic feed.

John de Berniere Hooper, age 73, who figured prominently in the early history of the coal mining industry in the Birmingham district and was Alabama's first chief mine inspector, appointed Sept. 1, 1898, died in Birmingham Feb. 12 after a prolonged illness. Interment took place in Columbus, Ga.



Market Shows Little Effect of Break at Miami; Storage Buying a Steadying Influence

Of outstanding interest to the bituminous coal industry of the country among developments of the last week was the suspension of wage negotiations between the union operators and representatives of the United Mine Workers. The adjournment of the Miami conference without reaching an agreement, however, actually had even less effect on the market as a whole than was expected, as an abortive outcome had been discounted well in advance of the deadlock.

On the surface at least there was a notably unequal territorial distribution of business last week, for aside from a healthy demand in the Midwest section—and this is expected to increase steadily—the trade was comparatively quiet. For that matter almost any appraisal of the market at this time must be largely relative for the reason that a large proportion of the business being done is transacted in unobtrusive fashion and then, too, production has kept steadily at such a high level as to counteract the usual effect of the volume of tonnage actually purchased. The trade inclines to the opinion that the last half of this month will bring to light a keener interest in the market on the part of many who hitherto have shown a complacent attitude toward the fuel situation.

Storage Orders Steady Market

The chief stabilizing feature of the market, as for several weeks past, is

the purchase of stocks for storage. The railroads and utilities continue to lead the way in this activity, followed by a number of large industrial consumers. The rank and file, however, have supplies little larger than normal. Negotiation of new contracts is proceeding cautiously and in general higher prices are being quoted than a year ago. Deals and rumors of deals for lake business are reported, but definite information on price arrangements is withheld.

Effects of Storm Short-Lived

Demand for domestic grades reflected a slight flurry in response to the storm early last week, but the effects of the inclement weather soon passed and with them the increase in business. At present consumers as well as dealers are buying only for current requirements and the trade promises to continue on that basis for some time. As usual in these circumstances, screenings are firmer with a tendency to scarcity—entirely due to the curtailment in demand for the larger sizes and consequent decrease in residue. Accumulations of "no bills" are a plague in most fields, except Kentucky, where special efforts have been made to guard against this evil.

Those on the wrong side of the fence may take new hope from the statement made on Saturday by James J. Davis, Secretary of Labor, that he was hope-

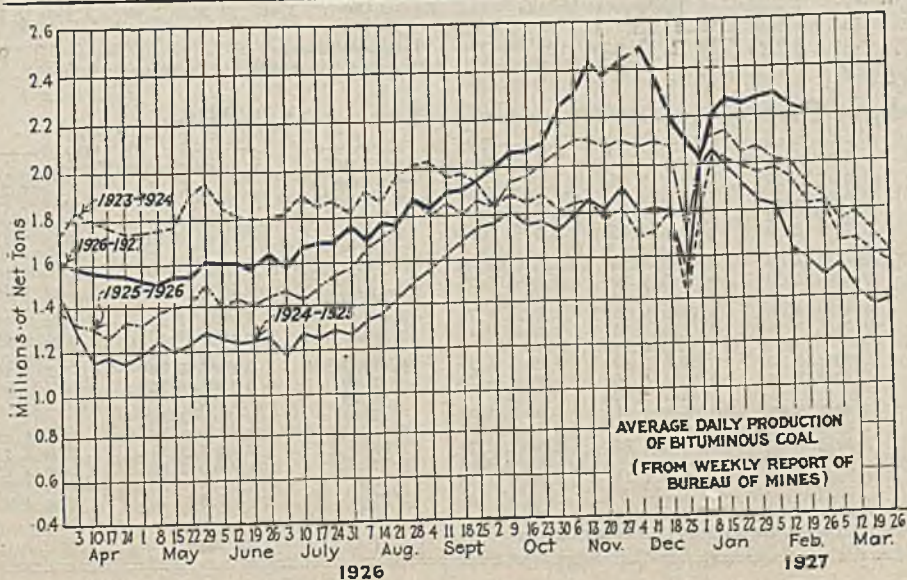
ful that another wage conference between the union officers and operators would be held before the present agreement expires. John L. Lewis, president of the United Mine Workers, approved the Davis statement, but made no further comment.

Coal Age Index of spot bituminous prices on Feb. 28 was 171 and the corresponding weighted average price was \$2.07. Compared with the figures for Feb. 21 this was a decline of 2 points and 2c. Recessions in central Pennsylvania prices on New England shipments and on West Virginia high-volatile were largely responsible for the loss.

Bituminous output for the week ended Feb. 19 is estimated by the Bureau of Mines at 13,225,000 net tons, a decrease of 262,000 tons from the preceding week. Preliminary figures on loadings for the first two days of last week show a falling off from recent figures due, no doubt, to the observance of Washington's Birthday.

Anthracite Trade Inactive

The effects of the storm last week on the hard-coal situation were short-lived, and the market has settled into a weather proposition. Buying is limited to bare necessities, interest being largely centered in the probable action of the producers in regard to prices April 1. There is little choice between the domestic sizes, and the steam sizes, including No. 1 buckwheat, are gradually easing. In most



Estimates of Production

(Net Tons)

BITUMINOUS

	1926	1927
Feb. 5.....	12,167,000	13,583,000
Feb. 12 (a).....	12,011,000	13,487,000
Feb. 19 (b).....	11,509,000	13,225,000
Daily average.....	1,918,000	2,204,000
Coal yr. to date (c).....	480,216,000	526,680,000
Daily av. to date.....	1,756,000	1,925,000

ANTHRACITE

Feb. 5.....	27,000	1,402,000
Feb. 12.....	35,000	1,501,000
Feb. 19.....	408,000	1,569,000
Coal yr. to date (c).....	41,043,000	84,808,000

BEEHIVE COKE

Feb. 5.....	366,000	187,000
Feb. 12.....	362,000	188,000
Feb. 19 (b).....	353,000	191,000
Cal. yr. to date (c).....	2,413,000	1,321,000

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

instances the collieries are working only three days a week.

The Connellsville spot coke market is quiet and featureless, with no quotable change in prices. Negotiation of second-quarter contracts is not expected until late this month.

Midwest Tonnage Moves Freely

Unseasonably warm weather has not taken the life out of the coal market in the Middle West, where business is in quite satisfactory volume. The railroads are moving a heavy tonnage and an increase is expected by the operators, who look for a suspension April 1.

Most of the buying is for storage, the principal demand being for mine-run and the smaller steam sizes. A total of between four and five thousand "no bills" of domestic sizes points to comparative quiet in that branch of the trade; nevertheless the demand is considered fairly satisfactory. The accumulation of unbilled lump and egg is

blamed on Eastern non-union producers, who have flooded this territory with tonnage at low prices. Fairly good 4-in. shaker-screened block from West Virginia or eastern Kentucky can be had for less than \$2 and 6-in. from the same fields at close to that figure. As most of this coal stocks well it has hurt local producers to some extent.

The railroads are quietly adding to stocks without much effect on the market. Demand for screenings is growing steadily, and there is a likelihood of slightly higher prices as April 1 draws near.

In the southern Illinois mining fields the situation is spotty; nearly all mines are choked up with domestic sizes, some are oversold on small nut sizes and others find the latter a drug on the market. While nominally the circular prevails many operators are cutting prices on lump and egg and others are shipping these sizes on mine-run storage orders. Working time ranges from

four to six days a week, depending on railroad tonnage. The strip mines are working full time and are loading considerable railroad and commercial coal. Similar conditions prevail in the Jackson County-Duquoin section.

Full Time in Mount Olive Field

Mines in the Mount Olive field are working practically full time on railroad and storage orders. All sizes are moving well. There is no unusual demand in the Standard district; nearly all the mines are moving railroad coal, but at prices barely above cost of production. Screenings are unusually scarce, but practically everything else is plentiful. Running time is from four to six days a week, with railroad and storage buying the controlling factors. Domestic sizes are sluggish. Screenings have advanced to \$1.25@1.50; other prices unchanged.

With springtime weather prevailing in St. Louis, there is little demand for domestic coal, either high or low grade.

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

Table with columns for Low-Volatile, Eastern, Midwest, and South and Southwest. Rows list various coal types (e.g., Smokeless lump, Pool 1) and their prices for different dates (Mar. 1, Feb. 14, Feb. 21, Feb. 28) across various markets (Columbus, Chicago, St. Louis, etc.).

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

Table with columns for Broken, Egg, Stove, Chestnut, Pea, Buckwheat, Rice, Barley, and Brldeye. Rows list these items and their prices for different dates (Mar. 1, Feb. 21, Feb. 28) across various markets (New York, Philadelphia, Chicago, etc.).

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

Anthracite and coke have dropped off altogether and smokeless has moved only a little in the last couple of weeks for next year's storage. Country domestic is unusually quiet, as few dealers are putting in any storage to speak of while city dealers have sufficient to pull them through the next sixty days unless severe weather sets in. Local wagonload steam is slow and carload buying is fairly good for screenings only, with country demand fair.

Domestic demand in Kentucky improved slightly early last week as the result of a snowstorm and colder weather, but the pickup, like the snow, was short-lived. Storage buying by railroads, utilities and industries has been active, however, and screenings are strong at firm prices. Though little apprehension is shown over the break in the Miami conference the local trade expects an active market this month, with screenings strong and scarce in view of the light movement of prepared sizes. Some of the large utility and industrial consumers are in a receptive mood on contract renewals, but smaller shippers are somewhat wary over the possibility of uncertain deliveries and higher prices.

Eastern Kentucky block can be had as low as \$2; screenings are \$1.25@ \$1.60. Western Kentucky block and screenings are on a par with eastern. Western Kentucky mine-run is \$1.30@ \$1.65 as against \$1.50@ \$1.85 for eastern.

Tonnage Moves Easily in Northwest

Industrial demand at the Head of the Lakes is higher than the seasonal average and shipments off the docks continue heavy. The railroads are carrying liberal supplies. Not much pressure is being used to move free coal, as the supply is limited; several of the companies in fact are reported to be sold up on West Virginia smokeless. Quotations are unchanged and firm on both soft and hard coal. While the possibility of a strike in the union fields is recognized, no anxiety is felt over supplies.

The early appearance of springlike weather in the Twin Cities has slowed the demand for domestic coal—both retailers and consumers are buying only for current requirements. Utilities and other large steam consumers are stocking against a strike, but there is no evidence of nervousness. The Milwaukee market is featureless and prices are unchanged.

Trade Slower in Southwest

Demand for all grades of Southwestern coal slowed up last week, although quotations were unchanged. Kansas coal ranged from \$2.35@ \$2.50 for screenings to \$4.50@ \$4.75 for deep-shaft lump. Arkansas grades ranged up to \$6.50 for Paris, with semi-anthracite lump selling mostly around \$5@ \$6. Spadra (Ark.) anthracite mines are practically closed for the season, but mines in other fields, especially in Oklahoma, continue to run close to capacity, piling up large quantities of lump.

There has been no break in the warm weather in Colorado, consequently domestic demand is weak, the operators

are overstocked and prices for lump and nut are soft. On the steam side, however, consumption of slack is increasing and the demand has improved. The mines are running about 60 per cent of capacity. Prices are unchanged. Both steam and domestic coal are in less demand than in the Utah market for several weeks. There is a surplus of the smaller domestic sizes, but prices are firm. "No bills," according to the latest report, totaled 475.

Accumulation Plagues Cincinnati

Two leavens—price cuts and curtailed output—are in action in the Cincinnati market to meet the stalemate of accumulated stocks, unpropitious weather and timidity of buyers. Neither has proved much of a stimulus to buying, for much unbilled coal blocks the tracks. Railroads in the district are well stocked and industrial consumers are buying sparingly, which, with domestic trade waning, leaves the lake trade in a commanding position. A few more deals in this line are rumored.

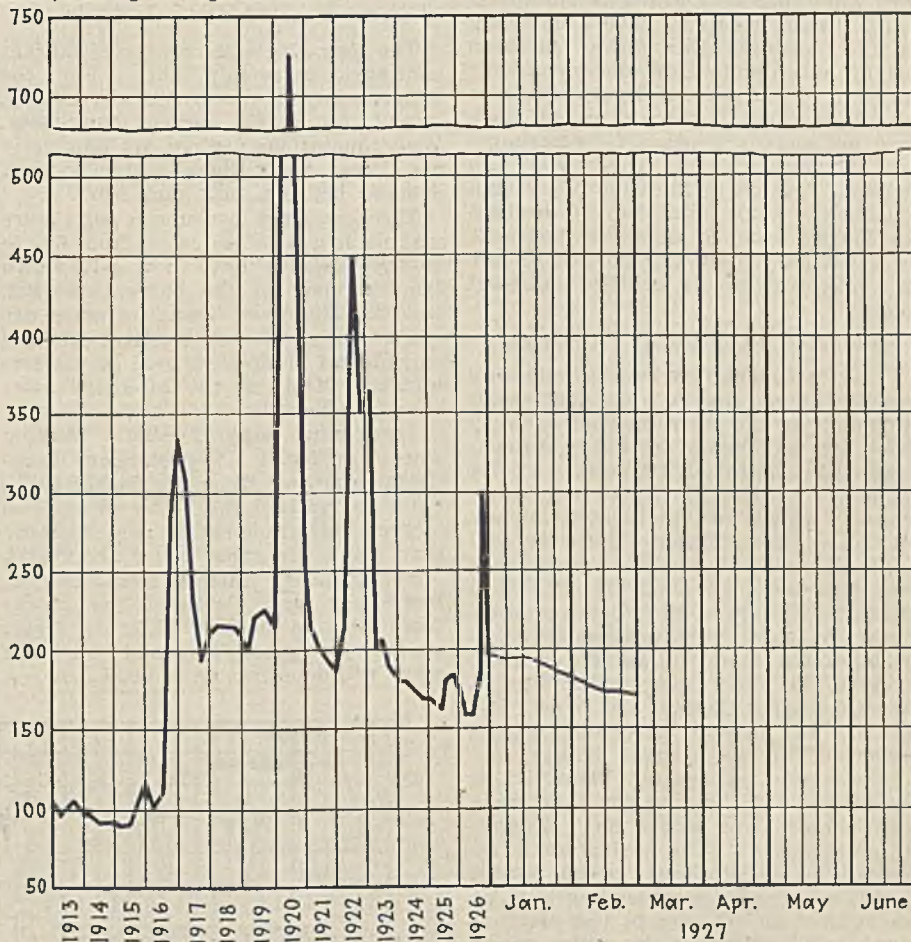
March smokeless circulars name \$3 as a rule for lump and egg, \$2.50 for mine-run, with slack open. Slack is the strong spot in the market, most of it bringing about \$2. In the high-volatile side also slack is the headliner, selling as high as mine-run. Egg

has dropped to a new low of \$1.50, save for a few special grades held at \$2@ \$2.50. A few firms also hold out for \$2.50@ \$2.75 for lump, though offerings from West Virginia have fallen as low as \$1.75.

Car Interchange Declines

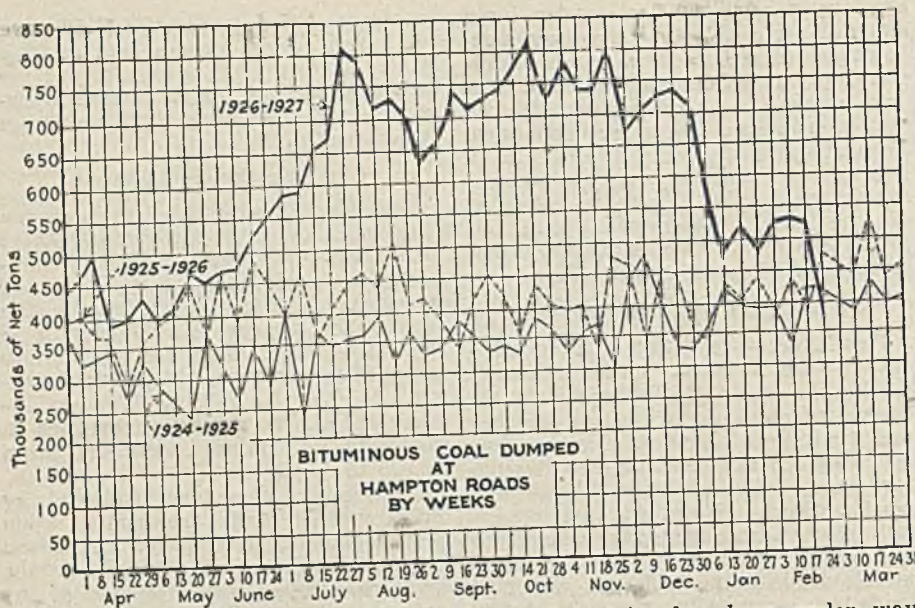
Coal loads interchanged through the Cincinnati gateway last week totaled 12,575 cars, a decrease of 2,300 compared with the preceding week and an increase of 424 compared with the same week a year ago. Louisville & Nashville interchange decreased 1,879 cars; Chesapeake & Ohio, 422; Southern, 15, the Norfolk & Western increased 16. The number of empties en route to the mines decreased from 15,905 to 14,567 cars.

A fleeting snowstorm followed by mild weather finds the central Ohio market weak and irregular. Domestic trade is quiet and attuned to the weather. Steam users, outside of the railroads and utilities, seem unconcerned over the possibility of a suspension in the union fields, as the average industrial consumer has only a normal stock. Buying on the open market at low prices is the rule, the smaller steam users depending on bargains in distress tonnage. Screenings show the most strength, solely because of the



Index	1927					
	Feb. 28	Feb. 21	Feb. 14	Feb. 7	Mar. 1	Mar. 2
Index	171	173	174	179	169	169
Weighted average price	\$2.07	\$2.09	\$2.11	\$2.16	\$2.04	\$2.04

This diagram shows the relative, not the actual, price on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportion each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1924, 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.



reduction in lump output. A few contracts for the new coal year have been placed, principally with West Virginia producers and at higher prices than a year ago. Output in southern Ohio is still below 25 per cent of capacity.

Suspension of negotiations at Miami had no appreciable effect on the northern Ohio market, which is unusually dull. While retailers have been doing a fair business they have not been buying much and steam consumers have tapered off purchases. Spot quotations on all eastern Ohio coals except slack and nut-and-slack are soft; screenings are strong, with a tendency to go higher. Output in the Ohio No. 8 field during the week ended Feb. 19 declined to 330,000 tons, or about 47 per cent of capacity. The major portion of this is going to railroads, utilities and steel plants.

Sluggish Tendency at Pittsburgh

The Pittsburgh district market shows practically no change since last week. Demand in the open market is very poor, but shipments are heavy on contracts running through March. In point of number, the majority of mines are closed. Prices are moderately steady at recent low levels. There is still quite an accumulation of coal on track but less is heard about forced sales. Since the failure of the Miami negotiations the chief local interest is as to whether the union will be able to make trouble in the Connellsville region, Westmoreland County and West Virginia. In general, some trouble is expected, but not a great deal.

Production in central Pennsylvania eased up a little during the third week of February and prices have dropped to some extent. The easing up is reflected in the loadings, which totaled 19,507 cars for the week ending Feb. 19, as against 20,782 cars in the previous week. Quotations at the mines are as follows: Pool 1, \$2.40@\$2.75; pool 71, \$2.25@\$2.35; pool 9, \$2.10@\$2.20; pool 10, \$1.90@\$2; pool 11, \$1.75@\$1.80; pool 18, \$1.65@\$1.70.

The soft coal trade at Buffalo remains quiet and consumers are not displaying much concern over the prospect of labor troubles at the mines. A fair amount of stocking on the part of

large industries has been under way for several weeks past, but there has been no flurry. It is believed, however, that March will bring about quite an improvement over the comparative quiet of February. Slack is somewhat stronger, as the production is not as great as sometimes at this season.

New England Outlook Gloomy

The New England steam-coal market continues extremely dull. For the moment buying has practically ceased, except for small current purchases. While quotations are not yet nominally any lower the outlook is for a weak demand between now and April 1.

The few large consumers who were making it a point to carry from 60- to 90-day reserves have now withdrawn their support of the current market, and the Hampton Roads agencies are again facing the alternative of rigid curtailment or distress coal at the terminals. Most of the off-share sales have now been filled and in no direction is there much hope of relief. "Asking prices" on No. 1 Navy Standard Pocahontas and New River are \$4.50@\$4.75, but it is realized that little or no coal of even first grade can be sold for more than \$4.50 per gross ton f.o.b. vessel.

For delivery inland from Boston, Providence and Portland the on-car basis also is easier; \$6.50 is freely quoted per gross ton and the next move will doubtless be to \$6.25. A few

conservative users continue to take in small lots on the possibility of trouble later on, but most consumers are relying upon the large non-union districts to see them through.

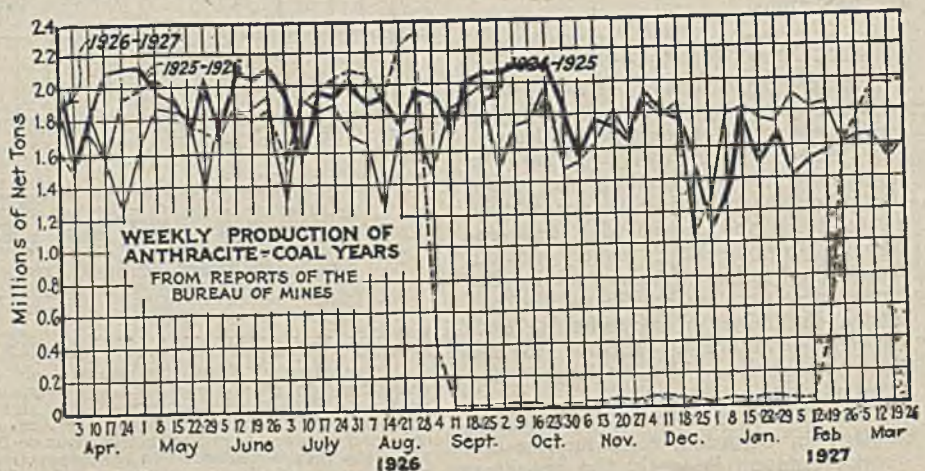
Shippers of high-grade output from central Pennsylvania are making every effort to secure spot business. Quotations have been quietly shaded in the last few days, and practically no operator is pretending to net over \$2.25, even for No. 1 coal.

Coal Moves Freely at New York

Adjournment of the wage conference at Miami last week apparently was of no special significance to soft-coal users at New York. Movement was active, with a heavy tonnage of free coals moving into bins. Most consumers have a fair amount of fuel on hand and are expected to increase their reserves to the limit of storage facilities before the termination of the present wage agreement. Special efforts are being made to have customers place orders before the middle of March. There is a large tonnage at the local piers which is kept moving without much difficulty.

A large volume of coal is being absorbed in the Philadelphia market, though nothing approaching a rush is in evidence. The most noticeable pick-up is on the part of smaller consumers, jarred out of complacency by the break-up of the Miami conference. The utilities and railroads continue to buy for stocking—in a quiet way. Several cargoes for export cleared recently, but inquiries of this class are practically nil and bunkering is of no particular moment. Even the recent storm failed to affect the Baltimore market. A few industries are laying in supplies, but the trade in general is sluggish. Better grades of pool 9 are bringing slightly higher prices because that grade is pretty well sold up, but otherwise prices are unchanged.

Spot buying is furnishing very weak support to the Birmingham market. The contract movement to industrials and shipments to railroads and coke makers is furnishing a fairly satisfactory operating schedule to mines holding such contracts; the others are operating pretty much in accordance with business in hand or reasonably anticipated, therefore there is not much surplus coal. Inability to move domestic sizes is in many instances slowing down operating time. Much domestic coal is



Car Loadings and Supply

	—Cars Loaded—		Car Shortages
	All Cars	Coal Cars	
Week ended Feb. 19, 1927.....	960,873	213,794	
Week ended Feb. 12, 1927.....	968,317	218,777	
Week ended Feb. 20, 1926.....	931,743	169,913	
Week ended Feb. 13, 1926.....	917,625	171,909	

	—Surplus Cars—		Car Shortages	
	All Cars	Coal Cars	All Cars	Coal Cars
Feb. 15, 1927...	259,556	68,373	.....	.....
Feb. 8, 1927....	257,767	64,718	.....	.....
Feb. 15, 1926...	232,031	90,604	.....	.....

being thrown into the commercial market. Quotable prices on all standard grades are without change. Coking plants are producing at about normal capacity.

Small Orders Rule Anthracite

Weather conditions promise to rule the anthracite market at New York until April 1. There was a slight improvement in the situation following the recent storm but the market is again inactive. Dealers as well as consumers are disposed to empty their bins in anticipation of the expected spring discount, hence small orders are the rule. One size of domestic coals seems to be moving as well as any of the others. Some shippers do not find the demand for buckwheat No. 1 as strong as it was a couple of weeks back and in some instances are open to offers in order to move tonnage.

At Philadelphia there was a buying flurry following the storm early last week, but it soon passed with the re-appearance of mild weather. Dealers are ordering sparingly until spring prices are announced. The steam situation is somewhat quieter and premiums on No. 1 buckwheat have shrunk. Demand is still comparatively good, however. The mines are working only about three days a week, and even so their output is not moving promptly. Buying in Baltimore is limited to current requirements, which are small. Dealers are holding back to see what action producers will take on prices April 1.

Anthracite demand is quiet at Buffalo, as dealers are holding off as much as possible until they learn whether the operators are going to reduce prices April 1. Most of the dealers have good-sized stocks on hand and orders received by the companies are only a small fraction of what they were a

short time ago. Dealers with low stocks are buying only for immediate needs. Retail coke demand at Buffalo has been unsatisfactory for the past week or more and dealers are not optimistic over prospects for the near future.

Connellsville Coke Market Dull

A slightly firmer note pervaded the Connellsville spot coke market last week, without quotable changes in price. Furnace coke, in fact, was rather dull and foundry coke not particularly active. Standard furnace is still \$3.35@3.50 and standard foundry, \$4.25@4.75. Blast furnaces have not been making spot purchases for some time, current business being largely confined to sales to miscellaneous consumers, who are thought to be doing a little stocking.

Not much interest is shown by either producers or consumers in second-quarter contracts; it is not likely that such business will be closed until later in the month. It is not believed that there will be much labor trouble April 1, as it would scarcely be worth while for the union to bother the few small operators paying less than the independent scale of \$6—only the Frick company pays the full \$7.50.

Production of beehive coke in the Connellsville and Lower Connellsville region during the week ended Feb. 19 was 135,700 net tons, according to the Connellsville Courier. Furnace-oven output was 60,150 tons, a decrease of 4,100 tons from the preceding week. Merchant-oven output was 75,550 tons, a decline of 210 tons.

Demurrage Appeal Dismissed

Without a written opinion, the U. S. Supreme Court on Feb. 28 dismissed the appeal of the Pan-Handle Coal Co. from a judgment awarded by the lower courts to the Norfolk & Western Ry. Co. for demurrage on coal cars held at the piers at Lamberts' Point, Va. The dismissal was based on a decision previously rendered in the Emmons Coal Mining Co. case, where a similar question was involved. The Pan-Handle case was a test suit involving fifteen others, the issues of which totaled demurrage of more than \$380,000. The cases arose from sorting coal for export by the Lamberts' Point Coal Exchange.

Government Loses Action On Cancelled Contract

The federal government must pay the Burton Coal Co. a judgment for the difference between the contract price for the purchase of coal and the market value at the times and places specified for delivery under a decision of the Supreme Court through Justice Butler rendered Feb. 21, affirming the decision of the Court of Claims. The government contracted in 1920 for 150,000 tons of coal at \$6.75 a ton for delivery at various army posts in the Chicago district. It accepted 53,146 tons and cancelled the contract.

The government contended that the company was entitled only to anticipated profits, as the remaining coal had not been mined. The Court of Claims held that the government was obligated to pay the difference between the contract price and the market value for the full amount of the contract and this decision was upheld by the Supreme Court. The government will pay \$445,528 instead of \$46,065 under this decision.

Coal Mines in India Adopt Machines and Electricity

It is noteworthy that coal mines of British India are steadily though slowly making progress in the adoption of machinery. The number of coal-cutting machines now in use is 125 and the total area undercut by these machines in 1925 was more than 9,000,000 sq.ft., and the total quantity of coal produced by them formed 15 per cent of the total output. This was an improvement over the previous year when the percentage of machine-cut coal was only 9. Of the 125 coal-cutting machines in service, 69 are of British make and 56 of American make. Fifty-eight machines are of chain type, 55 are of bar type and only 12 are percussive.

There also has been a marked increase in the use of electrical power. The aggregate horsepower used in 1925 was 56,000, which is an increase of 10,000 over the previous year. The number of collieries using electric power was 108, and out of the 125 coal cutting machines in use, 104 were driven by electric power and 21 by compressed air.

Coal Produced in Kansas in 1925*

(Exclusive of Product of Wagon Mines)

County	Net Tons		Value		Number of Employees					Average Number of Days Worked	Average Tons per Man per Day		
	Loaded at Mines for Shipment	Sold to Local Trade and Used by Employees	Used at Mines for Steam and Heat	Total Quantity	Total	Average per Ton	Underground					Total	
							Miners, Loaders and Shot-firers	Haulage and Track	Others Surface				
Bourbon and Leavenworth.....	25,000	47,500	2,000	74,500	\$254,000	\$3.41	330	18	88	23	459	264	0.62
Cherokee.....	1,100,415	60,492	16,328	1,177,235	2,993,000	2.54	626	72	45	406	1,149	173	5.91
Crawford.....	2,927,549	138,653	41,627	3,107,829	9,125,000	2.94	4,031	422	414	717	5,584	164	3.40
Linn.....	29,768	3,792	243	33,803	90,000	2.66	95	9	8	7	119	111	2.56
Osage.....	98,991	31,805	88	130,884	551,000	4.21	380	37	37	35	489	142	1.89
Total.....	4,181,723	282,242	60,286	4,524,251	\$13,013,000	\$2.88	5,462	558	592	1,188	7,800	169	3.44

* The figures relate only to active mines of commercial size that produced coal in 1925. The number of such mines in Kansas was 230 in 1925, 228 in 1924 and 222 in 1923.

Methods of mining in 1925: The tonnage undercut by hand was 232,147; shot off the solid, 2,811,530; cut by machines, 198,099; mined by stripping, 1,123,930 not specified, 158,525.

Size classes of commercial mines in 1925: There was 1 mine in Class 1B (200,000 to 300,000 tons), producing 6.8 per cent of the tonnage; 10 in. Class 2 (100,000 to 200,000 tons), with 29.9 per cent; 17 in Class 3 (50,000 to 100,000 tons), with 27.6 per cent; 54 Class 4 (10,000 to 50,000 tons), with 23.9 per cent, and 148 in Class 5 (less than 10,000 tons), producing 11.8 per cent.

Compiled by U. S. Bureau of Mines.

Foreign Market And Export News

British Coal Prices Soften As Output Mounts

London, England, Feb. 14.—Demand for coal in the British market has improved but has not kept pace with production. As a result the operators are embarrassed with tonnage, which undermines stability and confidence in the ranks of buyers. The situation reflects comparatively little effect in the way of increased business from reductions in prices. Spot supplies of all grades are abundant and prices weak.

Business with the Continent is poor, though inland consumers are taking slightly larger quantities. The Navigazione Generale Italiana has contracted for 60,000 tons of Admiralty large at 22s. 6d. f.o.b. The Palermo Gas Works has taken 20,000 tons of prime Wear gas at 27s. c.i.f. and a Danish sugar works has signed up for 15,000 tons of best steam smalls at 9s. 3d. f.o.b.

Spot quotations are: Best Admiralty large, 13s. 6d.; best gas, 17s. 6d @ 18s.; unscreened bunkers, 17s. 6d.

Total output by British collieries during the week ended Feb. 12 was 5,360,900 tons. This compares with 5,267,200 in the preceding week and with 3,884,200 in the beginning of the year. The current production is about normal for this time of year, and it is interesting to observe that it is attained with the number of miners at work still considerably below the normal figure. At present the workers number 1,006,200, as against nearly 1,200,000 a year ago.

Imports of coal into England from the United States are now diminishing, but the trade asserts that a marked increase in exports will be needed to restore the home coal industry as a whole to anything like a normal condition.

French Dullness Unaffected By Price Cuts

Paris, France, Feb. 10.—Sales of industrial fuels in the French market are not improving. Dealers' yards are full of domestic fuels, occasional cold days not being enough to stimulate demand appreciably. Inasmuch as most dealers' stocks were purchased at high prices they are becoming troublesome.

Negotiations are under way between Belgian and French producers of sized coals as to action on prices. Traders favor an intermediate reduction to go into effect on March 1 between winter prices, now prevailing, and summer prices, which are effective April 1.

Following reductions by the Nord, Pas-de-Calais and Loire collieries, those in Lorraine (Sarrelbourg and Petite-Roselle) have made cuts amounting to 5 fr. Those made by the Saar Domain mines are from 1 to 4 fr.

Contrary to expectations, British imports have not attained a high level. Large-scale deals may be made with

Belgium far below official rates. From across the Rhine business is much the same. Much coal ordered during the British strike is arriving from the United States. Polish coals also have re-entered this market, but Russian anthracites are not heard from.

In response to the requests of importers the Ministry of Public Works has hinted that imports should be restricted as much as possible. It is hardly probable, therefore, that a reduction in railway tariffs will be granted to imported fuels.

Since Feb. 1, prices of indemnity fuels entering France through Strasbourg, Laterburg or Kehl have been reduced by 4 fr. on unscreened and washed peas and 3 fr. on semi-bituminous smalls. Cokes remain unchanged.

Prices of metallurgical and foundry coke have been reduced by a total of 15 fr. since the first of the year. Although the official prices for these fuels are 191 and 211 fr. respectively big contracts extending over considerable intervals may be had at decided reductions. Nevertheless in some places such as Homecourt French coke still costs from 6 to 8 fr. more than that from the Ruhr delivered at the plant.

Decreasing metal production has resulted in an oversupply of coke at the present time.

Belgian Coal Demand Sags

Brussels, Belgium, Feb. 10.—Buyers are more reserved than ever in their purchases of Belgian coals and a new low price level has been reached. Foreign competition is keen and home consumption grows less and less.

As a result rates show a persistent tendency to decline. Anthracitic coals are much in demand and at good rates. It was recently decided to maintain the rates on semi-bituminous grades from the Charleroi region as much as possible. Borinage and Centre qualities are becoming weaker. Fairly large lots of British and German fuels have recently been contracted for although the tendency of keeping up the prices of these grades is becoming more marked than formerly. Competition from the northern French region also is beginning to make itself felt.

Decided weakness prevails in patent fuels. Recently some sales have been made at 235 fr., but they were effected with great difficulty. Plenty of spot coke is available. The rate for metallurgical fuel of this kind is 250 fr., but deals are frequently closed for less.

Some slight improvement has been noted in domestic fuels, due to cold weather. This is only a modest and seasonal revival, however, and has brought no change in prices.

It perhaps goes without saying that all price recessions are strenuously resisted by the mine owners, who recently increased wages 5 per cent following a rise in the cost of living index.

U. S. Fuel Imports in January

	(In Gross Tons)	
	1926	1927
Anthracite.....	135,201	8,751
Bituminous.....	55,318	52,409
From:		
United Kingdom.....	9,254	4,110
Canada.....	41,552	48,299
Australia.....	4,411	.....
Other countries.....	101	.....
Coke.....	24,509	16,826

U. S. Fuel Exports in January

	(In Gross Tons)	
	1926	1927
Anthracite.....	6,311	219,797
Bituminous.....	993,386	1,720,247
Exported to:		
France.....	.....	56,934
Italy.....	94,110	128,183
Other Europe.....	1,138	141,206
Canada.....	724,991	955,812
Panama.....	19,452	57,094
Mexico.....	8,282	14,040
Newfoundland and Labrador	155	187
British W. Indies.....	6,865	23,687
Cuba.....	68,456	87,914
French W. Indies.....	12,954	10,351
Other W. Indies.....	12,783	7,013
Argentina.....	10,653	101,301
Brazil.....	9,871	105,030
Uruguay.....	.....	5,494
Egypt.....	12,484	8,819
French Africa.....	.....	6,553
Other countries.....	11,192	10,629
Coke.....	81,863	59,471

Export Clearances of Coal, Week Ended Feb. 24

FROM HAMPTON ROADS		Tons
For United Kingdom:		
Br. Str. Siam City.....	.....	7,865
Br. Str. Dakotian.....	.....	8,121
For New Brunswick:		
Amer. Schr. Mabel A. Frye, for St. John.....	.....	1,679
For Barbados:		
Swed. Str. William, for Bridgetown..	.....	2,594
For Canal Zone:		
Amer. Str. Cubore, for Cristobal....	.....	11,393
Amer. Str. Lebere, for Cristobal....	.....	10,471
For Brazil:		
Br. Str. Pilar de Larrinaga, for Rio de Janeiro.....	.....	8,190
For Jamaica:		
Nor. Str. Gefion, for Kingston.....	.....	2,196
FROM PHILADELPHIA		Tons
For Cuba:		
Nor. Str. Cissy, for Havana.....	.....	.....
Nor. Str. Felix, for Antilla.....	.....	.....
Dan. Str. Jan. for Havana.....	.....	.....
For Porto Rico:		
Am. Str. Mariana, for San Juan.....	.....	.....
For Brazil:		
Br. Str. Bradavon, for Rio de Janeiro	.....	.....

Hampton Roads Coal Dumpings*

	(In Gross Tons)	
	Feb. 17	Feb. 24
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week.....	199,598	152,085
Virginian Piers, Sewalls Pt.:		
Tons dumped for week.....	100,458	104,378
C. & O. Piers, Newport News:		
Tons dumped for week.....	172,734	89,764

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

Pier and Bunker Prices

	(Gross Tons)	
	PIERS	
	Feb. 17	Feb. 24†
Pool 1, New York....	\$5.75@ \$6.00	\$5.75@ \$6.00
Pool 9, New York....	5.10@ 5.50	5.25@ 5.50
Pool 10, New York....	4.90@ 5.25	5.00@ 5.25
Pool 11, New York....	4.50@ 5.00	4.50@ 5.00
Pool 9, Philadelphia..	5.25@ 5.45	5.25@ 5.45
Pool 10, Philadelphia..	4.90@ 5.20	4.90@ 5.20
Pool 11, Philadelphia..	4.45@ 4.85	4.45@ 4.85
Pool 1, Hamp. Roads.	4.75@ 4.90	4.80@ 4.90
Pool 2, Hamp. Roads.	4.50@ 4.65	4.65@ 4.75
Pool 3, Hamp. Roads.	3.90@ 4.00	4.00@ 4.10
Pools 5-6-7, Hamp. Rds.	4.20@ 4.30	4.30@ 4.50
BUNKERS		
Pool 1, New York....	\$6.00@ \$6.25	\$6.00@ \$6.25
Pool 9, New York....	5.35@ 5.75	5.50@ 5.75
Pool 10, New York....	5.15@ 5.50	5.25@ 5.50
Pool 11, New York....	4.50@ 5.00	4.75@ 5.25
Pool 9, Philadelphia..	5.50@ 5.70	5.50@ 5.70
Pool 10, Philadelphia..	5.15@ 5.45	5.15@ 5.45
Pool 11, Philadelphia..	4.70@ 5.10	4.70@ 5.10
Pool 1, Hamp. Roads.	4.90	4.90
Pool 2, Hamp. Roads.	4.65	4.75
Pools 5-6-7, Hamp. Rds.	4.30	4.50

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

Coming Meetings

New York State Coal Merchants' Association. Ninth annual group meeting, Hotel Pennsylvania, New York City, March 15. Executive secretary, G. F. W. Woodside, Albany, N. Y.

American Society for Testing Materials will hold certain committee meetings, among which will be one on coal and coke, in conjunction with a four-day group meeting at the Bellevue-Stratford, Philadelphia, Pa., March 15-18. Secretary-treasurer, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

American Mining Congress. Annual convention May 16-20, Cincinnati, Ohio. Secretary, J. F. Callbreath, Munsey Bldg., Washington, D. C.

American Wholesale Coal Association. Annual convention June 1-3, Toronto, Canada. Secretary-treasurer, R. B. Starek, Chicago Temple Bldg., Chicago, Ill.

National Retail Coal Merchants Association. Annual convention June 6-8, Detroit, Mich. Resident vice-president, Joseph E. O'Toole, Washington, D. C.

New England Coal Dealers' Association. Annual meeting June 14-16, Hotel Griswold, New London, Conn. Executive secretary, E. I. Clark, Boston, Mass.

Colorado and New Mexico Coal Operators Association. Meeting at Boston Building, Denver, Colo., June 15. Secretary, F. O. Sandstrom, Denver, Colo.

National Coal Association. Annual meeting June 15-17, at Edgewater Beach Hotel, Chicago, Ill. Assistant secretary, J. C. Crowe, Washington, D. C.

Michigan-Ohio-Indiana Coal Association. Annual convention at Cedar Point, Ohio, June 28-30. Secretary, B. F. Nigh, Columbus, Ohio.

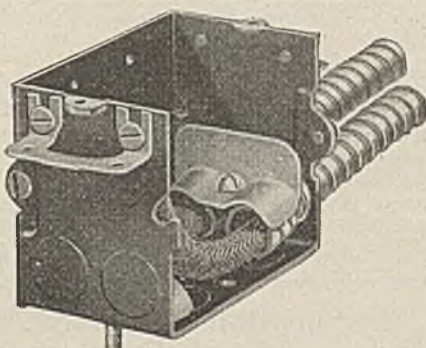
Association Activities

The Monongahela Valley Coal Mining Institute was organized, with 107 charter members, at a meeting Feb. 8 in the Engineers' Building, University of West Virginia, Morgantown. These officers were elected: President, H. L. Meredith, chief engineer, Connellsville By-Product Coal Co.; secretary-treasurer, C. A. Gibbons, chief engineer, Gilbert-Davis Coal Co.; vice-presidents, Fred Ice, superintendent, Trumbull Coal & Coke Co.; Charles Warner, superintendent, mine 26, Bethlehem Mines Corp.; Paul Kauffield, superintendent, Chaplin Collieries Co.; Brook Showalter, assistant to the president, Continental Coal Co. The purpose of the organization is to advance education among mine officials and all others interested for the betterment of the industry. Robert Lambie, state mine chief, and Dan Harrington, chief engineer of the mine safety section, U. S. Bureau of Mines, spoke on safety. H. D. McGinnis, of the duPont company, lectured on the uses of dynamite.

New Equipment

Adjustable Clamp Facilitates Electric Wiring

According to the manufacturer, the Chicago Fuse Mfg. Co., Laffin and 15th Sts., Chicago, Ill., the clamps on the new Gem XC sectional switchboxes not only secure sheathed and metallic cable or loom, but at the same time close up any knockout hole space not completely filled by the incoming cable or loom. Also, it is stated that this new clamp has an extension so that as the screw is turned down this extension covers any openings that may exist around the cable. The Gem sectional boxes



Makes the Job Complete

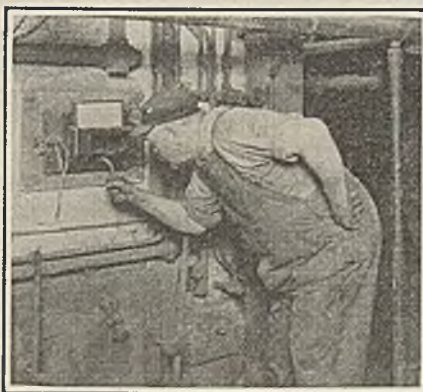
The clamps on the above sectional switchbox secure the sheathed and metal cable and at the same time close up any open space not filled by the cable.

manufactured by this company which are equipped with this new No. 7 clamp are the XC, the Locktite XCT, and the bracket box XCB. The accompanying illustration shows the XC box.

Puts Goggles on the Furnace

To enable firemen to observe the actual conditions within a boiler furnace without having to open the fire doors is the purpose of the C-E-Z furnace fire observation window being marketed by the Combustion Sales Co., 153 E. 42d St., New York, N. Y.

It is claimed by the company that by the use of this window firemen can observe holes in the fire, uneven fuel beds,



Protects the Eyes

According to the manufacturer this device puts the goggles on the boiler where they can always be found and used.

etc., which enables them to prevent the losses that usually result from these causes. It is stated that the construction of this observation window is simple and rugged, with nothing mechanical to get out or order, and no air connection to the firebox is required.

This device is fastened to the outside of the walls by four bolts. When in a closed position the observation slot in the brick work is covered by a piece of asbestos. When in use, a slide holding this asbestos is pushed upward and a mica window registers with the slot in the brickwork. This prevents an inrush of cold air. A fixed light absorbing glass is held off from the mica and through this a clear view can be had of the firebox. A generous air space around this glass keeps it cool.

Floor Grating Is Devised For Power Stations

A type of steel flooring designed especially to meet the requirements of power plants has been developed by the Walter Bates Steel Corp., Gary, Ind. This steel floor grating is said to be strong, durable, slip-proof, safe and fireproof, and it is relatively of light weight and low cost. It affords air circulation and light penetration and has no angles or openings where dirt can gather. It is sanitary and attractive and has a positive lock joint which is said permanently to prevent loosening and chatter.

New Tachometer Announced

The "Standco" pocket-size tachometer, with a range in speed from 60 to 8,000 r.p.m., has been placed on the market by Herman H. Sticht & Co., 15 Park Row, New York, N. Y. All the necessary accessories are self-contained or attached to the reverse side, thus eliminating a carrying case. The instrument is equipped with a spirit level to facilitate holding it in a horizontal position, and it also has a pointer-locking device which permits of locking the pointer. The tachometer also contains an automatic protective device for the measuring element which protects the rotary element if the instrument is accidentally used for high-speed measurement while the gear shift is set for low-speed measurement. —*Electrical World.*

Recording Meters Improved

Four new features have been incorporated in the General Electric CR type round pattern recording instruments. The new pen is of greater capacity, with a glass body and metal stylus, and can be refilled without impeding the operation of the instrument. There is a new shipping device, operated by turning a knurled knob on the back. A new polarizing adjustment, by which the instrument calibration can

be altered, can be locked in any desired position. There is also a new suspension link of indestructible character, which retains the calibration and sensitivity of the instrument.

The CR recording instruments, for either alternating or direct current, are available either for switchboard mounting or in portable style. The ammeters are built to register from 5 to 200 amp., and the voltmeters are supplied for any range from 0 to 750 volts. The charts, 8 in. in diameter, are driven either by one-day or eight-day clocks or by Warren synchronous motors.

Universal Electric Hoist

Universal electric hoists which may be operated on either direct current or single-phase alternating current of 110 or 220 volts have been placed on the market by Louis E. Emerman & Co., 1761 Elston Ave., Chicago, Ill. A hoist of this kind has a minimum headroom of only 11 in., weighs 95 lb. complete, is built in 500-, 1,000- and 2,000-lb. capacities, and is provided with 12 ft. of load chain and a hook.

It is stated that the hoist may be operated from any power socket and that a limit stop, which operates with the hook at either end of the chain, shuts off the current when the hook has reached the upper limit of travel. The manufacturer states that this hoist needs no holding or lowering brakes and, consequently, hooks may be placed on either or both ends of the chain. The full-load lifting speeds for the hoists of the different ratings are as follows: 500-lb. hoist, 28 f.p.m.; 1,000-lb., 12 f.p.m.; 2,000-lb., 6 f.p.m.

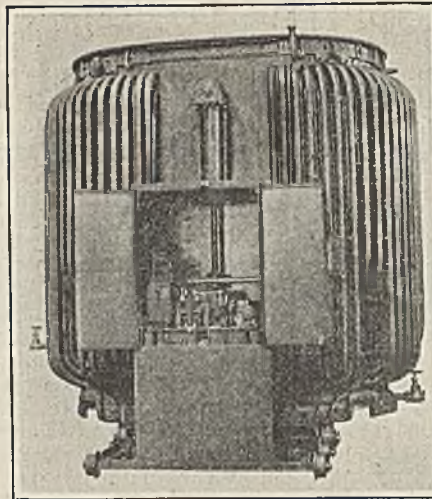
Controlling Load Ratio In Belgium

By use of transformers equipped with load ratio control, a Belgian copper refinery will control the current used in its electrolytic processes by varying the voltage applied to a rotary converter, and without interrupting the circuit. By this method the Oolen Refinery of the Société Générale Metallurgique de Hoboken will be able to exercise remote control of its processes by means of two push buttons on the control panel.

The installation will consist of two 915/1840-kw., 750-r.p.m. synchronous converters and two oil-cooled transformers rated 2,055 kva., together with necessary switchgear. This equipment will be installed in a new refinery in Hoboken, Belgium, where copper from the Belgian Congo will be brought and refined. All the electrical equipment will be of General Electric manufacture, and that company is now also building three 4,000-kw. motor generators for a large leaching plant in the Belgian Congo, a subsidiary of the Société Générale Metallurgique de Hoboken.

The Belgian transformers will take their power from a 3-phase, 6,600-volt, 50-cycle circuit and will deliver 5,270 amps. to the rotary converters at a pressure which can be varied from 66 to 130 volts in nine steps. Finer adjustments in the direct-current voltage will be obtained by field control.

The motor drive of the load ratio



Exterior of Transformer

Housing of tap-changing mechanism is open in this view of the device evolved by Belgians to control load ratio.

control will accomplish one complete tap change in about ten seconds. It will be possible to operate the tap-changing mechanism by hand, with the motor disconnected. On the switchboard there will be an indicating instrument to show the attendant on which tap the transformer is operating.

Publications Received

Patents—What a Business Executive Should Know About Patents, by Roger Sherman Hoar. The Ronald Press Co., New York City. Price, \$4.50. Pp. 232; 5½x8½ in.

Eastern Coal Rates Investigation Before the Interstate Commerce Commission. Docket No. 15,006. Pp. 265; 19 appendices. Brief on behalf of the Central Pennsylvania Coal Producers' Association and Somerset County Coal Operators' Association.

Fusibility of Coal Ash as Related to Clinker Formation, by W. A. Selvig, P. Nicholls, W. L. Gardner and W. E. Muntz, with an introduction by E. P. Ricketts of the New York Edison Co. Mining and metallurgical investigations under the auspices of the Carnegie Institute of Technology, United States Bureau of Mines and Mining and Metallurgical Advisory Boards. Bulletin 29. Price, 50c. Pp. 64, 6x9 in.; illustrated.

Proceedings of the Rocky Mountain Coal Mining Institute covering Sept. 9-11, 1926, meeting at Glenwood Springs, Colo. Pp. 92; 6x9 in.; illustrated.

Safety Rules for Installing and Using Electrical Equipment in Coal Mines, sponsored by U. S. Bureau of Mines and American Mining Congress. Technical paper 402. Bureau of Mines, Washington, D. C. Pp. 21; 6x9 in.

An Investigation of Twist Drills, Part II, by Bruce W. Benedict and Albert E. Hershey. Engineering Experiment Station, University of Illinois, Urbana. Price 40c. Bulletin 159. Pp. 76, 6x9 in.; illustrated. This book (Part I, Bulletin 103, appeared in 1917) deals specifically with the relation between helix angle, torque, thrust and endurance of

the drill when drilling in gray cast iron and steel.

The Measurement of Air Quantities and Energy Losses in Mine Entries, by A. C. Callen and C. M. Smith. Engineering Experiment Station, University of Illinois, Urbana, Ill. Bull. 158. Price 45c. Pp. 77; 6x9 in.; illustrated. Report prepared under a co-operative agreement between the Engineering Experiment Station of the University of Illinois and the Illinois State Geological Survey of investigation to see whether pitot-tube traversing methods could be applied with reasonable accuracy at any desired location without building a measuring station and without special preparation of the section.

Coke Oven Accidents in the United States during the calendar year 1925, by William W. Adams. Bureau of Mines, Washington, D. C. Technical Paper 408. Pp. 40; 6x9 in.; tables.

Trade Literature

Type B Automatic Variable Timing Switches and Control Cabinets. Crouse-Hinds Co., Syracuse, N. Y. Bulletin No. 221. Pp. 11; 8x10½ in.; illustrated.

Groundulets. Crouse-Hinds Co., Syracuse, N. Y. Bulletin 1097, superseding bulletins 2085 and 2089. Four-page folder illustrating different type of groundulets.

Chas. Cory & Son, 183 Varick St., New York City, have issued Bulletin No. 60-29-A, on Annunciators, Bells, Buzzers and Signal Equipment. It has 60 pp., 8½x10½ in., illustrated and thumb indexed for ready reference.

Western Wheeled Scraper Co., Aurora, Ill., has issued a Jubilee catalog on its 50th birthday. It contains 167 pp., 8½x11 in. and well illustrated. A history of the company precedes the review of the handling equipment manufactured by the company.

Automatic Pulverizers. Raymond Brothers Impact Pulverizer Co., Chicago, Ill. Catalog No. 19. Pp. 23; 8½x11 in.; illustrated. Describes various pulverizing problems and illustrates the different pulverizers best adapted to various kinds of materials.

Tunnel Mucking with Myers-Whaley Shoveling Machines is the title of an 8-pp. bulletin issued by the Myers-Whaley Co., Knoxville, Tenn. It describes the use of these machines in driving the Shandaken, Hetch Hetchy and New Cascade Tunnels.

Sullivan Machinery Co., Chicago, Ill., recently issued the following: "Turbinair" Diamond Drill. Bulletin No. 80-C. Pp. 7; 6x9 in.; illustrated. This machine is designed for surface or underground prospecting. Mounted Diamond Drill, Class "N," for Deep Structure Testing. Bulletin No. 80-B; Pp. 7; 6x9 in.; illustrated. This drill is driven by a direct-connected Buda engine, mounted on a heavy truck with wide steel wheels for transportation in rough country.

Arc Welding Accessories. General Electric Co., Schenectady, N. Y. GEA-571. Four-page folder illustrating and describing hand shield and helmet, protective colored glass, electrode holders, and other accessories.