

COAL AGE

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"It Cannot Happen"— But It Does

MANY mine executives have been like those at Everettville, W. Va.: they have believed the mine was so wet that the coal dust in it could not explode, but evidence shows that a wet mine can have a bad dust explosion.

Everyone agrees that water in quantity seems a good guarantee against an explosion of coal dust, but as all the evidence shows it is not, why argue from this false basis any longer? The Hastings explosion in Colorado proved satisfactorily that reliance could not be placed on water, of which there was an abundance.

At Everettville, it would have been better to have rockdusted the entries by hand than to have awaited the arrival of a machine. It is another example of the fact that a mine that is not rockdusted is an unprofitable, as well as an unsafe, mine to operate. Safety is the first economic consideration. The mine inspectors' advice, if heeded, would have saved the company from much loss, and the men working at it would have been living today. Rockdusting has had a further vindication, which mine executives and legislators everywhere would do well to note, taking appropriate action.

Embarrassed by Its Resources

THIRTY YEARS AGO nearly all the raw-material industries, including that of coal, were confronted by problems naturally arising from the excessive and easily available resources of the country. The lumber industry was flooded with excess production, and the iron industry was almost vainly endeavoring to assimilate the large iron fields of Alabama, Minnesota and Michigan. Clay deposits cropped out of almost every hill and demoralized the brick industry. The oil industry, however, had only periods in which it was faced by an excess of potential and actual production. It occasionally went wild, but not for long.

Today much of the lumber of the country has been cut, the owners of what remains are few and the industry is well in hand. The steel industry fell into strong hands that absorbed the iron ore deposits which, incidentally, were not as widespread as the coal fields or the woods. That industry has, therefore, been effectively stabilized. The oil interests have oil fairly well in hand. It has been organized so that today there are few companies in operation. Oil is just now in abundance, but the wells will soon begin to become flooded with salt water, thus deflating the industry. Clearly only those raw-material industries are stable that have limited resources.

The brick industry is still overdone. Of the making of clay products there is no end. It is still an industry with many small units with no control—with nothing that can be labeled big business. Probably it never will be well organized. The farming industry also is over-

developed and largely less productive of profit and well being than it should be. It finds itself overwhelmed by its own resources.

Unfortunately, coal still remains in the unlimited-resources stage. The condition is made worse by reason that a small mine, as long as it can remain small, can compete satisfactorily with a large mine, because haulage, ventilation and drainage conditions are likely to be all favorable and the labor is usually more friendly to the small, resident, impecunious operator than to the big, distant, supposedly wealthy, corporation.

The number of small companies and the relatively small size of the large ones accounts for the fierce competition in the coal business. It is, say some, as disorganized as the grocery business and for the same reason.

As in that business, the lack of large interests, the ease with which competitors can enter the industry with small capital, and the belief of everyone that it is a simple business that anyone can master without technical training or experience, all tend to demoralize it.

A few years hence the country will be developed to the extent of its coal resources having in mind the railroad facilities for transportation, except, perhaps west of the Mississippi, and a vast change will almost insensibly come over the industry. Old mines will have to be bought. New mines will less often be opened. Large units will be the rule rather than the exception. Concurrently, the market will grow and thus ease the situation.

Buying a Lawsuit

IN THE PAST, one of the most annoying difficulties in mining has been in a separation of the ownership of the surface from that of the coal seam. Many problems would have been avoided had the companies insisted on buying the surface rights as well as those to the coal: Even where right of support was waived, prudence would have counseled against providing for any dual ownership of a piece of land.

As perplexing, but not as vital to the whole industry because less prevalent, has been the practice of selling or leasing two or more beds to as many different vendees or lessees as the case may be, each of which is mined by a separate operator who occupies a seam much as an owner or tenant may own a floor in a many-storied apartment house. The practice should not be extended. Like buying coal land without surface ownership, it is an undesirable practice that can make only trouble even where the laws, decisions or the contract provisions uphold the rights of the first purchaser.

In the Scotts Run area of the Fairmont region are two seams, the Pittsburgh and the Sewickley, sufficiently far apart that both could be mined concurrently with reasonable satisfaction if that were desirable, provided the same company operated in both seams. When two companies operate, difficulties begin to exhibit

themselves, as in the case of the Connellsville By-Product Coal Co., which, mining the Pittsburgh seam, created difficulties for the Continental Coal Co., which had its holding in the Sewickley seam above it.

On June 7, the Supreme Court of Appeals of West Virginia made, at Charleston, a decision setting aside an injunction which forbade the operation of the lower bed. The legal battle between the companies has been long and hotly contested. The Connellsville By-Product Coal Co.'s case rested on its priority rights, it having acquired its holdings before the Continental Coal Co. The latter, however, was the first of the two to begin mine development. Priority rights, it appears, can no more be set aside in mining than in the granting of a patent.

The Sewickley seam doubtless will be worked later despite the prior excavation of the Pittsburgh bed. The measures below and above the Sewickley seam will be fractured and the coal also will be broken in places, but experience has shown that the condition of the bed will not be greatly affected after motion has ceased. Of course, some time will be needed after the lower seam is extracted for the measures to come to a complete rest.

This is, however, no great compensation to the Continental Coal Co., which wants its coal now. Few concerns will refuse to leave in their mines the necessary pillar coal for the support of main entries in mines above them, providing a reasonable settlement is made to defray the loss incurred. Such an arrangement was suggested in this particular case by the By-Product coal company which agreed to adhere to this procedure for a period of ten years with the understanding that the Continental company should stand the loss due to royalty paid for the unmined coal involved. The Continental Coal Co. refused to do this and obtained the injunction from the county circuit court.

Still another solution suggests itself, borrowed from the practice of some companies that simultaneously mine two seams, one above the other. It is that of superimposing the working projection of the upper mine on that of the lower. This would not, by any means, provide a cure-all but it would, to some extent, aid in preventing injury to the upper seam.

A far better plan is to buy outright. In the early days of the development of a coal territory, the additional price of a piece of land purchased in fee simple is small enough to be worth the slightly increased outlay even where there is timber. The latter rights may, however, be waived, for the timber is soon removed and freedom of action for ingress, egress and coal removal is then unabridged, not only in the judgment of the law but in that of the public. No company in these days likes to buy a lawsuit or a public quarrel.

All to the Good But None too Good

THE RECENT explosions and the decision on the part of the Associated Companies not to continue to insure coal companies against workmen's compensation losses evidences a need for further legislation. For this reason, Ohio is to be congratulated on having recently passed some amendments to its code which are likely to improve conditions and reduce accidents in the mines of the state. One provision does not go far enough,

that on rockdusting, and one is a trifle too overguarded, that on "interior fans," but all are a contribution to safety for which everyone should be grateful, especially the coal operator. Accidents in his mines or in those of others bring discredit on the coal industry and make unfavorable legislation inevitable.

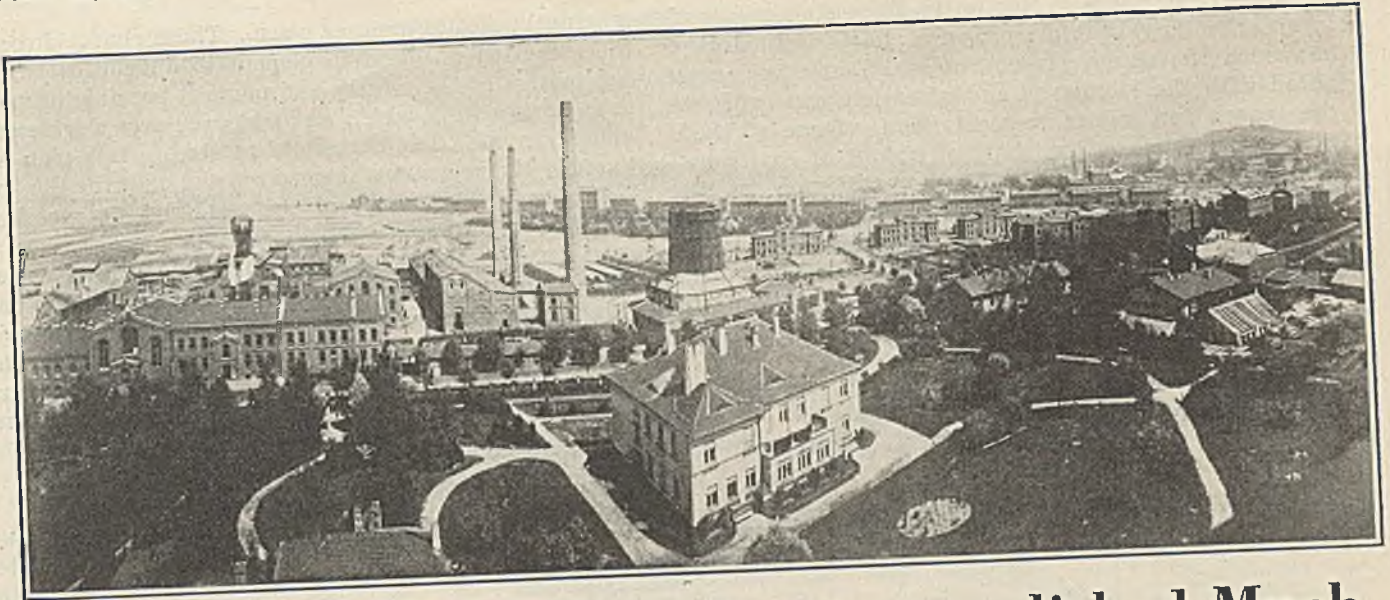
One of the weaknesses in this legislation is the feebleness of its approval of rockdusting. When a place is so dry and dusty that the dust is put into suspension and when the district inspector finds that the conditions should be remedied, then only shall he require that the place be sprinkled or rockdusted. The air in the entries of most places is not visibly dusty and if that is the measure that determines sprinkling or rockdusting, seldom indeed will either be resorted to. Unfortunately a runaway trip, an arc, a blown-out shot, a displaced timber, a fall of roof or an explosion may at any time and in any place make air that is reasonably free of dust, amply dust-laden to act as the vehicle for a disastrous explosion. Should such an occasion arise, and should the district inspector chance to come and see it, then he can order the condition abated. Long before he could do that, however, a disaster would have occurred.

For a long time Great Britain had regulations that did not compel the mine owners to rockdust wet places. Finding that wet mines would explode, the Mines Bureau ordered all entries in bituminous mines to be covered with rockdust, whether the workings were wet or dry. Germany, that has long sprinkled copiously, decided after the explosion in the Minister Stein mine to compel rockdusting in all mines. But in Ohio even the requirement that the mine be sprinkled or rockdusted is dependent on two contingencies—the dustiness of the air and the action of the mine inspector. This should not be.

Among the amendments appears a regulation regarding "interior fans." The latter is a broad expression, but doubtless includes all underground fans—boosters and auxiliaries. The law now requires that they shall be installed only on the approval of the chief inspector of the division of mines. If auxiliary ventilation is to have any degree of success it cannot be hampered by a rule of this kind unless it is to be interpreted in a broad way to the effect that the chief inspector's approval will be given to all auxiliary fan placements if in accord with certain principles he has laid down. Otherwise the mine foreman or the district inspector should be delegated the power to direct the manner in which a fan should be installed. The chief inspector, however, would be the proper authority to act in the case of booster fans.

The requirement that mine foremen and firebosses shall be examined and certificated is good, and Ohio is to be congratulated on not having made any requirement as to prior residence in the state. It would be well to make certificates transferable from state to state were it not that the laws are different, even where conditions are much the same. It is well that re-examination be required, so as to be sure that the state law has been carefully studied.

A good feature in the law is its demand for systematized posting where the drawslate is left in the roof with the requirement that if more timber is needed it shall be used. It would be better if in every state and in every place, whether drawslates are present or not, there might be some such rule.



Scientific Management Has Accomplished Much In Coal Mines of Poland

Time Studies Were First Made and the Various Causes of Delay Charted Therefrom—"Harmonograms" or Ideal Charts Were Then Constructed and Interdependent Operations Thereby Synchronized

By Wallace Clark

Consulting Management Engineer, New York City

IT HAS OFTEN been said that scientific management cannot be applied to the mining of coal because that industry is different from others. The reasons given are that it is not possible in mining to adopt the same division of labor as in machine shops for instance; so many unexpected things happen in mines that standards cannot be set or plans made in advance; and because miners are scattered over a wide area underground, it is difficult to supervise them and therefore it is better to depend on their personal skill and ability and their willingness to work.

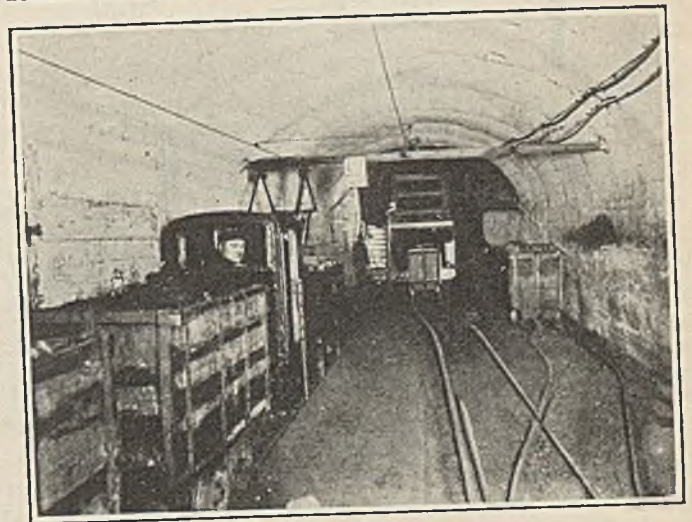
As the engineer member of the Kemmerer Financial Commission to Poland last Summer, I visited three coal mines in which the principles and some of the most recent methods of scientific management had been installed. One of these was privately owned, one owned by the Polish Government, and one 50 per cent by the Government and 50 per cent by a French syndicate.

In the privately owned mine at Grodziec the method pursued in the introduction of this newer type of management was to divide the various phases of mining into operations and to record the time taken on each. These records of time were then charted on "harmonograms," a type of chart which shows the various operations and the time spent on them so as to disclose any lack of balance. This is a highly ingenious and valuable chart developed by Professor K. Adamicki, director of the Polish Institute for Scientific Management.

The surface works of this mine at Grodziec, Poland, like those of most others in Europe, are the acme of neatness and cleanliness and present a striking contrast to those frequently found in this country. The building in the center foreground is the home of the technical manager. The mine officers are located in the large building in the left foreground. The miners' homes or apartments are seen in the middle distance on the right. Each miner is given a certain area of land for gardening. A completely equipped and modern hospital is also provided.

These records and charts were continued for a week or ten days and provided information as to the sequence of operations and the time normally required for each.

An ideal or standard harmonogram was then drawn, on which the operations were so arranged as to provide a proper balance, avoiding the necessity for one gang of men to wait for another and eliminating the various other stoppages caused by lack of co-ordination. Instructions were then given to the workmen covering the changes in sequence of operations. In this way a definite standard was set for a normal day's work.



Shaft Bottom at Grodziec

The underground workings are as neat and clean as the surface plant and every precaution has been taken to insure safety. Note that the locomotive is provided with collector arms instead of a trolley. The method of supporting the power lines, as well as the concrete lining of the haulageway, are also worthy of note.

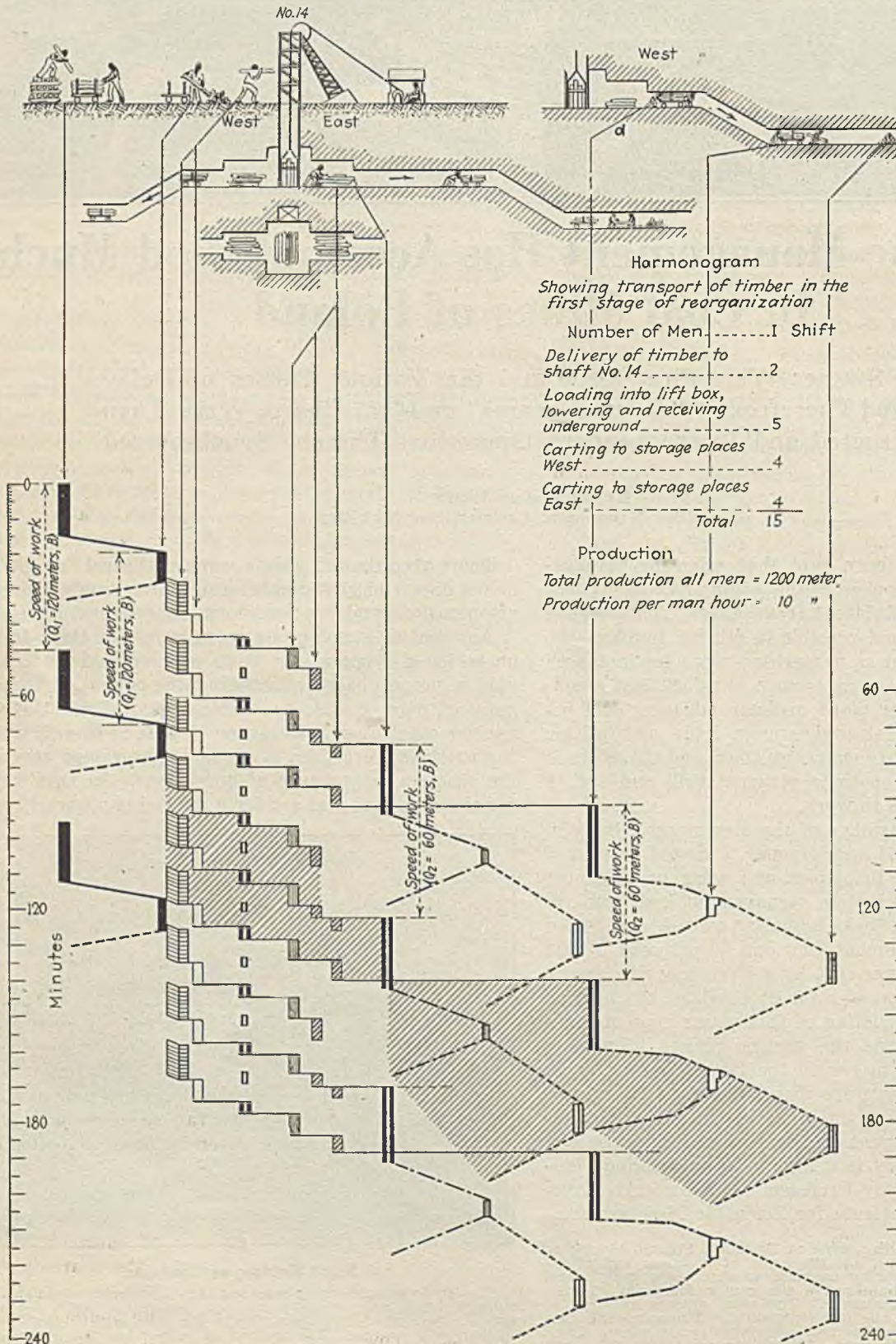
The next step was to live up to these standards and in order to do this Gantt progress charts were drawn, on which the actual amount of work done was compared with the standards and attention was called to the reason for failure to meet them. Some of these reasons as noted on the chart of output of coal were: Car shortage, shortage of timber, inferior timber, transmission under repair, sorting plant under repair.

On the chart of delivery of sand and filling the cause of delays were: Bucket under repair, locomotive under repair, shortage of sand, clogging of pipes, alterations,

moving bucket to another place. These charts directed the attention of the management to difficulties beyond the control of the miners and made it possible properly to supervise work which was scattered over a wide area under ground. The next and last step in this plan was to study the operations themselves and discover the "one best way." This phase of the work has not yet been completed.

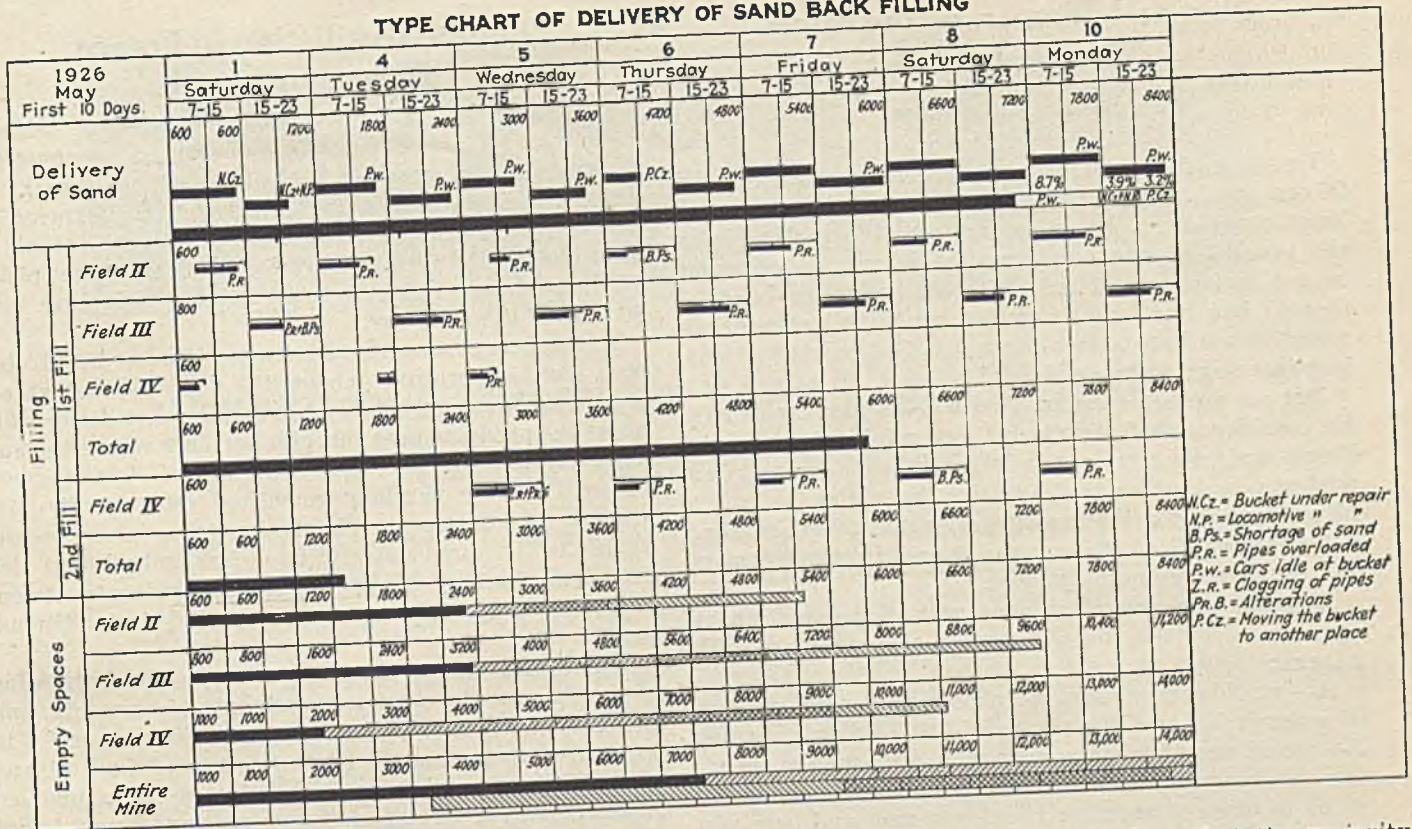
In a memorandum describing what has been accomplished by the application of these methods to the handling of timber for the mine, Mr. Razniewski, the technical director, said that when the first records were taken 26 men in an 8-hr. day delivered 950 m. of lumber, which is 4.6 m. per man-hour. Within 10 days after the study of the work was begun, 15 men working an 8-hr. day, were delivering 1,200 m. of timber, or 10 m. per man-hour. This was an increase of 118 per cent. After the newer methods had been in use for some time and further improvements in scheduling the work had been made, 15 men in 8 hr. delivered 1,600 m., or 13.3 m. per man-hour. This was an increase of 190 per cent over the original quantity—almost three times as much work per man without undue fatigue and with no changes in equipment or personnel. One of the workmen said: "We do not know why our output has increased so considerably; I think the reason of it is that every one of us knows exactly what he has to do."

Electric locomotives and Sullivan coal cutters are in use in most of the mines in Poland and it was thought that the introduction of equipment of this type was all that was needed to bring their costs of production down to a



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TYPE CHART OF DELIVERY OF SAND BACK FILLING



N.C. = Bucket under repair
 L.P. = Locomotive "
 B.P.s. = Shortage of sand
 P.W. = Pipes overloaded
 P.R. = Cars idle at bucket
 Z.R. = Clogging of pipes
 P.B. = Alterations
 P.C. = Moving the bucket to another place

minimum. The studies which have been made at the Grodziec mine have shown that it is possible without further additions of workers or equipment to substantially increase the output of the mine by a better co-ordination of the workers at the face with the transportation of coal and the handling of timber, filling, masonry and other miscellaneous work; and that further gains can be secured by careful studies of the methods that are put into daily use by the workmen themselves.

The management of this mine has been wise in attempting first to reduce the costs of those parts of the work over which the workers have no control. The elimination of these delays invariably makes it possible for the individual worker to increase his output and a bonus provides the incentive. A careful study of the

operation of a mine makes it clear that the majority of the delays and failures to meet a reasonable standard of production are due not to any individual workman or group of workers, but rather to a lack of co-ordination of men, machines and equipment. This co-ordination is of course under the control of the management and it is obvious that the way to eliminate costly delays is by means of careful planning.

The beginnings that are being made in American coal mines as well as in Poland make it clear that the objections to the introduction of science into the management of this industry are being met satisfactorily and that developments in coal mining may now be expected to parallel the remarkable results that have been obtained by the application of scientific methods in other industries.

Success of Automatic Electric Control Warrants Broader Application

A recent survey to determine the amounts of automatic electric control equipment used in the anthracite field, by C. R. Seem, electrical engineer of the Glen Alden Coal Co., reveals that wherever such control is applied it is proving itself both reliable and economical. At many places unusual efforts, he found, were being made to extend the use of automatic equipment so that emergency conditions could quickly be met and labor costs reduced where now manual attendance is supplied.

Automatic centrifugal-pump control initiated in 1922 in the anthracite field has practically revolutionized pumping in the mining industry because of its great savings in labor costs. That such equipment is entirely reliable was aptly illustrated at the Enterprise Coal Co. mine when an automatically controlled centrifugal pumping outfit which had not been in service for several months due to low water, automatically primed itself and came into service lately when high water was expe-

rienced. This outfit had remained idle, with no inspection, so long that the operators were almost dumfounded when they went to start it and found it was at work before they got to the pumphouse.

One of the latest applications of automatic control equipment mentioned by Mr. Seem was the installation of a gas-engine auxiliary fan drive recently made by the Lehigh & Wilkes-Barre Coal Co. at the Wanamie mine. This outfit, upon failure of power on the main supply lines, sets the gas engine in operation and puts auxiliary power on the fan before the fan speed reduces below 70 per cent of that when driven by power supplied over a transmission line.

That there is a great opportunity for the use of automatic equipment in the anthracite field was revealed by several figures Mr. Seem gave of the number of such outfits already in service. He said there are now 120 full automatic pumping stations, 40 semi-automatic pumping stations, 189 automatic fan installations, 30 automatic power-converting substations and 74 semi-automatic power-converting substations.

Men and Women of the Mines

XI—An Optimist

By H. S. Geisner
Birmingham, Ala.

He is dead and buried now and has been for some fifteen years. Assuming that there is a purgatory I hate to venture a guess as to where his soul rests at the present moment—making the wrong guess would be too serious a matter. Like the sailor, he believed that to live hard, die hard and go to hell afterwards would be too hard a fate for a just God to visit on any human being; so he lived hard.

But we are not concerned with J—'s manner of life. He considered that strictly his own affair while he was living and we certainly will continue to respect his wishes now that he is dead. By occupation he was a mine foreman for the final twenty years of his lifetime and through all of those years he was by temperament the camp's supremest optimist.

During the course of an average week he would have some or all of the following types of encounters with miners:

A— would come to him complaining about the amount of water in his working place and insisting on a change. J— would say, "Pish! my dear man, here we are spending thousands of dollars trying to get our mine damp so as to make it safe for all of our men and here you complain because you draw a room where the good Lord furnishes the protection for you."

THE PRACTICAL CASUIST AT WORK

B— would have a complaint about the coal being so low that he could not make a living. J— would say, "Pish! of all the fool complaints! You don't have to bother with long heavy props and you can reach up and sound the roof without an effort and our safety inspector never has to worry about you. Sure I have a lot of places in high coal, standing idle. Old man X— was killed in one of them. Do you want his place?"

C— would object to the terrible push out of his room for the loaded cars—too much grade. "Now, now, J— would exclaim, "do you know why you get more cars to load than any man on your heading? No! Well I'll tell you! The driver knows that when he cuts the empties loose at your room neck the cars run on down and clear the switch instanter, so he smiles every time he finds that you can take another car to load. Better not let any of your buddies in on that secret."

The superintendent once called a meeting of all of the foremen to inform them that orders for coal were getting scarce and it looked as if a shut-down for a month or so at least was imminent. "Darn glad of it," pipes up J—. "The miners are getting too independent for me! If the demand kept up like it has been we'd have to beg them to dig coal pretty soon. Instead, before long they will be begging us to let them dig."

He met a runaway trip of cars head-on and lived two days afterwards to talk about it. "Pish! but it's lucky that I never married! no widow and orphans to leave behind!"

Surely he lived hard. No wife to sew on his buttons and a camp boarding house to furnish his victuals! And he died hard. His condition was so desperate after the accident that he could not be removed to a distant hospital where proper attention could have been given him. And—

Lignite Distillation in France To be Furthered

According to a paper recently contributed to the Subcommittee of the French Commission of *Combustible Liquides*, a new company is about to establish works at Saint Pollet-de-Caisson in the French Department of the Gard for the distillation of the lignite obtained from the Saint Julien de Peyrolas mines near that place. The experimental plant is to be capable of dealing with 80 tons of lignite a day.

In the new process distillation is stated to be effected at a low temperature—about 250 deg. C.—and at atmospheric pressure. After leaving the distillation furnaces the products pass through purifiers where the sulphur is removed and arrive at special "catalyseurs" where they are partially converted into an oil quite similar to petroleum. The action takes place on the vapors before any condensation occurs and without risk of polymerisation. Following the catalysing treatment any remaining sulphur is recuperated in additional purifiers.

It is stated that, as in other processes, the distillation of lignite provides semi-coke, sulphate of ammonia, and from 6.6 to 11 lb. of phenol, but in addition from 6.6 to 11 gal. of motor spirit, 4.4 to 6.6 gal. of fuel oil and about 22 lb. of sulphur per metric ton of crude, undried lignite. The inventors of the process are hopeful that the high prices obtainable for the recuperated sulphur will serve as a valuable factor in offsetting the cost of the process. The spirit obtained from the distillation of lignite is stated to contain a high proportion of benzene-base products and to be suitable for use as a motor fuel when mixed with 50 per cent of alcohol.

THE ERA of narrow, selfish individualism has passed. We have entered the era of co-operation where countries, business organizations and individuals are being taught that the solution of their problems depends upon the spirit in which they are approached. Minds filled with rancor, hate, jealousy and suspicion will be met with similar mistrust. Confidence and faith in one another is vital if progress is to be made.—*Charles F. Abbott, American Institute of Steel Construction, Inc.*



Hospital at Harmar Mine

Some accidents which, in the beginning appear slight, eventually prove fatal because immediate and adequate medical attention is not available to curb the setting in of complications. A modern operating room with a complete outfit of surgical instruments is part of the equipment of this hospital. Arrangements whereby the services of one of several physicians can be obtained in a few minutes, protect from the accident toll of industry so far as possible, the workers at the Harmar mine of the Consumers Mining Co. near Pittsburgh, Pa.



Scraper Loader in Low Coal Triples Productiveness of Labor

Many Factors Contribute Toward Savings Realized—Elimination of Hand Loading, Avoidance of Dead Work and Simplification of the Transportation Enables Seven Men to Produce 120 Tons per Day

THE UTILITY of the latest type of scraper is perhaps wider than that of any single mechanism employed in the winning of coal. It picks up coal at the face of a working place, transports it to an entry and there delivers it to mine cars. These features enable the scraper to function both as a loading and a transportation device and render it especially applicable to the mining of thin beds. The scraper surmounts several obstacles encountered only in the working of thin measures and obviates the necessity for certain practices that otherwise would be unavoidable.

The Berwind-White Coal Mining Co. is one of many concerns that has turned its attention to the application of the scraper to the mining of comparatively thin coal. This firm works a group of mines in the Johnstown-Windber region of Pennsylvania. The larger operations of this group are in the Lower Kittanning seam, known locally as the Miller or B bed, the average thickness of which is here less than 4 ft.

This group of mines lies partly in Cambria and partly in Somerset County, in the low-volatile or smokeless field of Pennsylvania. The region in which they are located is embraced within the broad area of the Appalachian uplift; consequently its stratigraphy consists of many minor folds within a system of anticlines and synclines whose axes extend in a generally southwest-northeast direction. Although the general inclination or dip of the coal within any large area or that of, say, several thousand acres is quite regular, the structure in detail is extremely irregular and wavy. In these mines the undulations are manifested by a continuous series of rolls.

Obviously the methods customarily followed in mining by the room and pillar system are not always those best adapted to the physical characteristics of the seam.

In the headpiece are three photographs that show various steps taken in winning coal by a scraper in Eureka No. 37 mine of the Berwin-White Coal Mining Co. On the left the scraper is shown picking up a load at the face. It will be noted that the scoop is inclined downward away from the face, a position resulting from the occurrence of a roll, only the toe of which had yet been exposed. A wavy floor subtracts little from the efficiency of the scraper. In the middle view the scraper is seen in the single entry from which the faces are developed and is headed for the discharge chute. Note what a smooth path fine coal makes for the scraper. The jack shown in this photograph and the ropes and sheaves attached thereto constitute the mechanical brains of the machine. On the right the scraper is shown discharging coal into a mine car. Three scraper loads fill one of these cars of 2-ton capacity.

The area under development must be overly extensive in order to provide a sufficient number of working places for the production of a nominal output. On the ridges of many of the rolls the coal is pinched to considerably less than its average thickness. While working in coal of subnormal thickness, the miner produces at a rate which may be much below his average. The output per man employed, throughout the entire field, is thus comparatively low, chiefly because conditions are irregular and much dead work is involved in mining under the system used. Generally speaking also, undercutting insures no marked economy in the room and pillar system in this field, and mining machines accordingly are employed in the recovery of only about 25 per cent of the coal.

HAULAGE LIMITATIONS AN IMPEDIMENT

The limitations of auxiliary mine-car haulage under these circumstances constitute an important factor impeding the attainment of satisfactory final results. As a substitute for cars as the medium of transportation within the working places, the company considered both the conveyor and the scraper. The latter appealed more strongly to the management because of its dual utility as a loading and a transportation device; on account of its ruggedness, simplicity, flexibility and portability; also because of its relatively low investment, operating and upkeep costs.

In May of 1926 a Goodman entry loader, Type 136, was installed in the Eureka No. 37 mine and has been operated continually ever since. The performance of this scraper has been so satisfactory that the company recently installed the third unit of this kind in this same mine. It also placed two units in its Eureka No. 42 operation and one in the Maryland Shaft mine of the Maryland Coal Co. of Pennsylvania. The following description and records of performance apply only to the scraper first installed in No. 37 mine.

This company wisely set aside a section of the underground workings for scraper mining exclusively. It thereby secured to this method of operation at the outset many of the advantages that accrue only from normal working on a larger scale. As shown in Fig. 1, the territory, opened by three pairs of headings, that originally was projected for room and pillar mining

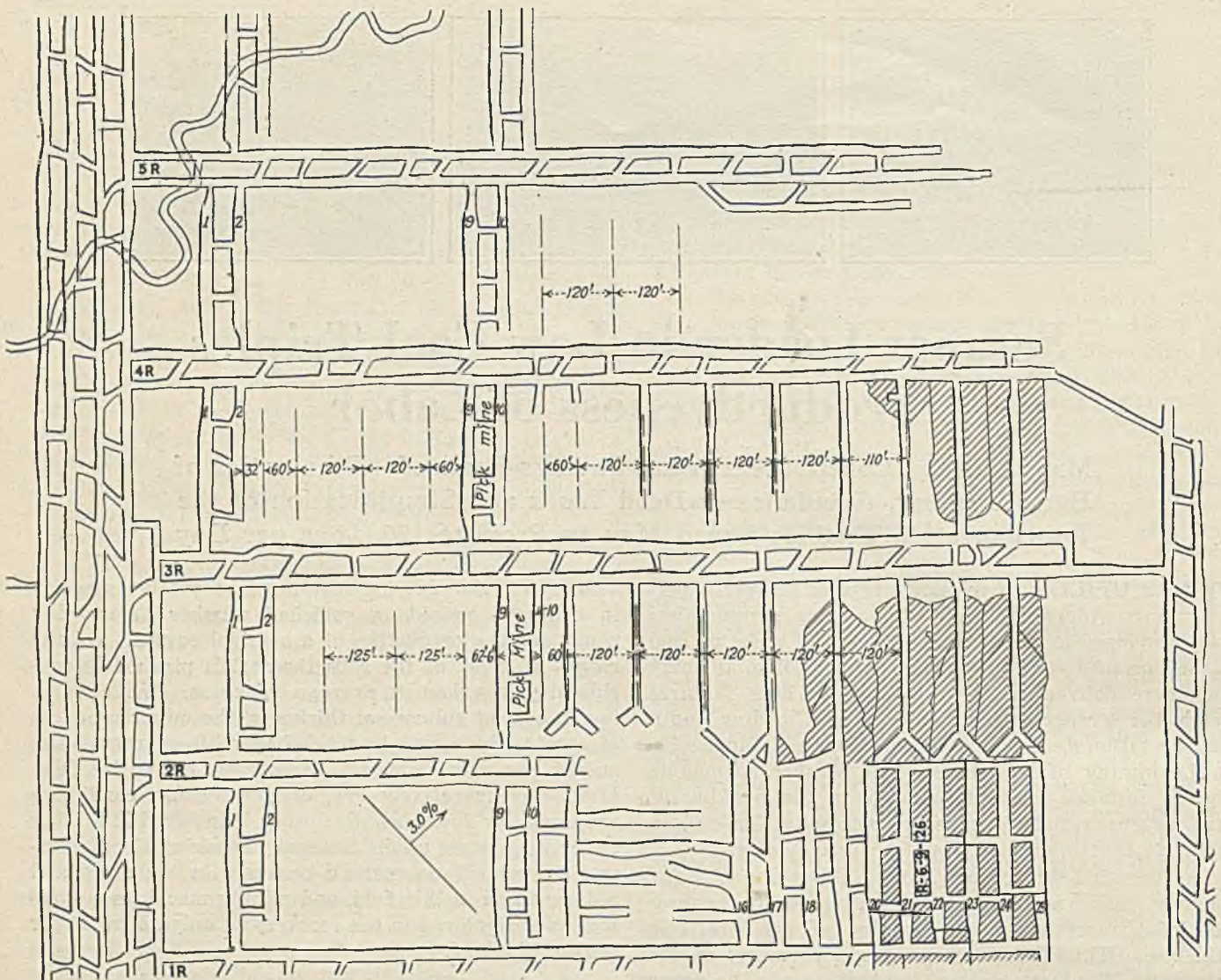


Fig. 1—Layout of Workings for Scraper Mining

The main artery entries are driven about 1,700 ft. long at intervals of 300 ft. Here the entries are driven in twos but in future projections they will be driven in threes. At intervals of 120 ft.

single entries are driven to each of which two faces converge. Each face is about 77 ft. long and the angle between them is 90 deg. They are developed by hand and scraper loading methods.

is being utilized for this purpose. These headings are roughly 1,700 ft. long and are driven in pairs at intervals of about 300 ft. The territory thus developed is mined retreating in a layout of faces which converge in pairs to pioneer entries 10 ft. wide, driven singly on 120 ft. centers.

Scraper faces are started by driving two short places that diverge from each pioneer entry, in the shape of a "Y." The angle subtended by the wings or branches of the "Y," or the inclination of the faces to each other, is 90 deg. Each face is about 77 ft. long. The triangular stump within the wings of the "Y" is removed by hand before the track used in developing the entries is withdrawn. The mining of this stump consequently forms a part of the development work.

It will be noted by a further study of Fig. 1 that the entry marked 3-R is being used as the outlet for the recovery of coal lying between it and the adjacent entries on either side. This arrangement will be followed in all future projections of the Y-layout with the exception that the entries will be driven in threes instead of twos. A third entry is being driven parallel to the two marked 5-R to prove the merit of this plan.

Haulage facilities provided by the two-entry system are adequate for the operation of one scraper only on a shift when the faces are mined methodically in retreat. As already mentioned, attention will be here confined to one of the scrapers operating in Eureka No. 37 mine. This unit is engaged in the mining of a pair of faces developed from the 3-R entries. An attempt is being made to keep the workings on each side



"Mechanicalized" Miners

While these men work almost continuously throughout the shift, at no time do they work as hard as they sometimes would in hand loading. The cribs are intended to hold the mouth of the place open and to protect the cutting machine, which is here stored when not in use, in the event of an untimely roof break at this point.

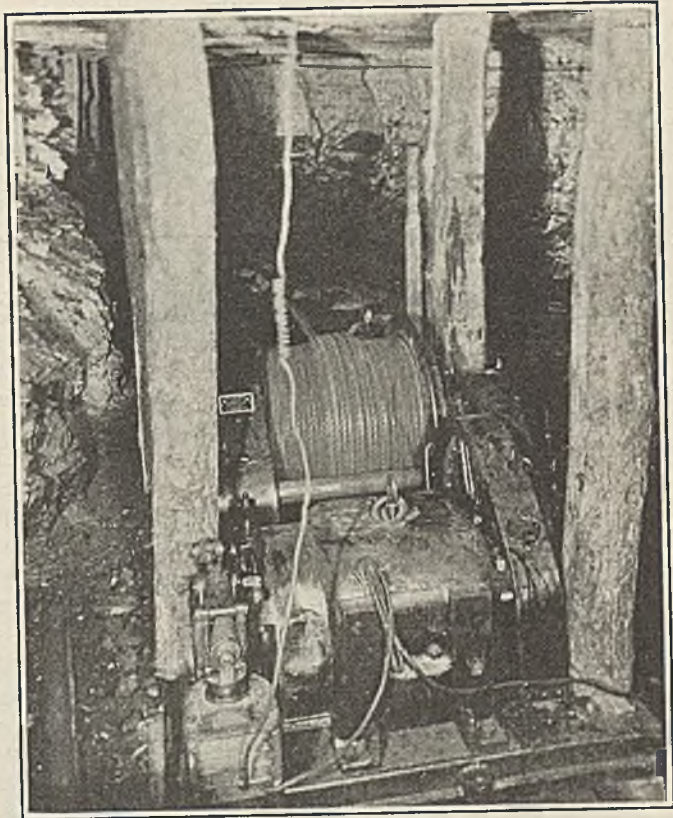
of these entries in step in the retreat and consequently the operation of the scraper is alternated from one side to the other as indicated on the map. Of course the scraper is moved to a new location only after a pair of faces has reached the limit of its retreat.

The management feels confident that it can facilitate the working of two scrapers in two places side by side by alternating their operation between the day and the night shifts. On the day shift, No. 1 scraper would be in operation but a crew of men would be at work preparing the faces from which coal would be mined that night by No. 2 scraper. On the night shift therefore the sequence of operation with respect to the two places would be reversed. The crews would be alternated weekly from day to night work, the faces of the two adjoining places would not be worked on an even front but would be stepped with respect to each pair by an interval of, say, 100 ft. This arrangement is shown in Fig. 2. The value in the roof control secured by it is obvious. Four scrapers might be applied by the use of this arrangement to the working of as many places in a three-entry layout.

THICKNESS OF COAL IS 44 IN.

Throughout the section where the scraper is in operation the thickness of the cover is about 300 ft. and the thickness of the coal is approximately 44 in. Above the bed is a 4-in. band of bone that readily leaves the roof and comes down with the coal to which it is "burned." Most of this bone is separated at the face from coal which is fairly soft and of a lustrous, columnar structure.

Seven men perform all duties connected with the operation of the scraper—cutting, drilling, shooting, loading, timbering and the like. This crew takes one cut from each of two faces every 24 hr. Five men work on the day shift and two on the night shift. The two night men attend to the cutting, drilling and shooting. The coal is undercut to a depth of 6 ft. by a shortwall machine, an operation which takes about 4½ hr. Holes are drilled electrically and each is charged with 1 to 1½ sticks of permissible explosive. The



Remotely Controlled Trip Hoist

This single-drum hoist accommodates 600 ft. of ¾-in. rope and is driven by a 15-hp. motor. It is equipped with a dynamic brake and can exert a pull of 10,000 lb. A sturdy hoist is required to handle the cars, which are made up into trips of 25, as heavy grades are frequently encountered.

charges are detonated one at a time, a practice which obviates the danger of misfire and provides better preparation of the face for loading by the scraper.

Three of the five men in the day crew work at the face while the remaining two are stationed at the loading point on the entry. One of the latter controls the scraper hoist while the second trims and spots the cars which are moved by a hoist provided for the purpose in trips of about 25. The scraper has a carrying capacity of 1,500 lb. and each mine car holds 2 tons; consequently the scoop makes three trips to the entry in order to fill one car. Inasmuch as heavy grades are likely to be encountered on the haulage entry, a hoist of large size, 15 hp. is used. This machine is remotely controlled and is equipped with a dynamic brake. It is of the single-drum type accommodating 600 ft. of ¾-in. rope. It is capable of exerting a pull on the drawbar of 10,000 lb. and has a rope speed of 40 ft. per minute. The positive action of this hoist in the spotting of cars avoids many delays that might occur if a simpler type were used.

At the face, one man devotes his attention to timbering and the other two guide the scraper in the loading operation, dig standing coal, and perform other necessary duties. Although the movements of the scraper are controlled by an attendant stationed at the unloading point on the entry, occasionally one of the face men guides it while it is picking up its load. This procedure is necessary only at the start and in the clean-up of the loading operation.

The bottom consists of fire clay which is not disturbed to any noticeable degree by the scraper. Irregularities in the floor are automatically filled with slack from the scoop itself, thus making a smooth travelway. With-

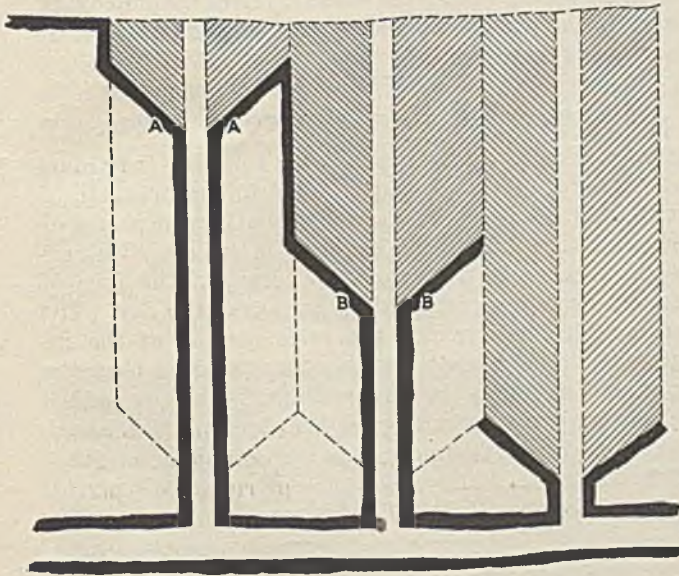
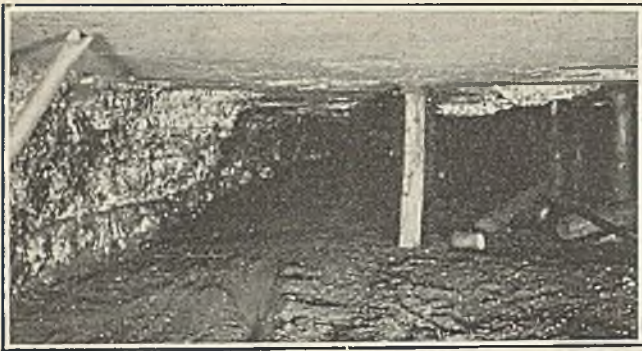


Fig. 2—Working Two Places Side by Side

A series of saw-tooth faces cannot be maintained on an even front. This company proposes to work two pairs of faces simultaneously by maintaining an offset between them as shown. Each place will be provided with a scraper. While faces "A-A" are being loaded out, faces "B-B" will be cut, drilled and blasted. On the second shift these operations will be reversed. This scheme solves an otherwise difficult transportation problem.



A Scraper Clean-Up

Shovels are unnecessary for the scraper cleans up as thoroughly as is here shown. The row of props nearest to the face was set shortly before the photograph was taken. The clearance between these posts and the solid coal is about 6 ft. Sound round props, about 7 in. through, are used to hold the roof.

out losing any appreciable amount of the coal it is carrying, the scraper readily glides over rolls in its path.

Making due allowance for a 6-ft. cut, the length of the unsupported span between solid coal and the nearest row of timbers varies from 10 to 14 ft. This affords a clearance of 4 to 8 ft. behind the face. Timbers are placed on 4-ft. centers in rows 5 ft. apart. On some days it is necessary to set two rows of props in order that the unsupported span shall not exceed the maximum allowed. None of the timbers is recovered. Three movable cribs are set about 25 ft. in by the junction of the two converging faces. These are intended to keep open the mouth of the place should a fall reach this point, and, incidentally, to protect the cutting machine which is kept there when not in use.

The roof is composed of a 12-ft. bed of hard, sandy shale. This is quite firm, and is held up without difficulty. This measure is known to the miners as "first rock." It and an 18-in. rider seam of coal above it are generally the only measures involved in the first fall. A borehole log shows the following ascending order of a few of the measures above the rider seam: Sandy shale, 23 ft.; clean coal, 14 in. (correlated as the Mid-

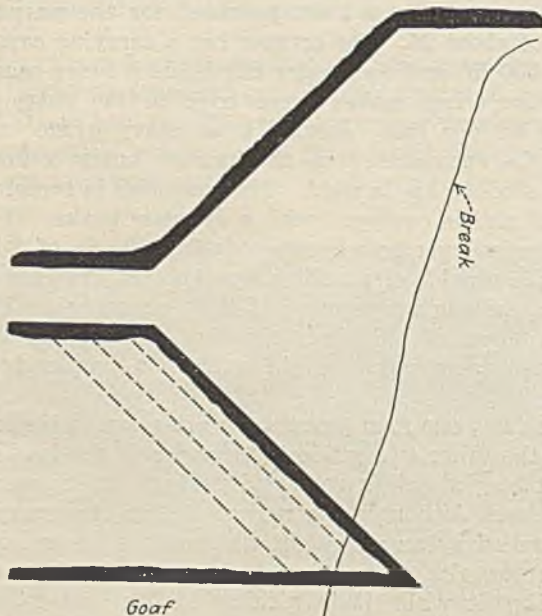


Fig. 3—Recovering a Face After a Break

The danger of losing a portion of the left-hand face is remote because it is protected by a barrier of solid coal. The point of the pillar on the right may be lost by the occurrence of an encroaching fall. In this case a stump is cut off by several successive face cuts as indicated. This stump is abandoned and lost.

dle Kittanning seam); shale and sandy shale, 33 ft.; sandstone and sandy shale, 28 ft.; Johnstone limestone, 4 ft. 6 in.; clean coal, 3 ft. 9 in. (correlated as the Upper Kittanning seam). The second falls within the small areas thus far excavated by the scraper are believed to extend only to the Middle Kittanning seam. It is believed that sandstones and limestone above this bed are not broken and finally come to rest on the broken and fallen strata below them.

As might be expected, not a single break occurred during the mining of the first place allocated to scraper operation, but took place while the adjoining place was being worked. Since then the overlying strata have been caving satisfactorily. In several instances falls have encroached slightly within the triangular excavation between a pair of faces, burying the exposed end of the face on the goaf side, as indicated in Fig. 3. When this happens a small stump of coal is abandoned and the length of the affected face becomes temporarily subnormal. This length is gradually increased, however, to standard in the retreat from the break.

As already mentioned, the scraper and crew of seven men assigned to its operation take one cut from a pair of faces each working day. The average daily production of this unit is 120 tons, equivalent to 17.14 tons per man. In the same mine hand loaders average only about 5½ tons per day each. The rate of mining on a heading by means of only one scraper is about three times as fast as that achieved by hand-loading methods. The two night men seldom work overtime in the completion of their duties. The two faces are cleaned up by the day crew in an average of 8 hr. The working time is greater than this, however, at the start of the retreat of the faces, when the travel of the scraper is greatest, and is proportionately less at the finish, when its travel is least.

Recovery of coal realized from the area mined by the scraper is 98.6 per cent. An overall recovery of 95 per cent is expected by the use of this system as against 88 per cent by hand-loading methods. The management feels that by means of the scraper it may be possible to recover 80 per cent of the coal available in stumps and chain pillars of a three-entry system by employing a working layout of two faces which would converge at the middle entry.

Statistics Cited as Source of Ideas

The world has scant sympathy for the individual or business that complacently yields to the pressure of competition, be it a pressure which batters at prices or what-not. The history of business is replete with records in which utilization of new ideas, in the face of the most gruelling competition, has saved the day. The first big idea with which the sales portion of the industry must become thoroughly saturated is that the cry of selling today is for available figures on which analysis and understanding of business may be based. Such statistical information will give birth to ideas which will solve many problems.—Harry L. Gandy, at dinner of Cincinnati Coal Exchange.

ACCORDING to *Power*, the capacity and efficiency of a centrifugal pump falls off rapidly as the pressure head on the pump suction is decreased below the suction pressure for which the pump is designed. Therefore, before ordering a pump, the suction, as well as the total, head should be determined as accurately as possible.

New Epoch of Safety Is Well Established By Permissible Battery Equipment

Storage-Batteries Supply Power for Permissible Equipment for Every Major Mine-Face Operation—Recent Developments Stimulate Use of Batteries

By Edgar Gealy
Editorial Staff, *Coal Age*

THE DEGREE in which storage batteries have contributed to the success and more complete modernization of the coal mining industry will perhaps never be fully realized. In many instances they have been the initial force that has made possible several new systems of operation entailing higher economic recoveries.

It was only a few years ago that it was generally considered economically impossible to mine certain thin and irregular beds which today are being profitably worked by the aid of storage battery energy. Also many mines once believed to be too dangerous to operate by wire-transmitted electrical energy are now producing large tonnages by means of storage batteries with a greater degree of safety than was ever before considered possible.

High labor costs demand the use of labor-saving equipment so that the maximum quantity of a given product can be produced with the minimum amount of human effort. As time goes on and the full force of this principle becomes recognized the use of storage batteries will increase rapidly because storage battery energy enables the operator to apply machinery to places and services where other forms of energy are impractical.

At present the major application of storage batteries in mining service are as follows: Haulage locomotives—Gathering service, main line transportation service, gathering and main haulage in gaseous mines, outside haulage above ground, stripping operations, preparation and loading plants. Coal cutting—cutting machines, electric drills. Mechanical loading—traveling convey-

ors, jiggling chutes. Tramming—shaft loading and unloading. Power trucks—hoists, pumps, face equipment. Auxiliary power supply—fans, pumps. Mine lamps—cap lamps, stationary lights. Auxiliary lighting—lights, alarms and signals.

The application of storage batteries to haulage locomotives has far exceeded the demand for this type of equipment for other purposes. A mere citation of the number of locomotives equipped with storage batteries

would give but a small idea of the total number of cells in service. Each locomotive so equipped usually has not less than 45 cells, some use as many as 110 lead or a much larger number of nickel-iron cells. One of the largest applications of storage-battery cells in the coal mining industry is at the Colstrip operation of the Northern Pacific R.R. in Montana. Here two 60-ton locomotives are in daily operation hauling heavily loaded trains. Lately the demand for storage batteries for use in gassy places has greatly

expanded. At many of these operations only storage-battery energy is employed and the properties have accordingly been dubbed "wireless" mines.

Storage batteries offer the most economical means of carrying electrical energy from one place to another without the use of distributing wires. They provide a highly efficient means of transporting such energy of almost any practical voltage or capacity. By their use safe, trouble-free energy can be supplied for regular or emergency service anywhere in a mine. When used for emergency service, such as for fans, they eliminate most of the danger of explosions and the loss of life

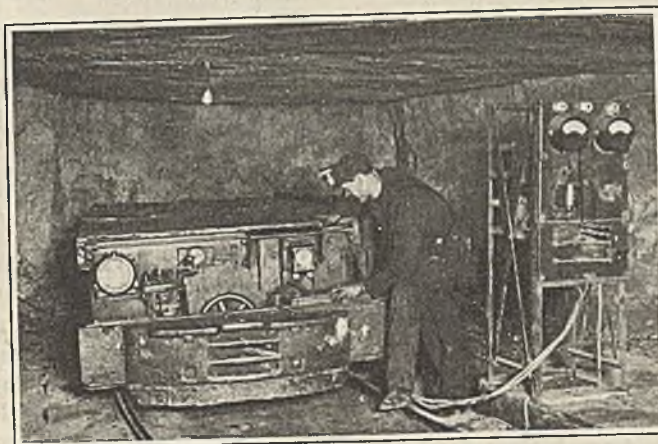


Fig. 1—Charged by Quick and Ready Means

Simplicity is an outstanding quality in recently designed charging equipment. It has made many operators turn confidently to the use of storage-battery locomotives.

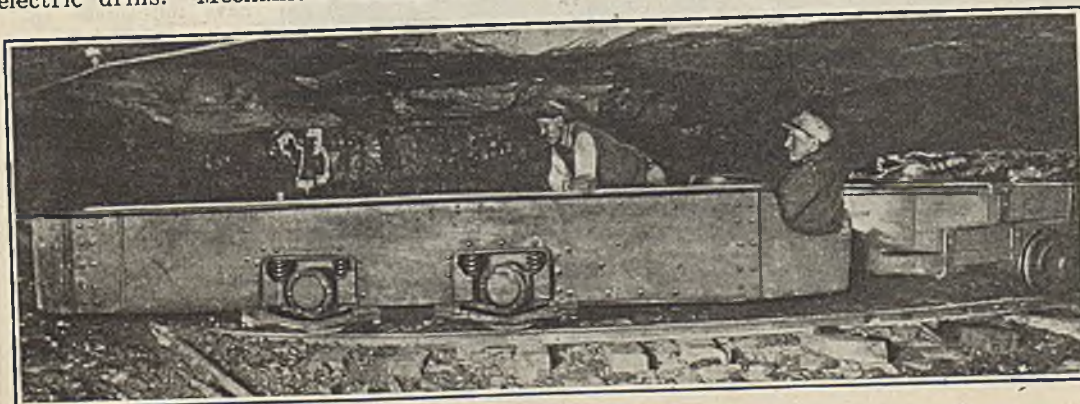


Fig. 2—A Low Type

The Black Star Coal Co. at Alva, Ky., finds no difficulty in using long locomotives but high types on the gathering tracks would be unsuccessful.

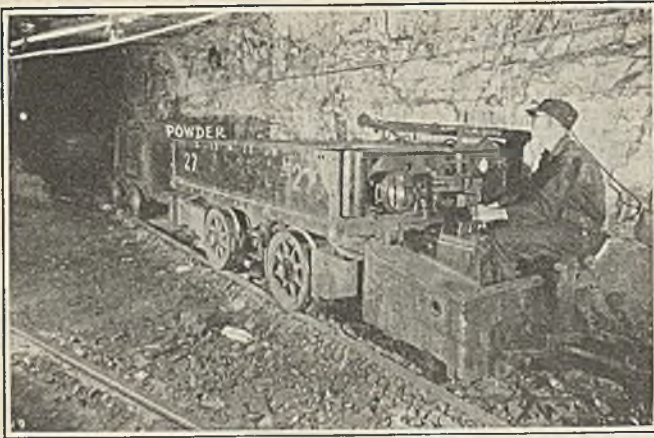


Fig. 3—Danger Is Greatly Minimized

This combination locomotive operates from the battery when transporting explosives, thus minimizing danger. Such a practice could profitably be introduced at many mines thus reducing explosion and fire hazards.

and property inherent to the use of long conductors.

The development of permissible mine equipment has gone hand in hand with the recent increased use of storage batteries and today apparatus of this type is available for every major application of machinery used at the mine face.

In building permissible equipment manufacturers have produced apparatus which, when driven by storage-battery energy, not only protects a mine from gas explosions but also from those arising from dust, provides against hazards resulting from moisture getting into the electrical equipment, dangers from shock and risks of fire. It is these latter advantages of storage-battery driven equipment that bid fair to promote widespread use of permissible apparatus even where gas is not present.

INDIRECT BENEFIT IS GREAT

The use of storage batteries has also been of much indirect benefit to the mining industry. Power tanks employed at the face, close to the driven equipment, have supplied full voltage to the driven motors and kept them operating at such rates that there is now a keen consciousness of the advantages of good voltage regulation on all inside power lines. Lower maintenance costs for battery-driven equipment also has

done much to prove the advantages of good track bonding where power-line service is used.

With permissible equipment more generally available there has lately arisen a marked trend toward still greater use of storage batteries than has been witnessed even during late years. Some leading mine operators are purchasing only storage-battery locomotives this year. When they need a trolley machine they transfer one from a gassy to a non-gassy mine and purchase a permissible locomotive to take the place of the machine transferred. One large anthracite company recently placed an order for twelve permissible storage-battery locomotives in line with the above procedure.

POWER TRUCKS GAINING FAVOR

Although accurate records have not been available regarding the costs of storage-battery energy it is significant that the idea of using power trucks is rapidly gaining favor. Cost figures gathered by one company show that storage-battery energy when used to drive face equipment is only slightly more expensive than when power is taken from feeder circuits. However, the advantages of better operation, obtained solely as a result of more satisfactory voltage regulation, has put storage-battery power on a sound economic basis. The fact that storage batteries keep down peak power demands and raise the monthly load factor of the ordinary mine plant are also important considerations.

Power trucks have been built to accommodate as many as one hundred and nineteen lead cells, thus providing a nominal voltage of 238. The ampere-hour capacity of these batteries varies with the requirements and some having cells with as many as 39 plates are used.

In designing a storage battery for any kind of service one of the first considerations is the nominal voltage of the equipment to be supplied with energy. In most instances storage batteries used in the mines are intended to furnish current for electric motors. The type of this latter machine must therefore be kept in mind because the operating characteristics of some motors vary greatly with the voltage supplied to them.

The normal operating potential of lead cells is approximately 2 volts; that of nickel-iron cells is about 1.2 volts per cell. The voltage of both types varies somewhat with the rate of discharge and with the quantity of energy remaining in the cell at any given time.



Fig. 4—Power on Wheels

Quick transfer of this power plant on wheels enables the operator to have full-voltage energy available at remote corners of the mine. The "tank" can travel anywhere that tracks are available and can be used to drive all kinds of mining equipment even to serving as an auxiliary or standby to the regular source of power supply in case of emergency.

Obviously, after the operating voltage of a battery is determined it is merely necessary to select the proper number of cells which, when connected in series, give the desired electrical pressure.

The next step is the determination of the capacity of the battery. To establish this it will generally be necessary to find out the kilowatt-hour consumption of the driven equipment between the intervals allowed for re-charging the battery or replacing it with another unit.

39-PLATE CELL IS MAXIMUM

For mechanical reasons, at the present stage of development, a 39-plate lead cell is about the largest that should be used. It will be found in many cases that when a limited space is available for the battery a slight sacrifice in the desired voltage will result in providing more room for cells of greater capacity. Frequently, such a compromise between electric pressure and ampere-hour capacity will actually result in better all-day voltage and a more satisfactory size of battery for the load to be handled.

The persistent effort toward greater safety in mine operation, both through more advanced working methods as well as more rigid legislation and mine inspection has stimulated the demand for storage-battery outfits. This is especially true regarding battery locomotives because a mine, obviously, cannot produce more coal than it can move safely and quickly from the working face. Storage-battery locomotives have done much to simplify this transportation problem. Trolley machines even when equipped with a cable reel have their limitations in today's methods of rapidly advancing the working face. They cannot proceed far from the end of the trolley wires whereas the storage-battery machine is not so limited. It can usually operate unhampered over wooden tracks, if necessary, and neither trolley nor bonds are required. This flexibility, plus the added safety derived from eliminating charged wires, sparking trolley wheels and rail joints, have given the storage-battery machine a decided advantage over other means of transportation.

LOCOMOTIVE SALES INCREASING

During the last few years the percentage of storage-battery locomotives sold to the mining industry has steadily increased. In 1924 it was 25 per cent of the total number of electric locomotives furnished the industry, in 1925, 26 per cent, and last year it is estimated that it jumped to nearly 30 per cent. The rapidly growing tendency to replace trolley machines now used in gassy mines with permissible storage-battery locomotives gives reason to believe that the percentage of these machines purchased during the present year will be unusually large.

The added security against possible gas and dust explosions provided by storage batteries has recently increased the number of mines approaching the "wireless" stage. Some of the pioneer mining companies using batteries for all inside power purposes are the following: The Pond Creek Pocahontas Co., at Bartley, W. Va., is producing about 4,000 tons daily from a mine using storage-battery energy for all electrified underground service including cutting, loading, gathering and haulage. The power trucks used are equipped with 110, thirty-one-plate lead cells. Each battery is rated at 450 amp.-hr. and approximately 100 kw.-hr. Several mines are being re-equipped for "wireless" operation by the

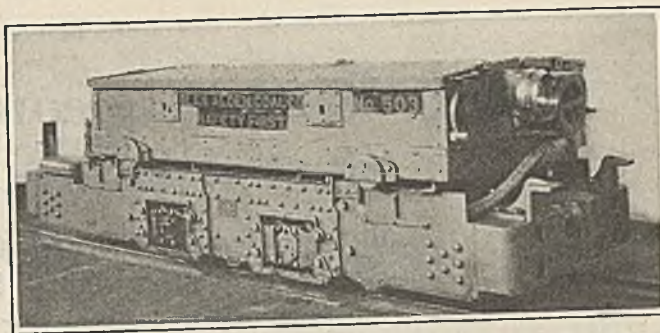


Fig. 5—Built for Use Where Gas May Cause Trouble
This is one of the permissible locomotive units that marks the beginning of a new era of safety by the progressive mining company that owns it.

Consolidation Coal Co. Whenever it is desired to use electrical equipment in places where gas may become dangerous storage-battery energy is used. The amount of money invested in storage battery apparatus here involves over a million dollars. The Phelps-Dodge Corp., has long been a pioneer in the use of storage batteries for "wireless" mines.

As the relative advantages of storage-battery energy become better known further developments along this line are practically assured. The experimental stage is already well past and the trend is decidedly toward safer operation by improved methods.

Mines Bureau Studies Signs at Surface That Coal Has Been Extracted

A detailed study of the problem of surface subsidence due to coal-mining operations in the State of Illinois has been conducted by the U. S. Bureau of Mines, in co-operation with the State Geological Survey of Illinois and the Engineering Experiment Station of the University of Illinois.

The objects of the investigation conducted were to determine whether the surface actually subsided and, if so, how much, and whether in advance of underground mining; to determine the injury done to the surface by different methods of mining and to demonstrate what damage was sustained by permanent buildings on the surface overlying active mines.

Four widely separated places where mining was in progress were selected as observation stations—one in the northern Illinois longwall coal field, one in the central Illinois coal field where the room-and-pillar panel system of mining was being used, and two in the thick coal of southern Illinois where the room-and-pillar panel system of mining was employed. These four points of mining activity gave a rather wide opportunity for observing subsidence when different mining methods were used.

The Illinois investigations are continuing, and the subject increases in importance as mining is done more intensively, because surface improvements become more and more valuable, both in the towns and on the farms, and the drainage systems required by the generally flat, rich prairie lands become more extensive.

A résumé of the observations so far made in this study of subsidence of surface lands due to coal-mining operations in Illinois is given in Bulletin 238, by C. A. Herbert and J. J. Rutledge, copies of which may be obtained from the U. S. Bureau of Mines, Washington, D. C.

Storage-Battery Locomotive Arc Said to Have Started Everettville Explosion

Haulways Given a Primary Coat of Rock Dust Ten Months Prior to Explosion—Blast Propagated in Wet Workings—Company Was Awaiting Improved Dusting Machine

THE EXPLOSION in the Federal No. 3 mine of the New England Fuel & Transportation Co., Everettville, W. Va., April 30, is believed by the state mine inspectors who investigated it to have been initiated by an arc from a storage-battery locomotive in the presence of an accumulation of gas. The inspectors are of the opinion, also, that the explosion thus started was propagated by coal dust.

Approximately ten months prior to the explosion the haulways had been given a first coat of rock dust. After that time no further rockdusting was done, though the state mine department recommended in January that this work be given immediate attention. The airways

eral questions of safety measures taken by company to assure safety. (5) Manifestations of explosion, paths of travel of force and flame, suggested point of origin and cause of explosion. (6) A defense of the decision of those in charge of restoration proceedings for advancing cautiously, at the expense of speed, by the air-lock system.

In this report the evidence is classified under these divisions which are taken up in the order given above. As a further step toward providing a clear understanding of the case, a simple line drawing, Fig. 1, on which are indicated the most important features bearing on the case, is presented in place of the mine map.

Ventilation—Thomas A. King, engineer of the coal company, described the ventilation in the Federal No. 3 mine. The main artery has six entries, and the cross headings, from which rooms are turned, have, for the most part, three headings. The air delivered by a force fan is divided into three splits which ventilate the workings to the right of the Old Main, see Fig. 1. The crop area to the left of this main entry is ventilated by two natural splits. The haulways are, of course, in every instance intake airways.

Howard N. Eavenson, consulting engineer of Pittsburgh, Pa., who has for several years been retained by the coal company, testified that ventilation in this mine was kept up to the face, more air being provided than the law required. He was of the opinion that the ventilation in this mine was above the average. Complying with his recommendation, the company had been acting on plans to provide a greater abundance of air, not because that provided was inadequate, but rather to meet the requirements of the time when the workings would be further advanced. This involved a new air shaft toward the site of which the shaft headings (see Fig. 1) were being driven. These headings were far

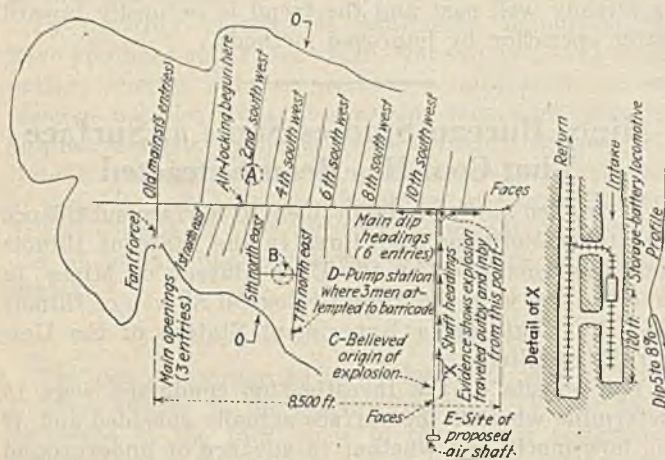


Fig. 1—Diagram of Everettville Mine Showing Ventilation System

This drawing is not made to scale. It was prepared merely to depict those main features of the mine layout which had to do with the explosion. In the vicinity of A, evidence of mine fire was detected which caused the rescue men to change the plan of attack from the direct methods to air-locking. This was necessary because the oxygen content of the air was high as were also the carbon-monoxide and methane content. In the vicinity of B a glowing fire was discovered. The territory to the left of O-O was under light cover, fractured to the surface and was considered non-gassy as no gas had ever been detected there. The explosion is believed to have originated at C.

were not rockdusted, nor were they provided with dust troughs or shelves.

Representatives of the coal company recognize the merit of rockdusting and believe that had the mine been properly rockdusted the explosion would have been localized. The entry in which the explosion is believed to have originated was extremely wet, yet the water failed to check the ignition of coal dust.

The inquest on this explosion was held in Morgantown on June 8, the verdict being that the cause and place of origin is unknown. The testimony presented at the inquest falls naturally into the following divisions: (1) Ventilation practices and condition of the ventilating system just prior to the explosion. (2) Inspections and questions relating thereto. (3) Rockdusting, condition thereof, related questions. (4) Gen-



Checking Out

Apparatus crews worked in shifts of six hours. Praise is due to these men and others who relieved them as they worked for days sealing off a fire area in an atmosphere which closely approached an explosive mixture. Note the gas masks being worn by two of the men. These have come to be recognized as an important part of rescue equipment.

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advanced prior to the explosion (about 3,500 ft.) and would have been completed had not much rock been encountered in them, which retarded the work six or eight months.

John A. McKay, superintendent of the mine, said that these plans called for the placing of a fan at the shaft and a rearranging of the ventilation system. John Spiker, mine foreman, stated that the practice was to extend line brattices from the last open crosscut to the face of every place in which gas was emitted. Doors at



Tippie Where Explosion Killed Six Men

Before the explosion reached the outside most of its force had been spent, but even so it was of intensity sufficient to completely wreck the fore end of the tippie. Six men were at work at this point at the time of the explosion. All of them perished.

strategic points were erected in twos, only one of which was open at any time when trips were passing.

Inspections—Mine Foreman Spiker was asked to explain the system of fireboss inspection in force at the mine. Not all working places were under the jurisdiction of a fireboss. Workings outby or to the left of the Fourth South headings (see Fig. 1) were not included in the area patrolled by the fireboss, because no gas has ever been detected in them. The cover over them is light and in many places broken to the surface; consequently, what gas might otherwise accumulate bled off. Incidentally, these workings are for the most part worked out and were ventilated by an independent split. Fireboss William Connor testified that he daily visited all the other places in the mine.

A member of the jury asked him what means the company had of knowing whether the places not inspected were at all times free of gas. He explained that the section bosses and, of course, the machine runners, carried flame safety lamps. He added that about eighteen men carrying flame safety lamps were employed on one or the other of the two shifts.

In his run on the day of the explosion, Fireboss Connor found a trace of gas at the face of the aircourse of the shaft headings. This was being emitted from drill-holes. He also detected a small quantity of gas at the face of the second entry of Thirteenth South. He also reported that stoppings had not been erected in the second from the last crosscut in the Seventh, Eighth and Tenth South. Mine Foreman Spiker stated that 15 days before the explosion he measured the air at the last completed crosscut in the shaft headings and found 6,200 cu.ft. The last sprinkling was on Seventh and

Eighth South and was done two days prior to the explosion. Mr. Eavenson inspected the mine six weeks before the explosion. He found conditions satisfactory, much water and only slight traces of gas in the lower workings.

Superintendent McKay read the recommendations made by W. B. Riggelman and Homer Jarrett, state mine inspectors, following a joint inspection of the mine on Jan. 12 and 13. These recommendations called for the cleaning up of accumulated coal dust on Seventh and Eighth South and thorough rockdusting of the main dip headings and those to the right and left of them at as early a date as possible. The coal dust was promptly removed, but, according to Mr. McKay, the rock entries were not rockdusted.

DID NOT FOLLOW RECOMMENDATION

Rock Dusting—J. W. Devison, general superintendent, explained why the company did not comply with the recommendations of the state mine department as to rockdusting. The one rockdusting machine owned by the company was being used in the Grant Town mine where conditions are far more hazardous than those in the Federal No. 3 mine. A supply of rock dust, however, was on hand in readiness for the job when a rockdusting machine would arrive. Mr. Eavenson declared that the company had for some time decided upon getting a second machine, but was awaiting a new type by which rock dust could be carried to aircourses. This was in process of development.

Several representatives of the coal company testified that the last rockdusting job in this mine was completed about ten months prior to the explosion. Then only those entries provided with track were treated. No rock-dust barriers were installed in the mine.

Representatives of the coal company also expressed the belief that, had the mine been thoroughly rockdusted, the explosion would have been localized. Mr. Eavenson said he had always been, as his actions showed, a firm advocate of rockdusting. J. M. McKenna, assistant general superintendent, remarked that "prior to the explosion" he had been of the opinion that the mine was so wet that occurrence of a coal-dust ignition was quite unlikely.

NO LONGER THINKS WATER A SAFEGUARD

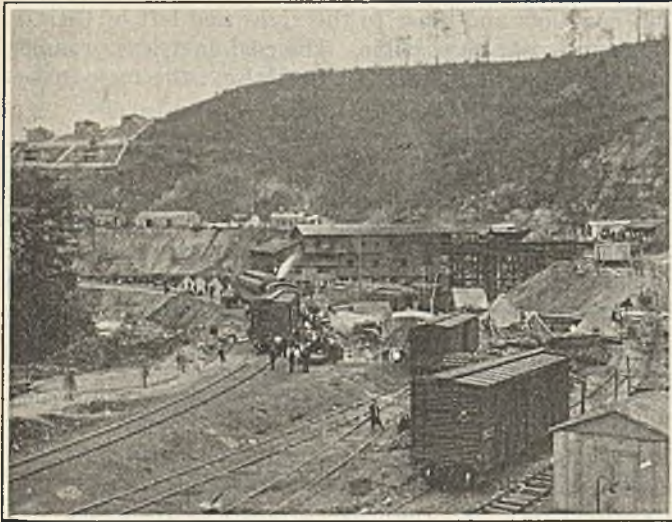
McKay said he had had firm confidence in the protection of the water in the mine, but since the explosion he had changed his mind. Mr. Devison considered this a wet mine and admitted that it was his opinion, gained through reading, that rock dust tended to check a coal-dust explosion. Mr. Spiker, mine foreman, said the explosion penetrated the shaft headings which were extremely wet and required pumping, proving that water of itself will not check a coal-dust explosion.

Safety Measures—Until the last two years, the mine workings had been under light cover and no gas was encountered. But as the workings penetrated the hill, with a general tendency to dip, gas was found and electric cap lamps were installed. At about the same time the company decided to rockdust, being the first in the region to do so. Dry stretches of the haulways were sprinkled at frequent intervals, according to Mr. Devison.

Details of Explosion—Mr. Spiker, mine foreman, said he was in the lamphouse at the mine mouth talking over the telephone with the trip dispatcher when the

explosion occurred. The power went off, and a few seconds later he was swept from his feet. Going outside he saw smoke rolling from the mine, followed by a haze with the appearance of steam. Then air rushed at a terrific rate into the mine. Nine men who had been working in the Old Main section were rescued. The remaining men underground, 91, and six men on the tippie were killed.

Mine Foreman Spiker thinks the explosion was initiated by gas and propagated by coal dust. He did



Federal No. 3 Mine Plant and Town

This mine is a drift in the Pittsburgh seam. The main portal entries pierce the hill in a direction in line with the tippie. At a point approximately halfway along these straight entries six arteries comprising the new mains are turned right to the dip, and consequently are on the course of the long axis of the hill. The box car, shifting engine and coach seen on the left track were the only means of transportation to the mine through a distance of nearly three miles from the main channels of travel as the roads were impassable.

not believe that the gas was ignited by a blown-out shot. On being questioned by R. M. Lambie, he admitted that the storage-battery locomotive used on the shaft headings or a flame safety lamp might have ignited the gas, but he noted no evidence pointing to either cause. The testimony of Superintendent McKay on the parts which gas and coal played in the explosion concurred with the opinion of Mr. Spiker. Mr. McKenna, assistant general superintendent testified that he found in the Tenth South haulway the most marked evidence of force. Here a track rail had been broken in two.

INSPECTORS PRESENT THEIR CONCLUSIONS

Evan J. Griffiths, W. B. Riggelman and Homer Jarrett, state mine inspectors, presented their conclusions as to the cause of the explosion, gained through a study of the entire mine. They are of the opinion that the explosion originated in the aircourse of the shaft headings, about 120 ft. from the face and just outby the open crosscut.

At this point, as indicated in Fig. 1, they found a storage-battery locomotive obviously in motion from the fact that the controller was on. This place was visited fifteen days after the explosion. It was then found that one of the headlights of the locomotive was still illuminated. The locomotive stood on the crest of a roll in the bottom. The bodies of two men with flame safety lamps were found near the locomotive. These lamps were exhibited at the inquest and apparently were in good condition. These inspectors believe that an arc

from the locomotive ignited gas which had accumulated at this high point on the entry as a result of interrupted ventilation.

Leaving the mouth of the shaft headings, the explosion split, traveling outby and inby along the Main Dip headings. In all entries south of these latter headings and inby the Second South the explosion traveled inby, and through connecting places to the Second South from which it emerged outby. It moved inby into Ninth North and outby from Eighth North at the mouth of which the greatest violence was detected. It traveled inby into Seventh North, across to Fifth North from which it emerged.

STANDING GAS FOUND IN HEADING

Standing gas was found in the shaft heading, in two of the adjacent slope headings, in rooms 1 and 2 off Twelfth South and in the aircourse of Ninth North. Evidence of coking or slow combustion was seen in the slope headings adjacent to the shaft headings, in No. 1 room and the aircourse of Ninth North and in No. 22 room off Third South.

As he and those who had assisted him in directing the restoration of the mine had been criticized for advancing into the mine cautiously by the system of air-locking, Chief Lambie drew out the opinions of several witnesses as to the wisdom of the strategy followed. When Mr. Lambie arrived at the mine, air-locking was already initiated. Those in charge before his arrival advanced by open methods as far as Second South. At this stage of the procedure, said George Riggs, of the Mine Safety Appliances Co., he and his companions noticed much swirling smoke in Second South. Here gas was detected about 12 in. below the roof and a high percentage of carbon monoxide in the air was noted. It was then agreed that the entries should be sealed at this point.

AIR SAMPLE ANALYSIS MADE

About nine hours later an air sample was taken inby the seals by Chester E. Watts, chief chemist of the Bethlehem Mines Corporation. This sample analyzed 3.3 per cent carbon monoxide and 4.4 per cent methane in an atmosphere containing 13.8 per cent oxygen.

John T. Ryan, general manager of the Mine Safety Appliances Co., W. H. Forbes, district mining engineer of the U. S. Bureau of Mines, Mr. Riggs and Mr. Watts, all of whom took part in the sealing, testified that it was the only sane procedure under the circumstances, as the oxygen content was greater than 12 per cent, much gas was present and a fire was burning. Later in the work, evidence of several fires was noted. One fire glowing a cherry red was discovered and extinguished. Further, the authorities believed that it would be foolhardy to risk the lives of 100 or so men engaged in rescue when they were positively sure that the men caught by the explosion were dead.

DEATH CAME SPEEDILY TO VICTIMS

All were agreed that those caught by the explosion lived but a few hours at most. Three men located at a pump station at the foot of Seventh North lived three hours after the explosion and then succumbed. This fact was proved by notes which they left in their buckets. Evidence was seen that they made several attempts to barricade themselves in, but on each occasion they were driven back.

Current Prices of Mining Supplies

SINCE LAST MONTH

DECINES double advances, comparing current prices with those of May 19, at which time this tabulation last appeared. Red-oak railway ties continue the upward movement started in the West over a month ago. Several descriptions of brattice cloth are higher. Scrap, railway spikes, cast-iron pipe and bare copper wire tend downward.

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

	Pittsburgh			
	Current	Year Ago	Birmingham	Chicago
Standard Bessemer rails.....	\$43.00	\$43.00	\$43.00	\$43.00
Standard openhearth rails.....	43.00	43.00	43.00	43.00
Light rails, 12 to 14 lb.....	36.00	34@36	34@36	1.80@1.90*

*Per 100 lb.

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

	Pittsburgh			
	Current	Year Ago	Chicago	Birmingham
Standard spikes, ½-in. and larger.....	\$2.80	\$2.80	\$3.55	\$3.00
Track bolts.....	3.90@4.25	3.90@4.15	4.55	3.90
Standard section angle bars, spliced bars or fish plates.....	2.85	2.75@2.80	3.40

WROUGHT STEEL AND IRON PIPE—The following percentage discounts are to jobbers for earload lots at Pittsburgh mill:

Inches	Steel		Inches	Iron	
	Black	Galv.		Black	Galv.
1 to 3.....	62	50½	1 to 1½.....	30	13
2.....	55	43½	2.....	23	7
1 to 1½.....	60	49½	1 to 1½.....	30	14
2.....	53	42½	2.....	23	9

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

1 to 3 in. butt welded.....	Black		
	New York	Chicago	St. Louis
2½ to 6 in. lap welded.....	53%	54%	49%
	48%	51%	46%
Galvanized			
1 to 3 in. butt welded.....	New York	Chicago	St. Louis
2½ to 6 in. lap welded.....	39%	41%	36%
	35%	38%	33%

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

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

	New York			
	Birmingham	Burlington, N. J.	Current	One Year Ago
4 in.....	\$42.00	\$49.00	\$51.60	\$55.60@57.60
6 in. and over.....	38.00	45.00	47.60	51.60@53.60
Pittsburgh				
4 in.....	Chicago	St. Louis	San Francisco	
6 in. and over.....	\$49.60	\$48.20	\$47.60	\$56.00
	45.60	44.20	43.60	52.00

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

BOLTS AND NUTS—Discounts from new list, Apr. 1, 1927, on immediate deliveries from warehouse in New York and vicinity: Machine bolts, square heads and nuts, up to 1x30-in., full kegs or cases, 50%; Carriage bolts, up to ½ x 6-in., broken kegs or cases, 50—10%; Nuts, hot-pressed or cold-punched, blank or tapped, square or hexagonal, full kegs or cases, 50—10%.

STEEL PLATES—Following are base prices per 100 lb. in earload lots, f.o.b. for ½-in. thick and heavier:

Pittsburgh.....	\$1.80@1.90	Birmingham.....	\$1.95
STRUCTURAL RIVETS —The following quotations are per 100 lb., in earload lots, f.o.b. mill, for ½-in.:			
Pittsburgh.....	\$2.75	Cleveland.....	\$2.75
		Chicago.....	\$2.85

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

	Per Cent
Plow steel round strand rope.....	35
Special steel round strand rope.....	30
Cast steel round strand rope.....	20
Round strand iron and iron tiller.....	5
Galvanized steel rigging and guy rope.....	7½
Galvanized iron rigging and guy rope.....	+12½

RAIL BONDS—28-in., 0000, stranded copper, welded, at points east of the Mississippi per 100, \$90.36.

DRILL ROD—Discounts from list:

New York.....	60%	Cleveland.....	55%	Chicago.....	50%
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FRICITION TAPE—Size ½-in. in 100 lb. lots in Eastern territory, per lb., \$0.31.

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

	6 In. x 8 In. by 8 Ft.	7 In. x 9 In. by 8½ Ft.
	Chicago, white oak, plain.....	\$1.45
Chicago, empty cell creosoted.....	1.85	2.45
Chicago, zinc treated.....	1.65	2.15
St. Louis, white oak, plain.....	1.25	1.50
St. Louis, zinc treated.....	1.65	1.90
St. Louis, red oak, plain.....	1.15	1.40
Birmingham, white oak.....	1.25	1.45

STEEL MINE TIES—Prices range from \$0.38 to \$0.60 per tie, f-o-b. Pennsylvania and West Virginia Districts, depending upon gage of track and weight of rail.

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

BRATTICE CLOTH—Prices f.o.b. cars New York, Philadelphia, St. Louis or Chicago, per sq.yd.:

Jute, 24-oz., double warp.....	\$0.22	Jute, waterproof.....	\$0.24
Jute, 22-oz.....	.17	Duck, waterproof.....	.37
Jute, 18-oz.....	.15	Duck, non-inflammable.....	.34
		Old sail cloth.....	.60

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

	New York	Cleveland	Chicago
	White.....	10.00@13.50	16.00
Colored.....	9.00@13.00	12.00	12.00@17.00

MACHINE OIL—Medium bodied, in 55 gal. metal barrels, per gal., as follows:

New York.....	\$0.33	Cleveland.....	\$0.35	Chicago.....	\$0.29
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SCRAP IRON AND STEEL—The prices following are f.o.b. per ton paid by dealers:

	New York	Chicago	Birmingham
	No. 1 railroad wrought.....	\$12.50@13.00	\$11.25@11.75
Stove plate.....	6.00@8.50	12.75@13.25	13.00@14.00
No. 1 machinery cast.....	15.00@16.00	15.50@16.00	15.00@16.00
Machine shop turnings.....	7.00@7.75	6.00@6.50	8.00@8.50
Cast borings.....	7.50@7.75	8.75@9.25	8.00@8.50
Railroad malleable.....	11.25@11.75	12.75@13.25	12.00@13.00
Re-rolling rails.....	11.50@12.00	13.00@13.50	15.00@16.00
Re-laying rails.....	22.00@24.00		22.00@23.00
Heavy melting steel.....	7.75@11.25	10.75@11.25	12.00@12.25

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

	New York	Cleveland	Chicago
	Crucible heavy copper.....	11.00 @ 11.25	10.50
Copper, heavy, and wire.....	10.25 @ 10.75	10.50	9.00 @ 9.50
Copper, light, and bottoms.....	9.00 @ 9.50	9.00	8.00 @ 8.50
Brass, heavy, yellow.....	7.00 @ 7.25	6.75	6.50 @ 7.00
Brass, heavy, red.....	8.75 @ 9.00	9.25	8.50 @ 9.00
Brass, light.....	5.00 @ 5.50	6.00	5.50 @ 6.00
No. 1 yellow rod turnings.....	7.25 @ 7.50	7.00	6.50 @ 7.00

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

New York.....	18.25	Cleveland.....	18.25	Chicago.....	18.25
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TROLLEY WIRE—In earload lots, f.o.b., producing point, all sizes, round, 15½c. per lb.; grooved, 15½c.; Fig. 8, 16½c.

TROLLEY WHEELS—F.o.b. Jersey City, N. J., 4-in., \$1.20 each; 6-in., \$1.50 each.

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

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

LOCOMOTIVE CABLE—F.o.b. producing point, braided, Size 3, \$83.00 per M. ft.; Size 4, \$69.00 per M. ft.

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

B. & S. Size	Two Conductor	Three Conductor
	No. 14 solid.....	\$30.00 (net)
No. 12 solid.....	136.00	180.00
No. 10 solid.....	185.00	235.00
No. 8 stranded.....	305.00	375.00
No. 6 stranded.....	440.00	530.00

From the above lists discounts are: Less than coil lots, 50%; Coils to 1,000 ft., 60% 1,000 to 5,000 ft., 62%; 5,000 ft. and over, 65%.

EXPLOSIVES—F.o.b. in earload lots:

	Districts		
	West Virginia	Pennsylvania	Missouri
Black Powder, FF, NaNO ₃ base, 800 kegs per car, per 25 lb. keg.....	\$1.70@1.80	\$1.70	\$1.75
Ammonium permissible, 1½ x 8 in. sticks, 20,000 lb. per car, per 100 lb.....	14.50@15.50	14.25	14.50



News Of the Industry



Old Timers of Union Pacific Coal Co. Celebrate with Bands and Bagpipes; Thirty-seven Nations Participate

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

All roads out of the mining communities of southern Wyoming led to Rock Springs last Saturday. By train, bus, private car and afoot old knights of the pick and shovel, their wives and their families poured into the city. A holiday spirit matching the bright sunlight was in the air. Massed miners' bands played stirring marches and sentimental tunes of other days. Bagpipes skirled, greybeards and laughing youngsters paraded the streets, sons of Europe and children of Asia marched side by side with men who acclaim the United States as the land of their birth. The third annual gathering of the Union Pacific Coal Co. Old Timers' Association was in full swing.

Beginning with the registration of the members and guests at the Elks' Temple and continuing through the business meeting, the annual dinner at which representatives of thirty-seven nationalities joined to honor the fortunate old timers who were to receive the gold buttons that told Wyoming and the world at large that the wearers had spent forty years in the service of the Union Pacific Coal Co. and its affiliated organizations, and the theater party which closed the meeting, it was a crowded day in which veterans renewed old acquaintances and related tales of pioneering years.

Tries to Ease Life for Aged

Eugene McAuliffe, president of the coal company and moving spirit in the organization of the Old Timers' Association, delivered the principal address at the business meeting. "I have tried," he said, "to make life a trifle easier and more secure for a few of our elder men whose age and infirmities prevent their continuing to earn, and it is a great joy to see some of these men here today. Excepting the searing effect of crime, I know of no greater calamity than that of a man or woman who, without means or earning power, is compelled to confront privation in old age. I trust that we have been able to take this load in part at least off the shoulders of some of our old men and their good wives."

Characterizing "the cruel, and many times needless, stoppage of earnings during strikes and suspensions" as another tragedy that has long gone hand in hand with the coal-mining industry, Mr. McAuliffe stated that he had dis-

cussed the situation with the district union officials several months prior to March 31. When the matter had been submitted to John L. Lewis, international president of the United Mine Workers, it was found that Mr. Lewis was anxious that the men in the West continue at work.

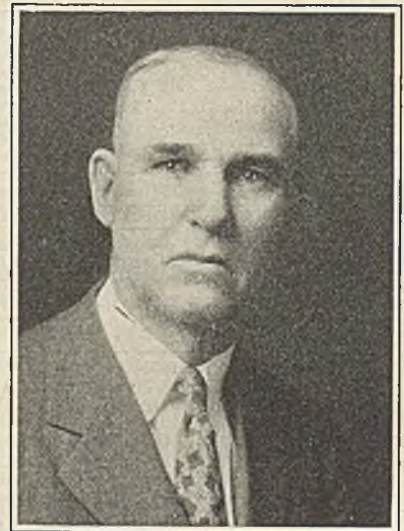
"And so the mines in Wyoming, Montana and Washington, where union men are employed," continued Mr. McAuliffe, "have carried on. Although business has been dull, they have kept their markets and their payroll, while the men in the suspended districts have, in many cases, been forced to go into the non-union mines in order to obtain means to support their dependents. The coal which they help to get out is taking the place of that they otherwise would have mined.

Urges Mutual Efforts for Right

"The strike and the lockout—and I will not say how much of each enters into the present situation—is too often a brutal, bludgeoning way of settling affairs that might be more quickly and effectively composed through mutual effort toward what is right and just. There is absolutely nothing at the bottom of a just and proper labor relation other than loyal, intelligent, conscientious service on the part of the worker and a full recognition of the fact that a worth-while worker is a human being who should be treated as such, paid a good wage and his work made as pleasant and as safe as it is possible to make it."

Mr. McAuliffe made a special plea to the older men in the mines to use their influence with the younger workers in promoting greater safety in operation. Last year, he said, he had made a similar appeal and from July 24, 1926, to March 11, 1927, the mines had been run without a single fatal accident, as against eight fatalities in the first eight months of 1926. "I have said to our staff that I do not propose to trade human life for money, but regardless of all the money we are spending or may in the future spend, the safety of our men will, in the greatest measure, rest with them and our underground officials."

Over six hundred were present at the banquet. T. Seddon Taliaferro, Jr., local attorney for the company, who



Eugene McAuliffe
Friend of the Old Timers

entered the service at Green River in 1883, acted as toastmaster. Joseph Iredale, president-elect of the Old Timers' Association, who started work at Carbon in 1878, welcomed the guests on behalf of the organization. Mrs. A. W. Dickinson, wife of the general superintendent of the Union Pacific Coal Co., sang; N. H. Loomis, general solicitor, Union Pacific system, delivered the principal address, and Sydney A. Hale, associate editor, *Coal Age*, spoke briefly.

The climax of the banquet, of course, was the presentation of the gold service buttons to the seven men graduating into the 40-year class. The presentation was made by Mr. McAuliffe, and Mrs. McAuliffe placed the buttons in the lapels of the coats of the recipients. Included in the graduates into the top division of old timers were A. H. Doane, assistant treasurer of the company, and Frank L. McCarty, of "Duck-Bill" fame, superintendent at Rock Springs.

Bands and Pipers Perform

The miners' bands from Hanna, Cumberland, Reliance and Winton, assisted by the pipers, gave a concert following the banquet. The wives of the members of the association were later the guests of Mrs. George B. Pryde, wife of the vice-president and general manager of the Union Pacific Coal Co., at a tea at her home.

The Old Timers' Association was organized three years ago. Membership is open to any person in the employ of the company or related companies for twenty years. Retired and pensioned employees also are eligible. At pres-

ent the association has a membership of 397, including 7 men now living in China. Twenty-seven names are on the 40-year roll with an average service per employee of 44 years. James Moon, retired trackman, worked 53 years for the company. Lao Chee, stable boss, has been employed for 47 years and is still active. Mary Taylor, who entered the employ of the company in 1901, is the only woman member of the association.

New Safety Research Station To Open in Britain

The British Safety in Mines Research Board will open a new research station soon at Harpur Hill, Buxton, to supersede that at Eskmeals, Cumberland. The special function of the new station will be to carry out experiments in coal-dust and firedamp explosions.

The cost of the building and equipment at Harpur Hill, excluding equipment transferred from Eskmeals, has been about £35,000 (approximately \$169,855). The money has been found by the Miners' Welfare Fund, which also is responsible for providing all but £2,000 (which is obtained from the state) of the £50,000 that is spent annually on research work in connection with safety in mines.

Three galleries, having the appearance of long iron pipes, have been constructed for testing the explosibility of coal dust under various conditions. The largest of the galleries, in which most of the systematic work will be carried out, is 1,000 ft. long and 4 ft. in diameter. Another, which will be used principally for "demonstration" explosions, is 400 ft. long and 7½ ft. in diameter. There are fans for inducing a current of air to correspond with the ventilation in a mine. The 4-ft. gallery is equipped with instrument cabins every 100 ft. The instruments measure



George B. Pryde
Vice-President and General Manager,
Union Pacific Coal Co.

the pressures produced by explosions and the rate at which the flame travels. Sections have been made in this gallery to correspond with the branch roads in underground workings, in order to study their effect on the development of a coal-dust explosion.

One of the principal series of experiments to be made in the 7½-ft. gallery will have for its object the measurement of the distance to which the flame of an explosion may be projected along a roadway beyond the area originally occupied by the explosive mixture. The third gallery, 300 ft. long and 1 ft. in diameter, will be used to study the effect on its speed of restrictions in the path of the flame.

For research on coal-mining explosives there is a laboratory and gun room, in which photographic methods will be used to investigate the flame and the pressure-waves sent out by an explosive when it is fired and also an explosion gallery and observation station, where the igniting power of explosives under different conditions of detonation will be tested directly by firing them into inflammable mixtures of firedamp and air.

The building in which the study of gob fires will be made consists of a central chamber, 30 ft. square and 8 ft. high, representing a mine goaf, with an air passage, approximately 6 ft. wide by 7 ft. high, circumscribing it. The first object of the research here will be to determine the conditions necessary for the production and ignition of explosive mixtures from a coal fire behind a stopping, and to study methods of sealing off a fire that are most likely to avoid those conditions.

The Board has another research station at Sheffield, where laboratory work is done on the same problems that will be studied at Harpur Hill and where also experiments are staged to make the use of electricity in mines safe and to improve miners' lamps. Researches that require the use of the heavy and expensive plant of an engineering laboratory—such as those into methods of supporting the roof of colliery workings—are made at the Imperial College of Science and Technology in London.

Tug River Assn. Dissolves; Pocahontas Is Gainer

Dissolution of the Tug River Coal Operators' Association and the anticipated enrollment of more than 90 per cent of its producing strength in the Pocahontas Operators' Association will swell the annual output of the latter group to well over twenty million tons.

The Tug River Association decided to dissolve on June 30 at a mass meeting held at Welch, W. Va. Operators of the Tug River field and members of the dissolved association have been invited to join the Pocahontas association, whose headquarters are at Bluefield.

At present the Pocahontas association includes in its membership producers of about fifteen million tons a year, or 86.3 per cent of the entire commercial tonnage of the Pocahontas field. The Tug River field, with its forty companies operating fifty-six mines, has an annual output of about five million tons.

The Tug River Coal Operators' Association was formed several years ago. It was known originally as the Dry Fork Coal Operators' Association and its membership comprised only those operators on the Dry Fork branch of the Norfolk & Western Ry. It later reached out to include mines on the main lines of that road west to the Mingo-McDowell county line.

C. C. Morfit, secretary of the Tug River Association for the past few years, will be retained until October 1 to set its affairs in order. William C. Atwater, of New York, is president of the Pocahontas association, and W. E. E. Koepler is secretary.

Says More Are Idle Here Than in Britain

A greater number of workers are unemployed at present in the United States than in Great Britain, according to a statement in the British House of Commons on June 1 by Sir Arthur Steel-Maitland, Minister of Labor. Sir Arthur said that the unemployed in Great Britain now number 978,000, the lowest figure recorded since 1921.

The Labor Minister declared that, although no official statistics on the subject were issued by the U. S. Government, it appeared to be generally accepted by those competent to form an opinion that, out of 12,000,000 workers engaged in manufacturing and industry, about 1,500,000 at present were unemployed.

Statistics of the U. S. Labor Department from 10,000 industrial firms show that during April, 1927, these firms were employing 90.6 per cent as many workers as they employed during 1923. In view of the extraordinary business activity in 1923, it has been the opinion of the statisticians that 90 per cent of peak employment represented the maximum possible to attain over prolonged periods.

European Coal Dilemma Analyzed by Briton

The question of European coal must be settled by agreement among England, France and Germany is the opinion of P. J. Hannon, president of the Federation of British Industry, as quoted in the *New York Times*.

This is not an opportune time, however, for the opening of negotiations, Mr. Hannon thinks, because there are pressing in England problems in this branch of industry which must be solved first. He also holds that in the chemical industry England and Germany must work in closer harmony than heretofore.

Lower production costs and cheaper prices to the consumer is the goal of all this wanted co-operation, Mr. Hannon avers, and if this goal is not attained "all endeavors to create trusts and all efforts to formulate working agreements for international co-operation will be useless and the hoped-for advancement of the people will not materialize."



A. C. Fieldner

Fieldner Named to Direct Experiment Stations

Arno C. Fieldner, superintendent of the Pittsburgh experiment station of the U. S. Bureau of Mines, has been appointed chief engineer, Division of Experiment Stations, of the Bureau, effective July 1. In his new position Mr. Fieldner will correlate the scientific activities of the Bureau's experiment stations located at Pittsburgh, Pa.; Salt Lake City, Utah; Reno, Nev.; Berkeley, Calif.; Tucson, Ariz.; Seattle, Wash.; Bartlesville, Okla.; Rolla, Mo.; Minneapolis, Minn.; Birmingham, Ala., and New Brunswick, N. J. At these experiment stations problems dealing with the elimination of waste in the different mineral industries are being studied.

Mr. Fieldner, who has served as superintendent of the Pittsburgh experiment station for the past six years, is regarded as an authority on the technology of coal, coke and gas, and ventilation problems, involving noxious gases, in mines, tunnels, and elsewhere.

Mr. Fieldner, a native of Ohio, was born Dec. 12, 1881. He was graduated in chemical engineering at Ohio State University in 1906. In 1907 he joined the staff of the U. S. Geological Survey and with that organization and later with the Bureau of Mines engaged in research, performing notable work in connection with the utilization of coal, coke, petroleum and other fuels.

During the World War Mr. Fieldner served as a major in the chemical warfare service, and was placed in charge of gas-mask research. The methods developed by him for testing the efficiency of gas masks and absorbents were generally used by the chemical warfare service and were later adopted by some of the laboratories of the Allies.

In 1924 Mr. Fieldner spent six months in visiting European laboratories and industries, studying especially the carbonization and processing of coal, and safety in mines research. He was invited to become a member of the Coal Research Club of England.

Retailers Re-elect Tattersall At Detroit Meeting

James C. Tattersall of Trenton, N. J., was re-elected president of the National Retail Coal Merchants' Association at the closing session of the tenth annual convention of the organization held at the Book-Cadillac Hotel, Detroit, Mich., June 8. W. A. Clark, Boston, Mass.; J. Maury Dove, Jr., Washington, D. C.; Geo. T. Kinney, Kansas City, Mo.; Geo. W. Malcolmson, Detroit; M. E. Robinson, Jr., Chicago, and Charles B. Staats, Albany, N. Y., were re-elected vice-presidents. Robert S. Hayes, Newport, R. I., was chosen as treasurer to succeed Rudolph Reimer of Brooklyn.

The closing sessions of the convention were devoted to a rapid-fire discussion of retail problems such as horse vs. truck deliveries, retail advertising, salaried vs. commission salesmen, credits and collections. In a few brief remarks, Daniel T. Pierce, vice-chairman, Anthracite Operators' Conference, warned the delegates not to be discouraged if progress in co-operative effort seemed slow. The mere fact that the rate of progress was coming under attack was evidence of progress.

Mr. Robinson was the speaker at the luncheon meeting on June 8. He discussed the importance of the national association from the standpoint of the Middle Western retailer. While recognizing that there had been criticism because programs gave so much time to anthracite and so little to bituminous problems, he was inclined to place most of the blame for this situation upon the bituminous interests themselves.

He praised highly the work that had been done in the field of governmental relations and mildly berated those coal men who belittled that work or who favored government regulation. Mr. Robinson urged more attention to transportation matters, pointing out that those questions were as vitally appealing to the Middle Western trade as anthracite relations was to the East.

Walter H. Clingerman Dies

Walter H. Clingerman, president of the H. C. Frick Coke Co., subsidiary of the U. S. Steel Corporation, died in a Pittsburgh hospital on June 13 after undergoing an operation for appendicitis. He was fifty-eight years old.

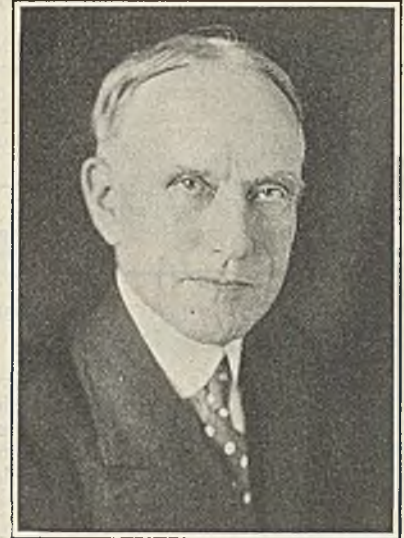
Since his election early in 1915 as successor to the late Thomas Lynch, Mr. Clingerman served continuously as president of the Frick company, of which he had been general superintendent since 1904.

Mr. Clingerman was one of the most popular men in the Pennsylvania coke fields.

Roads Ordering Coal Cars

The Illinois Central has placed orders for 4,500 cars, including 300 70-ton hoppers with the Pullman company, 700 50-ton hoppers with the Standard Steel Car Co. and 500 gondolas each with the American Car & Foundry Co. and the Illinois Car & Mfg. Co.

The Chicago & Illinois Midland has ordered 350 70-ton hoppers from the Pullman company.



James C. Tattersall

L. & N. to Link C. C. & O. With Coast Line

The Interstate Commerce Commission has granted the Louisville & Nashville R.R. privilege of leasing and building such road as is needed to connect its Cumberland Valley division in southeastern Kentucky to the Carolina, Clinchfield & Ohio R.R. in Virginia. The C. C. & O. is controlled jointly on a 999-year lease by the L. & N. and Atlantic Coast Line and is to be used in connecting the L. & N. to the A.C.L., in reaching the Carolinas and South Atlantic ports. Under the plan 13 miles of road will be built from Chevrolet, Ky., to Hagans, Va., and trackage rights for 18 miles will be leased over the Interstate Railroad Co. from Norton to Miller Yards, Va., which will bridge the two gaps.

Reduced Differential Urged In St. Louis District

The Interstate Commerce Commission has received a report from the examiner who investigated rates on coal to St. Louis from nearby Illinois mines recommending that these rates be reduced and that the rates to East St. Louis from the same points be increased.

The commission will determine what rates shall apply. From the Belleville group of mines to St. Louis, Mo., the rate is \$1.16 a ton and the recommendation is for a \$1.13 rate. From the same group of mines (which are within 71 miles of East St. Louis) the rates to East St. Louis, Ill., are 46 and 36c. The recommendation is that the differential in favor of East St. Louis be not more than 30c., or a minimum rate of 83c. if St. Louis gets the \$1.13 rate.

A reduction in rail freight rates on anthracite to Rochester, Syracuse and nearby territory takes effect on June 20. The rate on egg, stove and nut to Rochester is reduced 13c. per gross ton and will be \$3.02, while the rate on pea and smaller sizes is cut 12c. to \$2.65. The rate on larger sizes to Syracuse will be \$2.88 and on smaller sizes \$2.63.

Illinois Miners and Operators Organize To Begin Wage Negotiation Next Week; Ohio Union Spurns Competitive Scale

An important development in the suspension that has tied up production since April 1 in the Central Competitive Field, Iowa and the Southwest took place in Chicago June 14. Illinois operators and union miners held a joint conference in the Auditorium Hotel. The meeting was secretly called and mutually agreed on by both sides. No wage discussion took place but organization was effected and adjournment taken until next Tuesday, when the real task of trying to work out an agreement that will bring the suspension in Illinois to an end will be taken up. The discussions will not be hampered by reservations on either side.

Rice Miller, president of the Illinois Operators' Association, was elected chairman of the joint conference; Walter Nesbitt, secretary-treasurer of the Illinois miners' union, was chosen secretary, and C. E. McLaughlin of the Illinois operators, was named assistant secretary. The Lester strip mine at Herrin is working again with an output of 500 tons daily.

The first formal effort to bring together Ohio operators and miners since the coal strike started failed last Saturday in Cleveland. Rotary, Kiwanis and Lions clubs of Cambridge, a community whose sole industry is paralyzed by the strike, induced A. A. Augustus, of the Cambridge Collieries Co., and George M. Jones, of the Ohio Collieries Co., Toledo, to meet with Lee Hall, president, and G. W. Savage, secretary, of the Ohio district of the United Mine Workers, in Mr. Augustus' office in Cleveland.

They discussed the suggestions of the business men's clubs that a conference of Ohio operators and union officials be held in Columbus this week. Messrs. Hall and Savage declined to attend a meeting unless a scale would be discussed "on the basis of the Jacksonville scale" while the Cambridge operators refused to propose a meeting to discuss a scale except "on a basis of the 1917 scale as a maximum."

Following a meeting of the executive committee of the Ohio Coal Operators' Association, Inc., in Toledo on Friday, President S. H. Robbins issued a public statement proposing that the miners of Ohio form a union independent of the United Mine Workers.

Decries Union Policy

"The Ohio operators," said Mr. Robbins, "have no quarrel with the miners' union in Ohio, but with the policy of the international officers of that union which proposes to sacrifice the Ohio coal industry in order to maintain the unworkable Jacksonville scale in outlying districts they are distinctly at variance.

"It can only be a question of time before the operators of Ohio will be forced to take some action to start their properties into operation.

"To save Ohio the old-time union miners who know the facts should now insist that their officers agree to a con-

tinuously competitive wage scale, and if their officers refuse to do this, these good union miners should then create a union of their own—an Ohio union—and make a scale with the Ohio operators which would permit Ohio mines to operate in competition with these other fields."

Resumption at the Robyville mine of the New Pittsburgh Coal Co., a subsidiary of the Pittsburgh Coal Co., in the eastern Ohio field, last week was accompanied by some violence. The mine has been idle two years and recently was cleaned up and cutting started. Richard Winnacotta, mine boss, was beaten by a mob. Three union pickets were arrested at Adena shortly afterward charged with violating the village ordinance forbidding gatherings on streets and public places.

When the report was first circulated that the mine was about to start open shop a crowd of several hundred gathered and a group of men entering the mine was made the target of stones.

At least five small deep mines have started open shop in Ohio in the last two or three weeks. The Henrietta mine, at Brilliant, formerly the property of the old Consolidated Coal & Coke Co., now owned by the Henrietta Coal Co. of Pittsburgh, was started with non-union men at \$5 a day. Other recently open shop mines in operation are those of the Maple Grove Coal Co., at Adena; the Stellar Coal Mining Co., at Kenwood, near Adena; the Tabor Coal Co., at Cadiz, and the Quaker City Coal Co.'s Elden mine at Quaker City.

First Eviction Action in Ohio

The first effort of an Ohio company to evict a miner's family from a company owned house failed on Friday when a jury disagreed in the case of the Powhatan Mining Co., an F. E. Taplin interest of Cleveland, against Mike Kislow of Powhatan. The case was tried in a justice of the peace court and an effort will be made by the company to have it tried before a new jury. The union claimed that Kislow was still an employee of the company.

In Pennsylvania the Vesta Coal Co., subsidiary of the Jones & Laughlin Steel Corporation, with mines in Washington County, last week announced a new miners' wage scale carrying into effect its recent announcement that hereafter the mines will operate on an open-shop basis. The mines have been idle since April 1. Company officers said no definite date had been fixed for resumption of mining. The new scale was said to be about 20 per cent under the Jacksonville agreement.

State troopers were enforcing virtual martial law at New Kensington, Westmoreland County, after a period of near rioting. A proclamation signed by Sheriff William Feightner was posted forbidding persons to congregate in groups of more than two persons.

The trouble centered on efforts to bring in strike breakers to operate the Kinloch mine of the Valley Coal Co.



Rice Miller

President of the Illinois Operators' Association and chairman of the joint scale committee of Illinois miners and operators organized in Chicago this week.

Three negroes, alleged to have been imported to work in the mine, were met at the station by a crowd of almost 1,000 people but were rescued and placed in the jail for safety. Twelve deputies, in addition to state police, patrolled the streets and guarded the mine.

The production of eighteen open-shop mines of the Pittsburgh Coal Co. in the Pittsburgh district in May was 493,035 tons, an average of 19,721 tons a day, against 451,690 tons in April and 510,384 tons in March. The average number of men at work in May was 5,365, against 4,835 in April and 5,153 in March.

The wage scale conference between union operators and miners of the central Pennsylvania field scheduled for June 15 in Philadelphia has been postponed until June 21.

The situation in Pike County, Indiana, is more encouraging than it has been for several weeks. The Pike County Coal Corporation, which resumed operation before selling out its two mines, has been shipping about 3,000 tons of coal daily. The Central West Coal Co. is operating the Gladstone mine and the Enos Stripping Coal Co. is operating its holdings to full capacity.

The Dugger-Martin coal mine at Paxton, Ind., has signed a contract with the United Mine Workers and will begin hoisting coal shortly. The Jacksonville agreement formed the basis of settlement.

The Hymera Coal Mining Co. resumed operation June 13 at its Shelburn mine, producing 1,000 tons daily.

Efforts to reorganize locals of the United Mine Workers in the Alabama field are reported following a mass meeting at Carbon Hill, Walker County, where addresses were made by several persons purporting to be representatives of the union. The meeting was attended by some 150 mine workers employed in the vicinity. Reports indicated that only slight interest was manifested in the movement. Alabama mines have operated entirely on the open-shop basis since about 1922, when the local union organization was disbanded because of lack of support.

A.S.T.M. Holds Meeting On Coal Classification

A. C. Fieldner, superintendent of the Pittsburgh experiment station of the U. S. Bureau of Mines, was chosen chairman of the executive committee of the Sectional Committee on Coal Classification, under the sponsorship of the American Society for Testing Materials, at a meeting held at Philadelphia June 10. At that meeting and at the complimentary dinner given by the society on the previous evening, there were present representatives of the American Ceramic Society, American Electric Railway Association, American Gas Association, American Institute of Mining and Metallurgical Engineers, American Society of Mechanical Engineers, American Society for Testing Materials, American Wholesale Coal Association, Association of State Geologists, Coal Mining Institute of America, International Railway Fuel Association, National Retail Coal Merchants' Association, U. S. Bureau of Mines, U. S. Geological Survey and the Canadian Department of Mines, all of whom have representatives on the general sectional committee.

The Anthracite Operators' Conference, the American Mining Congress and the National Coal Association were represented, but not as participants, for these organizations, together with the Eastern States Blast Furnace and Coke Oven Association, the Blast Furnace and Coke Oven Association of the Chicago District and the National Electric Light Association, have not accepted invitations to appoint representatives on that committee. The American Iron and Steel Institute, the American Railway Association and the Federal Specifications Board declined to appoint representatives.

The National Coal Association was represented by J. W. Searles, president, Pennsylvania Coal & Coke Co., New York City; W. H. Cunningham, vice-president, West Virginia Southern Coal Co., Huntington, W. Va.; M. L. Gould, president, Linton Coal Co., Indianapolis, Ind., and A. P. Cameron, vice-president, Westmoreland Coal Co., Philadelphia, who was accompanied by G. B. Seyms, sales manager, and E. F. Wilson, chief chemist of that company. Executive Secretary Gandy also was present, as was L. C. Bosworth, engineer of the Madeira-Hill Co., Philadelphia, and W. L. Scott and H. H. Lineaweaver of the local association in the Broad Top district of Pennsylvania.

At the organization meeting it was decided that the executive committee should consist of seven members. Walter R. Addicks, senior vice-president, Consolidated Gas Co., of New York, was elected vice-chairman and Geo. H. Ashley, State Geologist of Pennsylvania, was elected a member of the executive committee. Of the other four places, one was assigned to the railroads, one to the anthracite industry, one to the bituminous industry and one to wholesalers. Dr. E. W. Parker was present as an onlooker for the Anthracite Operators' Conference, and Dr. H. M. Payne for the American Mining Congress.

It was explained by H. N. Eavenson, of Pittsburgh; Harold J. Rose, of the



Dr. Thomas S. Baker

Koppers Company; Dr. Fieldner and others that a studious effort will be made to find whether or not such existing facts can be correlated as will make a worth-while report on the scientific or geological classification and on a use classification of coal together with a survey of how the coal of the country is marketed. The work will be in the hands of subcommittees with the understanding that unless occasion should arise therefor there will not be another meeting of the main committee until some time next March. A number of participants expressed the thought that the contemplated studies and reports would be of mutual benefit to producers, distributors and consumers, although it was brought out by a question by C. P. White, of the Bureau of Mines, that for the most part the requests for the movement had come from consumers.

After the meeting the National's representatives conferred and by resolution to the board of directors recommended acceptance of the invitation to name representatives on the general sectional committee.

Outlay for Rail Betterments Heavy Last Year

Capital expenditures by the railroads of this country for new equipment and additions and betterments to property used in connection with the transportation service amounted to \$885,086,000 in 1926, according to complete reports for that year received by the Bureau of Railway Economics and submitted to the directors of the American Railway Association meeting recently in Atlantic City.

This was an increase of \$136,895,000 over similar expenditures made by the railroads in 1925 and an increase of \$10,343,000 over 1924, but was a decrease of \$174,063,000, compared with such expenditures in 1923. Of the total capital expenditures made by the railroads in 1926, \$513,164,000 was for roadway and structures and \$371,922,000 for new equipment. Expenditures for new equipment in 1926, while greater by \$33,808,000 than in 1925, were less than in 1923 and 1924.

Dr. Baker Sails to Arrange Second Coal Conference

Dr. Thomas S. Baker, president of Carnegie Institute of Technology, Pittsburgh, Pa., sailed from New York June 9 on the North German Lloyd liner *Columbus* for Bremen. He will be abroad for about two months making arrangements for the second International Conference on Bituminous Coal at Carnegie Tech in November, 1928. International interest in the first conference besides developments since then, Dr. Baker believes, will insure an even larger attendance of both foreign and American leaders in coal research.

While in Germany Dr. Baker will proceed to Heidelberg to visit Dr. Friedrich Bergius, inventor of the Bergin process of liquefying coal. At Essen and Mannheim he will inspect low-temperature carbonization plants. He also plans a call on Prof. Franz Fischer, director of the Institute of Coal Research, Mülheim-Ruhr. In France he will see General Georges Patart, of Paris, who discussed his methanol process at the last conference.

Dr. Baker also expects to confer in London with Dr. C. H. Lander, head of the Fuel Research Board of Great Britain. An important feature of Dr. Baker's tour will be the collection of data in connection with the establishment of a coal-research laboratory at Carnegie Tech, as published in *Coal Age*, April 14.

Inept Rescue Work Alleged In Japanese Mine Fire

Tokyo, Japan, May 7.—The recent fire at the Iwaki Colliery which resulted in suffocation of 136 miners has given rise to serious charges of incompetency in handling rescue and protective measures. The mine owners assert that the shaft was not sealed until eight hours after the outbreak of the fire, while officials of the Japan Miners' Association contend that sealing of the mine was done prematurely only two hours after the first alarm was raised. Mochizuki Genji, leader of the miners' organization, who was at the colliery at the time, declares he obtained corroborative evidence.

The Japanese Imperial family granted 1,000 yen to the families of each of the 136 miners who lost their lives in the mine at this fire.

Retailers to Meet at Falls

The New York State Coal Merchants' Association will hold its annual meeting next September at Niagara Falls, N. Y., and several hundred delegates and their wives are expected to attend. Arrangements for the place of meeting were made a few days ago on a visit to the Falls by three officers of the association: Major C. B. Staats, of Albany, president; C. A. Ellwood, Rochester, first vice-president, and G. W. F. Woodside, secretary. For several years the association has held its conventions in the eastern part of the state and the attendance from western New York has not been as large as desired.

News Items From Field and Trade



ALABAMA

Brookside-Pratt Enlarges Plant. — The Brookside-Pratt Mining Co., which several months ago acquired the properties of the New River Coal Co., including an active operation at Turner, Marion County, is building a washery and installing concentrating and preparation equipment to handle a largely increased output. Production now is at the rate of 500 tons per day. The company owns a large acreage of virgin Black Creek coal. A large camp has been constructed and church and school facilities provided for the employees. The mine is served by a branch from the Illinois Central R.R. J. M. Powell is superintendent of the Turner operations. General offices of the company are in Birmingham. A. R. Long is president; H. P. Culligan, general superintendent, and Albert Allison, secretary-treasurer.

To Develop Coal Lands?—The proceeds from the sale of \$4,000,000 securities by the Gulf States Steel Co., Birmingham, will be expended in improvements and expansion at present operations and possibly in the development of a large body of coal lands acquired by the corporation in Tuscaloosa County some time ago. Coal mines are now operated by the company at Altoona, Blount County, and at Virginia and Sayre, Jefferson County, with a byproduct plant, furnaces, steel and bar mills and wire plant at Alabama City, and also ore mines at Shannon, Jefferson County. A large sum will be spent in electrification work also, it is announced. L. E. Geohegan is operating vice-president of the corporation.

Carbon Hill Output Increasing. — Moss & McCormack recently struck the coal in their new slopes near Carbon Hill and are now getting a steadily increasing output. A modern washery and preparation plant at this place takes care of the output from the new mines and also from the two drift mines operated at Howard. A modern village has been built for the employees of the company, providing all the conveniences necessary for their comfort and enjoyment.

ILLINOIS

Rescue Station for Belleville.—Fifteen thousand dollars will be available after July 1 for the construction of a mine-rescue station at Belleville. Appropriation of this sum received final approval when Governor Len Small signed Representative E. Petri's bill providing for turning over this amount to the State Department of Mines and

Minerals. Erection of this station will relieve the situation that has prevailed for some time in the coal mining region about Belleville, where a district in which several thousand miners were employed was without rescue facilities in case of mine disaster. The nearest stations at present time are at Springfield and Duquoin.

INDIANA

Walter G. Holt, Indianapolis insurance man, has been named receiver for the Rader Coal Co., 407 Traction Terminal Building, Indianapolis. The receiver was asked by James H. Persons,



Courtesy Halsey, Stuart & Co.

How Power Production Is Regulated At a German Mine

Accurate and safe regulation of the energy supplied to the Hagenbeck mine of the Stinnes interests in the Ruhr, is easily obtained by these control devices. The attendant has a visual knowledge of the functioning of each machine by observing the indicating apparatus conveniently located on the wall.

president of the company. Mr. Persons alleged a receiver should be named to conserve the assets of the company for the benefit of the creditors.

KENTUCKY

Coal Fields Flooded.—Flood conditions in the Hazard field were bad last week. On June 1 the Hazard Coal Operators Exchange chartered an airplane for a survey of the situation about Hazard, Jackson, Roxana, Typo, Blackey, Chavies and other towns which are flood bound. Some of the branch lines of the Louisville & Nashville in the coal fields probably will be unable to handle coal for some time as a result of wrecked bridges and washouts. Several deaths were reported as a result of torrents sweeping down

mountain streams, washing away homes, mine buildings, etc., at some points. Information has been meager as a result of communication being poor. Some trouble is reported also in the Big Sandy valley, on the other side of the mountain range. High water was reported about McRoberts, Jenkins, Fleming and other towns.

An involuntary petition in bankruptcy has been filed at Covington, against the Layne Coal Co., producers, at Harold, Floyd County, by eastern Kentucky jobbing houses. It is charged that the company has been insolvent over the past four months and has assigned properties to others, thereby preferring them as creditors.

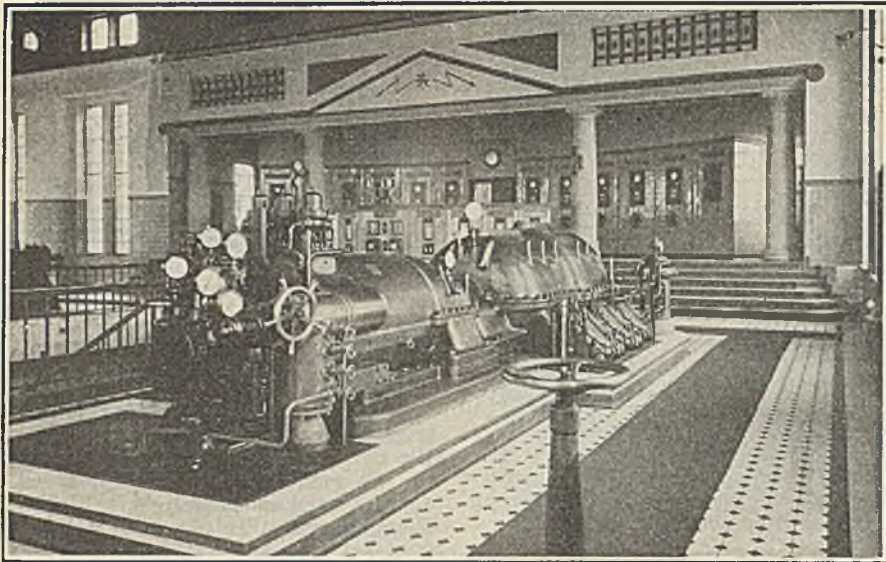
Appellate Court Affirms Judgment.—Before Judges Hicks, Moorman, Dennison and Knappen, constituting the U. S. Appellate Court for the central district, the judgment granted by Judge A. M. J. Cochran of the Eastern District of Kentucky, in favor of the Kentucky River Coal Corporation restraining the Elkhorn Hazard Coal Co. from mining or removing coal from the Williams tract in Letcher County was affirmed. The court also refused to dismiss the appeal of the Fordson Coal Co. against which Sheriff W. J. Maggard of Leslie County obtained judgment for a large amount said to be due as taxes. The county authorities, however, were allowed to file an amended and perfected statement of the evidence.

MISSOURI

Huntington Stages Comeback.—H. M. Bowden, one of the Arkansas delegates attending the United Brotherhood of Miners' convention at Macon, said the Central Coal & Coke Co. had subleased to Graham & Hill its mining properties near Huntington, and that developments had been started that would eventually give employment to 400 miners. Huntington, as a coal town, he said, had been hard hit by the mine suspension which began in 1923, a year before the 1924 scale stopped the industry in the Western coal mines, but that new life would now come to Huntington. Bowden, who is district secretary of the United Brotherhood, says the organization has been steadily gaining new members in Arkansas and that the outlook is good for a general resumption of mining in that state.

OHIO

Steps are being taken by the Cincinnati Coal Exchange to utilize the annual picnic for the purpose of honoring Fred Legg, who was elected president



Courtesy Halsey, Stuart & Co.

Turbo-Compressor at Stinnes Mine, Muelheim, Germany

Stinnes power plants not only generate electrical energy but they also produce compressed air for the many devices using energy in this form. The above photograph shows a turbo-compressor in a power house at one of the Muelheim mines.

of the American Wholesale Coal Association at Toronto, and Harold Holmyard, who was elected a director of this national body. Both have been ardent in their support of the local exchange. The picnic will likely be held in July, but, as one of the members put it, other conventions may bring forth honors for other Cincinnati coal men and it is best to wait for the end of the convention month before embarking on the picnic so that all honors can be taken care of at the same time.

The Columbus Board of Purchase will open bids June 23 for 7,000 tons of nut, pea and slack coal for the municipal electric plant; 4,000 tons of nut, pea and slack coal for the Water Works Department and 1,200 tons of nut, pea and slack and 500 tons of 1-in. coal for the garbage disposal plant. These bids are designed to provide coal for the last six months in 1927. H. C. Cain is secretary of the board.

The Board of Trustees of the Ohio Soldiers' and Sailors' Orphans' Home at Xenia will open bids June 18 for 6,000 tons of either mine-run or screened coal to be delivered on the B. & O. siding. Analysis of each sample of coal submitted by bidders will be made. The board rejected bids opened June 4.

PENNSYLVANIA

At the final organization meeting of local unions of Prospect and Henry collieries of the Lehigh Valley Coal Co. held recently in the auditorium of Plains Memorial High School, Edward Hogan, of Scranton, was elected chairman of the merged locals by an overwhelming vote. The two local unions had been given permission by Rinaldo Cappellini, president of District No. 1, United Mine Workers, to consolidate and will shortly be given a new charter by the district president.

The Union Coal Co. has begun operation on a non-union basis, according to R. W. Winn, superintendent. Winn

said that in all probability all mines in the Paris field will be operating on a non-union basis soon. The Paris-Purity Coal Co. also is working on a non-union basis now, Winn said. The Semi-Anthracite Coal Co. is paying the 1917 wage scale. The mines in the Paris field have been closed down since March 1.

Summer Course Opens Soon.—Pennsylvania State College has announced the opening of the annual summer short course for practical coal miners of Pennsylvania on June 20, to continue to July 23. Dean E. A. Holbrook of the school of mines and metallurgy will be in charge. It is a free course to young men having had at least one year's practical work in or around a mine. Its object is to prepare young men for the State Department of Mines examination for fireboss and foreman. If these examinations have already been passed, an advanced course has been arranged to fit such men for higher positions. The only expense is the cost of living in the college community. The U. S. Bureau of Mines safety car will be lent to the college and will be located conveniently for instruction in mine safety work. Prof. W. G. Duncan, director of mining extension for the college, will be the instructor.

The Lehigh Valley Coal Co. has declared a dividend of \$2, payable July 1 to stock of record June 16.

Cosgrove-Meehan Earns More.—Cosgrove-Meehan Coal Corporation preliminary figures for the four months ended April 30 show earnings after all charges but before federal income taxes of \$212,520, equal to over 87c. per share on the 237,939 shares of outstanding common stock of no par value. For the same period in 1926 earnings were \$163,955, or about 68c. per share. Sales for the four months of 1927 were 1,173,932 tons, against 869,109 tons for the same period in the preceding year.

To Reopen Eureka Mine.—The Pittsburgh Coal Co. announced late last

week that it would reopen its Eureka mine, at Smithton. With this mine in operation the company will have 18 plants working open shop. It was recently stated that the Essen mine would be closed because of the coal being worked out.

Conlon Leases Plains Colliery.—John Conlon, an independent anthracite operator, has leased from Madeira, Hill & Co. the Plains colliery, near Pittston. As soon as a tunnel can be driven between Mr. Conlon's working on an adjoining property and the Madeira-Hill plant Mr. Conlon will abandon his present breaker and run the coal from both mines through the Plains breaker, which is comparatively new.

Urges Municipal Coke Plant.—A commission of which Samuel Rea, formerly president of the Pennsylvania R.R., is a member has recommended that the City of Philadelphia install a byproduct coke plant to augment the city's supply of gas and to reduce the cost to consumers through the sale of coke. The plan has yet to be approved by the City Council but is favored by many members and the mayor.

UTAH

To Eliminate Smoke from Coal.—The National Devonian Process, Inc., a company formed in Salt Lake City recently to take the smoke out of coal, has been granted a permit by the Utah State Securities Commission to offer 200,000 shares of preferred stock for sale at par of 25c. and 66,670 shares of common stock at par of 25c. The president of the company is E. S. Woodruff, member of the retail coal firm of Woodruff & Margetts.

VIRGINIA

Barton County Leads in Output.—Ray County ranks first in number of men employed in mining coal, according to advance sheets from the annual report of the State Bureau of Mines. In tonnage and value of coal produced Ray County is second to Barton County. Lafayette County is second in the number of men employed and third in tonnage and value. Ray County in 1926 produced 462,075 tons; Barton County, 1,120,048 tons, and Lafayette County, 359,948 tons.

Extensive Development Planned.—More than \$1,000,000 will be spent in Montgomery and Pulaski counties in the development of coal properties this year. It has been announced by William Boncer, mine inspector for the State Department of Labor and Industry. The development will be along the New River, much of which work is now under way.

WEST VIRGINIA

Paisleys Plan Big Development.—One of the biggest developments in Monongalia County during the current summer is the announcement by Stephen Arkwright, general manager of the James A. Paisley interests, that the Connellsville By-Product Co. will open 1,000 acres of coal in the Robinson's Run district at Madsville. The

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plans call for development of the Jamison, Garlow and Lazelle tracts, necessitating the erection of a new tippie, the rebuilding of about a mile of tramway and the installation of modern mining machinery. While the Lazelle property has been in the hands of the Paisley interests for several years the recent purchase of the Jamison and Garlow tracts makes possible the development of the entire property through one mine. Having that in mind, the company has purchased the Old Mutual Coal Co. property, together with a tippie outfit on the north side of the Monongahela Ry. tracks and a short distance from the Monongahela River, so that water transportation can be resorted to at any time. The mine and tippie of the old Mutual Coal Co. are now being used, with an average output of from 400 to 500 tons of coal a day, but with the new development it is planned to construct a plant with a daily capacity of approximately 2,500 tons.

Byrne Mine to Boost Output.—Extensive improvements are to be made at the Byrne mine of the Morgantown Gas Coal Co. at Byrne on the Monongahela Ry. It is proposed to double the present capacity of the mine. The mine will be equipped with a new all-steel tippie and new mining machinery. Loading equipment will be replaced and other steps taken to make the mine one of the best equipped in the Monongalia field. New miners' houses will be erected at Murray, just across the river where the Murray mine is operated by the same company. Once improvements are completed the Byrne mine will have an output of about 2,000 tons daily.

Davy Mine Cleaned Up.—The Warrior Coal Co. mine at Davy, damaged by an explosion recently, has been cleared and now is ready for operation, it has been announced by officials, who say but little damage was done to the mine.

The Crystal Block Mining Co., of which J. M. Tulley is general manager, will begin construction soon at Lobata a new tippie with a daily capacity of 2,000 tons of coal per 8 hours. The new building will cost \$25,000 and \$30,000 worth of new equipment will be installed.

Improvements in Scotts Run.—At the No. 2 mine of Pursglove Coal Mining Co., in Scotts Run, preparations are being made for a rotary dump and plans are matured for the construction of a new tippie on the site of the present one, some time next year. It is planned to have the rotary dump in operation in August. The dump will make it possible to speed up the handling of coal from the mine cars into the railroad hoppers. At the Nos. 1, 3 and 4 plants minor repairs are being made so that the properties will be in first-class condition when the demand for winter coal begins to send the plants up to capacity tonnage.

Cleaning Up Fire-Swept Plant.—At the Connellsville By-Product mine, Monongalia County, which was swept by a disastrous fire last January, work is progressing rapidly in cleaning up the big plant for operation. No date has been set for full resumption. Tracks

have been repaired and the tippie put in shape. In recent weeks several new houses have been built and everything is virtually completed for the resumption at the plant, which under normal conditions produces more coal than any other single operation in the district.

At the Gilbert-Davis holdings as well as at the Continental mine of the Showalter interests at Cassville, Monongalia County, minor improvements have been made.

CANADA

A picture of the Alberta coal fields being turned into oil and soon piped all the way to Toronto and the East was drawn by Prof. J. C. McLennan at the luncheon of the Canadian Manufacturers' Association.

Besco Reorganization Arranged.—Reorganization of the British Empire Steel Corporation will involve the issue of one million shares of stock without par value which will take the place of the outstanding share capital, the latter to be "extinguished and cancelled," according to a "scheme of arrangement" approved by the shareholders of the corporation and by the board of directors at a recent meeting, and filed in the Supreme Court of Nova Scotia. Roy M. Wolvin, president; J. H. McLurg, vice-president; Sir Newton Moore, member of the board of directors, and F. H. Markey, Montreal, solicitor for the Corporation, were in Halifax last week in connection with this and other matters affecting the industry. According to the "scheme of arrangement," under which heading the plan was filed, the holders of 7 per cent

first preference stock, will receive three and a half shares of the new no par value stock for each share held; for one share of 7 per cent second preference stock 1-10 share of new stock will be given and for one share of common stock, 1-30 share new no par value stock.

Output Up Slightly in March.—The output of coal from Canadian mines during March was 1 per cent more than the production for the preceding month and 9 per cent greater than the average for March in the past five years. The figures were 1,401,278 tons in March as against 1,377,173 tons in February, and an average of 1,276,752 tons during the five preceding years. Coal imports in March amounted to 1,609,410 tons as compared with 1,307,588 tons in February and the five-year average for the month of 1,475,872 tons. Exports of Canadian coal in March were 110,905 tons; February, 88,893 tons.

Alberta coal interests are hopeful that a way will soon be found by which that fuel will be made available for Eastern Canada. High freight rates have thus far stood in the way of extending the market for this fuel. Howard Stutchbury, trade commissioner for Alberta, who was in Toronto a few days ago, said that the national committee studying the coal question as it affects Ontario will hold a meeting before the whole subject is taken up with the Dominion Railway Board this month. He declared: "If our coal bill of about \$115,000,000 were spent at home it would make a lot of difference both East and West, and the governments of Ontario and Alberta realize the importance of the situation."

New Trends in Business and Industry Presage Need of Training for Efficient Work

"There are many new trends in business and industry on the horizon today some of which seem to present an unbalanced picture," according to a survey of economic trends in business just released by the National Industrial Conference Board, New York City. "There is a marked lack of balance in the scale of well-being and monetary return on investment and labor between the giant industries of agriculture and manufacturing which may or may not result in a fundamental realignment in the nation's basic economic life. In the bituminous coal industries more mines are being operated than can be operated at a profit, and in the anthracite fields conditions lack healthy stability. In the building industry, due to a war-time void in construction and the demands for better housing that followed the path of larger earnings and high standards of living after the war, there is a great danger of over-building and especially of unproductive building because of its high cost, largely due to wage rates which were at the end of 1926 almost double those prevail-

ing in manufacturing and fully 85 per cent higher than those in railroad transportation.

"The question before the nation today is 'Does this apparent economic instability present a menacing condition which concerns the whole national life in the near future?' One answer to this is in a better type of business and industrial management.

"The problem of management in the years to come rests on the adequate training of the present subordinates, both for effective grappling with the increasingly growing complexity of industry's problems and for shouldering the chief burden of responsibility.

"Nor is the training problem confined solely to executive and foreman training. There can be no question that the more than forty-three million persons now engaged in gainful occupations need some kind of practical training, no matter how low the grade of service, if they are to perform their work efficiently and economically, and if at least some of them are to fit themselves for a higher plane of usefulness."

Among the Coal Men

The West Virginia Coal & Coke Co. has appointed J. W. Bischoff superintendent in charge of all operations of the company, with headquarters at Omar in Logan County. W. G. Whitman, who has been division superintendent in charge of the Splint division at Omar, has succeeded Mr. Bischoff in charge of the Elkins division John T. Fallon, who has been for some time superintendent at Coalton, has been transferred to Omar as superintendent, and A. R. Hewitt, formerly general mine foreman and assistant superintendent of the Norton plant, has been placed in charge of both the Norton and Coalton plants as superintendent. Mr. Bischoff was vice-president and general manager of the company at the time of the consolidation of the West Virginia Coal & Coke Co. and the Main Island Creek Coal Co. and the Huthinson interests in Logan county in 1924. He was at one time president of the West Virginia Mining Institute and an active figure in the councils of the Northern West Virginia Coal Operators' Association during the existence of that body.

Percy Kuhlman, formerly with the Iroquois Coal Co., Chicago, now general sales manager of the Groveland Mining Co., Chicago, which has taken over the Iroquois holdings, was a visitor in Louisville recently. Accompanied by George Ford, vice-president, he visited R. W. Hunter, vice-president in charge of the Louisville office, and made an inspection of eastern Kentucky operations.

Joseph E. Johnson, secretary of the Hazard Coal Operators Exchange, from Lexington, Ky., has been announced as one of the directors of the newly formed Kentucky Chamber of Commerce, which has been in process of organization for some months. The body will meet in Louisville on June 20 and complete its organization. The coal industry will be well represented in the chamber.

Fred M. Sackett, U. S. Senator from Kentucky, who is connected with the Sackett-Speed coal interests of Louisville, has been named chairman of the flood relief committee of the state. The committee is raising \$250,000 for the benefit of the flood sufferers, many of whom are still in the open or quartered in tents since their homes were washed away or destroyed.

Fred J. Waldo, member of the coal, coke and pig iron firm of Waldo, Egbert & Maltby, Buffalo, was elected a director of the American Wholesale Coal Association at the late convention in Toronto. Mr. Waldo's concern has been quite prominent in the trade and is successor to the firm of Waldo, Egbert & McClain, which was established a number of years ago.

A. C. Lewis of Benton, Ill., has been appointed general counsel for the United Mine Workers in Illinois. He succeeds A. W. Kerr, who died May 30. Mr. Lewis formerly was general attorney for the Franklin County

miners' organization. Roy C. Martin, State's Attorney of Franklin County, will succeed Lewis as counsel for the Franklin County miners.



Major W. C. Hepburn

Major W. Clay Hepburn, D.S.O., general colliery manager, Pearson & Dorman Long Co., with offices at Canterbury and London, England, visited the *Coal Age* office, June 7. He arrived in New York May 3, and since that time has visited Pennsylvania, West Virginia, Illinois, Alabama and Minnesota. He has recently returned to Great Britain. His judgment is that though many useful suggestions may be obtained in the United States, the differences between laws and conditions here and in his country make a wholesale transference of practices improbable.

J. D. Martin, general superintendent of coal mines, Virginia Iron, Coal & Coke Co., Roanoke, Va., was elected president of the Virginia Coal Operators' Association at the recent annual meeting of the organization.



J. D. Martin

Commodore H. B. Alderman, of the Waverly Beach Yacht Club, who also is an officer of the Seneca Coal Mining Co., has returned to business at Buffalo after a cruise in Southern waters. He was the guest of Commodore C. A. Gould, 2d, of the New York Yacht Club.

W. H. Shanks, Kentucky State Auditor, who is seeking the Democratic nomination for Governor, announces in his platform that he is opposed to any coal tonnage tax and discusses problems of the coal operators with judgment showing a good knowledge of the industry.

O. S. Newton, general manager of the Sunday Creek Coal Co., Columbus, Ohio, who submitted to an operation for appendicitis at Mercy Hospital, Columbus, several weeks ago, is slowly recovering and is believed to be out of danger.

Obituary

William P. Smith, who was for a number of years engaged in the wholesale coal trade at Buffalo, died in the General Hospital at Jamestown, N. Y., recently as the result of injuries sustained a week earlier when he fell down a stairway at his home in that city. He had been general agent of the Jamestown, Westfield & Northwestern R.R. for about two years and from 1910 to 1913 he was general freight and passenger agent of the former Jamestown, Chautauqua & Lake Erie R.R. He was born in Peterboro, Ont., Oct. 6, 1877, and his first experience in traffic matters was with the former Northern Steamship Co. at Buffalo. In 1913 he went to Texas and was in charge of accounting on one of the railroads there. In 1916 he came to Buffalo and was sales representative of W. A. Stone & Co., coal shippers of Uniontown, Pa. Afterward he was head of the W. P. Smith Coal Sales Co. He was vice-president of the Jamestown Traffic Club.

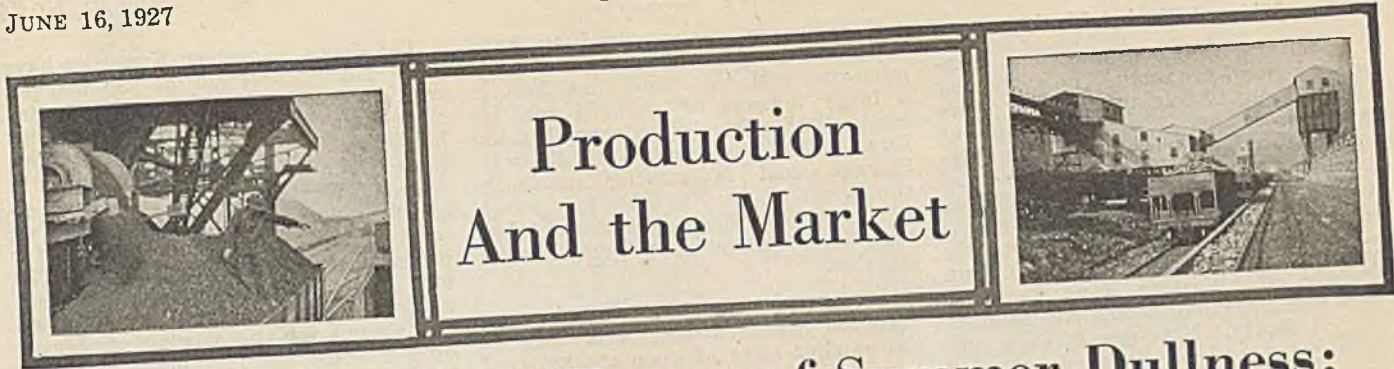
John A. McGhee, aged 61, secretary of the Royal Collieries Co., Jackson, Ohio, died at his home in that place on June 8. He was prominent socially and interested in mining property in the Hocking Valley. His brother, Joseph McGhee, was formerly Attorney General for the State of Ohio. Death was due to heart disease.

R. M. Brohard, 35 years of age, manager of the Imperial Elkhorn Coal Co., of Sergeant, Ky., died at a hospital in Coeburn, Va., on June 7, of injuries suffered when his automobile turned over while he was making a trip from Lexington, Ky., to the mines at Sergeant.

David Smith, 61 years old, the first coal operator in the Fulton field, recently died at Fulton, Mo.

New Companies

The Canadian Carbonized Coals, Ltd., of Toronto, Ont., has been incorporated to operate coal properties and manufacture coke and byproducts, with a capital of \$3,000,000 by Arthur W. Holmsted, Leonard V. Sutton and Aileena Ritchie.



Coal Markets in Throes of Summer Dullness; Increasing Inquiry Raises Hope

Developments in the bituminous coal markets of the country last week were largely governed by seasonal influences. Characteristic summer dullness pervades most of the market centers with relatively little variation in demand or price. In some quarters there are hopes of a revival with the approaching end of the half year. An increased volume of inquiry is the basis for this expectation.

The psychological effect of the lake cargo decision has been discounted to a large extent, as the 20c. reduction in rates on shipments from the Pittsburgh, Ohio No. 8 and Cambridge districts to lower lake ports does not become effective until Aug. 10. Operators of southwest Virginia, West Virginia, eastern Kentucky and Tennessee have asked the aid of railroads serving the region south of the Ohio in overcoming the effect of the decision. The rail executives declared themselves in sympathy with the Southern producers and promised to co-operate to bring about an equalization of the rates.

Midwest Market Drags

The situation in the Middle West is markedly quiet. Shipments from the mines in Illinois and Indiana are very light with consumers still resistant to offers from operations that have made agreements with the union. Not much is doing in either steam or domestic grades. Practically all the unbilled steam sizes have been cleaned up in

the southern Illinois mining fields it is true, but lump and egg are still plentiful.

Exceptional activity at the Head of the Lakes is shown by a steady increase in shipments from the docks. Industrial contracting is lively and independent iron-mining companies are planning increased operation. Receipts by lake up to May 31 were more than twice as large as at the same time last year. A few shaft mines have reopened in the Southwest in response to better demand for steam coals. This has not been accompanied by any appreciable strength in prices, however.

Heavy Movement to Lakes

There is a tendency to softness in screenings, both low and high volatile, in the Cincinnati market. The only strength is in prepared sizes, with mine-run showing little change. Business is on a fairly even tenor following the clearing up of the smoke raised by the lake rate decision. Western Kentucky screenings show a firmer tendency, some shippers shading mine-run and steam nut. The floods in eastern Kentucky, which curtailed output to a marked extent, caused a stiffening in screenings and block, with other sizes unchanged. Movement to the lakes is still heavy despite the slowing up caused by high water. Dumpings at lower ports for the week ended 7 a.m. June 13 were 1,179,359 net tons of cargo and 49,988 tons of vessel fuel.

Trade in Eastern markets shows no perceptible improvement.

Coal Age Index of spot bituminous prices as of June 13 was 154, with the corresponding average price \$1.86. This was an advance of 1 point and 1c. over the week before.

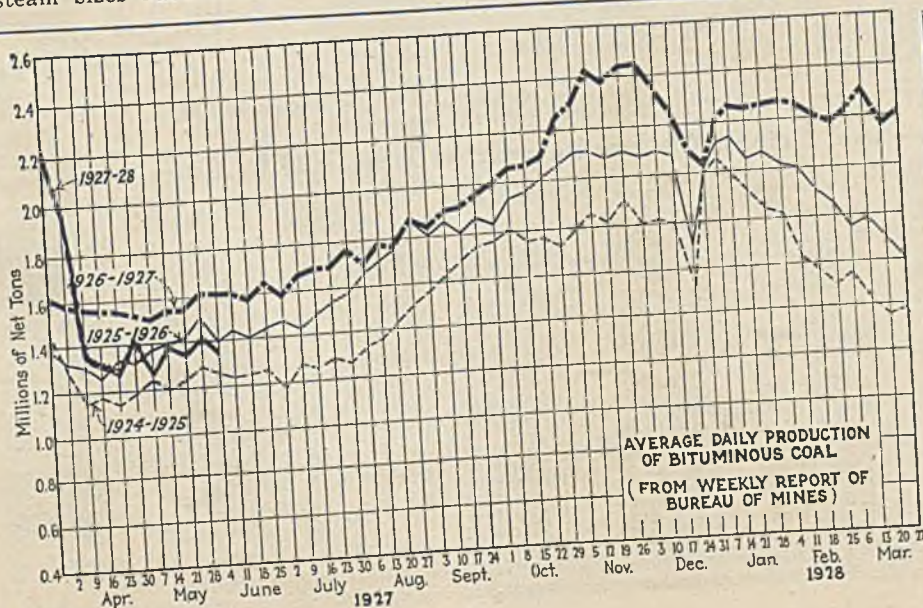
Bituminous coal output during the week ended June 4 was estimated by the U. S. Bureau of Mines at 7,372,000 net tons. The decline of 1,104,000 tons from the preceding week was due to the observance of Memorial Day.

There has been comparatively no change in the labor situation in the fields affected by the suspension. A few mines in Indiana and Ohio have signed up with the union, but their influence on the market as a whole is negligible. The resumption of negotiations by central Pennsylvania miners and operators scheduled for June 15 at Philadelphia has been postponed until June 21 at the request of the miners.

Anthracite Trade Flops

Anthracite buying has slumped. The expected summer buying movement has not begun yet. The new scheme of advancing prices every other month is blamed in some quarters for deferred activity. The mines are working only half time and many companies are storing virtually all sizes. The slackened demand is affecting the steam sizes.

The Connellsville beehive coke market is dull and featureless. Prices are unchanged.



Estimates of Production

(Net Tons)		
BITUMINOUS		
	1926	1927
May 21	9,282,000	8,273,000
May 28 (a)	9,683,000	8,476,000
June 4 (b)	8,660,000	7,372,000
Daily average	1,604,000	1,365,000
Cal. yr. to date (c) ..	231,584,000	245,333,000
Daily av. to date	1,764,000	1,868,000
ANTHRACITE		
May 21	1,750,000	1,970,000
May 28 (a)	2,089,000	1,844,000
June 4 (b)	1,678,000	1,572,000
Cal. yr. to date (c) ..	28,973,000	36,719,000
BEEHIVE COKE		
May 21	211,000	154,000
May 28 (a)	194,000	125,000
June 4 (b)	195,000	149,000
Cal. yr. to date (c) ..	5,923,000	3,940,000

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

Midwest Market Weak

Conditions in the Midwestern market in general are weak. The movement of coal from Illinois and Indiana mines is extremely light. Consumers continue to reject offers from operations producing under union auspices. "No bills" of prepared sizes are still plentiful on track at Illinois mines.

West Virginia smokeless is in only moderate demand, with mine-run slightly off. Western Kentucky shippers find the going rough and slack is offered freely. Mine-run is easy and there is a tendency to shade circular prices. Eastern high-volatile coals are exceedingly quiet, though high water in the Hazard field has practically suspended operations and some producers have temporarily withdrawn all prices.

Demand for anthracite has slowed down and the call for coke is not out of the ordinary.

In the southern Illinois mining field domestic lump is still plentiful with the other sizes well cleaned up. Sev-

eral railroads are reported to have bought heavily of western Kentucky mine-run, with the result that there is a large tonnage of railroad fuel on track. Similar conditions prevail in the Duquoin and Jackson County districts. Storage coal is moving unusually slowly out of the Mt. Olive field, much to the disappointment of those who had early anticipation of a good market ere this.

Speculators Guess Wrong

In the Standard field practically all the smaller sizes of open market coal have moved out. A few cars of egg and plenty of lump coal are on hand, however. A few mines, too, have railroad coal on wheels in addition to heavy stocks stored for speculative purposes. Prices are unchanged. Warm weather at St. Louis has eased the domestic situation except for a moderate movement of storage coal under pressure from dealers. Carload steam trade is sluggish. Country business, both industrial and domestic, is quiet.

The floods in eastern Kentucky have shut Hazard coal out of the market, with a resultant stiffening in prices for screenings and block, other quotations being unchanged. The affected regions, however, are gradually returning to normal. Western Kentucky screenings are firm with a tendency to shade on mine-run and steam nut. Orders for prepared sizes are disappointing. The lake cargo decision was anything but pleasing to eastern Kentucky shippers, but, except for the slowing up caused by the flood, the movement continues heavy.

Trade Lively in Northwest

Trade is exceptionally active at the Head of the Lakes. Industrials are contracting freely and increased operations planned by independent iron-mining companies are boosting business from this source. The fact that prices are slightly higher than last year does not seem to be an obstacle to placing business. In bidding for municipal coal orders list prices are being closely

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

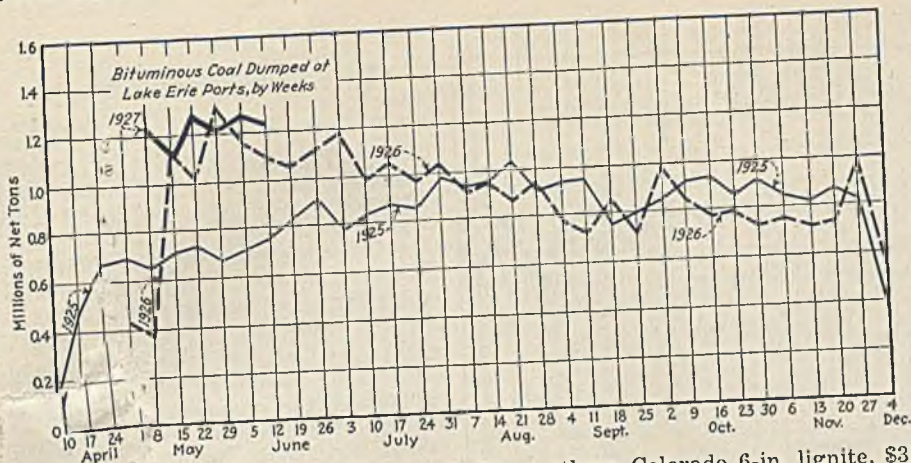
Table with columns for Market Quoted, June 14, 1926, May 30, 1927, June 6, 1927, June 13, 1927, and Midwest/Market Quoted, June 14, 1926, May 30, 1927, June 6, 1927, June 13, 1927. Rows include Low-Volatile, Eastern (Smokeless lump, mine-run, screenings, etc.) and High-Volatile, Eastern (Pool 54-64, Pittsburgh, Kanawha, etc.).

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

Table with columns for Market Quoted, Freight Rates, June 14, 1926 (Independent, Company), June 6, 1927 (Independent, Company), and June 13, 1927 (Independent, Company). Rows include Broken, Egg, Stove, Chestnut, Pea, Buckwheat, Rice, Barley, Birdseye.

*Net tons, f.o.b. mines. †Advances over previous week shown in heavy type; declines in italics. ‡Domestic buckwheat (D. L. & W.), \$3.50

JUNE 16, 1927



maintained. There is little free coal on the docks. Hard-coal demand is disappointing. Quotations are firm and unchanged. Shipments from the docks during the week totaled 15,117 cars, compared with 13,218 in April and 11,806 cars in May last year.

Receipts of bituminous in May were 2,267,056 tons; anthracite, 174,596 tons. This brings soft-coal receipts for the season up to May 31 to 3,305,358 tons, an increase of 1,613,176 tons over last year. Hard-coal receipts for the same period this year were 219,495 tons, an increase of 108,958 tons. During the last week 49 cargoes, including 1 of anthracite, were unloaded at the docks, and 28, including 2 of anthracite, were reported en route.

At Milwaukee the market is featureless, as is usual in June, with retailers trying to coax consumers to fill their bins for another winter season. Prices are steady. Dock managers, however, are busy keeping pace with the inflow of coal by lake. At the Twin Cities railroads and utilities are placing a moderate amount of business. Contracting is in comparatively small units, but the total is fair. Retailers are inclined to await further developments in crop and business prospects.

Production Gains in Southwest

A few of the Kansas deep-shaft mines have opened, prompted by a good demand for steam coal. The top price for shaft lump is \$4, a drop of 25¢ from pre-strike quotations. Screenings are \$2.75. Shovel lump ranges down to \$3.25; screenings, and crushed mine-run, \$2.60@2.65. The Arkansas field also reports heavier output with a show of interest in storage buying. Several semi-anthracite mines now operating offer lump at \$4 and slack at \$2.25. Paris and Bernice mines are running too, but the Spadra anthracite field is still down. Kansas City retailers are not storing coal, though some country dealers are beginning to take delivery on the Arkansas product.

Extremely warm weather has knocked the bottom out of the Colorado market for domestic lump and nut. Hot winds are playing havoc with crops, which is reflected in waning demand. Demand continues fairly good for steam grades, including Rock Springs-Kemmerer product. Colorado mines are running only two days a week. June 1 prices are: Walsenburg, Canon City and Crested Butte lump, \$4.50; nut, \$4.25; washed chestnut, \$3; Trinidad coking lump and nut, \$3.25; chestnut,

\$3; northern Colorado 6-in. lignite, \$3; Louisville 4-in. lump, \$4; Crested Butte 5x2 and 2x1 anthracite, \$8.75; 2x2 egg, \$8; chestnut, \$5.25; Rock Springs-Kemmerer lump, \$4.25; nut, \$4. Steam coals range from \$1.25 to \$1.40.

Domestic Demand at Low Ebb

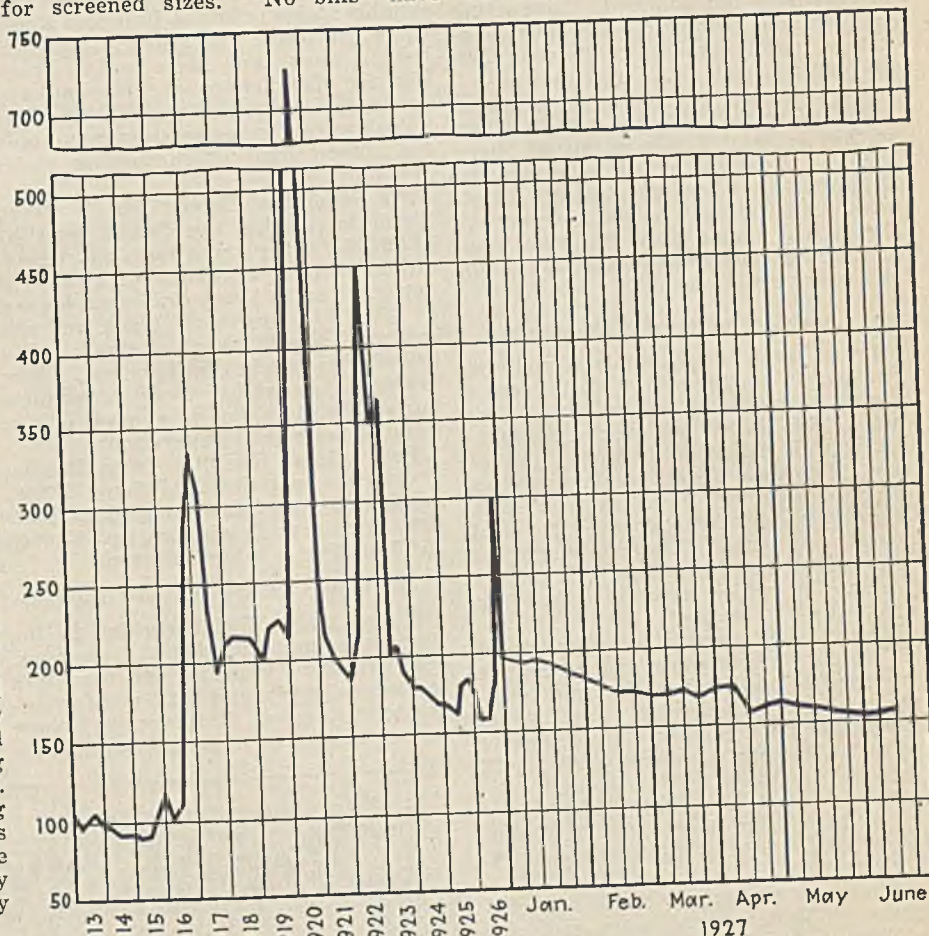
Domestic demand has reached the low point of the year in Utah, but even so the mines continue to dump slack on the ground to take care of orders for screened sizes. "No bills" have

shrunk to 503 with the mines averaging slightly less than half time. Prices are steady.

The Cincinnati market quickly recovered from the psychological setback of the lake rate decision. Business jogged along in its usual channels last week, with prices perhaps a trifle stronger. Smokeless tonnage is said to be sold up for the month and bookings are now being made for July. The strength is in large sizes; mine-run is unchanged and screenings are weaker. West Virginia high-volatile block and egg are gaining favor; mine-run and screenings are soft.

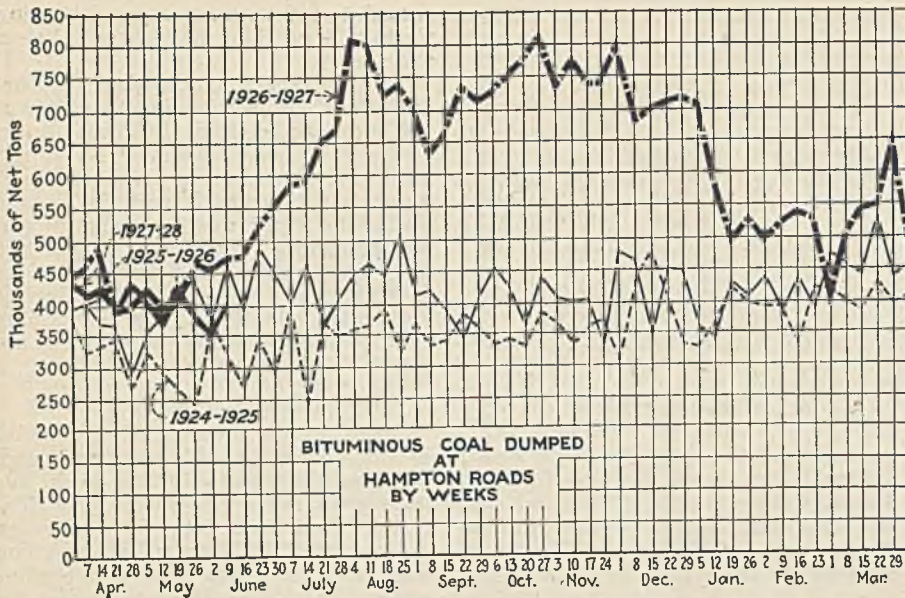
Floods Hamper Car Interchange

There was a pronounced falling off in the movement of tonnage through the Cincinnati gateway last week, due largely to the floods in eastern Kentucky. Coal loads totaled 12,360 cars, a decrease of 3,859 from the preceding week and 1,351 less than in the same week a year ago. Interchange on the Louisville & Nashville decreased 3,139 cars; on the Chesapeake & Ohio, 540; Norfolk & Western, 241; Southern, 61. Included in the movement were 4,969 cars en route to the lakes, which was 218 less than in the preceding week.



Index	1927				1926	1925
	June 13	June 6	May 30	May 23*	June 14	June 15
Weighted average price.....	154	153	153	154	156	160
	\$1.86	\$1.85	\$1.86	\$1.86	\$1.89	\$1.94

This diagram normally shows the relative, not the actual, price on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportion each of slack, prepared and run of mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board. Owing to the suspension of operations in certain unionized fields the figures since April 2 have been reweighted to cover present-day tonnage. Figures for May 30 and June 6 are tentative only. *Revised.



The number of empties en route to the mines decreased from 14,972 to 14,053 cars.

At Columbus the steam trade is dull and featureless and domestic business, which had been the backbone of the market, also has slumped. Contracting is quiet and buying on the open market is mostly limited to bargain lots of distress coal.

Inquiries, as well as demand, are at a low ebb in northern and eastern Ohio, so that in spite of reduced output, there is ample tonnage for all requirements. Distress coal has practically disappeared, the practice of shipping unconsignee coal having proved a losing venture. Smokeless demand has slowed up, but prices are unchanged.

Light Turnover at Pittsburgh

Prices show no quotable change at Pittsburgh though there has been a slight increase in demand from line trade. The limited turnover in the market is well indicated by the output of the Pittsburgh Coal Co., now producing at about half its average in 1923. A light inquiry has appeared for coal for lake shipment. There is a general impression, however, that it is only a feeler, for which reason it has not aroused much interest.

There is no perceptible improvement in central Pennsylvania and no change is expected until after the wage conference in Philadelphia next week. Loadings for the week ending June 4 were 10,517 cars, compared with 12,762 for the preceding week. Current quotations are: Pool 1, \$2.40@2.55; pool 9, \$2.10@2.20; pool 10, \$1.85@2; pools 11 and 18, \$1.75@1.80; pool 71, \$2.25@2.40.

While some members of the soft coal trade at Buffalo note more inquiries of late, orders have not increased appreciably. There is a slightly better feeling, however, and it is predicted that business will be better before the end of the month. Most consumers are still relying on their stocks. Prices show a weak tendency, especially on all steam coals. Fairmont three-quarter lump is \$1.50@1.65; mine-run, \$1.35@1.50; slack, \$1.20@1.35. Smokeless prices vary with the quality and district from \$1.90 to \$3 for mine-run,

Cambria County smokeless being quoted at \$2.50@2.75.

New England Trade Dormant

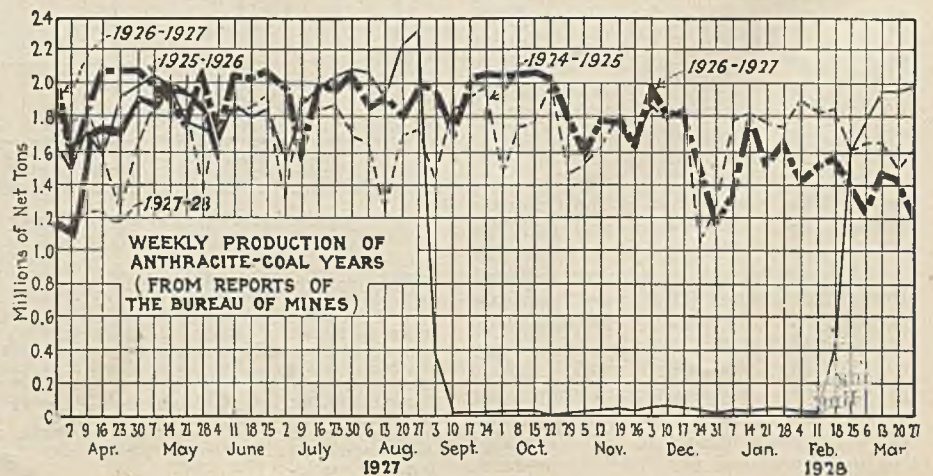
In New England the steam coal market is extremely dull. Apart from reasonably stable prices at Hampton Roads there are fewer indications of firmness than a week ago. More coal is pressing for distribution at this end and prices have softened appreciably. The industries are extremely quiet and only the closest kind of canvassing yields any tonnage.

At Hampton Roads No. 1 Navy Standard grades are being held at \$4.50@4.60 per gross ton f.o.b. vessel, although quite a volume of good coal not quite up to No. 1 grade can be had at from \$4.30 upward. Slack and nut and slack are in plentiful supply, with prices correspondingly depressed. There are occasional signs of coal accumulating at the piers, but in general output is reasonably well supervised.

For inland delivery from Boston, Providence and Portland there is less inquiry. Prices have slumped to \$5.50 @ \$5.65 on cars Providence, and \$5.60 @ \$5.75 at Mystic Wharf, Boston.

New York Consumers Show Interest

Things are a little brighter in the bituminous coal situation at New York. Inquiries are increasing and operators and salesmen report a little more attention by the buyers. Reserves are lighter and consumers in many instances show



Car Loadings and Supply

	Cars Loaded	
	All Cars	Coal Cars
Week ended May 28, 1927	1,026,397	165,723
Week ended May 21, 1927	1,016,803	161,588
Week ended May 29, 1926	1,081,164	177,600
Week ended May 22, 1926	1,039,385	165,212

	Surplus Cars		Car Shortages	
	All Cars	Coal Cars	All Cars	Coal Cars
May 31, 1927	256,488	78,148		
May 23, 1927	248,771	77,304		
May 31, 1926	257,926	75,253		

a desire to replenish their stocks. Plenty of tonnage and low prices are available. Free coals are not moving and there are some distress mines at the piers. Quotations for all grades show practically no change from a week ago.

While conditions remain quiet in the Philadelphia market the trade is looking forward hopefully to July 1 for the resumption of buying on a large scale. A foretaste is seen in increasing inquiry, though this in most cases is only consumer effort to learn the state of the market rather than a real desire to purchase. An export clearance for the West Indies last week is believed to be the forerunner of more of such business.

Baltimore wonders if the expected upward movement has begun with last week's advance in smokeless prepared sizes ranging from 25 to 50c. per ton. Local demand for soft coal continues light, with moderate stock replenishment by purchasing in the open market on the present low scale of prices. Some inquiries are developing, however, for larger amounts on storage, although this is confined mainly to the better grades of steam, with lower grades and gas coals still a drug on the market. The export movement is still flat.

Birmingham Spot Buying Light

There is practically no spot buying in the Birmingham market. Mine operation is dependent almost wholly on contract shipments, which are lighter than a few weeks ago. Little thought is given to reserves. Inquiries for bunkers are scarce. The Seaboard Air Line is expected to award its contract before the end of the month as bids are now in. Domestic bookings are unusually light. Quotations are without any change of consequence.

Movement of anthracite at New York is slow. Consumers are not taking as much advantage of the discount system as was expected, and while retail dealers are doing a good business the situation is not as active as it should be at this time. Chestnut and pea are slow while stove and egg are moving in better shape, considering general conditions. The steam sizes are slipping.

There has been a slump in the Philadelphia market. The expected summer buying movement has failed to materialize, and there are fears that it may be deferred until just before the September price advance. Mining operations have been cut to about half and the larger companies are storing practically all sizes. The steam sizes are showing the effects of slackened demand; rice and barley are noticeably weaker with buckwheat holding up fairly well.

At Baltimore the anthracite trade is at about the seasonal level. A fair amount of stocking was done at the prices of May. As there will be further advances before September, considerable ordering is expected during June and July. Local retail prices for June are as follows, per gross ton: White ash No. 1 (broken), \$15.50; No. 2 (egg), \$15.25; No. 3 (stove), \$16; No. 4 (chestnut), \$15.25; pea, \$12.75; buckwheat, \$8.50; rice, \$7.50; Sunbury No. 1, \$15.75; No. 2, \$15.50; No. 3, \$16.25; No. 4, \$15.50; Lykens Valley No. 2, \$17; No. 3, \$17.25; No. 4, \$16.75.

Anthracite trade has been light at Buffalo so far this month. Householders who have not yet ordered coal feel that they have plenty of time to do so before another advance in prices.

Connellsville Labor Menace Past

Indications are that the Connellsville coke market will peg along without labor difficulty. Except for the possibility of a Buffalo furnace and one other furnace going in, third-quarter requirements are contained in present shipments. It is felt, therefore, that small operators will not risk reducing wages in defiance of the opposition of leading ovens. One third-quarter contract with a steel interest is reported closed at a little under \$3.50, and one or two furnace contracts are for April to September inclusive. Spot furnace coke remains quotable at \$2.85@\$. Standard foundry is \$4@\$.475.

Beehive coke production in the Connellsville and Lower Connellsville region during the week ended June 4 was 104,690 net tons, according to the Connellsville Courier. This was a decrease of 1,990 tons from the preceding week. All of the decrease was at merchant ovens. Furnace-oven output was unchanged at 67,400 tons.

Domestic coke shows little activity at Buffalo. The unchanged retail price of \$10 seems likely to be in effect for some time, so consumers are not worrying about future supplies.

Contracting for foundry coke for the next quarter and last half is progressing favorably at Birmingham, \$5.50 below the ruling price. Spot is still holding at \$6. Interest in domestic sizes is relatively the same as affects domestic coal. Quotation on egg is \$4.50; stove, \$4.20, and nut, \$3.70.

Expect Present Era of Unusual Prosperity To Continue in 1928

That the present era is one of unusual prosperity and that this prosperity will continue on into 1928 was the consensus of opinion as expressed by the speakers at the eleventh annual meeting of the National Industrial Conference Board at New York City on May 19. The sentiment of the Conference was fittingly expressed by Mr. Magnus Alexander, president in that "Many signs clearly indicate that American industry is again entering a different period of economic development, but that it is hardly possible as yet to fix in a precise manner a designation for the new year that lies immediately ahead.

"There is no doubt that at present life with the people of our country is fuller and holds forth the promise of attainment

of much more satisfaction than was possible in the past. The vital question, however, is whether or not this is a momentary and fleeting condition. To be sure, wages are high and have reached, or are rapidly approaching, an apparent state of stabilization, and the standard of living also is high and likely to remain so in comparison with that of our pre-war period or that now prevailing in other countries.

"With business conducted along more intelligent and efficient lines, employment is more regular and more secure. We ought not to have any more panics in business, but if we do have them, it will be because they are man-made, not because they are natural phenomena. Panics are occasioned very largely by distrust and ignorance".

Purchasing Agents Report On Stocks and Output

Seasonal slowing up is discernible in coal consumption for April, the total being 38,600,000 tons, a daily rate of 1,286,666 tons, according to a report of the National Association of Purchasing Agents.

There has been a slight shrinkage in the size of the coal reserves in the hands of industrial consumers, who on May 1 held a total of 72,288,000 tons as against a total on April 1 of 75,406,000 tons. The present reserve, however, is sufficient for 56 days at the prevailing rate of consumption.

Comparative Estimate of Output, Consumption and Stocks

	Output	Industrial Consumption	On Hand in Industries
December...	66,104,000	45,085,000	49,373,000
January...	63,128,000	44,671,000	55,010,000
February...	58,756,000	43,536,000	57,450,000
March.....	64,075,000	43,237,000	65,735,000
April.....	43,109,000	38,600,000	77,455,000
May.....	72,288,000

Utilities Consume Less Fuel In April Than in March

Public utility power plants in the United States consumed 3,290,396 net tons of coal during April, according to the U. S., Geological Survey report. In March 3,483,285 tons were used. Fuel oil consumption by these plants in April totaled 566,451 barrels, against 639,347 in March. The decline in average daily consumption was 2,800 tons of coal and 1,700 barrels of oil.

The average production of electricity by public utility power plants in April was 212,000,000 kw.-hr. per day, about 2 per cent less than the average daily output for March. The usual seasonal decrease in the demand for electricity occurred in March and April. The average daily output by water power in March was 83,300,000 kw.-hr. In April

it was 84,300,000 kw.-hr. Of the total production of electricity in April 40 per cent was generated by water power.

Deny Continental Injunction

The Continental Coal Co. cannot by injunction prevent the Connellsville By-Product Coal Co. from mining Pittsburgh seam coal to the hazard of its Sewickley bed operations 90 ft. above the others, the Supreme Court of West Virginia held on June 7. In its opinion the court, with Judge Woods dissenting, pointed out that the Connellsville By-Product Co., a subsidiary of the James A. Paisley interests of Cleveland, acquired its mining rights from the Cochran heirs and in the transfer of title the deed contained the provision that the company had the right to mine "without any liability for damages that might arise from the removal of or all of said coal without being required to provide or leave support for the overlying strata or surface and without being liable for injury to the same."

The court declared that the Continental company later acquired the right to the Sewickley bed presumably with the knowledge of the provision in the deed of the Paisley company. The fact that the mining of the Sewickley seam was started first has no bearing in the case, the Supreme Court held.

The Continental company alleged that the careless manner in which the Pittsburgh coal had been removed had caused the 90 ft. of earth between the two seams to sink, thus damaging the property of the plaintiff. The plaintiff company asked that proper pillars and supports be left to insure their property against damage and the Connellsville By-Product company demanded \$19,000 for the coal which would have to be left untouched for at least 10 years. Failure to agree resulted in the suit.



Foreign Market And Export News

Meager Continental Demand Depresses British Prices

London, England, June 3.—The South Wales coal market is dull and depressed. Demand is poor, and the heavy supplies on the Continent have driven British prices to a level which operators claim leaves no margin for profit, and often involves loss. Operators also state that the reduction in wages as from June 1 will be largely offset by the increased costs caused by irregular operation.

Alarm has been caused by the French decree prohibiting imports, and there is a rush to clear supplies before June 5, when the decree takes effect.

The Egyptian Public Works Department has taken 10,000 tons of best large steams at 34c. c.i.f. immediate delivery. It is reported that the Central Argentine Ry. has contracted for 100,000 tons of Admiralty large for delivery from July to September. Several inquiries are reported from Newcastle. One is from the Swedish State Rys. for 187,000 tons of steam coals, while smaller inquiries have come from European gas plants.

The recent spurt in exports from Wales proves to have been only temporary. Last week shipments abroad amounted to 449,873 tons, as against 620,877 tons in the previous week. Canadian trade kept at a pretty good level, but in all other directions shipments were appreciably lower. The summarized direction of exports (in gross tons) was: France, 114,125; Italy, 66,298; South America, 70,333; Spain, 36,067; Portugal, 22,317; Greece, 5,553; coaling depots, 63,333; Belgium, 2,926; Holland, 2,732; Canada, 30,494; Irish Free State, 11,234; other countries, 24,461.

Depressed conditions are reported in practically all coal districts in the United Kingdom, according to late cable advices to the Department of Commerce. Trade, especially in South Wales, is reported to be considerably disturbed over new French coal import license system.

Some cargoes are reported cancelled and quantities are reduced in other cases, but British exporters insist upon the completion of all existing contracts. Production during the week ended

May 28 was 5,071,000 gross tons, while production ended June 4 was 5,052,200 tons. Employment was 1,025,000 on June 4. Actual employment is much less due to part-time working.

French Trade Below Normal; Imports Now Licensed

Paris, France, June 2.—Relatively little change has taken place in the French market during the last week. Sales of domestic grades remain fairly satisfactory, but with a declining tendency. Although the demand from metallurgical consumers has improved somewhat this has not been sufficient to bring consumption up to normal.

The government placed a license system on coal imports in effect June 1. It is believed that licenses will be granted freely provided foreign coals be not offered at dumping prices. The purpose of the order is to encourage state administrations, railroads and public utilities to use French coals at prices related to those of imported products, which would have the effect of preventing many French miners being thrown out of work.

Improvement Gains Headway In Belgian Market

Brussels, Belgium, June 2.—There has been no interruption to the recent improvement in the Belgian coal market. The situation in household grades is particularly encouraging. Consumers are laying in winter supplies in anticipation of an advance in prices. The outlook for business this summer is bright as local demand is good and heavy buying is noted from France and Holland. Numerous orders for ovoids are coming from the Netherlands. Quotations are advancing; anthracite coals are commanding 10 fr. more than two weeks ago, and the tendency is still upward.

Industrial grades also are benefiting from the general improvement, partly because of less active foreign competition. Coking smalls are in better demand. Prices, however, remain unchanged from a week ago, except for a few sized products of good quality which have advanced in sympathy with a rise in foreign products.

German Trade Declines

The coal industry in Germany registers declining production and sales as a result of the recovering British coal industry, which is vigorously competing in export markets and even selling beyond German coastal districts, according to a cable dispatch to the Department of Commerce.

The Ruhr mines are forced to reduce shifts for the first time since the outbreak of the British coal strike last year. Stocks are mounting, with 1,700,000 metric tons at Ruhr pitheads now.

Export Clearances of Coal Week Ended June 9

FROM HAMPTON ROADS	
For Brazil:	Tons
Braz. Str. Caxamba, for Rio de Janeiro	5,051
Br. Str. New Mexico, for Rio de Janeiro	8,045
For Canada:	
Br. Str. Aboukir, for Port Alfred	4,732
Nor. Str. Solhav, for Chandler	2,050
Dan. Str. Parkhaven, for Three Rivers	6,838
For Cuba:	
Nor. Str. Sokndal, for Havana	3,095
Amer. Schr. Maurice R. Thurlow, for Manopla	1,976
For Miquelon:	
Nor. Str. S. B. Lund, for St. Pierre	2,044
For Nova Scotia:	
Nor. Str. Kalfond, for Halifax	2,017
For Danish West Indies:	
Br. Str. Lady Brenda, for Curaçao	4,628
FROM PHILADELPHIA	
For Cuba:	
Nor. Str. Wagland, for Antilla	—

Hampton Roads Coal Dumpings* (In Gross Tons)

	June 2	June 9
N. & W. Piers, Lamberts Pt.	72,651	114,422
Virginia Piers, Sewalls Pt.	104,966	108,914
C. & O. Piers, Newport News	134,957	139,406

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

Pier and Bunker Prices

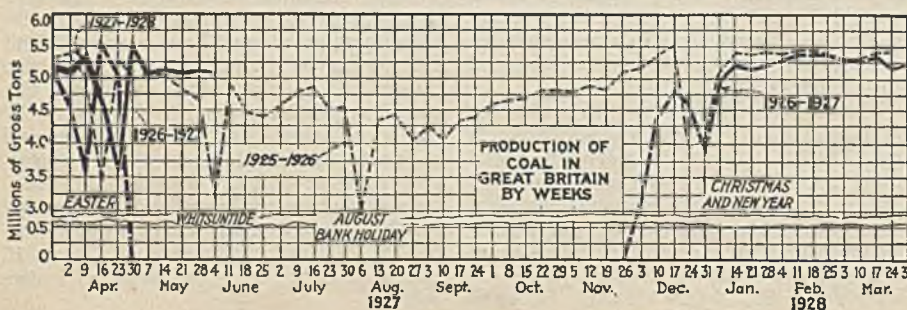
(Per Gross Ton)			
PIERS			
	June 2	June 9†	
Pool 1, New York	\$5.50@5.75	\$5.50@5.75	
Pool 9, New York	5.00@5.25	5.00@5.25	
Pool 10, New York	4.75@5.00	4.75@5.00	
Pool 11, New York	4.50@4.75	4.50@4.75	
Pool 9, Philadelphia	4.80@4.95	4.80@4.95	
Pool 10, Philadelphia	4.55@4.80	4.55@4.80	
Pool 11, Philadelphia	4.35@4.70	4.35@4.70	
Pool 1, Hamp. Roads	4.50	4.50	
Pool 2, Hamp. Roads	4.25	4.25@4.40	
Pool 3, Hamp. Roads	4.00@4.15	4.00@4.10	
Pools 5-6-7, Hamp.Rds.	4.10	4.00@4.15	
BUNKERS			
Pool 1, New York	\$5.75@6.00	\$5.75@6.00	
Pool 9, New York	5.25@5.50	5.25@5.50	
Pool 10, New York	5.00@5.25	5.00@5.25	
Pool 11, New York	4.75@5.00	4.75@5.00	
Pool 9, Philadelphia	5.00@5.20	5.00@5.20	
Pool 10, Philadelphia	4.80@5.05	4.80@5.05	
Pool 11, Philadelphia	4.60@4.95	4.60@4.95	
Pool 1, Hamp. Roads	4.60	4.60	
Pool 2, Hamp. Roads	4.35	4.40	
Pools 5-6-7, Hamp.Rds.	4.20	4.15	

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

Current Quotations, British Coal F.o.b. Port, Gross Ton

Quotations by Cable to Coal Age		
	June 4	June 11†
Cardiff:		
Admiralty, large	22s. 6d.	22s.
Steam smalls	14s. 6d.	14s. 6d.
Newcastle:		
Best steams	19s.	19s.
Best gas	17s. 6d.	00s.@00s.
Best bunkers	16s.	16s.

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



Coming Meetings

American Society for Testing Materials. Thirtieth annual meeting, French Lick Springs Hotel, French Lick, Ind., June 20-24. Secretary, C. L. Warwick, 1315 Spruce St., Phila., Pa.

American Institute of Electrical Engineers. Summer convention, June 20-24, at Detroit, Mich. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

Mining Society of Nova Scotia. Annual meeting at Baddeck, Nova Scotia, Canada, June 21-22. Secretary-Treasurer, E. C. Hanrahan, Sydney, N. S., Canada.

International Chamber of Commerce. Fourth congress at Stockholm, Sweden, June 27 to July 2.

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

Illinois and Wisconsin Retail Coal Dealers' Association. Annual convention, the Hotel Pfister, Milwaukee, Wis., June 28-30. Managing Director, N. H. Kendall, 706 Great Northern Bldg., Chicago, Ill.

Annual First-Aid Meet for championship of Pennsylvania (open to mining and industrial teams), Ebensburg Fair Grounds, July 9. Superintendent, H. D. Mason, Jr., Box 334, Ebensburg, Pa.

Second (Triennial) Empire Mining and Metallurgical Congress opens at Montreal, Can., Aug. 22 and continues to Sept. 28, under the auspices of the Canadian Institute of Mining and Metallurgy. Secretary, George C. Mackenzie, 604 Drummond Building, Montreal, Can.

New York State Coal Merchants Association. Fall meeting Sept. 8, 9 and 10 at Niagara Falls, N. Y. Executive secretary, G. W. F. Woodside, Albany, N. Y.

Industrial Notes

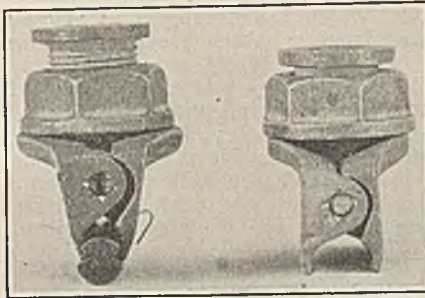
The election of three new vice-presidents and the retirement of two executives of the General Electric Co. were announced by Gerard Swope, president, following a meeting of the board of directors of the company in New York on May 25. C. C. Chesney, manager of the Pittsfield works; W. R. Burrows, associate manager of the incandescent lamp department, and C. E. Eveleth, manager of the Schenectady works, were elected vice-presidents of the company, taking on responsibilities in the manufacturing department. F. C. Pratt, vice-president in charge of manufacturing, and H. F. T. Erben, assistant vice-president of the manufacturing department, have retired. The other officers of the company were re-elected at the meeting.

The board of directors of the L. H. Gilmer Co., Tacony, Philadelphia, has elected Frank B. Supplee treasurer of the company. Mr. Supplee has been with the company for twelve years, working up from a minor position, and is well known in the industry.

New Equipment

Clamp Exerts Tremendous Holding Power

The Archi heavy-duty mine clamp combines great holding power and good wheel clearance. By the arrangement of the leverage it is possible to secure a grip on the wire which will resist a 3,800-lb. pull. The thin jaws on the



Heavy-Duty Mine Trolley Clamp

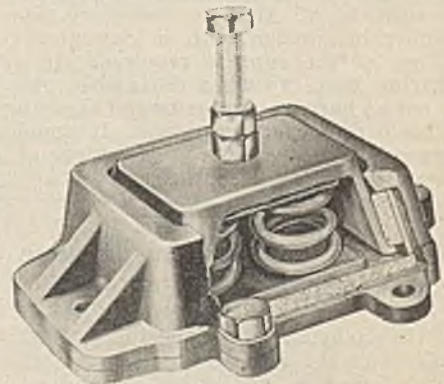
clamp eliminate arcing both on curves and with worn trolley wheels. A flexible self-opening feature minimizes the difficulty in stringing wire on curves. This clamp is made by the Westinghouse Electric & Manufacturing Co.

Use of Dampers Wipes Out Virtually All Vibration

As a result of several years research, design and experience obtained through actual operation, the Korfund Co., Inc., 235 East 42nd St., New York City, has recently announced the "Vibro-Damper" for deadening noise and absorbing vibration of industrial equipment. The device is a simple, sturdy inexpensive unit that is easily attached to the foot or base of machines already installed. It requires no special foundation. It is said that easily adjustable spring tension permits the damper to meet varying requirements resulting from changes in speed, variation in machine loads, etc. The flexibility of the device has, it is claimed, made it particularly successful for deadening high frequency vibrations. Its quick reaction recommends the damper for many machines which operate with sudden vertical impacts. The apparatus has a wide range of application and use, among the conditions which make it particularly desirable being the following: For machines which work with heavy and sudden impacts such as punch presses, elevator machinery, paper cutters, linotypes, mixing machines, etc.; for machines of high rotative speeds such as motors, fans, blowers, centrifugal pumps and compressors, rotary converters, extractors, machine tools; for machines producing objectionable humming noises such as transformers, band and circular saws, woodworking machines; and for the smaller sizes of reciprocating machines such as steam and

oil engines, ammonia compressors, pumps, printing presses, and the like.

Built in five different sizes to sustain loads of from 30 to 4,000 lb., this damper is said to be unusually compact in construction. The additional height given to the machine is so slight that it will not interfere with operation nor affect stability. In special cases, the device may be placed in a depression of the floor, thereby reducing the increase in height to a minimum. The outer housing of the damper, a strong casting, rests on a base plate to which it is securely bolted. The inner walls are completely covered with an isolating material which is adjustable in the larger sizes of the device. Thus, the spring casing supporting the machine is resiliently separated from the housing and foundation under the damper. This casing incloses one or more springs, the tension of which can be adjusted in the simplest manner by means of the same bolt which holds the machine base to the spring casing. It is said that the height of the device is



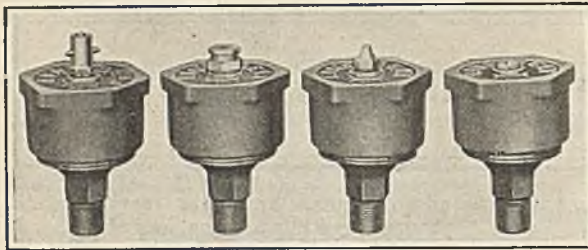
Deadens Vibrations and Noise

The effects of machine vibration constitute a serious industrial problem which, it is claimed, are practically eliminated by the damper here shown. Simple construction, low first cost, long life and ease of attachment are among the advantages of this device.

not affected by the spring adjustment. The conical design of the spring casing and motor housing effectively prevents any misalignment of the machine. Any such tendency is immediately counteracted by the greatly increasing pressures set up by the conical surfaces. In most installations, the base plate can be mounted directly upon the dampers which are so spaced as to prevent undue bending stresses.

"Hex-Top" Grease Cups Made With Alemite Fittings

Of interest to all manufacturers whose processes or products require the use of grease cups, should be the announcement of Link-Belt Co. of Chicago, Indianapolis, and Philadelphia, which describes their new "Hex-Top" malleable-iron compression grease cup equipped with Alemite, or Zerk, fittings.



Hex-Top

Fitted with means of pressure lubrication, these grease cups offer many advantages.

The name "Hex-Top" aptly describes the shape of the grease cup head. Being six-sided, it offers an easy purchase for turning by any type of wrench and a good grip for the hand. The combination of compression grease cup and Alemite fitting is claimed to be a distinct improvement over either article used separately.

One application of these attachments is to the lubricating system of a long belt conveyor using many grease cups on the idlers. Here the easiest, quickest and most economical way to fill all the cups is said to be with a grease gun applied to the Alemite fittings. The cap of the cup is, of course, turned up but not entirely unscrewed or removed.

The filling can be done without waste of grease or any inconvenience. The cup holds a supply of grease for use by compression. An occasional slight screwing down by hand or with a wrench is all that is necessary for proper lubrication until a general refilling of the cups is required. If a bearing heats up when the grease gun is not at hand, a turn or two of the cap takes care of the emergency. It would appear that there is a wide variety of uses for this cup in industry. It is now available.

Makes "Figgerin'" a Pleasure

Arithmetic began with the counting of fingers and toes. The abacus, known to the Babylonians as early as 2200 B.C., was the immediate successor of men's fingers in the field of mechanical counting. Different types of this instrument were developed and, in various forms, it is still used in China, Russia, and Japan.

For centuries afterward there was no significant change in the methods of calculation but about 1200 A.D. the present system of numerical notation was introduced into Europe. Soon afterwards, the development of mechanical calculation began and in 1642 Blaise A. Pascal, a young Frenchman, constructed the first model of an arithmetical machine that provided for the carrying of tens. Following him were Leibnitz and his contemporary, Thomas of Colmar, France. To the latter belongs the credit of having produced the first durable calculating machine suited for practical use. Mr. Thomas' first model was produced in 1820.

However, it was more than 50 years later that Frank S. Baldwin, an American, produced the first directly reversible type of adding-calculator where addition and multiplication were performed with easy, simple, forward turns of a crank; and subtraction and division with equally simple, backward turns of the crank without, in either case, necessitating the manipulation of a change lever. Recognition of the

value of calculating machines was slow, and in 1892 there were only 500 machines in use throughout the world.

In 1911 the Monroe Calculating Machine Co. of Orange, N. J., assumed control of Mr. Baldwin's device. The result is the "Monroe Adding-Calculator" which has developed in sixteen years from a rather crude beginning to the present "full automatic" machine. This new electrically-operated model is called a full automatic because all that is necessary, for example, to divide two numbers is simply to set one number in the lower dials and the other on the keyboard and push the division control key. The machine then auto-



Handy Around Mine or Office

This fully automatic calculator adds, subtracts, multiplies and divides directly, easily, simply, and without the use of arbitrary rules. Should the electric power fail for any reason, the machine can be operated by hand.

matically carries through the complete division. Not only is the calculation made as rapidly as the answer can be conveniently copied, but the answer is infallibly accurate. To multiply, one number is set on the keyboard and the multiplication made by touching special multiplier keys. The machine not only makes the multiplication by each figure, but automatically shifts the dial carriage to the proper positions.

Large Diameter Welding Rod Offers Many Advantages

A new welding rod is announced by the Lincoln Electric Co. of Cleveland, Ohio. This "dipped" steel rod is the result of several years of research and will be known as "Stable-Arc" welding rod. It is a companion to the "Kathode" welding rod which has been sold by the same company for many years. Considerably larger diameters are possible with this new rod than have been customary in rods for metal electrode welding in the past. The rod is carried in stock in all sizes up to $\frac{1}{2}$ in.

It is claimed that this rod permits of much higher currents than have been used heretofore and that this results in greater speed. As labor is by far the largest factor in welding operations, increased speed means an appreciable

decrease in welding cost. Not only does the higher temperature result in greater speed and lower costs but better penetration and a much smoother finished bead is also obtained. In addition, the greater heat obtainable by the higher currents occasions an annealing action which increases the ductility of the weld and gives a greater elongation. Current densities of 15,000 amp. and more per square inch can be used.

It is stated that "spluttering" of the arc is decreased and that this reduces spattering. As a result, more actual metal is deposited per pound of rod. The higher currents, it is said, result in a remarkably clean finished weld and on heavy work where more than one layer is used little brushing or cleaning is necessary between beads.

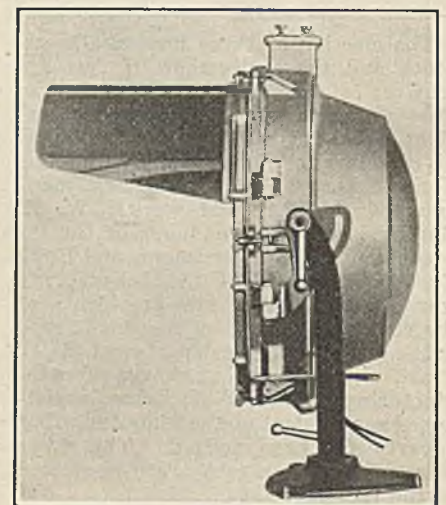
"Stable-Arc" welding rod is obtainable in 14-in. lengths in standard 50 lb. burlap-wrapped bundles. If desired, it can also be secured in longer lengths.

Mine Locomotive Headlights Of Rugged Construction

Improved types of mine locomotive headlights have just been announced by the Westinghouse Electric and Manufacturing Co. of East Pittsburgh, Pa. These are of sturdy design which enables them to withstand the most severe operating conditions. They are constructed with spring suspensions which will protect the lamp filaments from breakage by vibrations and jars.

The Type L headlight has its lens holder fitted to the case with a threaded joint which, with rubber gaskets, tightly seals the apparatus. A heavy cast iron grid protects the lens.

The Type S headlight is of approved gas-proof construction. The front cover is fitted to the case by machined threads with lead gaskets. Each side of the glass front allows an inch of actual creepage distance in all joints so that any gases ignited within the headlight will be cooled before reaching the outside. In addition to the machined flange, the cover has a threaded fit of one inch. To conform with requirements, the lens is $\frac{1}{2}$ in. thick.



Sturdy and Gas Proof

Spring suspension protects the lamp filament of this headlight from breakage, while destruction of the lens is guarded against by the heavy iron grid. Any gases that may be ignited within the headlight are cooled before reaching the outside.