

COAL AGE

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Our Needless Fire Losses

FEW OF OUR numerous wastes are more destructive than fire. We think Europe is wasteful because it has done little toward power utilization, economy in the use of material, standardization and mass production and because it has not organized effectively for large output per man per hour. But surely it has shown the way to us in the matter of fire waste.

"Since the World War," says Irving T. Bush, president of the Bush Terminal Co., "America has lost more lives through fires than were suffered during the War itself. We have destroyed in property during the same period the equivalent of two-thirds of the national wealth of Belgium. The damage Germany did in the Netherlands during the War was infinitesimal in comparison to the fire ravages we permit in America. The annual cost of fires in this country now is 12,000 lives and \$500,000,000 in property. The waste is increasing instead of decreasing, and unless we have sense enough to put a stop to this colossal carelessness we are going to impoverish ourselves sadly."

The annual cost of fire insurance per capita in the United States is \$5 as compared to 50c. in Europe. Nor are these costs arbitrary, they are a reflection of intrinsic hazard. The attitude of any community toward fire prevention is written into its insurance rates which are made large enough to cover the costs.

The coal-mining fraternity is a glaring example of an industry paying heavy sums annually for carelessness in relation to fire losses. It could make a big reduction in its annual insurance bill. It could effect a great saving in its certainty of operation. By its neglect of the fire hazard, it carries a heavy load of unnecessary responsibility and continually faces commercial disaster. A fire is a heavy loss to capital, for the insurance rates do not adequately cover the property. No insurance company will consent to carry the entire risk. The coal industry could add to its fire economies that of increasing the life of its structures, which, if better materials were used, would be more permanent.

But has it been recognized by coal operators that they would gain much if the industries other than theirs would adopt better fire protective methods? More fire-proof buildings would mean the use of more steel, brick, tile, cement, chimney linings, plaster and other materials, all of which are produced by the use of heat and therefore of coal. Hydrants and piping would also involve the use of fuel. It would pay the coal industry good dividends to finance this movement even if it were alone to attempt it. It might advisedly start an advertising campaign with this in mind. Unquestionably, good results would follow.

There is no need for this, however, for the National Fire Protection Association of 17 East 42nd St., New York, is starting a half-million dollar campaign with

this in view, and coal men would do well to put some of their money at the disposal of this organization, the formation of which bids fair to do much to put the coal industry in a better financial position and to recover for it that which other waste campaigns have caused it to lose.

Treating Mine Effluent Unaware

TO MANY it will seem a surprising statement that some coal companies have been treating coal-mine effluent with profit. It may be added that they neither intended to treat the water, nor in all probability even knew they were doing it. There is, moreover, no ocular demonstration that they have and are treating it, but that they are is unquestionable.

In certain of the mines of central Pennsylvania it occurred to some who did not wish to pump the mine water out of dips into the main gravity drainage channel that if they would drill down to the limestones below, the channels in these beds would serve as passageways for the water. There was always the risk that the water in the limestone might well up into the mine and increase the difficulties to be met. In that case the drilling would be a wasteful expedient, but in many cases, perhaps not in all, the water ran down the borehole and disappeared.

The water thus carried to the limestone must have reacted on the lime, thus neutralizing the acid. No one, probably, knows where the water emerged, but doubtless it found a way out and joined some river, miles, perhaps, below the mining operation, in some cases indeed entering an entirely different river or creek from that on the watershed of which the mine was being operated. The action of such mine waters would doubtless be more rapid than that of normal water which would contain only carbon dioxide.

To what extent this means of neutralization could be used is questionable. Perhaps sedimentation would close the channels in the limestone, and the extension of the areas excavated might cause caving and make the channel walls and floor creep, thus blocking the exit. Where the water falls into a basin it would have to rise to a certain level in the borehole to gain pressure enough to escape over the flanks of the syncline, but it is always possible that minor folds in the coal might be absent in the limestone and thus water held in the coal seam might on drilling fall into a stratum with a favorable grade.

It must be remembered that limestones often tail out. Over some areas geological conditions did not favor their deposition. In other places there is not as much fall in the streams as in central Pennsylvania which lies at a considerable elevation, and the water consequently might not escape. It is questionable, therefore, whether this method of neutralizing acid in mine water can be much extended beyond its present

limits, but it is worthy of consideration, if not as a means of treating water, at least as a method of disposing of it to advantage.

Should drilling cause water to come to the surface or to the mine level, as it often does in the same areas where the holes have been drilled to the oil and gas sands, it might be necessary to plug the hole, in which case the expedient will be expensive, unprofitable and even costly, but it is worth attempting. Experience and geological inquiry might be expected to show where it could be attempted with a reasonable probability of success.

Evangelism in Education

THE AMAZING IGNORANCE of the aims, ideals and actualities of their chosen profession displayed by freshmen in this country's engineering colleges should waken practicing engineers to the fact that silence on their part concerning their work, its prerequisites and its rewards, has ceased to retain any semblance of virtue, and has indeed become a grievous fault.

The Society for the Promotion of Engineering Education reports that a questionnaire distributed among the first-year students in thirty-two representative engineering institutions disclosed that more than half of these young men had "little or no conception or a poor conception" of the field of engineering, the work of the engineer, or of the particular field of engineering they had elected to enter.

Is it any wonder, then, that having chosen so blindly more than sixty per cent of those who enter our engineering colleges fail to complete their courses? It is true that part of the blame for these failures may be laid to lack of proper scholastic foundation for engineering training, to absorption in the non-essentials of college life, and perhaps to failure on the part of the colleges themselves to deal properly with the students. Granted all this, it is none the less true that the prime factor in causing this appallingly high academic death-rate is blindness on the part of the high-school student in choosing to become an engineer. Shooting in the dark is never conducive to good marksmanship.

For the betterment of their profession, engineers should become evangelists. Whenever and wherever possible they should talk of their work to high-school students and to high-school teachers. They should delineate engineering realistically in proper proportion. They should neglect to mention neither its high romance nor its grinding hardships, neither its rigors nor its recompenses. They should tell of the possibilities it offers for community leadership and outstanding performance.

Only by so clarifying the profession for high-school students can there be any hope of attracting from among them the maximum number of those both willing and fit to become good engineers.

What Shall Be Done with Coal Refuse?

SO MUCH BONE COAL is coming from the picking tables and washeries that some disposal of it other than dumping it on the ground is desirable. Much is already used for railroad ballast. At one mine, the waste coal was so desirable that when the railroad received it for track surfacing, it used it without further cleaning at its pump stations. One company, at least,

crushes and washes its waste coal on tables, using the washed product to raise steam.

It would seem distinctly contrary to modern ideas of mining to dump burnable coal on the ground, to catch fire ultimately and befoul the air for all those who have to live and work nearby. Such coal would furnish heat for electrical energy where companies are making their own power or for bathhouses where these are maintained. It will serve also for the incineration of garbage, where garbage is collected and burned as it should be.

Many a village has an idyllic look till the dumps begin to burn. Then the air is befouled; paint is destroyed on the houses and buildings; trees and all vegetation languish; the gardens suffer; fires invade the woods ignited by the burning dumps, and the hope for a model town dies. The men and women who are willing to work in such a place are not of the most desirable type.

It will be said that the burning rock dumps—and in bituminous fields they are always prone to burn—will make smoke enough to render the town murky and that is true, but why add a smoking coal dump or increase the activity and offensiveness of the rock dump by the presence of picking-table and washery waste? At one mine even the road cleanings are pulverized and used for steam generation in the main boiler plant.

Refuse coal on the surface makes a little extremely acid water to add to that of the mine effluent, but not much, if the area on which the pile is formed is kept free from standing water and the pile is deep. Its principal fault is its proneness to burn, thus destroying the comfort, health and morale of the inhabitants of the village.

What joy can there be in living in a town always covered by a pall of smoke? In most cases, dumps are located so that the prevalent winds carry the smoke from the village, but no one can wager which way the wind will blow, and smoke, even if infrequent, is nevertheless, an unwelcome guest wheresoever it goes. The mine is murky enough; why allow the village to be darkened also?

Extravagance in Operation

AN UNSAFE MINE is an inexcusable extravagance in these days of compensation. It pays well to take precautions. The U. S. Steel Corporation's subsidiaries in ten years might have saved \$9,763,063 by not inaugurating safety and they would then have lost \$14,609,920 in needless compensation paid to employees. Roughly, a million yearly was spent in safety, all of which was returned and another half million added thereto. Some dividend, indeed!

This is safety on a big scale, so big it could not be by chance. One might say it was luck if it were not the outcome of so many years' experience at so many operations. And it does not represent all the true saving. How much was gained by lessened turnover, steadier operation, happier employees and general morale will never be known.

Safety is a big consideration at any mining plant, yet it looks like money thrown away until the results are calculated by adequate statistics. The facts as to costs of safety and as to savings effected should be obtained by every general manager, so that he will keep himself and his superintendents sold and may sell the idea to his board of directors. After all, the results are apparent enough to convince anyone if records are kept.

Adverse Conditions and How They Are Surmounted

Compared with Her Lavishness in Some Other Localities Nature Has not Been Altogether Kind—Coal Deposits Are Thin and Pockety and the Roof Bad—Trend Is Toward Bigger Operations

By J. H. Edwards

Associate Editor, *Coal Age*, Huntington, W. Va.

SMALL MINES, bad roof, low coal and antiquated methods seem to express the impression held by the mining fraternity generally concerning conditions existing in Iowa. That most mines in that state have bad roof is quite true but the other assertions are entirely too sweeping. Many mines within the state produce over 1,000 tons per day. In some the coal runs from 5 to 8 ft. thick and much modern equipment has been installed.

Iowa's coal fields may be roughly divided into two sections. One of these lies in the vicinity of Wayne and Appanoose counties along the Missouri line. Here occurs the uniform and persistent Centerville or Mystic bed of coal. The other section extends along the valley of the Des Moines River from the southeast corner of the state to a point about 30 miles north of Des Moines. Throughout this region the coal occurs in pockets, lenses or basins ranging up to a few square miles in area and in thickness up to 8 ft. or more in the center of the deposit.

Because of the method of mining there followed, the first section is often spoken of as the longwall field. The thin coal, a 2- to 3-in. dirt band slightly below the center of the bed, a soft clay bottom and a drawslate top ranging from nothing up to 6 in. in thickness make this region a "true longwall proposition." Room-and-pillar mining is commonly followed in the other or Des Moines Valley field.

Total production for the state was about 5,000,000 tons in 1926, as compared to approximately 8,000,000 tons in 1914. This decrease in output is not due to diminishing supply but rather to the high labor scale, excessive local freight rates (as compared to long-haul rates on Eastern coals), and to the natural preference of domestic users for the higher grade Eastern product.

For years Iowa mines have been "solid union." Strict

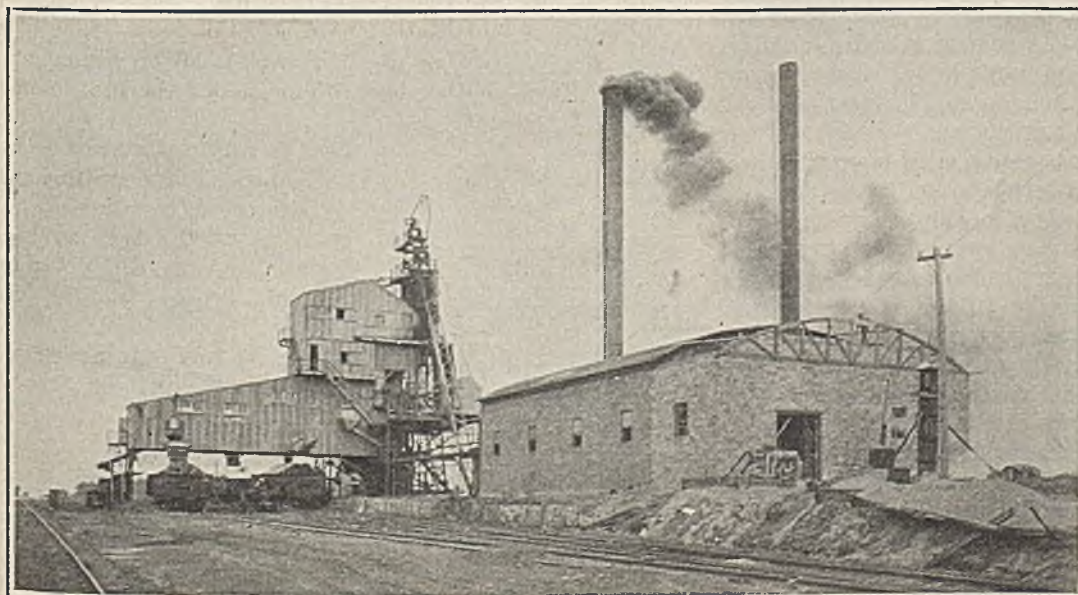
adherence to the 1924-1927 Des Moines agreement has been a potent factor in reducing production. An example of the high local freight rates is furnished by a lumber and supply dealer of a small town in the east-central portion of the state, 110 miles from the Centerville field and 80 miles west of Davenport.

Of the 65 carloads of fuel handled by this dealer last year, only one was Iowa coal; the remainder was from western Kentucky. The freight rate from Centerville, Ia., to this town is \$1.61 per ton as compared to \$3.52 per ton from western Kentucky. Because the railroads serving Iowa take perhaps 35 per cent of the state's production there has been little disposition on the part of the coal operators to make a concerted fight for lower local rates on Iowa coal. Loss of railroad contracts would be a serious matter for most Iowa mines.

What has been the longwall field of Iowa for 20 to 30 years was originally opened by the room-and-pillar system. Now, in an attempt to lower production costs some mines are again trying room-and-pillar methods. Results so far attained, however, are not promising.

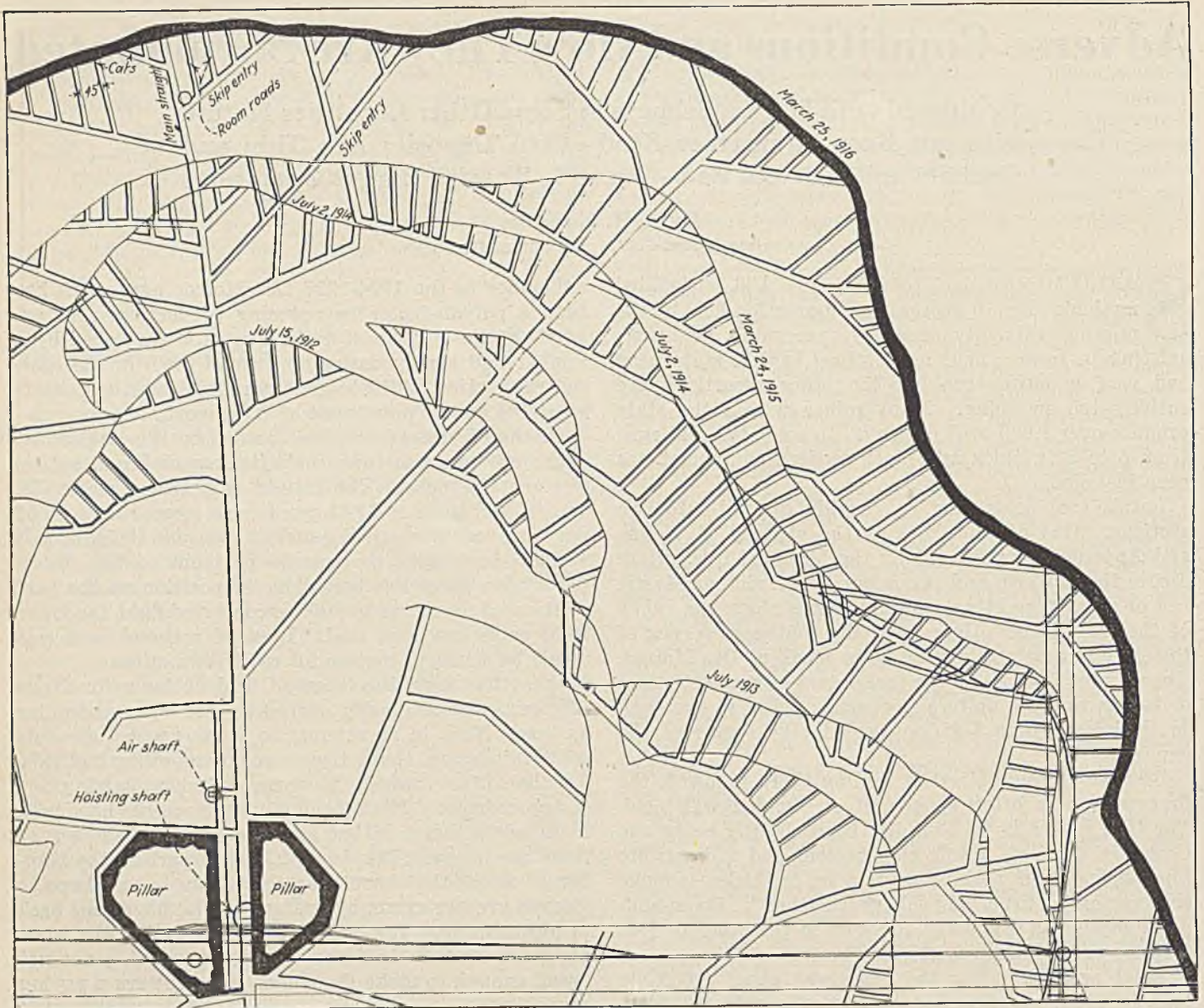
Approximately 70 longwall mining machines have been installed in this field but at present fewer than ten of them are in use. This is explained in part by the number of mines that have been shut down but perhaps to an even greater extent by operations that have gone back to pick mining. The owners have found that the wage scale differentials in favor of machine mining are not broad enough to make the use of undercutters a paying proposition.

Perhaps there is no other place in the United States, certainly only a few of them, where true advancing longwall in a complete circle is being worked. With this method a shaft is sunk in the center of the property and mining is started in a circle around a pillar approximately 300 ft. in diameter that is left to protect



Good Upperworks

Inasmuch as most mines in Iowa are short lived the upperworks are, as a rule, made as cheaply as possible. The mine here shown, that of the Central Iowa Fuel Co., at Williamson, Iowa, is somewhat of an exception to the general rule. This is a modern steel tipple preparing three sizes of coal for market. Hoisting is performed by steam power but current is generated for the operation of mining machines and locomotives underground.



Section of Typical Longwall Operation

This shows slightly more than one-fourth of the face that encircles the shaft. From shaft pillar to face the recovery closely approximates 100 per cent. At present only

about 4,000 ft. of face is being worked and this without the use of machines. Not long ago, however, the entire circle was worked and the undercutters were never sumped

out. Mine cars are distributed along the face at 45-ft. intervals by way of the room roads off the skip entries. Low coal necessitates low cars.

the shaft. The coal bed is here from 30 to 36 in. thick, and the recovery amounts to practically 100 per cent.

In this longwall work tracks are not laid along the face but instead are placed in room roads that reach it at right angles. These room roads are pitched on about 45-ft. centers and each miner loads $22\frac{1}{2}$ ft. of face on each side of the track. In other words, it is as if the mine were worked by 45-ft. rooms with tracks in their centers but with no pillars left between rooms.

When the room roads off of a skip entry get to be 125 ft. in length, a new skip entry is started branching off the main straight entry. In due course of time the old skip entry is abandoned. In the room, skip and main entries bottom is lifted or top brushed to provide height. Usually, to begin with, about 12 in. of bottom is lifted in the main straight entries. This bottom consists of fire clay which can be dug without shooting. As the roof settles, crushing the light props and compressing the gob, additional bottom or top is taken whichever is the easier, to maintain sufficient haulage height.

Ordinarily the combined refuse from undercutting in the fire clay beneath the coal, that from the parting,

from the draw slate, and from taking bottom or top on the roads, is sufficient to fill the gob. In some places there is too much of this material and some of it has to be hoisted out of the mine. In other places, however, the combined refuse is insufficient to fill the gob entirely to the roof.

In the vicinity of Centerville the cover is approximately 135 ft. thick and the bed lies practically horizontal. The roof action brings down most of the coal after it has been undercut, and no explosives are used. Although in many cases the slate top shows break lines parallel to the face at intervals of from 18 to 48 in., this top does not fall but rather appears to bend as it gradually settles.

It is a common belief that longwall methods are suited only to mines that can be operated continuously. As a matter of fact these true longwall mines of Iowa are as a rule shut down during the late spring and summer months. Little or no inside maintenance work is done during these shut-down periods.

It is in the Des Moines valley field that all of the mines of approximately 1,000-tons capacity are located,

and in these operations room-and-pillar methods are generally employed. Much of the coal is shot from the solid. Although approximately 120 shortwall machines are located in this field, by no means all of them are in use.

Mule gathering, electric locomotive haulage, generated electric power, and steam hoisting are the common prac-



Longwall Face in Streepy Mine

The coal here averages 36 in. in thickness with a 2-in. parting about a foot from the bottom. The miner is shown cutting a 6-in. kerf in the fireclay that underlies the coal. Roof action and the use of wedges are sufficient to bring down the coal without the use of explosives.

tices at the larger mines. These are shaft operations, their depths ranging from 150 to 500 ft.

The practice of generating electric power and hoisting by steam has several exceptions. At those few mines where purchased power is used, the hoist, as a rule, is electrically driven. At least one hoist is of the Ilgner-Ward-Leonard type—that is driven by a fly-wheel motor-generator set having generator field control. This machine is of 320-hp. and is owned by the Scandia Coal Co., near Des Moines.

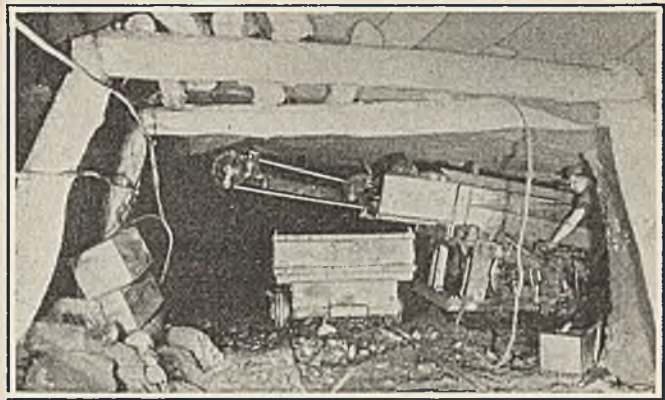
POCKETS OF COAL HARD TO FIND

Although heavy local grades are encountered in some of the mines, the outstanding characteristics are the limited acreage that can be mined from one opening, and the unfavorable roof conditions. As previously mentioned the coal occurs in pockets. These are usually long and narrow and the bed thins out from the center toward the limits of the area. A typical pocket but one



Face of Main Straight Entry

Bottom has been lifted to the extent of 10 to 12 in. to afford the necessary head room. At the right is the start of a new skip entry, branching off from the main at an angle of about 60 deg. No pillars are left but where the new entry takes off rock-packed cribs protect the corners. The mine cars here used have no endgates but are loaded with an average of 1,400 lb. of coal. Ponies are used in gathering.



Entryloader in Great Western Mine

This is room-and-pillar work. The coal is here 3 ft. 8 in. thick. The machine stands on a track that extends only a few feet into the room neck. It is self-propelling and consequently moving takes only a comparatively short time. Heavy timber and lagging are necessary to protect the entry.

that is larger than the average is 3,000 ft. wide and 3½ miles long.

These pockets are discovered by drilling, and a great many holes are necessary in proving a tract before sinking a shaft is justified. On one 2,500-acre tract nearly 200 churn drill holes were put down. The average cost of such drilling is \$0.50 per foot, but accuracy of this type of drill is limited to depths of about 250 ft. Beyond this depth diamond drilling, costing \$2.25 per foot, is necessary.

Timbering is an expensive item in Iowa mining. Practically all entries have to be protected with lagged sets placed about 5 ft. apart. The average life of such timber is considered to be but three years. Most of this timber is shipped in from outside the state, and none is treated with preservative before use. The timbering cost including labor and material is approximately \$0.15



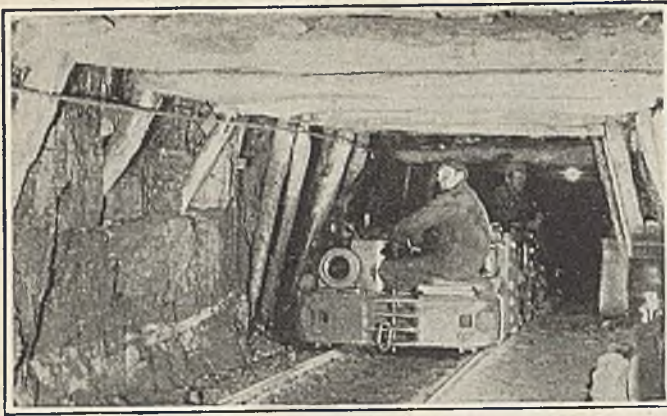
Scraper Picking Up Its Load

At this point the coal is 44 in. thick. A 45-ft. room is being advanced from the entry to a depth of 150 ft. Pillars 15 ft. wide are left between rooms. The coal is undercut and drilled electrically. Four-inch props pitched on 4-ft. centers are carried to within 10 ft. of the face. None of these are recovered yet the roof does not break until after the room has been driven up to its full depth.

per ton of production. Several mines are now using steel crossbars on some of the main entries.

At the Pershing mine of the Pershing Coal Co., where the coal averages nearly 6 ft. in thickness but attains 8 ft. in places, timbering costs are reduced by leaving up 12 to 18 in. of top coal in the present development of entries. Where this does not leave sufficient height for haulage, as much as 12 in. of bottom is lifted.

In spite of the generally bad roof, mechanical loading has been introduced with success in parts of several mines. The Entryloader, which utilizes a scraper to move the coal to the loading point on the entry, is the



Haulage Locomotive on a Main Entry

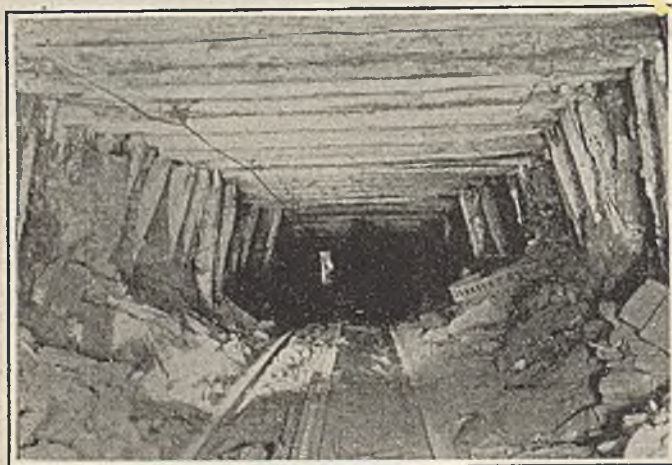
This is the main north in the Red Rock mine. The track gage is 36 in. and the entry is 8 ft. wide. Where the rib is close short legs are used to support the crossbars. The average life if mine timber is here said to be about three years.

equipment used. In some instances the coal is taken by working rooms 45 ft. wide on 60-ft. centers to a depth of 150 ft., and in others by working blocks 90 ft. wide by 150 ft. deep. Props are set on 4- to 5-ft. centers. None of these props are recovered. So far the practice is not to use breaker props but instead to hurry the completion of a room or block before a roof break occurs.

BLACK POWDER GENERALLY USED

For the most part the Entryloaders are being used in those sections of the mines where the coal has thinned to from 30 to 42 in. In such places the coal is undercut with shortwall machines and drilled electrically ready for shooting. In all Iowa mining black powder is the explosive generally used. Although this is true as well as that much coal is shot from the solid, the mines have suffered no serious disasters so far as loss of life is concerned. About a year ago, however, an explosion that occurred when no one was in a mine and just as a shot firer left the cage in coming out, wrecked the mine so badly that about half of it had to be abandoned because of roof falls due to the timber being stripped away. Ignition of coal dust by a blown-out shot was considered the probable cause of this mishap.

Freedom from explosive gas and the presence of in-



Rack-Rail Locomotive on a 12-Per Cent Grade

Heavy grades are encountered in many Iowa mines, this particular one being in the Pershing operation. The short life of the mines and the bad roof encountered make grading out impractical. The coal at this point is 5 ft. 8 in. thick but in places it attains a thickness of 8 ft. without dirt or parting. In many places in this mine from 12 to 18 in. of top coal is left up to protect the roof and avoid the use of an excessive amount of timber.

combustible dust produced by the handling of large quantities of slate and rock are two reasons for the few explosions that have occurred within this state. Neither rock dusting nor sprinkling have been reported anywhere.

Because all of the thick coal occurs in small pockets, the average life of Iowa mines is only about 10 years, and a 15-year life is considered good. For this reason investment in equipment must be held to a minimum. This is evidenced by the general use of wood linings in shafts, and by the lack of facilities for washing or air-cleaning the coal. A number of mines, however, have installed fairly complete screening and picking equipment and several have modern steel tipples.

OUTLOOK DECIDEDLY GLOOMY

At the present time the outlook for Iowa mining is not at all "rosy." Operators claim that there must be a re-adjustment of wages if they are to stay in business. With this end in view and because of the possibility that the mine workers will not agree to any substantial reduction, several companies are seriously considering plans for sealing their mines for an indefinite period. The future for Iowa mining is not easy to predict.

Bituminous Coal Industry Has Adequate Reserve Capacity

Of the two occasions since the war when there have been sudden increases in demand with some consequent rise in prices, neither was attributable either to a coal strike already in existence in this country or to fear of a strike in the future. In both instances, the immediate cause was a sudden increase in the demand for bituminous coal for export to foreign lands; and on both occasions this increase in foreign demand was due to a coal strike in Great Britain, where the coal industry has been legislated nearly to death.

In a normal year our overseas exports amount to slightly more than 4,000,000 tons. In 1920, when such exports were increased to nearly 20,000,000 tons, the increase in the production of bituminous coal over the normal annual output far exceeded that amount. Similarly during the recent period of abnormal foreign demand, when overseas exports for the first ten months of 1926 exceeded normal exports by something over 12,000,000 tons, the increase in bituminous production has again far exceeded the increase in exports. It is also true that during the anthracite strike in the fall and winter of 1925-26, the increase in bituminous production over normal was in excess of the deficiency in anthracite production.

INDUSTRY IS ACCORDED PRAISE

This record is a splendid tribute to the ability and readiness of the bituminous industry to meet any unexpected demand for its product. The present large output, which at the moment is running at the rate of nearly 700,000,000 tons a year, would have been impossible, however great the world's need of coal, if the capacity of our mines had been limited to our normal yearly production of 500,000,000 tons. It is fortunate for the public that extra mine capacity is available, whether in times of war or peace.—*Walter Barnum, president, National Coal Association before International Bituminous Coal Conference.*

What Duty to Support the Surface Does Sub-Surface Owner Owe?*

Subsidence Has Caused Much Trouble for Coal Producers but in the Absence of Specific Stipulations Duty of Surface Support May or May Not Be Present Depending Upon How the Mineral Was Acquired

By Robert G. Bosworth
Denver, Colo.

LIABILITY FOR DAMAGES to the surface caused by subsidence is an ever-present threat in all underground mining. In metal mining for various reasons this threat rarely materializes into action. In the mining of coal however, it is decidedly real. Coal frequently lies close to the surface, in beds extending under large areas of land the surface of which is suitable for agricultural or urban development. Furthermore, mining is generally conducted by the room and pillar method and when the pillars of coal are removed, the subjacent support is destroyed.

This question of the duty of surface support has now become a live one in Colorado. What was waste prairie land of a few years ago, has become valuable agricultural property dotted here and there with growing towns. Frequent references will be made here to Colorado conditions and adjudicated cases, but the conclusions to be drawn therefrom are equally applicable to all coal-mining states.

Briefly stated, the question is "Does the owner of the substrata or underlying mineral owe any duty of surface support to the owner of the surface?" No absolute duty of support is owed by the mineral owner and this assertion is made with full knowledge of numerous expressions to the contrary by courts of Pennsylvania, Illinois, Colorado and other coal-mining states. Whether or not such duty exists depends upon the circumstances surrounding each case, and since in the nature of things those circumstances are rarely identical, there can be no absolute rule.

There has been much loose thinking on this question by courts, judges and lawyers, not only in this country but in England. Coupled with this, there has been a blind following of precedent without proper weighing of circumstances and without adequate distinctions as to fact. Consequently, we are confronted at the outset with the following general statement of what purports to be the established law, taken from Ruling Case Law, vol. 18, pp. 1244 to 1245:

The rule is well settled that, in the absence of contractual provisions to the contrary, where the person owning the whole fee in land grants the mineral rights therein, reserving the surface to himself, the grantee is bound to furnish sufficient subjacent support for the surface in its natural state, either by allowing sufficient of the ground to remain, or by substituting artificial supports. The owner of the surface is entitled to this absolute support of his land, not as an easement depending on a supposed grant, but as a proprietary right at common law, and one which

is incident to the land in its natural state. Moreover, this right is without regard to the comparative value of the strata.

Ruling Case Law then goes on to qualify this absolute statement as follows:

The owner of the surface may, of course, part with his right to surface support by his deed or covenant, or he may waive it. However, such a conveyance or waiver should

not be implied unless the language of the instrument of conveyance is appropriate therefor, and clearly indicates such to be the intention of the parties, and where minerals are granted or reserved in the most general terms, still a reasonable support must be left for the surface and there is in every such case a prima facie inference that the grant or reservation is made in such a manner as is consistent with the retention of this right.

The quarrel, then, is not with the compiler of the well known reference work quoted but with the courts whose failure to weigh properly the distinguishing cir-

cumstances in the cases presented and cited to them has resulted in blanket statements of a so-called absolute rule. The Supreme Court of Colorado has been equally at fault in the four cases in which, to date, it has passed upon this question.

Campbell v. Louisville Mining Co., 39 Colo. 379.

When the surface of land belongs to one, and the coal thereunder to another, the owner of the coal cannot remove it without leaving support sufficient to maintain the surface in its natural state.

Burt v. Fuel Co., 71 Colo. 205.

It is conceded that unless there be a contract, express or implied, the owner of the coal only, when he removes it, must leave support enough to hold up the surface.

Barker v. Mintz, 73 Colo. 262;

Evans Fuel Co. v. Leyda, 77 Colo. 356.

It is also well established by the great weight of authority that the owner of the surface has a right to have the superincumbent soil supported from below in its natural state, and that such right is incident to the ownership of the surface.

In every one of the above cases, however, just as in the quotation from Ruling Case Law, the absolute rule enunciated is then qualified by some statement such as the following from the *Evans Fuel Co.* case just cited:

From what we have said in the former cases the right to surface support in the absence of express or implied waiver is an absolute right.

There are many other cases from Illinois and Pennsylvania, all holding the same rule, and all qualifying it, so as to free the owner of the mineral from the duty of supporting the surface in case of either an express or implied waiver of the right of such support on the part of the surface owner. It is right here that loose thinking and the blind following of precedent begins. Having once enunciated this rule, all the courts, up to

Although many court decisions in many different coal-producing states would tend to substantiate a contrary belief, the owner of mineral is under no absolute obligation to support the surface under any and all circumstances. This duty, however, may and frequently does exist.

*Paper presented before the New York meeting of the American Institute of Mining and Metallurgical Engineers, February, 1927.

the more recent decisions, held that a grant or reservation of all "coal with full right to work and win the same" was never sufficient to constitute either an express or implied waiver of the right of surface support.

There is no logical basis for such a rule. Some courts have said that the right to, or easement for, support is an incident of the ownership of the surface. This is illogical because at some time some person or entity—governmental or corporate—owned the entire fee in the property "from the middle of the earth to the center of the sky." Such an owner could convey as little or as much of his title and estate as he desired. The extent of such conveyance must be determined from the language of the parties. To say, therefore, that this alleged right exists as an incident of ownership of the surface is the assertion of a conclusive and irrebuttable presumption. Since the existence of this right was a matter of the desire of the owner of the full fee and his agreement with his grantee, there is no logical place for an irrebuttable presumption.

The vast majority of courts have held that the waiver of this right of surface support is a matter of contract express or implied. This is the statement of a rebuttable presumption and is entirely logical. It is tantamount to saying that the law presumes, until the contrary is shown, that the parties intended to give this right to—or retain it in—the surface owner. But it is a far cry from that rebuttable presumption to the unqualified statement that words of general grant or reservation, such as that to "all coal with full right to work and win the same," is not sufficient to constitute either an express or implied waiver of the right of surface support. Yet that is the apparent holding of a majority of our courts.

The fallacy lies in the fact that the courts have overlooked the distinction between a grant of mineral rights and a reservation of mineral rights, upon severance of the surface and subsurface estates. They have failed to realize that the determining factor in establishing whether or not this right of surface support has been waived is whether the owner of the full fee at the time of the severance of the two estates, first granted the coal or other mineral underlying his land, reserving to himself the surface; or first granted the surface, reserving to himself the underlying mineral. Very different results flow from the two situations and if fully understood, the courts can be expected to reverse the present rule so far as prior mineral grants are concerned. For convenience, let us call these two situations Type 1 and Type 2.

Type 1, therefore, is where A, the owner of both the surface and subsurface, grants by deed or lease to B "all coal with full right to work and win the same," reserving the surface to himself.

Type 2 is where A, the owner of both the surface and the subsurface, grants to B the surface of the land, reserving to himself "all coal underlying said land with full right to work and win the same."

The fact that A in either type of case may thereafter convey his reserved estate to some third person is of

no moment. The third person can acquire only such rights as A had and no more.

A grantor cannot derogate from his own grant. This is a fundamental principle of our law, older, in point of time by centuries, than any of the adjudicated cases implying the duty and right of surface support. It is an admitted fact that from 40 to 60 per cent of the coal in lignite fields must be left in place if the surface is to be supported in its natural state and that artificial supports are so expensive as to cost more in many instances than the coal is worth.

If, therefore, in a Type 1 case the conveyance or grant having been made, the grantor is permitted to come in, many years later, and say in effect, "Yes, I granted you all the coal with full right to work and win the same, but I only meant such coal as you could extract without damage to me, and therefore you must leave 50 per cent of that coal in place." manifestly this constitutes a derogation of the grant. It is equally a derogation of the grant if the law implies this condition, as it has done in many cases. In fact the court in implying this condition in a Type 1 case is doing more than derogating from the grant. It is attempting to make a new and different contract for the parties, a thing which has never before been sanctioned.

On the other hand, take a Type 2 case, where the owner of the full fee first granted the surface and reserved to himself the underlying coal in the most general terms, namely, "all coal with full right to work and win the same." In such case it is logical to hold that to permit the subsurface owner under his reservation to so mine as to destroy the value of the thing, which he has granted is to permit a derogation of his grant. It is therefore logical at least, for courts to imply the condition in cases of reservations of coal rights that the subsurface owner owes an absolute duty of support to the surface, unless the contract or grant in the most explicit and unequivocal terms frees him of liability for damages due to surface subsidence. Such an express exemption is not contained in the cases now under consideration.

DECIDED CASES FALL INTO LINE

Once this distinction between a Type 1 case and Type 2 case is firmly grasped, the decided cases upon this question, with one or two exceptions, fall into line. For example, of the four Colorado cases cited not one is a Type 1 case, with the possible exception of the case of *Barker v. Mintz*. In the *Campbell* case in 39 Colo., the plaintiffs, as owners of the surface of the land, apparently had a prior grant, and the only question involved was whether the Louisville Coal Mining Co., the defendant, as lessor of the coal to the United Coal Co. could be held liable for the damages caused by the manner in which its lessee mined the coal. The attorneys for both sides admitted that under the circumstances the subsurface or coal operator owed a duty of support, and hence this question was not directly involved.

In *Burt v. Rocky Mountain Fuel Co.*, in 71 Colo., the coal company as the owner of the full fee plotted the

Controversies over surface support usually fall into either one or the other of two separate and distinct types. In the absence of contractual stipulations to the contrary, if the fee owner of a property sells or leases the coal therein no obligation to support the surface is present. If, on the other hand, the fee owner of the same property sells the surface and then proceeds to work the coal himself he must protect the surface from injury.

surface for town lots, reserving to itself the right to mine and extract the coal.

In the Evans Fuel Co. case, Mrs. Steele et al. plotted the surface into town lots as a part of the Town of Frederick, reserving in general terms the coal.

In *Barker v. Mintz*, it is impossible to determine whether the case belongs to Type 1 or Type 2, but in any event it involves mining by the stripping process, which consists of a complete destruction of the surface, and this, therefore, could not have been within the intention of the parties under either type of case.

It accordingly follows that none of the Colorado cases is wrongly decided under this theory of the law, because they are Type 2 cases, that is to say, cases of a reservation of the coal in general language, and a prior grant of the surface. Under such circumstances a duty of support is owed.

The same is true of *Wilms v. Jess*, 94 Ill. 464; *Harris v. Ryding*, 5 Messon & Welevy 59; *Colman v. Chadwick*, 60 Pa. 81; *Bibby v. Bunch*, 176 Ala. 585; *Carlin v. Chappel*, 110 Pa. 348.

The early English cases are the background upon which our earlier American cases were founded, and all gave expression to the general rule that under all circumstances, unless there was an express exemption from liability, the subsurface owner owed a duty of support to the surface owner. The later English cases, however, are departing from that rule and are recognizing the practical test of whether or not the particular coal bed could be mined in a practical manner without injury to the surface, and are using this test as a measure of construction of the contract. For example, in the case of *Butterley Co. v. New Hucknall Collieries Co., Ltd.*, 99 *Law Times Reporter* 818, the Master of the Rolls in discussing the previous English cases points out that in the *Butterley* case (decided 1908) evidence was brought to the attention of the court for the first time that the coal could not be mined without damage to the superincumbent strata, and Lord Justice Moulton in the same case says:

It (the *Butterley* case) differs from preceding cases in that for the first time the court is by proper evidence made cognizant of a fact which has been known for many years to those conversant with coal mining, namely, that except in the case of shallow seams the working of the coal in a seam is inevitably followed by a corresponding sinking of the whole of the superjacent strata, and consequently of the surface . . . it follows, therefore, that if the instruments made it clear that it was the intention of the parties that subjacent seams should be worked, it is a necessary implication that they intended that there should be subsidence of the superjacent strata.

In a still later case entitled *Jones v. Consolidated Anthracite Collieries, Ltd.* (decided 1915) *Law Reports*, 1916, King's Bench, the Court says:

A man who has granted a right to work a mine must be taken to allow its being worked in the only way which it can be worked, whatever the effect on his other property may be.

The best considered case in the United States is that of *Griffin v. Fairmont Coal Co.*, 53 S. E. 24th (W.V.), decided in 1905. It is a Type 1 case, that is to say, a case involving a grant of the coal with reservation of the surface to the fee owner. The language of the

grant in that case is in general terms, namely "all coal" and without any express exemption from liability for damages caused by surface subsidence. The opinion is long, but carefully thought out, and a careful study of it is recommended to anyone interested in the subject.

Suffice it to say here that the learned Judge in the *Griffin* case argues that since the owner of the full fee was under no obligation whatsoever to sell any part of his reservation except upon such terms as he approved, and since there was nothing ambiguous or needing explanation about the grant of "all coal," it must be presumed by the court that the grantor meant exactly what he said, and that it was no province of a judge to remake the contract into something different.

There are, as stated at the outset, a few cases contrary to the position here taken.

One of them is an early Iowa case entitled *Mickle & Co. v. Douglas* decided in 1888, and reported in 75 Iowa, page 78. In that case a coal company having received a grant of all coal was enjoined from mining it by a railroad company having a right of way and track across the surface of the land by virtue of a prior grant from the owner of the full fee. The coal company then sued its granter for damages, or really for failure to convey to it part of the property which it claimed had been paid for, namely, all the coal. The court held that the surface was a dominant estate to which

the subsurface owed a duty of support and therefore no recovery was allowed the coal company. The court merely cited a few earlier Pennsylvania cases without any attempt to reason logically about the facts or the principles involved.

Another instance of a similar nature is a later Pennsylvania case entitled *Weaver v. Berwind-White Coal Co.*, 216 Pa. 195. This decision is the result of the blind following of precedent without any attempt to reason into the law any logic or common sense. To quote from the majority opinion: "It is now too late to discuss the policy of the law or the wisdom of the rule." As a matter of fact it is never too late to discuss the wisdom of any rule.

Another case apparently contrary is that of *Catron v. South Butte Mining Co.*, as decided by the Ninth Circuit Court of Appeals, and reported in 181 Fed., page 491. This controversy involves a lode claim. It is a Type 2 case, and easily distinguishable upon that ground. The result is correct, if we brush aside certain evidence which the court in that case disregarded or gave scant attention to, but the language of the circuit judge who decided the case is a typical example of the looseness of thought and language which has confused the entire issue.

In the *Catron* case the appellants were the owners of the full fee, and conveyed the surface to the appellees, reserving to themselves the minerals, but agreeing in the reservation not to mine at any time closer than 20 ft. to the surface, clearly showing by such an agreement that they intended to give surface support. It would have been sufficient to have decided the case upon the ground that because it is a Type 2 case, it carried the fair intendment of the parties to support the surface,

Gradually the courts in both England and the United States are breaking away from blind adherence to precedent. In writing leases it would be folly to neglect either a specific provision for or a waiver of surface support. It is infinitely better to include unmistakable provision covering this important matter than to leave it open to future misunderstanding, controversy and litigation.

and that this implication was strengthened and made certain by the agreement not to mine within a certain distance of the surface. The court rids itself of the following language, as a blanket proposition, and as pure dictum:

When the surface of land is owned by one and the mineral beneath with the right to extract the same is owned by another, it is immaterial whether the two interests have been created by a conveyance of the surface with a reservation of the mineral, or by a grant of the mineral with a reservation of the surface. In either case the obligation to protect the surface is the same.

Such an assertion is neither backed by common sense, logic nor by the weight of authority.

I am not discussing here that well settled line of cases, chiefly those of Type 2, where there is an explicit provision in the deed or lease which frees the underground owner from any liability for damages caused by surface subsidence due to the underground workings. In all such cases the courts uniformly held that there is no duty of support.

The case of *Scranton v. Phillips*, 94 Pa. 15, is a leading example of this sort and has been cited and quoted innumerable times. This line of cases does not need discussion here because they fall clearly within the scope of the present position of our courts, namely, that the question of the existence or non-existence of this right or duty is a matter of contract and its waiver a question of contract express or implied.

UNDERGROUND EQUITIES DISREGARDED

The difficulty is that so far the courts have been doing all the implying against the underground owner and have failed to recognize that he may have some equities in the situation which make his rights paramount to those of the surface owner. Clearly one of these circumstances where the mine owner's rights are paramount is the Type 1 case above discussed. It is conceivable however, that even in Type 2 cases there may be circumstances where the underground owner should be held to be free from any duty to support the surface. If we take the courts at their word, that the waiver of this right or duty is a matter of contract, then we are at once relegated, even in the Type 2 case, to the usual rule that all contracts are to be construed in the light of the intention of the parties as it existed at the time the contract was entered into and not in the light of subsequent events and circumstances.

YEARS ELAPSE BEFORE DISPUTE BEGINS

It is generally many years after the grant or reservation is made that the parties or their successors in interest get into a dispute as to the existence of this right. If *A* and *B* in the Type 2 case are then still the owners of their respective estates there will be a conflict of testimony as to the intention or else there could be no dispute. *A* will say that he intended to reserve all the coal with full right to mine every bit of it out from under the property, whereas *B* will testify that both parties intended that he should use the surface in any way that seemed best in accordance with the future development of the locality and that his present user is an entirely natural one and hence he claims that he is entitled to surface support from *A*.

This sharp conflict of testimony requires the court to look elsewhere for proof and it is conceivable that sufficient proof may sometimes be obtained from the surrounding circumstances. Suppose at the date of severance the coal was of known value and the extent

of the deposit was such as to make the tract of great worth. Suppose at the same time that the surface consisted largely of a gravel bed and that testimony was introduced to show that *B* in negotiating for the surface had been negotiating for some time in order to establish a gravel pit thereon. Subsidence would not destroy the value of the surface for a gravel pit. If he later changed that user and thus placed heavier burdens upon the surface or adopted a user that would be greatly interfered with by the subsidence or danger of subsidence, it does not seem just or equitable that the court should allow him to destroy by this subsequent change the valuable reservations made by *A*.

CASE IN POINT IS CITED

Another case which we might suppose, would be where the surface of the land at the time of the severance of the two estates was being utilized for dry farming, which *B* intended upon severance to continue. Many years later a government reclamation project is installed in the community with the result that irrigation is brought upon the land. Seepage occurs which weakens the support that had heretofore been adequate. The surface subsides and becomes unsuitable for agriculture. Perhaps a logical construction of the intention of the parties at the time of the severance of the two estates, would at most cast the duty upon *A* of providing support for the surface as a dry farm. Yet upon the present state of the law it is likely that *A* would be required to respond in damages to *B*. Here, too, is a change of user on the part of *B* occurring after the severance of the two estates and that could not be held to have been within the intention of the parties at the time the contract was entered into. Consequently in this Type 2 case, it would be equitable and just to deny any damages to *B* and if the seepage were such as to interfere with proper mining of the coal and cause damage, to make *B* respond to *A* for the damages so occasioned.

A DISTINCTION WITH A DIFFERENCE

Other Type 2 cases can be imagined where there would be no liability for damages for failure to support the surface but they are all unusual and must stand or fall upon the peculiar facts involved in each. I repeat that in the usual Type 2 case, that is to say, a case of the grant of the surface with a reservation of the coal rights, there is a duty to support the surface. In a Type 1 case on the contrary, that is to say, a grant of the coal with a reservation of the surface there is no such duty.

So far as I am advised there is but one case where the court has held expressly that where the grant of the coal in general terms, is made with a reservation of the surface followed by a subsequent grant of the surface, it would be a derogation of the grant of the coal to require any duty of surface support but that case has not as yet reached the court of last resort and, therefore, cannot now be cited as a precedent.

This distinction between a reservation and a grant and the results which flow therefrom, while somewhat novel in coal cases, offers the only logical solution of the average case involving the duty or right of surface support and consequent damages for breach thereof. These questions are bound to arise in the future just as they have in the past, because a large amount of undeveloped coal land has been deeded or leased, and in the latter instance the leases for the most part run for

long periods of time. Of the thousands of leased coal properties in Colorado, it is probable that only a small percentage contain any provision freeing the coal operator from liability for damages to the surface from subsidence. This situation is probably the same in other coal-mining states.

There is still much undeveloped coal and mineral land to be dealt with by barter, sale or lease. As to all future leases, it would be the height of folly not to include some provision either requiring or waiving surface support. It is much better to express clearly the intention of the parties at the time a transaction is entered into than to leave it for conjecture and subsequent litigation. Sometimes this is impossible, however, and in such instances the principles here set forth should be borne in mind as a determining factor in fixing the rights of the respective parties.

Men and Women of the Mines—IV Another Monthly Man

By H. S. Geisner
Birmingham, Ala.

His title was that of master mechanic but considering that ordinarily he was boss of only two helpers who could hardly be classed as mechanics this title was somewhat extravagant. The mechanical equipment at the mine where he was employed consisted principally of a battery of steam boilers, a hoisting engine, two straight-line air compressors and an engine-driven fan. All these were installed on the outside. Underground there were several air-driven pumps and a hoisting engine.

It was before the days of extensive electrification. The mine had been in operation some fifteen years and most of the equipment was approximately as old as the mine. Possibly some of it was older because few operators could resist the temptation to buy second-hand equipment "guaranteed as good as new" at the time that this mine was opened. Judged by its performance, one might have assumed that some of the equipment must have been on its last legs when it arrived at this particular job but the age of machinery around coal mines cannot always be judged by its actions.

Nine months in the year none of the machinery was in operation more than 10 hr. per day excepting, of course, the boilers. But during the wet season the compressors and pumps had no regular hours and often worked continuously for weeks. At such times the master mechanic was known to spend four and five days without taking off his clothes. He snatched a few hours of sleep now and then on a plank a few feet from the boiler feed pump. He had an old grain sack for a pillow and if the wind was blowing he might have an overcoat for a comfort but the plank was always bare and soft.

His helpers were more particular about their hours—they got paid by the hour: the master mechanic was paid by the month. Undoubtedly, if he had been needed every hour in the month he would have offered no complaint providing he could have kept awake.

When his helpers "white eyed" he tried to get others and failing in this attempted to do all of the work himself. He had the strength of an ox and never spared himself in any way. The average circus "strong man" would have been a weakling beside him.

Occasionally (and this is an elastic word) both of the

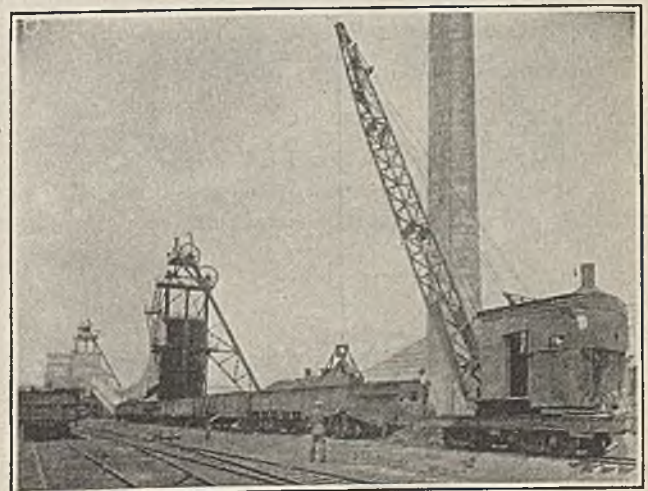
compressors would stop compressing simultaneously for several hours and shortly after they had been coaxed back into action one or more of the pumps inside of the mine would cease pumping and the water would begin to rise and keep on rising until the miners working in the vicinity of the sump became alarmed and hurrying out of their working places offered to lend a hand. Yes, the miners were known to take orders from the master mechanic. Just before the water reached the danger mark they would get control of it and the tension would be relieved—providing the master mechanic nursed and coaxed the pumps so that they would not miss another stroke for several days. And that is exactly what he did. Yet he carried all of his tools in his jumper pockets, along with his tobacco. One of those pockets generally had a hole in it at that.

When the miners went out on strike he shouldered a gun and served as a mine guard 12 hr. per day, seven days a week. He was a monthly man and all the other monthly men on the pay roll did the same thing.

There was nothing exceptional about his actions. Other mines in the vicinity had men of the same kind. What has become of the type—and why?

Recuperators for Open-Hearth Furnaces Would Cut Coal Bills One-Fifth

Use of electricity for driving mills and machinery is gradually reducing the usefulness of waste-heat boilers at the steel works, making the regenerator or recuperator the only alternative. "The quantity of heat lost up the stack of an open-hearth furnace, operating under average good conditions, without waste-heat boiler, is considerable," says W. H. Fitch in *Iron Age*. "The average temperature of these gases in furnaces of a representative plant is approximately 1,400 deg. F. In the case of a 100-ton capacity furnace making a heat every 10 hr. and gasifying 600 lb. of coal per ton of steel tapped, the possible avoidable loss of fuel per annum (300 working days) up the stack is 4,320 tons of coal. A reduction of temperature of gases from 1,400 to 700 deg. F. when entering the stack would be equivalent to a saving of 20 per cent of the fuel fired. At \$5.50 per ton of coal gasified, \$4 for coal delivered and \$1.50 for gasification, the savings would be \$23,760 per year."



Crane at New Orient

Coal is unloaded at the boiler plant of this mine by a locomotive crane. In the extreme rear is the main shaft and in the mid foreground the auxiliary shaft. This operation belongs to the Chicago, Wilmington & Franklin Coal Co., West Frankfort, Ill.

Welding Pipe Lines Instead of Threading Makes Tight Job and Saves Money

Welding Allows Pipe To Be Worked to Its Full Strength Thus Saving Purchase of Useless Metal—No Fittings Need Be Carried In Stock as They Can Be Made Up on the Job as They Are Needed

By J. F. Eldee
Clearfield, Pa.

AT ALL MINES there is more or less pipe line work to be done. In the installation and maintenance of piping systems the mine operator may well profit by the experience of those in the oil and gas industry. Visit any refinery, compressing station, drilling operation or line job and you will be amazed at the absence of threaded or flanged pipe connections and manufactured fittings. Yet even though subject to extreme pressure there are no leaky joints.

Closer examination shows the reason for this condition. Every joint is welded. In fact even the seams on the tanks, columns, risers, and the like are made in a similar manner.

The remarkable strength of welded pipe joints is demonstrated in the welded casings going into the new deep well of the Hope Natural Gas Co. near Clarksburg, W. Va. This well was approximately 7,000 ft. deep when I visited it recently. The casing was being then lowered into the well, each successive length being welded on. Anyone familiar with the size and weight of well casing can readily visualize the enormous stress imposed on the welds near the top of this long length.

The welded joint is the only type that permits the pipe to be worked to its full strength. Notice the depth of the threads on the end of an ordinary piece of pipe. They are about $\frac{1}{4}$ in. deep. This means that just that much excess metal must be purchased if threaded fittings are to be used. In the case of a 3-in. pipe this excess amounts to approximately one ton for each 600 ft. of pipe line. That extra iron or steel costs somebody some good hard cash. It follows then that if joints are welded money may be saved on many applications in the use of lighter-weight pipe.

At many mining operations that I have visited leaking joints and pipe have been seen. This certainly does not improve working conditions within the mine or increase the efficiency of the pumping or drainage system. In only one case was welded pipe observed and that in a Western mine. This installation has been in service for several years and to date has caused no trouble or expense.

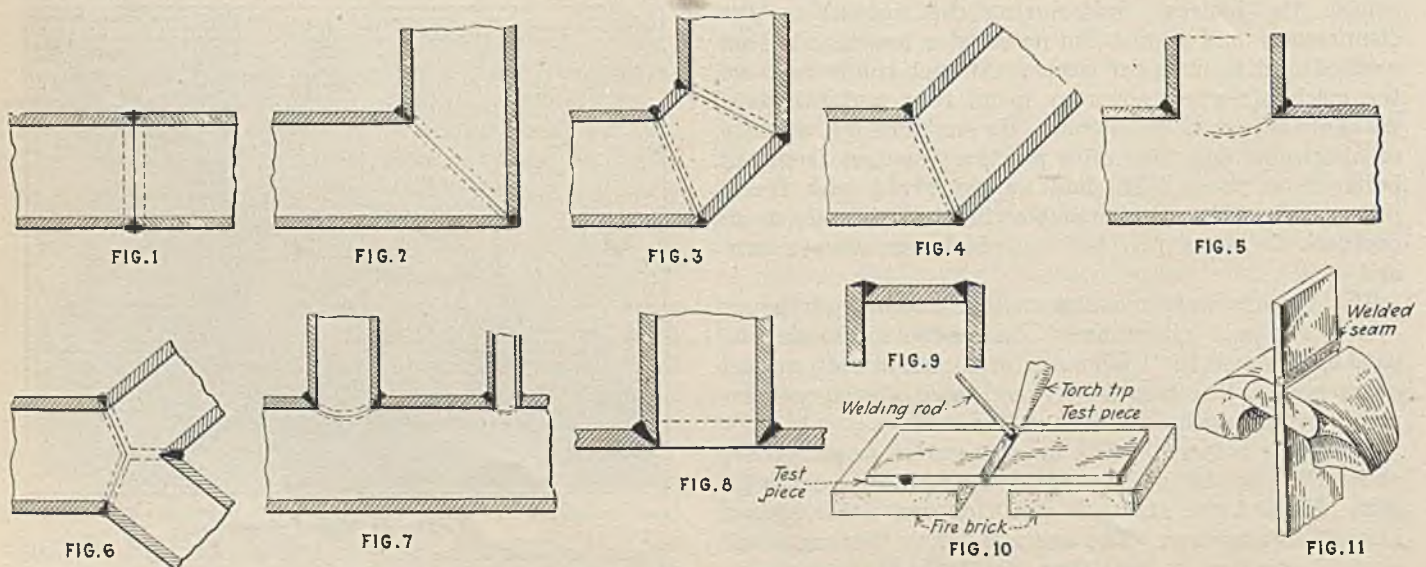
The permanence and superiority of welded lines have been proven and, although the initial cost is in some cases slightly higher, it is more than offset by the low upkeep. Ordinarily no maintenance expense need be considered. Furthermore, the bother and cost of special fittings is eliminated. None need be carried in stock as they can be made up on the job when and as needed.

Many coal companies, today, have oxy-acetylene welding and cutting equipment and with a little practice the mechanic will find that he can easily produce excellent pipe welds. Methods will be described later whereby the operator can roughly test the quality of his work.

For successful pipe welding it is essential that a high-grade low-carbon or mild-steel welding rod be used. Such a rod should have a bright coppery surface; rod that is rusty or dirty should be avoided.

The ends of the pipe should be beveled at about a 45-deg. angle. This may be done with the cutting torch. Some pipe manufacturers now supply their product already beveled if it is so specified on the order. The ends of two pieces of pipe are butted together as shown in Fig. 1 and the weld started.

When the pipe has been beveled by means of the torch care must be exercised that the film of oxide left by the cutting operation is floated out and thorough fusion



Various Pipe Welding Operations and Methods Employed

secured. Best results can undoubtedly be obtained only if this oxide is removed by grinding or otherwise, but this is not always either convenient or possible. On pipe work the operator will find it necessary to weld in all manner of positions, but a little effort will show that excellent welds can be produced on other than a horizontal plane. On vertical or overhead welding the heat is used sparingly on the rod while the work is kept in a plastic state. The edges are worked together with the rod and built up as desired. Fortunately, steel solidifies almost the instant the flame is removed from contact with it, so that by keeping the torch in motion the operator can avoid the metal running away.

WELDING TIP SHOULD FIT THE OPERATOR

The size of welding tip used should be the one best suited to the ability and experience of the torch operator. Numbers 6 to 10 are the ones most commonly employed. The flame should at all times be neutral. Excessive oxygen or acetylene either oxidizes or carbonizes the weld and renders it unsatisfactory. The point of the incandescent cone should be kept close to the work without actually digging into the puddle. Forcing the neutral cone into the molten metal is highly detrimental to the quality of the weld. It is well to keep the work covered by the brush of the flame for every time this is lifted the air comes in contact with the red hot metal and forms an oxide film that makes good welding difficult. Metal should not be dripped from welding rod but its end should be kept immersed in the puddle.

In some cases it may be impossible to work all the way around the pipe but this condition is easily met. A small hole is cut in the exposed side and the welding done half way around from the inside. The piece cut out is then put back into position and the weld completed on the exposed surface.

Figs. 2, 3 and 4 show how "L" and other angle fittings may be made. Figs. 5, 6 and 7 show "T," "Y" and side fittings respectively. All of these types may be made up on the job as needed and any fitting or combination of fittings can be readily constructed in this manner. The ends of the pipe are cut and beveled to shape with the torch and the welds made in the usual way.

CUTTING TORCH IS A LABOR SAVER

To tap into an existing line it is not necessary to remove a pipe section, cut, rethread and refit as with the old method. With the cutting torch a hole is made at the desired point and the new line welded in. If a section develops a leak it is not removed and scrapped but the leaks are welded up.

Fig. 8 shows how a pipe is welded into a tank. Should it be necessary to make a flange on the end of the pipe, a circular piece of sheet steel may be welded on in a similar manner. Should it be desirable to close the end of a pipe this may be done as shown in Fig. 9. This makes a strong, satisfactory job.

Should it ever become necessary to remove a welded pipe line, it can be cut with a torch into sections of any desired length. On a new location it is a simple matter to weld these pieces back together again.

Unless the torch operator has had a fair amount of welding experience it is advisable that some test welds be made before a real job is tackled. It would surprise some men who count themselves good welders if they also would make some of these tests.

For the purpose of testing, steel plate of as nearly as

possible the same thickness as the walls of the pipe, should be used. In most cases it is possible to find some plate on the scrap pile that will answer the purpose. With the cutting torch, several strips about 2 in. wide and 8 or 10 in. long are cut. After the ends have been beveled to 45-deg. angles two of the pieces are butted together, as shown in Fig. 10, and carefully welded.

When the piece has cooled it is clamped in the jaws of a vise, as shown in Fig. 11. It is then bent to a right angle or until it breaks. If necessary it may be bent back and forth several times until fracture occurs. For comparison a piece of similar plate without a weld may be bent in like manner until broken. In the case of the welded test piece the operator should note carefully all defects and attempt to correct them in the welding of further samples.

After a few attempts the mechanic should produce a test sample that compares favorably with an unwelded piece of steel. This does not mean that he should be able to produce a sample that requires as much effort to break as does an unwelded piece. No weld can be relied on to do this without heat treatment. He should, however, be able to make a weld that is free from defects.

The welder should also make some test welds in vertical and overhead positions, and test them in the same manner as the others. When all welds show up well he is competent to save his employers money on a pipe or any other low-carbon mild-steel welding job.

THERE IS a common ground between the interests of both producers and distributors that can be determined. And by the establishment of proper relationships, through which reasonable consideration can be devoted to the incorporation of constructive policies the road will be opened to the aggressive advancement of the entire industry. In this, both parties should be vitally concerned.—*Charles F. Abbott, American Institute of Steel Construction, Inc.*

Drink Safely and Healthily and Keep Well



Consolidation Provides Fountains for Its Men

Men around a tippie find it difficult to obtain good drinking water. When the tea or coffee in their dinner pails is exhausted they are likely to drink from springs which, too often, are polluted. Yet it is largely health that determines the efficiency of employees. This illustration was one of those presented by J. I. Forbes at the recent National Safety Congress. It shows a fountain equipped with a spigot for filling pail and located on the outside of one of the mines of the Consolidation Coal Co., of West Virginia.

Viewpoints Of Our Readers

Insists on Need for Wage Reduction

Seemingly, the editorial in your issue of April 7, "No Time For Strategy," was written in ignorance of, or without regard to, the main and principal question involved between Mr. Lewis and the operators of the Central Competitive Field. There is no suspicion or distrust on the part of the operators.

The miners' officials have declared in unmistakable terms that they will not enter into any negotiations having as a purpose any mitigation of the terms of the Jacksonville agreement. To enter into negotiations with the miners' representatives, while such declaration stands, would be puerile.

You deprecate "phrase mongering." What is your editorial herein referred to, but that?

THOMAS T. BREWSTER,

Mt. Olive & Staunton Coal Co.
St. Louis, Mo.

President.

Evidence That Coal Is a Fertilizer Not Entirely Convincing

In reference to the letter from Charles G. States, of Cedar Edge, Colo., in your "Viewpoints of Our Readers," Aug. 26, 1926, having relation to the use of coal to fertilize land, would say that if the data obtained have been checked up by comparisons with plots without treatment and also with plots treated with manure and lime, used both separately and together, it might be possible to draw some conclusions. As a matter of fact, it might well be found that the lime or manure would afford just as satisfactory or perhaps even a better growth with the coal waste omitted.

The statement regarding soot should not be considered in connection with the coal, as soot is a well-recognized fertilizer material carrying its value in an available form. We recommend soot continually as a soil amendment.

Of course, there may be another explanation rather than the chemical value of the coal waste, in that it may possibly have improved the physical condition of the soil. It is possibly to do this in some cases by adding sand, which has little value chemically, but may be of service in making the soil more open and porous.

A. G. RICE,

Acting Chief of Bureau,

Bureau of Soils, Washington, D. C.

Blames Freight Rates for Tonnage Shift

I have read with interest the story by your Washington correspondent, Paul Wooton, "Inroads of Coal from Southern Fields in Northern Markets Strikingly Shown by Figures on Traffic to New England," contained in your issue of March 31.

Mr. Wooton quotes at considerable length the testimony offered by the Central Pennsylvania Coal Producers' Association as to the shift in tonnage supplied to New England and New York harbor from Northern mines to Southern mines. Mr. Wooton also

makes a statement, "It is shown clearly that the forces bringing about this change arise primarily from differences in cost of production, due chiefly to the differences of labor cost." I might say that the figures do not show anything of the kind.

The loss of Pennsylvania all-rail tonnage to New England, according to the evidence, has been caused by the all-rail rates having been increased 7c. to 62c. per ton more than the rail-water rates applying to Southern coal.

The testimony shows that a freight rate from Northern mines to New York harbor of \$2.74 for 327 miles with better transportation conditions as against \$2.52 for 415 miles to Hampton Roads is the cause of the loss of business at New York harbor and also of business at Long Island Sound points which was formerly trans-shipped at New York harbor piers.

The fact of the shift of tonnage as reported by Mr. Wooton is correct, but his conclusions as to the cause are wrong and unjustified.

CHARLES O'NEILL,
Secretary, Central Pennsylvania Coal Producers'
Association, Altoona, Pa.

Rock Dust Subdues Flame from Shots But Does Not Quench Ignited Gas

In further elaboration of my remarks in the issue of March 3, p. 328, on the making of rock dusting of coal mines compulsory in Germany, I would say that though rock dust spread in roads or even in rock-dust barriers is not capable of extinguishing a gas explosion once it has been started, it is generally admitted in Germany, France and Belgium that rock-dust stemming gives complete security against the ignition of gas by the firing of a shot, because the flame of the explosive is quenched immediately in the cloud of dust which the explosion itself raises. Experiments in the Derne gallery in Germany and at Frameries, Belgium, prove these facts. In the former country the shot is stemmed with a paper tube filled with a special dust containing a certain quantity of carbonate. It is known as Kruskopf patent stemming. In Belgium the use of the Lemaire cartridge is obligatory in gassy mines. This cartridge invented by Lemaire, head of the research staff at the Frameries gallery, is an ordinary cartridge of permissible explosive. This is surrounded by a sheath of extinguishing material which consists of sodium fluoride or a mixture of potassium or sodium chloride with at least 35 per cent of sodium fluoride, the whole being mixed with 25 per cent of clay.

R. H. TOWAIDE,

Ressaix, Belgium.

Ressaix Colliery Co.

Shearing Halves Powder Bill in Colorado Mines

In the Sept. 23, 1926, issue of *Coal Age*, p. 424, I am represented as saying that "where undercutting and shearing had been introduced in place of undercutting alone the use of powder per ton of coal had been reduced from 5 lb. to a trifle over one pound." The statement that I made must have been misunderstood as my remarks were to the effect that the Colorado State Mine Inspector's Report for 1925 showed that in two of the Northern Colorado lignite mines that were undercutting and shearing, 5 tons of coal per pound of powder was produced and at the adjoining mines where coal was undercut alone, that 1.8 to 2.3 tons of coal were produced per pound of powder.

Denver, Colo.

J. Q. LALOR.

Current Prices of Mining Supplies

Electrical prices are to the mine by jobbers in the larger buying centers east of the Mississippi. Elsewhere the prices will be modified by increased freight charges and by local conditions.

SINCE LAST MONTH

MOST of the price changes of the last four weeks were in a downward direction. Declines developed in section angle bars, white cotton waste, scrap metals (ferrous and non-ferrous) and wire products. Cast-iron pipe is up \$1 per ton at the principal centers of production and distribution in the North. New mill lists on bolts, nuts, etc., became effective Apr. 1, 1927; latest discounts are shown in the accompanying table.

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

	Pittsburgh		Birmingham	Chicago
	Current	Year Ago		
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	35.00	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 carload lots, together with warehouse prices at the places named:

	Pittsburgh		Chicago	Birmingham
	Current	Year Ago		
Standard spikes, 1/2-in. and larger.....	\$2.80@3.00	\$2.80	\$3.55	\$3.00
Track bolts.....	3.90@4.50	3.90@4.15	4.55	3.90
Standard section angle bars, splice bars or fish plates.....	2.75	2.75	3.40	4.15

WROUGHT PIPE—The following discounts are to jobbers for carload lots at Pittsburgh mill:

Inches	Steel Black		Inches	Iron Black	
	Galv.	Galv.		Galv.	Galv.
1 to 3.....	62	50 1/2	1 to 1 1/2.....	30	13
2.....	55	43 1/2	2.....	23	7
LAP WELD					
BUTT WELD, EXTRA STRONG, PLAIN ENDS					
1 to 1 1/2.....	60	49 1/2	1 to 1 1/2.....	30	14
LAP WELD, EXTRA STRONG, PLAIN ENDS					
2.....	53	42 1/2	2.....	23	9

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

	Black		St. Louis
	New York	Chicago	
1 to 3 in. butt welded.....	53%	54%	49%
2 1/2 to 6 in. lap welded.....	48%	51%	46%
	Galvanized		St. Louis
	New York	Chicago	
1 to 3 in. butt welded.....	39%	41%	36%
2 1/2 to 6 in. lap welded.....	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 carload lots:

	New York			One Year Ago
	Birmingham	Burlington, N. J.	Current	
4 in.....	\$42.00	\$50.00	\$52.60	\$54.60@56.60
6 in. and over.....	38.00	46.00	48.60	50.60@52.60
	Pittsburgh		Chicago	St. Louis
	Chicago	Chicago	San Francisco	San Francisco
4 in.....	\$49.60	\$50.20	\$47.60	\$51.00
6 in. and over.....	45.60	46.20	43.60	47.00

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 1/2 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 carload lots, f.o.b., for 1/2-in. thick and heavier:

Pittsburgh.....	\$1.80@1.90	Birmingham.....	\$2.00
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STRUCTURAL RIVETS—The following quotations are per 100 lb., in carload lots, f.o.b. mill, for 1-in.:

Pittsburgh.....	\$2.75	Cleveland.....	\$2.75	Chicago.....	\$2.85
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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 tiler.....	5
Galvanized steel rigging and guy rope.....	7 1/2
Galvanized iron rigging and guy rope.....	+12 1/2

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.....	30%
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FRICITION TAPE—Size 1/2-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 8 1/2 Ft.	
Chicago, white oak, plain.....	\$1.45		\$1.83	
Chicago, empty cell creosoted.....	1.85		2.45	
Chicago, zinc treated.....	1.65		2.15	
St. Louis, white oak, plain.....	1.20		1.45	
St. Louis, zinc treated.....	1.60		1.85	
St. Louis, red oak, plain.....	1.10		1.35	
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 1/2 @ \$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.....	.35
Jute, 18-oz.....	.15	Duck, non-inflammable.....	.32
Old sail cloth.....	.55		

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

	New York	Cleveland	Chicago
White.....	10.00@13.50	16.00	15.00@20.00
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 net ton paid by dealers:

	New York*	Chicago	Birmingham
No. 1 railroad wrought.....	\$12.50@13.50	\$12.50@13.00	\$12.00@13.00
Stove plate.....	8.50@10.50	13.50@14.00	14.00@14.50
No. 1 machinery cast.....	15.00@16.00	16.50@17.00	17.00@17.50
Machine shop turnings.....	7.50@8.00	7.00@7.50	8.00@8.50
Cast borings.....	8.00@8.25	9.50@10.00	8.00@9.00
Railroad malleable.....	12.50@13.00	14.00@14.50	16.00@17.00
Re-rolling rails.....	11.50@12.00	14.25@14.75	15.00@16.00
Re-laying rails.....	23.00@24.00		21.00@22.00
Heavy melting steel.....	8.25@11.85	11.75@12.25	13.00@14.00

* Gross ton.

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

	New York	Cleveland	Chicago
Crucible heavy copper.....	\$11.50@11.75	10.75	10.75@11.25
Copper, heavy, and wire.....	10.75@11.25	11.00	9.75@10.25
Copper, light, and bottoms.....	9.25@9.75	9.50	8.75@9.25
Brass, heavy, yellow.....	7.25@7.50	7.50	6.75@7.25
Brass, heavy, red.....	9.25@9.50	9.50	9.00@9.50
Brass, light.....	5.50@5.75	6.00	6.00@6.50
No. 1 yellow rod turnings.....	7.50@8.00	7.50	7.00@7.50

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

New York.....	18.50	Cleveland.....	18.37 1/2	Chicago.....	15.00
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TROLLEY WIRE—In carload lots, f.o.b. producing point, all sizes, round, 15 1/2c. per lb.; grooved, 15 1/2c.; Fig. 8, 16 1/2c.

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 2.....	\$208.00
Size 3.....	74.50		Size 3.....	188.70
Size 4.....	65.70		Size 4.....	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.....	\$31.00 (net)	\$50.00 (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 carload lots:

	West Virginia	Districts	Missouri
		Pennsylvania	
Black Powder, FF, NaNO ₃ base, 800 kegs per car, per 25 lb. keg.....	\$1.70@1.80	\$1.70	\$1.75
Ammonium permissible, 1 1/2 x 8 in. sticks, 20,000 lb. per car, per 100 lb.....	14.50@15.50	14.25	14.50



Practical Pointers For Electrical And Mechanical Men



Two Safety Kinks Aid in Preventing Runaway Mine Car Crashes

A frequent source of accidents, and one that is too often overlooked, is the accidental detachment of mine cars from the trip. Although danger from this origin is naturally much greater on steep grades, it is also present on level stretches of track underground. Many mines have adopted more or less elaborate precautions—



Fig. 1—Securely Holds Coupling Pins

The home-made device here illustrated is a real "safety first" measure. The hook attached to the top of the moveable coupling pin falls under the drawbar and thus prevents the pin from jolting out when the trip passes over rough sections of track. Attached to the car by a chain, it also prevents loss of the pin.

such as automatic couplers, de-railing devices, automatic block-signal systems, etc.—to guard against accidents resulting from cars becoming uncoupled while in transit. The accompanying illustrations show some of the safety measures of this kind adopted at the Dawson Mines of the Phelps Dodge Corp., Dawson, N. M.

Fig. 1 shows a simple and inexpensive homemade device that will positively prevent the coupling pin from jolting out when the cars are made up into trips and hauled over rough sections of track. As illustrated, the device consists of a clevis-like arrangement movably attached to the top of the coupling pin at one point and firmly fixed, by means of a chain at another point, to the end-frame of the car. When in operation, the hook falls under the drawbar and thus absolutely prevents accidental removal of the coupling pin. To uncouple the car it is only necessary for the operator to grasp the chain and pull in a horizontal direction—the hook being thus pulled out from under the drawbar, the coupling pin is readily removed.

The size of the coupling hook, as well as of the chain by which it is fixed to the car, will naturally vary with the size and weight of the car to which it is affixed. The device shown can be as easily and quickly attached to a steel car as to one of wooden construction. In the

former case, it is only necessary to drill a small hole in the end gate to permit of the insertion of the eye-bolt to which the chain is attached.

Another means of accident prevention in use at the Dawson Mines is shown in Fig. 2. This consists of a "flag" which is mounted on the last car of all trips whether loaded or empty. The flag is usually about 5 in. deep by 7 in. wide and is generally made of sheet iron or tin. It is ordinarily painted with aluminum or other bright paint, but may also be painted red if it is to be used in place of the customary tail-light. It is made with a hook by which it is readily attached to the top of the end of the rear car.

The use of this rear-end flag or "target" serves two purposes: First, the motorman is always certain that he arrives at his destination with all of the cars with which he started and it obviates the necessity of counting the cars with the possibility of a miscount or of forgetting the number counted. If the flag is not showing, the motorman at once knows that one or more cars have become detached in some manner. He can, therefore, take the necessary steps to prevent a possible accident which might result from the cars running away on a steep grade or causing a rear-end collision on level tracks.

Secondly, as the flag is always bright and shiny, it makes a tail-end signal that can be readily seen by the motorman of a following trip. This prevents smash-ups and the danger of collisions along the haulage roads, as the headlight of the locomotive of a following trip will "pick up" this bright signal at a distance of several hundred feet. In this way the motorman will have ample time to bring his train to a stop. The flag is readily detached, when the trip reaches its destination, for use on another journey.

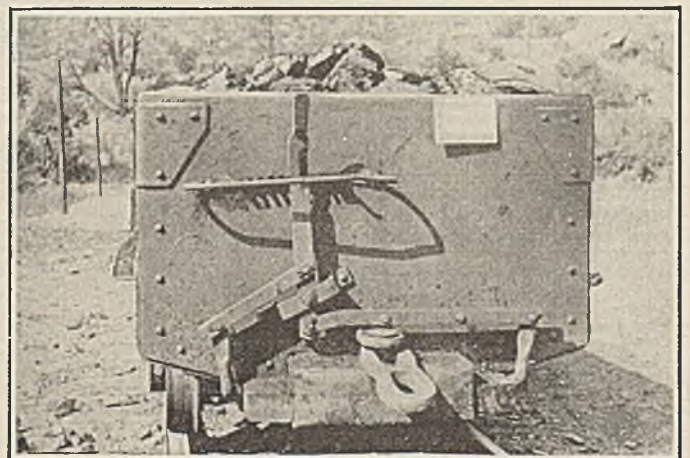
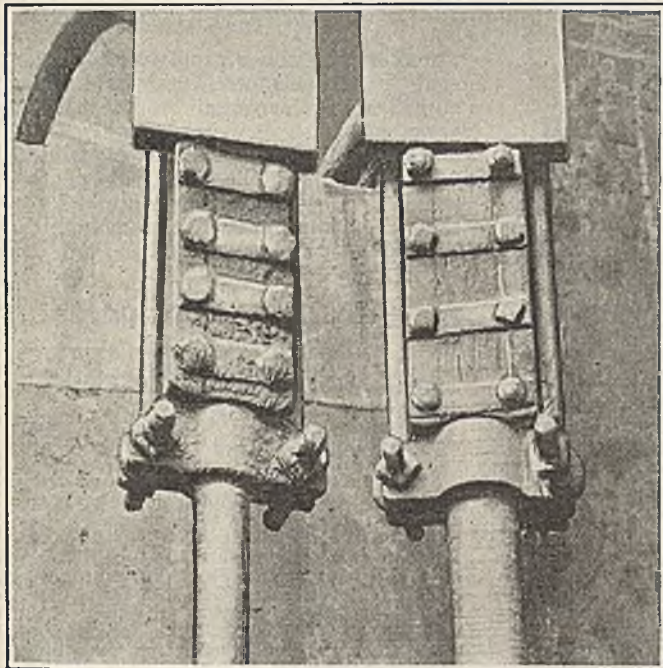


Fig. 2—Flag Used on Last Car of All Trips

This signal, a small piece of brightly-painted sheet metal, is quickly and easily attached to the car. Not only does the flag enable the motorman to be positively certain that he arrives at his destination with the full complement of cars, but it also makes an excellent tail-light and thus tends to prevent rear-end collisions.

Home-Made Clamp Has Double Hold On Armor of Cable

Life, as a rule, is not dependent on the suspension of an armored cable entering a shaft mine, but production is and in emergencies, life may also be. As compared to the cost of the cable, the cost of the suspension is small, therefore the engineer ordinarily uses the best suspension that he can make or buy, regardless of price.



Two Cables and Their Suspensions

The cable sections from which the armor wires have been removed are turned back over the sides of the clamp. Boards protect the unarmored portions from mechanical injury. The support is thus firm yet does no injury to the cable.

It is interesting and instructive to note in detail the cable-suspension method used at New Orient, the world's largest mine. The electric cables are suspended in the rounded end of the auxiliary shaft which is approximately 500 ft. deep.

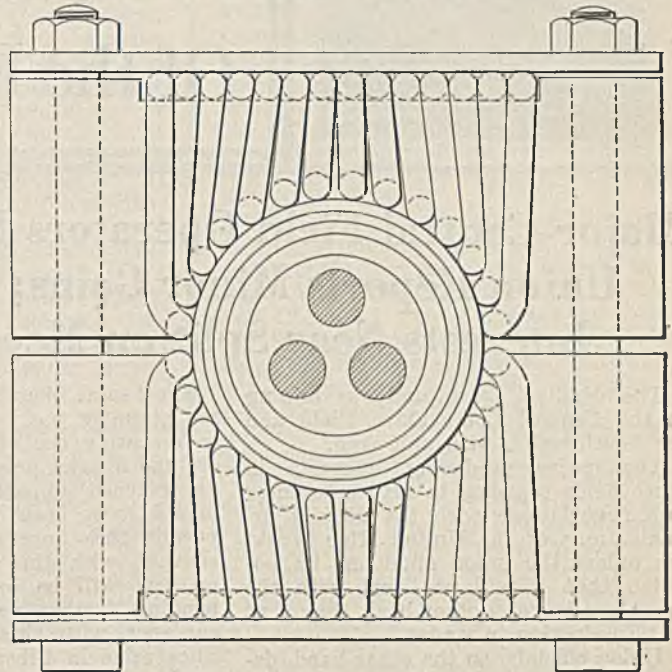
The illustration shows the suspension of two of the several leaded and armored cables. At the left is the 1/0, 3-conductor 220-volt cable that feeds the ring pump, and at the right is the 400,000-circ.mil, 3-conductor, 2,200-volt feeder which goes to the underground sub-station.

HOW CLAMP BODY WAS MADE

The line drawing, which is a view looking down on the upper end of a clamp with the cable cut off just above, indicates the details. The two blocks which are of cast iron and form the main clamp body were prepared as follows: First, the holes were drilled for the eight 3/8-in. bolts. Next the halves were clamped together with a 1/2-in. spacer between and bored to the outside diameter of the armor. Grooves, somewhat shallower than the diameter of the individual armor wires and wide enough to take half of the wires in a single layer, were then planed lengthwise down the broad side of each piece. The last operation performed in this connection was the rounding of the upper corners of the cable hole and of the grooves to a 1/4-in. radius.

When the clamp is assembled on the cable the 1/2-in. spacer is left out, thus assuring a tight grip on the

armor. Half of the armor wires are turned back over the top of the cable and laid in the groove on one side, and the same with the other half. The armor is clamped a second time by the straps held by the main clamping



Top View of Main Clamp

This indicates how the armor wires of the cable are turned back over the sides of the clamp and there held by straps secured by the clamping bolts. The corners of both halves are rounded to a 1/4-in. radius.

bolts. Two 1-in. rods fastened to forged clamps which fit loosely over the cable below the main clamp, take the weight.

In reply to an inquiry as to why a home-made suspension was used instead of a standard commercial type, A. E. Giles, chief electrician of New Orient and other mines of the Chicago, Wilmington & Franklin Coal Co., replied that: As the commercial types of clamps offered were not suited for the conditions it was decided to design a clamp for this particular service.

Protects Eyes of Shop Workers



Shield Completely Encloses Arc Welder

The door of the shield was thrown partly open for the purpose of taking the photograph from which the illustration has been made. The word "Knock" is placed on the screen, so that the operative will be notified before anyone enters. The Consolidation Coal Co., of West Virginia, which has provided this screen at its shops gave this illustration to J. J. Forbes for his article on "Safety Kinks" at the recent National Safety Congress.



News Of the Industry



Major Central Field Operators Firm; Union Reports Minor Gains; Indiana Interests Near Split on Mechanization

The deadlock in bituminous mining in the Central Competitive Field and the Southwest is still unbroken.

The major producing interests in those fields continue to refuse to enter into negotiations with the district organizations of the United Mine Workers unless the union abandons its position that it will not deal with the operators on "any other basis than that of no reduction in wages."

Union officials, on the other hand, declare that they are hopeful that an agreement will be reached on the basis of the demands laid down in the scale committee report at the Indianapolis convention. Considerable emphasis is placed by them on the number of smaller operations which already have accepted the union proposal to continue at work.

According to the union, in addition to the general acceptance announced some time ago in central Pennsylvania, Michigan, Wyoming, Washington and Montana, the operations now working under interim arrangements include 15 shipping and 73 local banks in Illinois, all of the operations in the block coal district of Indiana, 62 wagon mines in the Pittsburgh district, 45 mines in Iowa and 24 in Kansas. One of the biggest plums which fell to the union since it was announced that Steel Corporation and United Electric mines in Illinois would continue was the acceptance of the interim agreement by the Marion County Coal Co., at Centralia, Ill.

Illinois Producers Cheerful

Illinois operators express themselves as well satisfied with the present status of the suspension. The executive committee of the Coal Operators' Association of Illinois is holding frequent meetings to canvass the situation. The most recent meeting of this kind was held in Chicago on Tuesday. So far, however, no move toward initiating district negotiations has been reported.

Operators and miners met on April 12 and 13 to take up minor labor disputes and grievances in the northern, central and southern parts of the state. Although Harry Fishwick, president of district 12, was present, neither side discussed the suspension. When the meeting adjourned last Wednesday announcement was made that there would be another meeting at St. Louis on April 20 to consider routine labor problems in the Belleville district.

Shaft-mine operators in Indiana also are standing pat. The sub-committee representing the stripping-pit producers and district union officials have not yet reached an agreement. Arrangements have been made, however, to permit these operators to run their shovels, with the understanding that no coal will be loaded for shipment pending further negotiations. In accordance with this arrangement, the Enos mine in Gibson County resumed work on April 11.

Mechanization threatens to upset the solidity of the Indiana shaft-mine operators. Producers are divided into two groups and those favoring mechanization and the inclusion of a loading scale as part of the general wage agreement are becoming less reserved in their criticism of the "old guard" which spoke for the state at Miami. Some go so far as to charge that the clamor over "wildcat" strikes was a smoke screen thrown up to conceal the hostility of the conservatives to the whole mechanization program.

Six Mines Open Non-Union

Little change takes place from week to week in the situation in Ohio. According to officers of the Ohio Coal Operators' Association six commercial mines have resumed operations on a non-union basis since the expiration of the Jacksonville agreement, but the producers decline to make public the names of the properties of the districts in which they are located because of fear that union activity might be directed against them. Four more commercial mines are to resume this week.

One of the mines, which started up with its old employees on a reduced scale, loaded 800 tons a day before the strike and is now said to be loading 600 tons. Another formerly loading 900 now loads 400.

Six other mines—these in the Cambridge field—are working non-union under injunctions obtained several months ago. With the addition of stripping operations in eastern Ohio, a few co-operative mines in the northern part of the state, and the mines in the Pomeroy Bend field which have been running non-union since 1925 these represent the extent to which the Ohio operators have been able to run open-shop. The great majority of the properties, however, are still shut down and have no immediate plans to reopen.

Three or four mines supplying domestic coal in the eastern Ohio field have signed with the union on its interim arrangement.

Pay envelopes distributed April 10, which contained the final pay of the strikers, carried cards addressed to them from a number of the companies. The card of the Lorain Coal & Dock Co. read:

Something to Think About

The mines of Ohio are idle because we are unable to obtain a wage scale under which we could compete with West Virginia and the non-union fields.

The mines of West Virginia are today working full time filling your orders while you have no work.

The operators of West Virginia and the non-union fields have added new equipment and are getting ready to open new mines, so that the time will come when they can take care of their own trade and also all the trade formerly held by the Ohio mines.

Your officials say YOU MEN instructed them to refuse a competitive scale. That means that YOU MEN have forced your own mines to cease operations, and have GIVEN AWAY OUR TRADE AND HAVE LOST YOUR OWN JOBS TO FAVOR WEST VIRGINIA AND THE NON-UNION FIELDS.

Have the West Virginia operators given you men anything for selling out our trade and your jobs?

Do you expect the West Virginia operators to pay you for the time you are losing?

Do you expect the West Virginia operators to buy food and clothing for your wives and children while you are not working?

When West Virginia and the non-union fields have taken away all our trade, what kind of a job are you going to get?

W. H. Haskins, labor commissioner of the operators in the Coshocton district and member of the Miami scale committee, recently began a series of addresses to present the Ohio association's viewpoint to business men of the state. He spoke last week before Chambers of Commerce, Kiwanis and Rotary clubs at Cambridge, Zanesville, New Philadelphia and Athens. At Philadelphia Haskins said "the Ohio coal industry is ready for the poor-house." He recommended that the operators and miners meet with a mediator to arrive at a "continuously competitive" scale.

The Sunday Creek Coal Co. of Columbus relented last week on its eviction orders served on miners at its Hocking Valley properties, and demanded, instead, advance payment of house rents. This also is what most of the eastern Ohio operators are asking. Considerable bitterness had generated among 250 families in Perry County, according to press dispatches.

A scattered movement of Ohio union miners from all parts of the state into West Virginia continues but it is impossible to get any idea of the volume

of this migration. Some believe that a general shuffling of labor forces may take place, with the result that the close of the suspension will find many Ohio miners working in West Virginia and many West Virginians, including former Ohio men, working in Ohio. One Ohio operator with an open-shop property in the West Virginia Panhandle reported 27 of his Ohio employees had applied for work in the Panhandle mine.

To Abandon Fair Run Mine

The Fair Run mine of the W. A. Gosline Coal Co. will be abandoned, according to an announcement from Toledo. This action will sound the death warrant of the little village of Goston, which is practically owned by the Gosline company. A group of company houses will be offered for sale at \$100 each. No evictions are planned, says W. A. Gosline; the miners will be allowed to live in the houses until the dwellings have been sold.

"The reason for abandoning the mine," Mr. Gosline declared, "is that we have found for several years that we cannot operate under existing conditions. Everything has been ordered from the mine and the tippie will be dismantled."

In the Pittsburgh area the most important development was the announcement last Friday that preliminary eviction notices had been served on about 500 tenants of the Pittsburgh Terminal Coal Corporation at Coverdale, Horning, Castle Shannon and Mollenauer. Whether writs will follow after the ten days of grace have expired, the company declined to state, saying that the present purpose was to place it in a position where, "if we want to act, we will have the houses."

Mines May Reopen May 1

Neither of the three companies which recently made known their intention to run open-shop has set any definite date for the beginning of non-union operations. There are reports that the Pittsburgh Terminal may make the attempt about May 1 and barracks for housing workers have been erected at Coverdale. No early resumption, however, is expected in the case of the Vesta and Clyde mines.

In the meantime the battle royal of statements between union officials and the Pittsburgh Coal Co. goes merrily on. The news that about 40 shots had been fired by an unknown sniper in the hills at the Moon Run trestle was followed by the accusation from union district headquarters that the coal company itself was responsible for the sharpshooting, which took place in the early hours and injured no one, and that its purpose was to create public sentiment antagonistic to the United Mine Workers. This accusation the company indignantly denied.

Spokesmen for the company also declared that the union's charge that Pittsburgh production figures were padded would not hold water. Union estimates, they intimated, were based on the assumption that only 50-ton cars were loaded, whereas many were of 70-ton capacity.

According to C. E. Leshar, executive vice-president of the Pittsburgh Coal

One Good Turn, Etc.

During the recent British coal strike several bishops of the Established Church proposed terms for a settlement of the dispute. This was resented by the coal operators, led by Evan Williams. Now the bishops have disagreed on the revision of the Book of Common Prayer. Commenting on this, the *London Punch* says: "It is now denied that, at the suggestion of Mr. Baldwin, a proposal has been made by Mr. Evan Williams to the Bishops that a small committee of coal owners might intervene to bring about a settlement of their differences in regard to the revision of the Prayer Book."

Co., the record of the company since April 7 has been as follows:

	Men at Work	Production Tons
April 8	4,953	19,298
April 9	4,783	17,258
April 11	4,716	15,142
April 12	4,570	16,443
April 13	4,488	15,944
April 14	4,812	16,702
April 15	4,856	17,363
April 16	4,540	14,804
April 18	4,495	13,246
April 19	5,081

Temporary agreements have been made with over 60 wagon mines in the Pittsburgh district. These operations deliver the bulk of their output to Pittsburgh consumers by truck. Less is heard of possible defections from the non-union ranks in the Connellsville region. With the falling off in tonnage and in the production of coke, workers in that section seem less disposed to quit their jobs.

A futile attempt was made a few days ago to call out workers at the mines of the Berwind-White Coal Mining Co. in Somerset County. A picket line of 40 men gathered in the Windber section early last week, but soon dwindled away. Organizers sent into the region were later withdrawn by District President James Mark.

Appeal to Court in Kentucky

The Bellva Straight Creek Coal Co., operating in Bell County, Kentucky, appealed to the U. S. District Court at Covington last Thursday for a temporary restraining order to prevent John Lovell and others from furthering a strike at the petitioner's operations. The company charged that the respondents had instituted a strike last month to compel recognition of the United Mine Workers and the payment of the union scale.

According to J. A. Martindale, chief of the Huntington (W. Va.) branch of the U. S. Employment Service, there has been an increased call for coal loaders at southern West Virginia and eastern Kentucky mines since April 1. A conference of county authorities and state police in Harrison and Marlon counties was held last week to consider plans for stopping the dynamiting of non-union miners' houses. A number of cases have been reported since the first of the month.

Two West Virginia Plants In \$2,500,000 Merger

The Fairmont & Cleveland Coal Co., owning the Parker Run mine, at Rivesville, W. Va., and the Fairmont-Chicago Coal Co., operating the Chesapeake mine, at Barrackville, W. Va., have been merged under the name of the Monongahela Fuel Co., capitalized at \$2,500,000. W. E. Watson is president and general manager of the new company, with offices in the Jacobs Building, Fairmont, W. Va.

The merger is the outcome of negotiations extending over a period of several months between the owners of the mines and bankers in New York City and Chicago. The Monongahela Fuel Co. through the merger acquires two large mining plants, two mining towns and approximately 4,000 acres of Sewickley coal in Marion County. Production of the two mines is about 1,000,000 tons a year.

The board of directors includes Glenn F. Barnes, E. F. Hartley, N. E. Jamison, Carl Riggs and W. E. Watson of Fairmont; Friend Cox of Wheeling; Edward Hines and M. L. Judson of Chicago and J. W. Poling of Morgantown. Besides Mr. Watson the officers are: E. F. Narley, Fairmont, first vice-president; Friend Cox, Wheeling, second vice-president; Carl Riggs, secretary; M. A. Fletcher, treasurer, and N. E. Jamison, assistant treasurer.

Pittsburgh Coal Co. Orders Steel Coal Barges

The Pittsburgh Coal Co. last week ordered 40 hopper type coal-carrying steel barges from the Riter-Conley Co. These barges are of standard type, 175 ft. long, 26 ft. wide and 11 ft. deep. The Pittsburgh Coal Co. now has 30 steel coal barges of the same type in operation together with 40 wooden barges. The new steel barges will replace the wooden craft with more than twice the capacity.

Car orders include 400 mine cars for the Buckeye Coal Co., Nemacolin, Pa., placed with the Pressed Steel Car Co.

Inquiries include 779 mine cars for the H. C. Frick Coke Co. and 10 steel hopper cars for the U. S. Interior Department for the Alaskan Railroad.

In addition to recently placing an order for 1,000 new mine cars, the Stonega Coke & Coal Co., Stonega, Va., has placed an order for twelve gathering motors and seven sub-stations, which will be scattered over Stonega territory at places yet to be selected.

The Consolidation Coal Co. has awarded to the Bethlehem Steel Corporation an order for 600 mine cars. The Consolidation later will place an order for 650 additional cars of the same type.

The Western Maryland Ry. will build 1,000 steel hopper cars in its own shops.

The Hockensmith Wheel & Mine Car Co. has received orders from the Sharon Coal & Coke Co. for 100 mine cars, from the American Coal Co. of Alleghany County for 200 mine cars and from the West Virginia Coal & Coke Co. for 800 mine cars.

National Chamber to Study New Business Era

The Chamber of Commerce of the United States will hold its 15th annual meeting in Washington on May 3, 4 and 5. A distinguished list of speakers, including President Coolidge and Secretary of Commerce Hoover, will address this meeting. This national gathering of business leaders from all parts of the United States has been called for the purpose of discussing the important economic changes that have taken place in the business life of the nation during the past few years. The discussions will center around the major topic, "The New Business Era."

President Coolidge's talk will be delivered before a joint meeting of the National Chamber and the Pan-American Commercial Conference. The latter conference will be attended by representatives from the Latin-American countries and will be held in Washington during the week of the meeting of the National Chamber.

The list of speakers announced includes the names of business men prominent in practically all lines of industry, finance and commerce. Among the speakers will be John W. O'Leary, president of the National Chamber; Silas H. Strawn, Chicago; John Lawrence, Lawrence & Co., Boston; Victor Cutler, president, United Fruit Co., Boston; Walter Parker, New Orleans; R. E. M. Cowie, president, American Railway Express Co., New York; Paul T. Cherington, manager, research department, J. Walter Thompson Co., New York; L. D. H. Weld, H. K. McCann Co. (formerly head research dept., Swift & Co.); Hugh R. Pomeroy, secretary, Regional Planning Commission, Los Angeles, Calif.; Harvey W. Corbett, architect, New York; Major Henry W. Curran, New York City; H. A. Smith, president, National Fire Insurance Co., Hartford, Conn.; Dr. S. S. Huebner, professor of insurance, University of Pennsylvania, Philadelphia; C. A. Ludlum, vice-president, Home Insurance Co., New York; James S. Kemper, president, National Retailers' Mutual Insurance Co.; F. Highland Burns, president, Maryland Casualty Co., Baltimore; Leroy A. Lincoln, general counsel, Metropolitan Life Insurance Co., New York; Dwight B. Heard, president, Dwight B. Heard Investment Co., Phoenix, Ariz.; Charles W. Lonsdale, president, Simonds - Shields - Lonsdale Grain Co., Kansas City; Theodore F. Whitmarsh, president, Francis H. Leggett & Co., New York; Fred I. Kent, vice-president, Bankers Trust Co., New York; Henry D. Sharpe, president, Brown & Sharpe Manufacturing Co., Providence; A. J. Brosseau, president, Mack Trucks, Inc., New York; Milton E. Marcuse, president, Bedford Pulp & Paper Co., Richmond, Va., and A. L. Humphrey, president, Westinghouse Air Brake Co., Pittsburgh, Pa.

"In many respects," says a statement issued by the Chamber, "the meeting will be one of the most important ever held by the Chamber. American business sweeping forward under the play of new economic forces, finds it more necessary than ever to look into the future.

"The annual meeting of the National

Pennsylvania R.R. Spends \$36,202,878 for Coal

Total expenditures of the Pennsylvania R.R. for fuel and materials in 1926 amounted to \$164,049,700, embracing practically every product of farm, factory, mill and mine known to American commerce, ranging from milk, eggs and toothpicks for the dining cars to rock ballast, locomotive coal, rails, ties and structural steel.

While this total does not include large expenditures for new cars and engines, which exceeded \$24,000,000, it amounted to approximately 25 per cent of the company's gross operating revenues. The purchases were made from 7,500 individuals, firms and corporations, were classified under about 75,000 separate items and represented 520,111 sellers' invoices.

Iron and steel products constituted the largest group total, aggregating \$57,647,206. Fuel purchases took \$37,086,879, of which \$36,202,878 was for 18,306,755 net tons of bituminous coal. Fuel oil to the amount of 15,020,219 gallons cost \$788,561. Forest products amounted to \$13,352,981, electrical materials to \$7,867,366 and stationery and printing to \$4,220,665.

Chamber will survey economic trends with the purpose of determining their meaning and the hope of throwing light into the future. Leading business men will bring forward new problems within their industries. Newly arising questions that are bothering large sections of the country will be discussed.

"This meeting will bring to bear on our national economic problems the best business thought of America. From it will come a program setting up principles to serve as guideposts for the future."

Among the subjects to be discussed in connection with railroad transportation will be a proposal by the Railway Business Association for a declaration that the process of appointment and confirmation of members of the Interstate Commerce Commission should be safeguarded and the independence and integrity of the Commission should be protected against influences based upon considerations other than the national welfare and the ability, integrity and experience of appointees.

Consideration also will be given to proposals which have been made to modify the fourth section of the Interstate Commerce Act (the long-and-short-haul clause).

Taxation will come up for consideration, particularly with reference to a proposed declaration that the federal corporation income tax should be brought more nearly into line with the other income tax schedules, that certain war-time excise taxes should be eliminated and that the federal estate tax should be repealed.

Mining Research Fellowships At Carnegie Tech

In co-operation with the Pittsburgh Experiment Station of the U. S. Bureau of Mines, eight research fellowships in mining and metallurgy are offered by the Carnegie Institute of Technology during the coming year. According to the announcement, the fellowships are open to graduates of colleges, universities and technical schools who are properly qualified to undertake research investigations.

Each fellowship carries a stipend of \$750 paid in ten monthly installments. The period of each fellowship will be from Aug. 15, 1927, to June 15, 1928. The purpose of these fellowships, it is announced, is the solution of problems which are of special importance to the mining, metallurgical and allied industries.

Among the subjects already suggested for investigation during the coming program are the following:

Origin and Constitution of Coal—The determination and separation of coking constituents of coal; comparison of methods of determining the oil and tar yields of coal; the composition of low-temperature tar.

Coal Mining—Determination of cost and efficiency of storage-battery locomotive haulage in comparison with trolley locomotive haulage; study of methods in blasting coal.

Utilization of Coal—Correlation of fusing temperature of coal ash with clinker formation in furnaces; study of physical properties of coke in relation to domestic heating.

Mine Safety—Study of relation of fineness of particles to inflammability of coal dust; a study of the mechanism of spontaneous combustion and prevention of gob fires; survey of relative tendency of various coals to fire spontaneously.

Further Study of Mechanization.—The second meeting on mine mechanization to be held this year under the auspices of the National Coal Association, the American Institute of Mining & Metallurgical Engineers and the American Society of Mechanical Engineers will take place May 14, at Knoxville, Tenn. This meeting will be the fifth of a series, which commenced with a meeting in New York City in March, 1926. R. E. Howe, secretary of the Southern Appalachian Coal Operators' Association, will represent the National, and members of the Southern Appalachian Efficiency Association will attend. W. S. Peck, general manager of the Black Diamond Collieries, Coal Creek, Tenn., will represent the Institute, and W. E. Biggs, Knoxville, Tenn., will represent the American Society of Mechanical Engineers, on the program committee.

W. H. Courtenay, chief engineer of the Louisville & Nashville R.R., Louisville, Ky., has announced that the company will expend approximately \$350,000 at Pensacola, Fla., for coal-handling machinery to replace an elevator destroyed by a storm and to repair a wharf.

Suspension to Drag Through Summer, Is Belief of Washington Observers; Government Intervention Improbable

By Paul Wooton

(Washington Correspondent of *Coal Age*)

Less newspaper space has been used in chronicling coal strike developments since April 1 than ever before during the opening weeks of a major suspension, it is noted by Washington observers. The reason is easy to ascribe. The public is convinced that there will be no shortage of fuel and is not greatly interested.

With more than 100,000,000 tons of coal above ground, with the non-union fields in a position to produce 11,000,000 tons weekly, and with only a few of the non-union workers on sympathetic strike, the suspension promises to wend an uneventful course through the summer. If there is no violence the public probably will hear little of this strike. That phase of the situation, however, is regarded with some apprehension. The history of labor trouble in Pittsburgh is not a reassuring one. It is seriously doubted that the Pittsburgh district can continue to pay at the present rate. A serious situation may be precipitated if a cut is made.

Comparisons with 1922 must be discouraging to John L. Lewis. Non-union production is much greater. Fewer men are out. The chance of creating a coal shortage is practically nil. The Southwest long has been chafing under union conditions. The movement there toward the open shop has gained great momentum.

Output Below Expectations

Some surprise is expressed that non-union production has not been larger since April 1. Sight is lost of the fact that the market is the limiting factor. Thousands of unbilled cars must be worked off before the non-union mines can take advantage of the full demand. The public does not realize that the carry-over at the Head of the Lakes is greater than ever before. Demand there is so slack that embargoes have had to be placed at lower lake ports. Demand also is affected by the general turning to stockpiles.

In that connection the point is made that consumers would further their own interests were they to continue to buy a portion, at least, of their requirements from current production. This would be better than running into the fall with depleted stocks. The strike still may be on.

EDITOR'S NOTE—The foregoing Washington letter reflects certain views of official Washington. Due to the fact that policy as a rule prevents government officials from permitting their views being quoted directly, the authority for these reports is necessarily somewhat vaguely referred to. The views reflected are not those of any one group of officials, but of different men, in the legislative and executive departments. There is no necessary connection between their views and COAL AGE editorial policy; neither do they necessarily represent Mr. Wooton's personal views. It is felt that the opinions thus faithfully reflected will be of great interest to the industry. Where opinions are cited from sources outside of the government, the source will be specifically stated.

While there seems no probability of federal intervention in this quarrel, it is pointed out that Mr. Lewis evidently has left no stone unturned in that direction. For months, it is said, he has lost no opportunity for contact with the Secretary of Labor. He doubtless has presented plausible policies to him, but there is no reason to conclude that Mr. Davis has been influenced to take a favorable view of federal intervention in any form, other than to see that the conciliation machinery of his department functions as usual.

Program of Mine Inspectors' Institute Announced

For the annual meeting of the Mine Inspectors' Institute of America, to be held in Charleston, W. Va., May 3, 4 and 5, the following papers or addresses are scheduled in the order listed:

"Regulations for Safety in Mines, Supplementing the Statute Law," A. H. Findeisen, mining engineer, State Industrial Commission, Madison, Wis.

"Automatic Recording Devices for Mine Gases," George H. Deike, president, Mine Safety Appliances Co., Pittsburgh.

"The Relationship of the Coal Associations to the Mining Departments," W. H. Cunningham, secretary, West Virginia Coal Association, Huntington, W. Va.

"The Use of Auxiliary Fans," R. Dawson Hall, Engineering editor, *Coal Age*, New York City.

"Advantages of the Electric Cap Lamp," Miller D. Hay, chief inspector, Oklahoma Department of Mines, Oklahoma City.

"Fossils in Coal Mines in Southern West Virginia," C. E. Crebs, state geologist, Charleston, W. Va.

At 7:30 p.m. on May 4 there will be a banquet at the Ruffner Hotel. The morning of the next day will be taken up by an inspection trip to one of the large chemical plants near Charleston, and following this a picnic lunch will be served in New River Canyon, near Hawks Nest.

Congress Committee Approves Track and Signal Report

On submission of the revised report on Mine Tracks and Signals the sectional committee on Underground Transportation in Coal Mines of the American Mining Congress accepted it with a vote of nineteen in favor, one affirmative and two not voting. The report was submitted to the Mining Standardization Correlating Committee on Dec. 10, 1926, and, having passed that stage, it was submitted to the American Engineering Standards Committee April 14 for final action. It now awaits the result of that body's vote.

Eminent Delegates Named To Economic Conference

The American Section of the International Chamber of Commerce last week announced the appointment of Roland W. Boyden, Boston attorney and former American unofficial observer on the Reparations Commission, as one of five delegates to represent the International Chamber at the world economic conference to be held by the League of Nations at Geneva, beginning May 4. Mr. Boyden was the American observer at the Brussels financial conference in 1920.

The International Chamber, it was announced, is one of three unofficial organizations invited to participate in the discussions at the Geneva conference, which will be attended by representatives from nearly fifty countries. The American delegates, Henry M. Robinson, Norman H. Davis, John W. O'Leary, Alonzo E. Taylor and Dr. Julius Klein, were announced recently by President Coolidge.

Besides Mr. Boyden, the other delegates of the International Chamber will be Etienne Clementel, former French Minister of Finance; Walter Runciman, former president of the Board of Trade of Great Britain; Dr. Karl Kotzenberg, member of the Economic Council of the Reich; Gino Olivetti, Deputy, secretary general of the Confederation of Italian Industry.

Nine experts, all but two in the government service, were appointed as a technical staff to the delegation to the conference. The experts are Dr. A. N. Young, economic adviser of the Department of State; E. W. Camp, Commissioner of Customs of the Treasury Department; Dana Durand, chief of the Research Division of the Bureau of Foreign and Domestic Commerce; Grosvenor Jones, chief of the Finance Division of the Bureau of Foreign and Domestic Commerce; Henry Chalmers, chief of the Foreign Tariffs Division of the Bureau of Foreign and Domestic Commerce; Asher Hobson, permanent American delegate to the International Institute of Agriculture at Rome; Dr. Percy Bidwell, one of the European representatives of the U. S. Tariff Commission, and John P. Frey, editor of the *Moulders' Journal*, an adviser on labor questions.

Edward J. Mehren, vice-president and chairman of the editorial board of the McGraw-Hill Publishing Co., will report his observations on the conference—the first general economic conference to be held since the World War—for the McGraw-Hill papers.

Timber-Treating Study to End.—Studies of treated mine timbers now being conducted by the U. S. Bureau of Mines and the Carnegie Institute of Technology, Pittsburgh, Pa., will end on June 15. All coal companies that have been engaged in the practice of treating mine timbers, ties, etc., with preservatives are urged to contribute the results of their experience to this work. All communications should be addressed to T. D. Tracy, coal mining engineer, U. S. Bureau of Mines, 4,800 Forbes St., Pittsburgh, Pa.

Foreign Trade Convention To Hear Hoover

Foreign traders from forty states will listen to an address by Herbert Hoover, Secretary of Commerce, on May 26 next at the Fourteenth National Foreign Trade Convention. The convention will meet on May 25, 26 and 27 in Detroit, and 2,500 foreign traders are expected to attend.

The address of the Secretary of Commerce will be delivered at a special luncheon session, under the auspices of the American Manufacturers' Export Association. Its subject will be "American Foreign Trade," and a nationwide radio audience will listen in to what is expected to be one of the notable business addresses of the year.

Among other outstanding features of the convention will be addresses by Roy D. Chapin, chairman of the board, Hudson Motor Car Co., on "The Motor Influence in our Foreign Trade"; Governor Fred W. Green of Michigan, who also is managing director of the Ypsilanti Reed Furniture Co., on "Michigan's Vital Interest in Foreign Trade," and Silas H. Strawn, chairman of the board, Montgomery, Ward & Co., "Foreign Uses for American Capital."

F. Edsel White, chairman of the board, Armour & Co., will preside at the luncheon session of the American Manufacturers' Export Association, and C. K. Woodbridge, president of the International Advertising Association, will be in charge of the export advertising session.

More than forty speakers, prominent in all phases of the country's foreign trade activity, will address the convention's thirteen group and general sessions. Some of those who appear on the program include Julius H. Barnes, president of the Barnes-Ames Co. of New York; W. F. Gephart, vice-president of the First National Bank, St. Louis; Turner Jones, vice-president of the Coca Cola Co., Atlanta; Professor L. D. O'Neil of Boston University; John A. Russell, editor of the *Michigan Manufacturer and Financial Record*; W. C. Sproull, advertising manager of the Burroughs Adding Machine Co.; ex-Governor James P. Goodrich of Indiana; J. A. H. Kerr, vice-president of the Security Trust & Savings Bank of Los Angeles; Robert V. Beucus, advertising manager of Bauer & Black, Chicago, and C. C. Martin, of the National Paper & Type Co. of New York.

To Present Canadian Problems

Following the precedent of last year, the platform of the convention will be turned over at the first afternoon session to foreign trade spokesmen from Canada and representative leaders from the different sections of the Dominion, who will put before the delegates the kindred problems of Canada and the means for promoting friendly business co-operation across the border. A delegation of 500 Canadians is expected to attend the convention under the auspices of the Canadian Board of Trade. The convention also will serve as a meeting ground for many other delegates from the British Dominions and will be addressed at the general session of Thursday morning, May 26, by speakers from Australia, South Africa,

Quartermaster General of Civilization: Soft Coal

"We are now living in a mineral age, in which mineral fuels are the principal sources of energy," said Harry L. Gandy, executive secretary of the National Coal Association, in address on March 29 before the Chamber of Commerce at Cincinnati, Ohio. "Hence they are the quartermasters of civilization. Bituminous coal is the Quartermaster General because from this fuel about 60 per cent of the total energy developed from all mineral fuels and water power is obtained. In that computation if automotive energy had been eliminated the percentage of energy produced by bituminous coal would have been much higher.

"Certainly business men appreciate the vital need of maintaining the right of individual initiative in the management of an industry of such predominating importance to the progress of the nation. The stifling influence of governmental operation must not be allowed to extend to an industry whose development is of such paramount concern to every citizen."

Irish Free State and other parts of the British Commonwealth.

Another visiting delegation of great interest to American foreign traders is the group of Latin American business men, who will attend the convention following the Third Pan-American Commercial Conference which meets in Washington earlier in the month under the auspices of the Pan-American Union.

New Fuel Engineering Course To Open at U. of P.

The mechanical engineering department of the Towne Scientific School, University of Pennsylvania, recently announced a new course in Fuel Engineering. This course, which is of two years' duration, will open on Sept. 30, 1927, and will lead to the degree of Master of Science in Fuel Engineering.

Although largely a lecture course, it also includes field work and a research problem including a thesis. More than fifty lecturers, each a specialist in his own field, will aid and supplement the various courses of instruction offered. Among the subjects to be studied are fuel resources; mining methods; preparation for market; distribution; storage and rehandling; composition and combustion of fuels; manufacture of special fuels; uses of fuels and specifications for purchases; furnaces; fuel sampling, analysis and calorimetry; fuel testing in heating and power appliances; domestic heating; cooking; smoke elimination; regulations affecting use of water power and of fuel resources; research, and general electives.

Compensation Fund Solvent, West Virginia Probe Shows

West Virginia's compensation fund is solvent, charges to the contrary being founded on an unfair computation, according to the findings of a legislative committee headed by State Senator W. S. Hallanan, which reported April 15. The fund has been administered efficiently and economically, the report stated, and its greatest need is further "humanizing" by amendment of the law.

Senator Hallanan, in presenting his report, referred to the report of Emile Watson, Columbus actuary, who made an audit of the fund and concluded that it was insolvent, and severely criticized the basis used by the expert. While Mr. Watson's figures indicated a deficit of \$4,711,995 under the amount he believed would be necessary to meet all claims as standing at the end of the 1925 fiscal year, the department actuary found a surplus of the same date of \$150,271 and the committee investigation led it to the conclusion that the state official was correct and that within the next two years this surplus would rise, by reason of increased rates now in effect, to a million dollars, a sufficient fund to stand the demands of any catastrophe.

Penna. Soft-Coal Output Climbs in 1926

Output of bituminous coal in Pennsylvania during 1926 exceeded that of 1925 by 16,700,000 tons, according to the figures just compiled by the State Department of Mines. The anthracite totals have not been completed. The report of the department shows that in 1926 there were produced in the bituminous mines 151,946,464 net tons of coal as compared with 135,266,612 tons in 1925. There were 164,431 employees in the bituminous mines in 1926 and 165,586 in 1925. In 1926 there were 419 fatalities and in 1925, 312.

The Mines Department figures for 1926 are:

Counties	Output Net Tons	Employees	Fatalities
Allegheny....	13,427,812	15,641	50
Armstrong....	4,420,594	5,179	15
Beaver.....	65,607	116	1
Bedford.....	606,120	1,141	..
Blair.....	324,309	511	..
Bradford.....	5,618	24	..
Butler.....	1,791,708	2,276	..
Cambria.....	18,180,111	21,149	40
Centre.....	1,258,791	1,575	2
Clarion.....	1,457,014	2,091	1
Clearfield....	5,159,016	8,242	13
Clinton.....	268,166	281	..
Elk.....	806,815	1,552	2
Fayette.....	32,733,123	30,199	58
Fulton.....	288,882	312	..
Greene.....	6,101,474	4,709	14
Huntingdon..	646,740	1,063	2
Indiana.....	10,261,979	10,460	69
Jefferson....	2,786,630	3,774	11
Lawrence....	295,922	388	..
Lycoming....	40,713	79	..
Mercer.....	343,663	457	2
Somerset....	10,362,385	11,124	34
Tioga.....	157,959	460	..
Venango.....	9,100	27	..
Washington..	18,016,233	20,774	58
Westmoreland	22,135,980	20,827	45

Pittsburgh, Pa., will be the scene of the international first-aid and mine-rescue contest this year, according to George R. Wallace, president of the Pittsburgh Chamber of Commerce.

Supreme Court Orders Dismissal of Claire Case Without Ruling on Merits

Without deciding the merits of the original controversy but confining itself purely to a technical construction of the proper legal proceeding, the U. S. Supreme Court on April 18 reversed the lower courts in the so-called Claire Furnace Case and remanded it to the Supreme Court of the District of Columbia with instructions that the suit be dismissed.

The court, in an opinion by Chief Justice Taft for the majority, did not discuss at all the merits of the effort of the Federal Trade Commission to compel the Claire Furnace Co. and the 21 other corporations associated with it in the case to file with the Commission monthly reports of production, orders, selling prices, costs of production and other items of information concerning coal, steel and related products.

In brief, the case now is in the exact status it was when it originated in 1920, after having been before the Supreme Court more than three years, during which it was argued twice.

Balk at Monthly Reports

The suit arose when the steel and coal companies applied to the District of Columbia Supreme Court for an injunction against the Federal Trade Commission, which had ordered the 22 companies and various others to submit monthly reports on a wide range of subjects in the course of an investigation looking toward reduction of the then prevailing high cost of living, for which Congress had supplied the Commission with a special appropriation in the fall of 1919. The companies in their suit alleged that the Commission had gone outside its authority in ordering such reports, inasmuch as there was no charge that the companies were engaged in unfair competition or that they were doing any illegal act.

The District Supreme Court granted an injunction and this was affirmed by the District of Columbia Court of Appeals, the Commission then appealing to the U. S. Supreme Court.

The majority decision of the Supreme Court merely holds that the procedure was wrong and that the lower courts should have dismissed the suit for want of equity. It holds that the proper procedure would have been for the Commission to ask the Attorney General to file a mandamus suit against the companies to compel them to comply with the order and that the companies in such event would have had full opportunity to establish their claim that the demand was excessive. In other words, it is held that the companies, having refused to comply with the order, were not being injured and hence that their plea for an injunction against the order was an improper procedure.

The law provides that the Attorney General shall act for the Commission in mandamus suits, the court points out, and this obviously was written into the act by Congress, the opinion states, so that the Attorney General first himself might decide whether the order of the Commission was a proper one.

U. S. National Wealth Up 19 per Cent in 13 Years

The national wealth of the United States in 1925, as estimated by the National Industrial Conference Board, New York, amounted to \$355,300,000,000. This is the first estimate of national wealth published since the census estimate of 1922, which was \$320,800,000,000 for that year. For 1912, the census estimate of the national wealth was \$186,300,000,000.

Stating the amounts for 1912 and 1925 in terms of 1913 dollar purchasing value so as to eliminate the difference in purchasing values of the dollar in the pre-war and post-war periods and to make the two figures comparable, the Conference Board places the national wealth in 1912 at \$188,000,000,000 and in 1925 at \$223,900,000,000 of 1913 purchasing value. The nominal increase in wealth of 90.7 per cent during the thirteen-year period thus becomes a real increase of 19.1 per cent.

The term "national wealth" as used in this estimate represents tangible, physical objects only, and therefore excludes credits and currency. It specifically includes land and the structures and other improvements thereon, the equipment of industrial enterprises and farms, livestock, railroad and public utility land and equipment, personal property, motor and other vehicles and gold and silver coin and bullion. Of all of these, real property—that is, land and improvements—constitutes more than half, or \$172,700,000,000. Approximately three-fourths of the total wealth of the nation is in the nature of fixed assets, devoted to use as dwellings or to industrial and transportation enterprises.

Associate Justice McReynolds filed a short dissenting opinion in which he held that the proceeding had been proper, that the order of the Commission was beyond its authority, and that the decision of the lower courts against the Commission should be affirmed.

The U. S. Civil Service Commission announces an open competitive examination for junior mining engineer, applications to be on file not later than May 14. The date for assembling of competitors will be about ten days after the close of receipt of applications. The entrance salary is \$1,860 a year. After the probational period required by the civil service act and rules, advancement in pay will depend upon individual efficiency, increased usefulness, and the occurrence of vacancies in higher positions. Full information and application blanks may be obtained from the U. S. Civil Service Commission, Washington, D. C., or the secretary of the board of civil service examiners at the post office or custom house in any city.

Fuels Division of A.S.M.E. Studies Coal Statistics

At its meeting, April 13, in the Engineering Societies Building, New York City, the Fuels Division, Metropolitan Section, American Society of Mechanical Engineers, was addressed by R. Dawson Hall on "Fuel Statistics; Their Sources and Use," showing fourteen statistical charts.

Among other things he said: "There is an immense supply of coal on hand. Some would estimate that, including the consigned coal on that date and the coal stored at the Head of the Lakes, there is 100,000,000 tons in storage, roughly a fifth or a sixth of all the bituminous coal we are likely to use for a whole year. Remember also that this stock is on hand just before the summer season, when coal is little in demand. In the summer of 1924 the daily bituminous tonnage hovered around 1,200,000 tons, or 7,200,000 tons weekly.

"At that rate there would be enough coal to last a fourth to a third of the year. Business is better today, so perhaps the tonnage of last spring, which was 8,000,000 to 9,000,000 tons weekly, is a better criterion, for the stocks were then decreasing and the British strike was not helping to sustain the market.

"In the week ending Dec. 4 the output was 14,676,000 tons. That shows the possibilities of production. True, the union miners had been having a difficult time. They had been quite generally idle. Many mines had been closed. They were all eager for work and willing to do their best. Even discounting this the possibilities of the bituminous fields can be set at 14,000,000 tons weekly.

"To find the probable tonnage with any given percentage of men at work, all that is necessary is to take a similar percentage of 14,000,000. The non-union regions can produce 70 per cent of the tonnage but they cannot mine that percentage of 14,000,000 tons weekly, because that computation of 70 per cent is based on the steadier running time of the non-union areas.

"However, about 70 per cent of the whole mining force of the bituminous field is now working, reckoning both union and non-union men, and so a potential output of 9,800,000 tons weekly can be figured, which is more than was produced last spring.

"The suspension is more likely to be restricted than extended, so it will be safe to leave the suspension to settle itself without interference. No one can press for coal, for no one has room to store it, if he would like to do so, and everybody will be able to get as much as he wants without any difficulty or unusual enhancement in price."

At the close of the paper W. C. Strunk, stoker specialist, Westinghouse Electric & Manufacturing Co., read a paper on "Performance Possibilities with the Modern Underfeed Stoker Installation," on which much written discussion was presented. F. H. Daniels declared that between stoker and pulverized-fuel installations there was only a small margin of difference; which way depended on local conditions. J. T. Barron presided.



News Items From Field and Trade



COLORADO

Lignite Mine for Aurora.—Within two months mining operations will begin on 3,000 acres of land at Aurora, eight miles from Denver, where two seams of lignite have been discovered. George Morrison, president of the Clayton Coal Co., which will develop the property, says that preliminary drilling has disclosed seams 8 and 10 ft. thick at a depth of about 400 ft.

INDIANA

Receiver for General Fuel Co.—A. M. Ogle was named receiver for the General Fuel Co., which operates mines in Gibson County, by Judge John P. Jeffries, of Vigo Circuit Court, after Clem J. Richards had brought suit against the company in which he alleged that it was on the verge of insolvency. The bond of the receiver was fixed at \$50,000. The company, it was alleged in the complaint, owns 3,000 acres of No. 5 coal in Gibson County, with a possible output of 20,000 tons daily.

Clem J. Richards, receiver for the Burnett Coal Mining Co. of Terre Haute, has filed suit against A. R. Meneely for possession of 100 acres of land belonging to the Burnett company and which he says is being withheld wrongfully from him by Meneely. He asks proper allowance for damages because of Meneely's action.

IOWA

Initial work on the new Linden Heights coal mine will cost \$75,000, Walter Hoffman and Glenn A. Ransom have announced. Buildings exclusive of the tippie will cost \$22,000 and the remainder of the \$75,000 will be used for electrical machinery and the drilling costs. A 5-ft. seam was located 192 ft. from the surface. The new coal company is making plans to construct new railroad spurs and to lease new lands.

KENTUCKY

Flames in Hazard Shaft.—Fire broke out April 13 in No. 1 mine of the John P. Gorman Coal Co. at Diablock, south of Hazard. The U. S. Bureau of Mines' rescue car was rushed to Diablock in an effort to extinguish the flames. The mine probably will have to be sealed up and operations suspended until the fire is extinguished. No one was injured.

The Kentucky Power Co. of Augusta, operating a chain of public service concerns in northern Kentucky, has purchased the plants of the Maysville

Public Service Co., owned by the Cochran interests, taking over a power and lighting company, street car company and other subsidiaries. The Cochrans retained the water company.

MISSOURI

The St. Louis Retail Coal Merchants and Credit Association has gone on record as opposed to the proposed St. Louis ordinance for the exchange of the uses of the Municipal and Eads bridges. The principal objection is that the measure would give the Terminal Railroad Association control of the Municipal Bridge. The retailers' association opposes use of the Municipal Bridge "other than to offer open competition to railroads desiring the use of the same which will afford the means by which facts regarding transportation costs can be ascertained with a view of appealing to the Interstate Commerce Commission for a reduction on freight rates to St. Louis, especially on coal."

The Radio Coal Co. of Pittsburg, Kan., has leased 1,000 acres of land underlaid with coal near Montrose to develop as a steam-shovel mining proposition. It is understood that work will commence immediately.

NEW YORK

The Buffalo Department of Public Works is advertising for bids for supplying the city pumping stations with 45,000 tons of slack coal for the coming year. The bids close April 25. This is the largest municipal coal contract and it always creates interest. The department is not to be depended upon invariably to accept the lowest bid, for in recent years it has frequently thrown out all bids and bought its coal in the open market.

The Weaver Coal Co., Buffalo, will furnish the smokeless coal supplies of the public schools of that city for the coming year, the contract amounting to about 22,000 tons. The company's bid was \$5.94. The same company will furnish ordinary bituminous coal to the schools the coming year.

OKLAHOMA

Flood-Trapped Miners Escape.—Nineteen miners trapped for eight hours by a flood in the old Cato mine of the Old Cato Coal Mining Co., near Henryetta, escaped April 14 through a tunnel connecting with the abandoned Duncan McKay mine, a mile away. Heavy rains had caused Coal Creek to overflow into the mine, where twenty-

seven men were at work at the time. All of them reached safety.

PENNSYLVANIA

Boland Alleges Judicial Bias.—William P. Boland, independent coal operator of Scranton, whose efforts years ago brought about the impeachment of Judge Archbald of Scranton when he was a member of the U. S. Commerce Court, has now filed charges with the State Supreme Court of Luzerne County alleging that the Luzerne county judges for the past 25 years have been showing bias toward him in a suit dealing with certain coal lands in Wilkes-Barre. The coal operator's charges were made in the case in which he is the plaintiff against the Wilkes-Barre & Scranton Coal Co. in an effort to regain possession of coal underlying the Beaumont property in Wilkes-Barre. The first suit in this case started back in 1903. The Supreme Court of the state has postponed action on Mr. Boland's plea for a delay in the submission of arguments and also on his accusations against the judges.

Glen Alden Speeds Up.—After reduced operation for the past two months the Glen Alden Coal Co., Scranton, went on full time last week. The company is sending coal to Buffalo for shipment up the lakes.

Hudson Output Higher.—Anthracite produced by the Hudson Coal Co. and affiliated corporations during 1926, including product of washeries, aggregated 8,547,147 gross tons, an increase of 2,141,054 tons, or 33.42 per cent above 1925," according to L. F. Loree, president. "This output," said Mr. Loree, "was 12.29 per cent of the year's total production of all Pennsylvania anthracite mines and washeries, estimated at 69,555,804 tons. Increased production in 1926 is attributable to the mine strike, which lasted from Sept. 1, 1925, to Feb. 17, 1926, totally preventing production during four months of 1925 and about one and one-half months of 1926. After resumption of operations, on Feb. 18, 1926, production continued steadily throughout the year."

Compensation Bill Signed.—Governor Fisher on April 13 signed the Sordoni-Huber workmen's compensation bill, which amends the act of 1915. The Department of Labor and Industry estimates that the additional compensation will amount to nearly \$3,000,000 a year.

Kill Hard-Coal Tax Repealer.—The Jones anthracite tax repealer was virtually killed in the Senate April 13, when it was recommitted. Senator Bonbrake, Franklin, administration floor

leader, made the motion and Senator Davis, Lackawanna, opposed the motion vigorously, but it went through by a vote of 30 to 18. This bill provided for a graduated decrease in the tax until 1930, in which year the tax act was to have been automatically repealed.

Hollywood in an effort to locate the hard-coal seams which "rolled" out of existence at the edge of the Hollywood basin. All of these operations are near Hazleton. It has been asserted by anthracite engineers that these "spoons" are to be found further on and the company will spend a large

high Valley Coal Co. in the old Buck Mountain slope, which was abandoned years ago after engineers said the same had been worked out. Water will now be pumped from the gangways and the pillars robbed. These pillars are said to contain thousands of tons of anthracite. The coal company owns the houses of miners overhead but these will be sacrificed for the coal. The miners who have been renting these buildings for years have been told to move elsewhere.

William O. Jenkins, formerly vice-president of the Scranton Surface Protective Association, was elected president of that organization to fill the unexpired term of William J. Long, resigned, at the monthly meeting on April 5.

P. C. & C. Cuts Deficit.—The Pennsylvania Coal & Coke Corporation and subsidiaries report for 1926 a deficit of \$58,065 after all charges and subsidiaries' federal taxes, as compared with a deficit of \$467,532 in 1925. Net sales were \$6,336,041 against \$5,652,013 in 1925, but the operating loss was \$28,093 against \$428,656. President J. W. Searles said that in 1926 production was 2,763,361 net tons, or 243,763 tons more than in 1925. The improvement in the income account was due in part to better prices and a further reduction of costs, he said.

The Reading Co. hauled 2,029,046 gross tons of bituminous coal (revenue) during February, against 2,489,400 tons in the corresponding month of last year.

Open New Hard-Coal Seams.—The Maryd colliery, operated by the Hazle Brook Coal Co., successor to the J. S. Wentz Co., has opened several new seams on the first level about four miles from Tamaqua. Tunnels have been driven, gangways started and in the near future heavy production is looked for. In addition to these new seams the Maryd concern also plans to do some surface proving. On the southwest end of the property it is believed that there are several seams of virgin coal with the possibility of a few small crop strippings. This section may be mined from the first level, according to present reports.

No Neglect in Ehrenfeld Blast.—Deputy Coroner Russell R. Yost of Cambria County conducted an inquest on April 5 into the death of four miners who lost their lives in the explosion in the mine of the Pennsylvania Coal & Coke Corporation at Ehrenfeld on March 30. The jury returned a verdict to the effect that they found no evidence of neglect and concurred in the recommendations of the commission of mine inspectors who investigated the explosion. This commission was composed of Inspectors T. D. Williams, John Ira Thomas, Thomas A. Mather and Nicholas Evans. Inspector Thomas conducted the inquiry for the Department of Mines.

Reorganize Atlantic Fuel Co.—The Atlantic Fuel Co., which has valuable mining lands along the Baltimore & Ohio R.R. between Garrett and Rockwood, Somerset County, recently was reorganized. The board of directors is composed of Charles Bird, president;



Loading in Room 35 Ft. Wide, High Splint Mine, Kentucky

A snapshot in No. 4 room on the Fourth-Right aircourse in No. 8 section. The coal is 56 in. high without parting. The only difficult condition is the 6 in. of hard drawslate which comes down with the coal. The rooms are worked with a track along each rib and with rows of timbers between. The cutting is done with shortwall machines and the gathering with cable-reel locomotives. Seventy-pound rail is laid in the main haulways of the mine.

Students on Inspection Tour.—Five senior students in the School of Mines of the University of Pittsburgh are making the annual spring inspection and surveying trip of that school through the anthracite regions, the iron and mining district and granite quarries of Chester County and the limestone mines of Bellefonte. Robert M. Black, professor and head of the department of mining, is directing the trip. The students making the trip are Thaddeus A. Kubiczek, Krakow, Poland; John W. Reed, Indiana, Pa.; Francisco A. Royes, Manila, Philippine Islands; Dean G. Roberts, New Philadelphia, Ohio, and Robert W. Winters, Avalon, Pa. Methods of mining, mechanical equipment, geology and features of general engineering interest will be studied.

Governor Fisher has vetoed the bill of Representative H. F. Rieder, of Westmoreland County, providing for a commission to study geological conditions in the bituminous section of the state.

Westmoreland Coal Co. reports for 1926 a net income of \$956,145, equal to \$4.78 a share, par \$50, on 200,000 shares of stock, against \$745,728, or \$3.73 a share, in 1925.

Total output by the Pittsburgh Coal Co. in 1926, the annual report says, was 5,042,501 tons, of which 4,074,114 was in the Pittsburgh district, 419,136 in Ohio and 549,251 in Kentucky. The production rate was about 35 per cent of the capacity of the mines, it was stated.

To Seek "Lost" Seams.—Pardee Brothers & Co., Inc., owners of the Lattimer, Milnesville and Hollywood mines, will set diamond drill men to work this spring and summer west of

amount of money to prove the lands and see if the seams are in existence.

No. 5 slope of the Tomhicken mine, which was abandoned years ago by the McTurk Coal Co. of Philadelphia, is being reopened this spring by the Mercer Coal & Iron Co. of Pittsburgh. It is said that engineers for the Pittsburgh company have reported that considerable coal remains in the workings which can be recovered at a profit.

The Lehigh & Wilkes-Barre Coal Co., which is controlled by the Lehigh & Wilkes-Barre Corporation, reported for 1926 net income of \$7,742,250, after bond interest and federal taxes, an increase of \$4,522,084. The earnings were equal, after preferred dividends, to \$21.13 a share on 338,350 shares of common stock outstanding, against \$7.77 a share earned in 1925.

The Lehigh Coal & Navigation Co. is making extensive boring operations on the outskirts of Summithill in the hope of discovering several rich seams of hard coal. In event the coal beds are not sufficiently promising it is the plan of the company to have the ground thrown open for building purposes.

The South Penn Collieries Co., is asking \$100,000 damages from the City of Scranton as a result of a grade-crossing elimination movement now under way. It is the claim of the company that its North Scranton breaker will suffer loss to that extent through the new grade of the Delaware & Hudson R.R. tracks and the forced changing of grades on lines running into the coal company grounds. The city is fighting the claim on the ground that it is excessive.

To Rob Buck Mountain Pillars.—Pumps have been installed by the Le-

Norman Romesberg, vice-president; W. H. Kramer, secretary and general manager; C. A. Philips, treasurer. The property includes 1,100 acres of coal land.

UTAH

Government to Lease 800 Acres.—Eight hundred acres of coal land will be leased by the government land office in Salt Lake City on April 30. The land is near the property of the Eagle Coal Co. in Carbon County and is listed as Township 13 south, Range 6 east. The terms are 10c. a ton royalty with an initial investment of \$90,000 and a minimum production of 50,000 tons at the end of the fourth year of the lease, the lease going to the bidder offering the highest bonus.

The Court of Appeals of the District of Columbia has decided in favor of the estate of the late Mark Braffet, Price (Carbon County) attorney, whose title to 160 acres of coal lands in Carbon County has been strenuously fought by the government. The decision, however, is to be contested, and the next move by the government is to take the case to the U. S. Supreme Court, it is announced. The Court of Appeals decision affirmed the ruling of the Supreme Court of the District of Columbia.

The National Devonian Process, Inc., has been organized in Salt Lake City for the purpose of constructing a plant to produce smokeless fuel, petroleum and gas from coal. A test plant carbonizing 500 lb. of coal in one operation is already working. Present plans are to construct a plant with a capacity of 100 tons a day as soon as possible, it was stated. The capital stock of the company is listed at \$250,000 divided into 1,000,000 shares of 25c. par value. Elias S. Woodruff, formerly in the retail coal business in Salt Lake City and more recently general manager of a local daily newspaper, is president of the company.

VIRGINIA

To Tunnel Mountain.—A contract has been awarded for driving two parallel tunnels over 2,000 ft. long through the mountain at the Faraday operation of the Pocahontas Fuel Co. in order to reach coal deposits in Tazewell County. It is estimated that it will take about one year to drive the tunnels, which will be 8 ft. high by 15 ft. wide. The present shaft and tipples of the Faraday operation are located in McDowell County, while the major portion of the coal deposit is in Tazewell County. In order to reach the coal it will be necessary to drill through solid rock for more than a third of a mile. The two tunnels are to be driven to provide a haulageway and for ventilation.

WEST VIRGINIA

Lambie Announces Examinations.—Examinations for mine foremen and firebosses will be held at Welch on June 20; Williamson, June 23; Beckley, June

28; Logan, July 5; Charleston, July 12; Wheeling, July 19; Morgantown, July 25, and Elkins, July 28. The tests will begin promptly at 9 a.m. and continue two days.

Seal Burning Osage Working.—It has been necessary to seal a section of Osage Mine No. 1 of the Brady-Warner Coal Corporation, on Scott's Run, Monongalia County, because of a fire that broke out there on March 17. Water has been turned into the burning area. With the sealing of the burning area, the company is going ahead with operations. It will be possible, according to Superintendent Warren Cook, to operate the left side of the mine as well as the Sewickley seam, which is above the burning section of the Pittsburgh seam.

Reclaim Burned Area.—More than 500 ft. of the Connellsville By-Product Coal Co.'s mine had been reclaimed by the middle of last week by rescue workers who are attempting to enter the workings, closed since Jan. 28, when a serious mine fire broke out. Robert M. Lambie, chief of the State Department of Mines, who is directing the work,

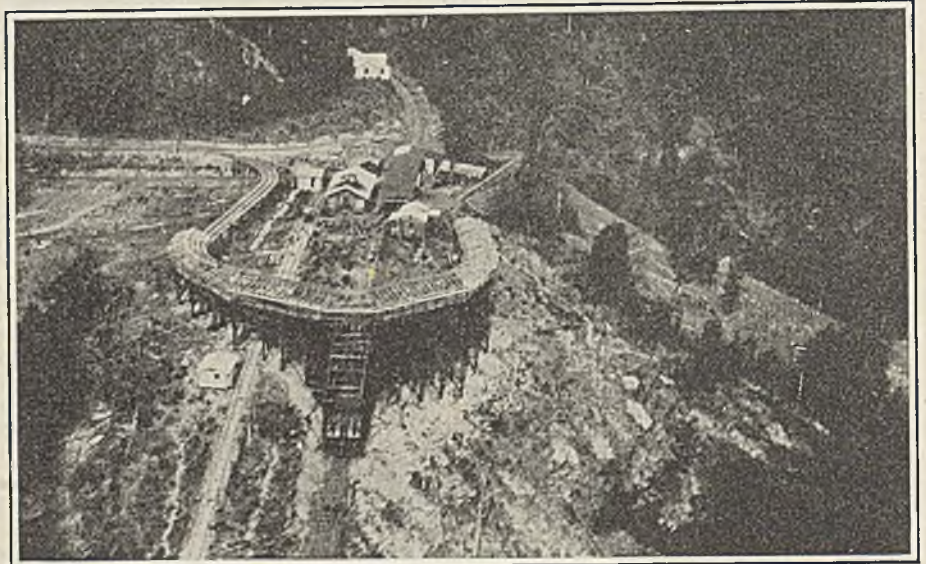
The trip will include a visit to the State Department of Mines, at Charleston, personally conducted by Chief R. M. Lambie.

The Winifrede Coal Co., Winifrede, was placed in the hands of a receiver recently. Frank B. Stewart, a stockholder, is in charge of the company's affairs.

The Thompson Coal Co., will soon let a contract for 1½ miles of track, including side tracks, to coal operations in Randolph County, and will build new tipples and incline and work three seams of coal.

CANADA

The British Columbia Department of Mines has announced that the coal output of the Province for January and February of this year totalled 426,042 tons, as compared with 340,025 during the corresponding period of 1926. All districts showed increases. The Crow's Nest Pass mines produced 147,373 tons, as against 112,701 tons in 1926; the Nicola-Princeton district, 36,024 tons,



Airplane View of New Construction

No. 2 mine of the Pruden Coal & Coke Co., Pruden, Tenn. The long narrow building with the black roof is the old headhouse, which was kept in use until completion of the new, which was built with the center of the bin directly over the old plane. Practically no time was lost in shifting from the old headhouse to the new.

reports that unusually good progress has been made. Four stoppings have been built, the ventilating system has been restored and pure air is circulating through the restricted area at the foot of the slope from which the work of penetrating the mine will continue. Five expert rescue crews are working in four shifts.

A tipples now under construction at the Owings mine of the Consolidation Coal Co., near Shinnston, will be as large as that at the Pinnickinnick mine. It will be equipped to produce all sizes of coal. The new tipples will be ready for use about the last of April.

Senior students in mining engineering at the School of Mines of West Virginia University are on an inspection trip this week through the mining fields of southern West Virginia. C. E. Lawall, head of the mining engineering department, is in charge of the party.

as against 31,622, and the Vancouver Island district 242,169, as against 194,952 tons in 1926.

Dominion Mines Busy.—At the annual meeting of the Dominion Coal Co. held at Montreal April 11 President R. M. Wolvin spoke encouragingly of present conditions in the industry. He anticipated satisfactory results from the measures adopted by the federal government for assisting the coal mining industry, including subsidies for the production of Canadian coal for coking purposes and the reduction of railway freight rates by 20 per cent. He stated that the collieries of the company had produced in the first three months of the year 1,084,979 gross tons as compared with the 662,242 tons in the corresponding period of 1926. The output of the Cape Breton collieries in March was larger by 23,000 tons than that of any previous March.

Among the Coal Men

Lafayette Tuck has been appointed general superintendent of the Pennsylvania mines of the Cosgrove-Meehan Coal Corporation, it is announced by A. S. Wilson, general manager. Tuck has been with the company since 1912.

S. J. Bohannon has been placed in charge of the newly established New York office of the Sullivan Bros. Coal Co., Frostburg, Md. Mr. Bohannon, who was formerly associated with the Park Coal Co., will have his office at 25 Church St.

G. W. Sweeny has been named secretary-treasurer of the United States Fuel Co., Chicago, and C. S. Wardley has been appointed auditor, according to an announcement by W. H. Clingerman, president of the company.

Peale, Peacock & Kerr have taken offices in the new Graybar Building, Lexington Ave. and 43d St., New York City, and will move there from 1 Broadway on May 1.

Charles C. Fitzmorris, president of the Globe Coal Co., Chicago, was appointed last week as Comptroller of the City of Chicago. Though not yet 43 years old, he has had a varied career as reporter, sports writer, editor, secretary of the Mayor and the Chief of Police of Chicago. He became president of the Eureka Coal & Dock Co. in 1923 at the urging of George Getz. He was promoted to the presidency of the Globe Coal Co. in 1925.

G. A. Glick, who since 1921 has been Twin Cities manager of the C. Reiss Coal Co., has been transferred to Sheboygan, Wis., headquarters of the company, where he will be general sales agent.

F. R. Sullivan, formerly connected with the Illinois Coal Traffic Bureau, has been appointed sales and traffic manager for the Moffat Coal Co., Denver, one of the largest coal companies in the Routt County fields in Colorado.

J. D. Francis and R. S. McVeigh were elected as directors of the Island Creek Coal Co. at a recent meeting.

R. W. Hunter, vice-president in charge of the Louisville office of the Groveland Coal Mining Co., is in Chicago in connection with pending contracts for output of mines in Kentucky fields.

Elmer C. Striebel, formerly in charge of the Great Lakes traffic department of the Milwaukee Western Fuel Co. at Milwaukee, Wis., has been appointed manager of the sales division of the Pittsburgh Coal Co. in Cleveland, Ohio.

Harry Whyel, former president of the Whyel Coal & Coke Co. and the Consolidated Coke Co., recently returned from Florida, where he spent the winter, to his home in Uniontown, Pa.

E. E. White, largely interested in the Winding Gulf district of West Virginia until a few years ago, when he sold his interests to the Massachusetts

Gas Co., is wintering at Augusta, Ga. He has booked passage to sail abroad on the *Majestic*, leaving New York about June 4. Mrs. White will accompany him and they expect to be gone until the early part of September.

Colonel James Ellwood Jones, vice-president and general manager of the Pocahontas Fuel Co., at Pocahontas, Va., recently was able to leave a sanitarium in Michigan, where he had been convalescing from an illness.

C. A. Connell, chief engineer of the Anthracite Coal Service, Philadelphia, was in Chicago recently in connection with the proposed establishment of a branch in the Windy City in the near future.

R. R. Wheeler, president of the Harlan-Knox Coal Co., operating at Morse, Ky., was in Cincinnati recently for the purpose of disposing of some of the company's holdings in the Harlan district.

George T. Taylor of Colorado Springs has been appointed by Governor Adams as a member of the State Industrial Commission of Colorado in place of William T. Reilly. The appointment of Mr. Taylor is satisfactory to the mining industry.

L. W. Cooper recently was appointed general superintendent of the Allegheny-Pittsburgh Coal Co., Logans Ferry, Pa., and the Windsor Power House Coal Co., Beech Bottom, W. Va., subsidiaries of the West Penn Power Co. Mr. Cooper served these companies for many years as mining engineer.

Industrial Notes

The Electric Storage Battery Co., Philadelphia, Pa., has opened its newly erected factory branch at 1955 Hunting Park Ave., Philadelphia. The branch, which is under the management of W. C. Hooven, houses a sales department for every type of Exide battery and a depot where certain types of batteries are assembled and complete batteries and parts are stored. The building is a two-story brick structure. The company has twenty-two factory branches and depots.

SKF Industries, Inc., moved on March 25 from 165 Broadway to larger offices at 40 East 34th Street, New York City.

R. H. Beaumont Co., Philadelphia, Pa., has taken over the business of the American Mfg. & Engineering Co., of Kalamazoo, Mich., and products formerly manufactured by this company will now be manufactured by the Beaumont company. S. O. Nafziger, president of the American Mfg. & Engineering Co., will be associated with the Beaumont company.

Fairbanks, Morse & Co., Chicago, has taken over the scale business of the Fairbanks Co., New York, carrying complete control of the manufacturing and distribution of Fairbanks scales. A

scale manufacturing plant at Birmingham, England, as well as the London sales agency and all other sales agencies throughout the world are included in the deal. At the annual meeting of directors of Fairbanks, Morse & Co., W. S. Hovey was elected president, the former president, C. H. Morse, becoming chairman of the board. This is the first time this position has been held by a man not of the original Morse family. Mr. Hovey was born in 1875, is a graduate of Cornell and joined the Sheffield Car Co., an affiliation of Fairbanks-Morse, in 1902.

The Fuller-Lehigh Co., Fullerton, Pa., has taken over that portion of the business of the Bailey Meter Co. pertaining to pulverized coal feeders, burners and water-cooled furnace walls. Addition of this equipment enables the Fuller-Lehigh Co. to supply not only pulverized-coal apparatus from the preparation plant to the furnace but to construct the furnace as well.

Earl E. Knox, who for 20 years has represented the Bury Compressor Co. in the Pittsburgh district, has been appointed general sales manager and will be located at Erie, Pa.

The appointment of Joseph G. Worker as general sales manager and his election to the board of directors is announced by the American Engineering Co. of Philadelphia.

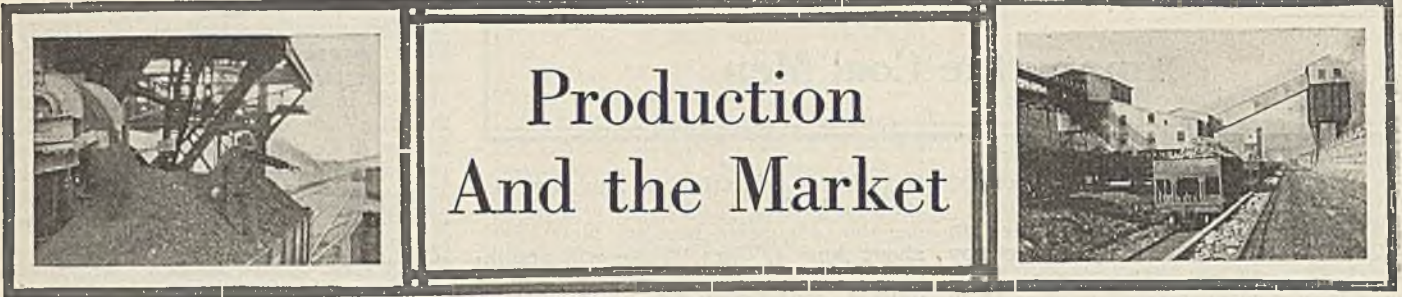
Obituary

J. E. Alley, 70, pioneer coal operator of the Pratt City mines, died at Birmingham, Ala., April 12. Mr. Alley was one of the party that opened the first coal mine at Pratt City. He is survived by his wife, three sons and three daughters.

William S. Byers, aged 64, well-known retired coal operator, died at his home in Bolivar, Pa., on April 9. He was born in Greensburg and was formerly president of the Fairfield Coal & Coke Co., at Bolivar. He is survived by his widow, four children and one brother, Frank Byers of Greensburg.

Association Activities

Preliminary steps have been taken toward organizing the Utah Coal Operators' Association. It is believed that all operating companies in the state will be represented when the organization has been completed. Another meeting of those behind the movement will be held soon. Among the objects of the association, it is announced, is the standardization of sizes of coal produced. The temporary chairman and temporary secretary are both widely known and influential in the coal industry of the state. Several years ago at a convention of Utah retail coal dealers some of the speakers expressed the hope that the operators would get together and form an association so that the members of the producing end of the industry could be dealt with collectively when necessity arose.



Industrial Consumers Undismayed by Suspension; Anthracite Market Improves

Industrial consumers continue undismayed by the suspension in the Central Competitive Field and part of the Southwest. The sharp reduction in bituminous tonnage the first full week of the walkout, when output dropped to 8,258,000 net tons, provoked no frantic buying in non-union fields and made little impress upon the mine storage stocks in some of the Middle Western districts. In fact, consumer interest as measured by prices was waning.

This is strikingly illustrated in the trend of *Coal Age* Index of spot bituminous prices. The tentative figure on April 18 was 174 and the corresponding weighted average price was \$2.11—a decrease of 4 points and 4c. from the figures of April 11. Were it not for the inclusion of storage prices on Illinois and Indiana coal and the disproportionate weight temporarily given to the Pittsburgh district, where commercial output now comes from only one or two companies, the index numbers would have been still lower.

Eastern Markets Drag

Eastern markets reflect indifference both in the volume of spot tonnage moving and in the prices paid. In a few cases tidewater traders were able to maintain the levels of the first of the month, but in most cases quotations at New York, Philadelphia, Boston and Baltimore were lower last week, with the low-volatile coals bearing the brunt

of the attack. Mine prices in the central Pennsylvania field also were weaker.

In Southeastern and Middle Western markets smokeless lump and egg showed increased strength and mine-run held in Columbus and Cincinnati, but weakened in the Chicago territory. Low-volatile slack, on the other hand, was easier. The stronger tone to the market on prepared sizes, however, had a favorable reaction upon the high-volatile trade in block and lump, but steam offerings could not overcome the combination of consumer indifference and congestion between the mines and the lower lake ports.

Output Below 10,000,000-Ton Mark

Predictions that the non-union mines would furnish a weekly output of 10,000,000 tons if the union operations suspended have yet to be fulfilled. Output during the week ended April 9 was estimated by the U. S. Bureau of Mines at 8,258,000 tons, as compared with 13,373,000 tons during the week ended March 26. Preliminary loading figures for April 11 and 12 gave no indication that output last week would show much, if any, gain over that of the preceding week.

The failure of the non-union mines, supplemented by the output of union operations in central Pennsylvania and the West, to turn out the tonnage anticipated, however, is chargeable not to a lack of mine capacity but to a lack

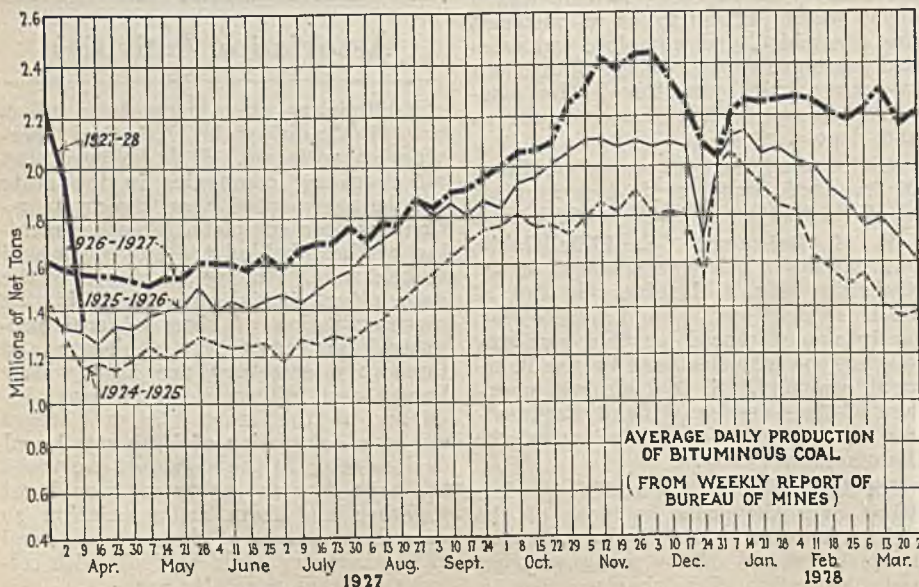
of market for the coal. Although this suggests that the consumer is in a comfortable position, there is danger in a too rapid depletion of the stockpiles built up by the industrial plants and the railroads prior to April 1.

Anthracite Trade Looking Up

After several weeks of discouraging demand, the anthracite market again is picking up. Production during the week ended April 9 was 1,651,000 net tons, as compared with 1,127,000 tons the week preceding. Easter holidays cut into working time late last week and on Monday of this week, but that interference was not an unwelcome one, as it probably will add zest to the revival of interest in retail buying. Much of this buying has been the result of April weather conditions.

While the steam division of the trade does not show the abnormal strength exhibited earlier in the year, when some buyers placed orders for domestic sizes as an inducement to the producers to make prompt shipment of No. 1 buckwheat, the general situation is a healthy one. Independents find a ready market for first-grade coal at company circular or better. Rice and barley also are in good demand; in some cases offers of the former size have been withdrawn.

The past week in the Chicago market was uneventful. While there was some decrease in the large number of "no bills" on mine sidings in Illinois and



Estimates of Production

(Net Tons)

BITUMINOUS

	1926	1927
March 26 (a).....	9,626,000	13,373,000
April 2 (a).....	9,040,000	11,054,000
April 9 (b).....	9,420,000	8,258,000
Daily average.....	1,570,000	1,376,000
Cal. yr. to date (c)....	157,919,000	180,266,000
Daily av. to date.....	1,883,000	2,149,000

ANTHRACITE

March 26.....	1,991,000	1,172,000
April 2.....	1,549,000	1,127,000
April 9.....	1,793,000	1,651,000
Cal. yr. to date (c)....	13,29,000	20,293,000

BEEHIVE COKE

March 26.....	251,000	200,000
April 2 (a).....	234,000	196,000
April 9 (b).....	228,000	193,000
Cal. yr. to date (c)....	4,237,000	2,690,000

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

Indiana, the rate of depletion of these stocks—estimated at 29,000 cars on April 1—has been slow. At the present rate of exhaustion it will be five or six weeks before the last of the "no bills" is on its way to the consumer.

Western Kentucky mine-run and screenings are steady. Some non-union coal from West Virginia and eastern Kentucky is moving into eastern Indiana for steam purposes. Very little Eastern coal, however, is rolling toward Illinois, Wisconsin and Iowa as a substitute for Illinois and Indiana steam sizes. As a matter of fact, industrial consumers in those states have hardly started to make a dent in their stock-piles.

Chicago Market Quiet

With the exception of Pocahontas and New River lump, the situation on all domestic grades of coal in the Chicago market is exceedingly quiet. Demand for smokeless lump, however, has been strong enough to force prices to \$3@

\$3.25. Mine-run, on the other hand, is erratic and the situation with respect to this particular size is largely influenced by lake embargoes.

Storage Piles Melt Slowly

Storage piles at the mines in southern Illinois are slowly diminishing. Spot orders favor the smaller steam sizes, but there is a large quantity of such coal in storage which already has been sold. Railroad buying in western Kentucky is disappointing to many Illinois operators with big stockpiles. Movement out of the Jackson-Duquoin and Mt. Olive districts is slow. The prices quoted on Standard coal retards spot sales in that field.

In the St. Louis local market spot activity centers largely on the domestic trade, with small-lot orders covering all grades. Retail yard supplies of coal are ample, but some Alabama coke is moving into the district. Buying by one large railroad system upset the steam-coal situation and forced up quotations

on western Kentucky coal 15 to 25c. With the rising quotations, local industrial plants dropped out of the market.

Western Kentucky operators with sales headquarters in Louisville have been trying to establish a minimum of \$1.75 on all sizes, but slack still sells to the consumer at \$1.50 and middlemen are able to buy at \$1.40. Some of the new prices show a range of from \$1.75 on screenings to \$2.25 on 6-in. block; there is more real movement, however, between \$1.50 and \$2. Although there is a good demand for coal in Illinois and Michigan and more inquiry from the Northwest, orders do not support sharp advances.

No Snap to Eastern Kentucky

In eastern Kentucky lump and egg bring around \$1.75, and block, \$2@ \$2.25. Slack is easier, with offers at \$1.25 and up, but the minimum on mine-run is firmly held at \$1.50. Substantial stocks in the hands of the consumers and the blockading of shipments to the

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

Table with columns for Market Quoted, Apr. 19 1926, Apr. 4 1927, Apr. 11 1927, Apr. 18 1927, Midwest, and Chicago. Rows include Low-Volatile, Eastern (Smokeless lump, Screenings, etc.) and High-Volatile, Eastern (Pool 54-64, Pittsburgh, etc.).

*Gross tons, f.o.b. vessel, Hampton Roads. †Advances over previous week shown in heavy type; declines in italics. ‡Quotations withdrawn because of strike.

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

Table with columns for Market Quoted, Freight Rates, April 19, 1926 (Independent, Company), April 11, 1927 (Independent, Company), and April 18, 1927 (Independent, Company). Rows include Broken, Egg, Stove, Chestnut, Pea, Buckwheat, Rice, Barley, and 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

lake ports as a result of recent embargoes exercise a restraining influence upon price movements in the eastern part of the state.

Trade at the Head of the Lakes is in the doldrums notwithstanding the fact that some of the docks have been compelled to hold down shipments until new cargoes are in sight. While bituminous stocks on hand April 1 approximated 1,500,000 tons, most of this was the property of the railroads or under contract for delivery to industrial consumers. The first cargoes of the new season are expected to arrive within the next few days.

Prices on prepared smokeless broke badly in the past fortnight. Late quotations are down to \$7.50, a reduction of \$2. The cut, it is explained, was necessary to meet all-rail quotations at the Twin Cities. Mine-run has eased off 25c., but screenings are firm. There have been no changes in the dock prices on other bituminous coals or on anthracite. Outside of the iron and steel interests, current industrial inquiry is light.

Indifference at Twin Cities

There is little interest in current buying in the Twin Cities. Retail prices have been reduced to stir up languid household consumers, but no great success has attended the move. Steam contracting is still in the inquiry stage. Milwaukee received its first shipments from Toledo on April 11 and a steady movement is in order. Current buying is slow. Retail prices on Hocking lump and egg have been cut 75c.

The Southwestern situation is unchanged. Demand is too poor to encourage the reopening of mines and operations running are relying upon railroad contracts to keep going. Announcement of summer storage prices on Arkansas and Oklahoma coals has been withheld. Industrial consumers are drawing upon storage stocks instead of crowding the spot market for screenings.

Winter played an unscheduled return engagement in trans-Missouri territory last week. Colorado coals enjoyed a slightly better demand as a result and there was a decrease in the number of "no bills." Storage buying by cement and sugar interests has enlivened the steam-coal market and prices on Colorado slack are up 25c. Colorado mines are averaging about 70 per cent running time.

Weather Helps Utah Market

Utah also reported an improvement in tonnage as the aftermath of inclement weather. Nevertheless the mines have not been able to push production much, if any, over the 50 per cent mark. Industrial consumers are purchasing normal supplies. The situation in slack is easy, with operators worrying that they may have a troublesome surplus of fine coal upon their hands.

Withdrawal of quotations by smokeless shippers has had a beneficial effect upon the Cincinnati market for high-volatile coals. The tightening in the low-volatiles comes just at a time when consumer indifference and lake embargoes threaten to undermine the weakened price structure. During the drive some high-volatile slack went down to \$1 and mine-run also wobbled.

The greatest reaction, however, was in prepared sizes. High-grade eastern Kentucky coals moved freely at \$2.50@ \$2.75, with less favored offerings bringing \$2@ \$2.25. Most of the bargain-counter tonnage in West Virginia lump was cleaned up and \$1.75 was the minimum at the close of the week. Egg coal also recovered ground after large blocks of tonnage had been sold at mine-run prices.

Smokeless Back in Key Position

A flood of inland orders restored smokeless to its key position in the market. Some shippers with little free tonnage have pegged spot prices on lump and egg at \$3.25 although the general range is \$3@ \$3.25 on lump and \$2.75@ \$3 on egg. Nut and stove are less active at \$2.25@ \$2.50. Mine-run has held at \$2@ \$2.25, but slack has been easier.

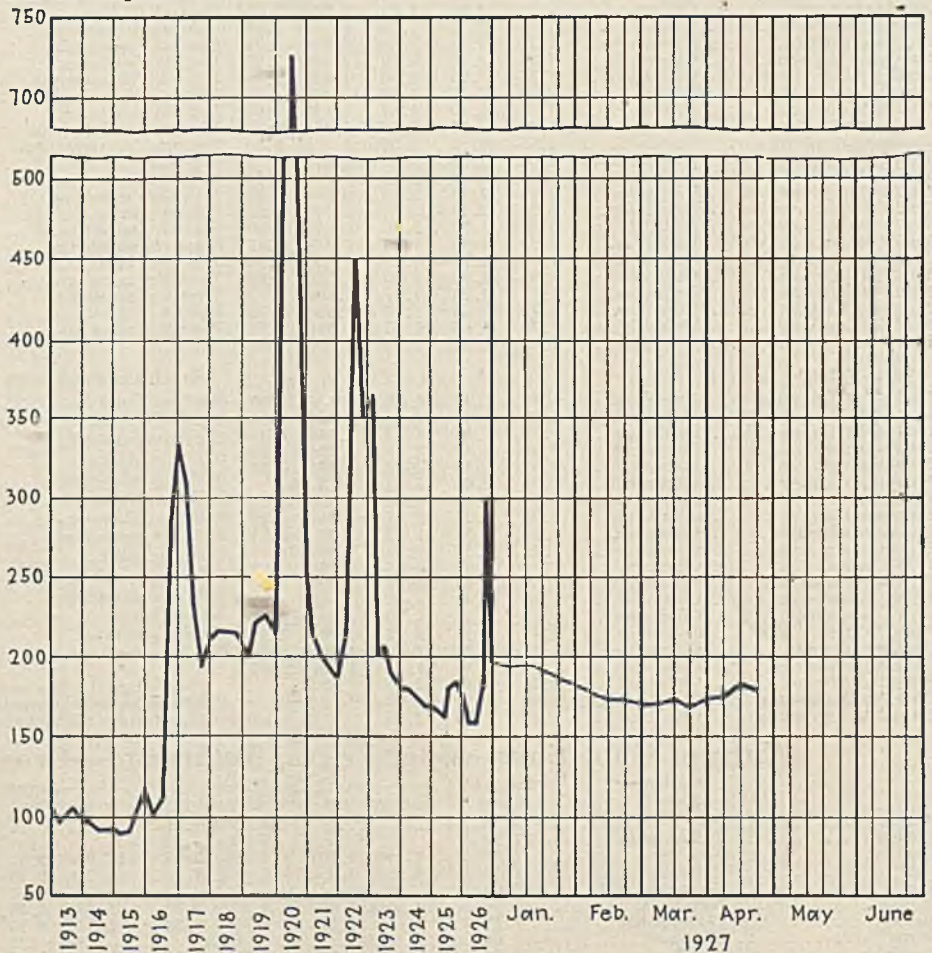
Coal loads moving through the Cincinnati gateway last week increased, but not sharply enough to offset the decrease of the preceding week. The total interchanged was 13,883 cars, an increase of 1,847 when compared to the week ended April 9 and 3,414 cars ahead of the total for last year. The biggest increase was on the C. & O. The number of empties en route to the mines

increased from 12,193 to 13,936 cars. Aside from the laying off of train crews in southern Ohio there is little in the Columbus market to indicate that a suspension in mining operations over the greater part of the Central Competitive Field is in progress. Retailers are well stocked and, generally speaking, are buying sparingly of non-union coal. Steam contracting is at a standstill and industrial plants forced into the spot market are able to supply their requirements without difficulty.

No Life to Cleveland Market

Although quotations on No. 8 coal have been withdrawn, there is no real snap to the Cleveland market. Stripping operations are quoting \$1.45 on crushed mine-run from eastern Ohio, Middle District coal is offered at \$2.10 and three-quarter lump from the Moundsville district is to be had at \$2.10. The market for these coals, however, could hardly be described as active. There is still some distress tonnage awaiting buyers.

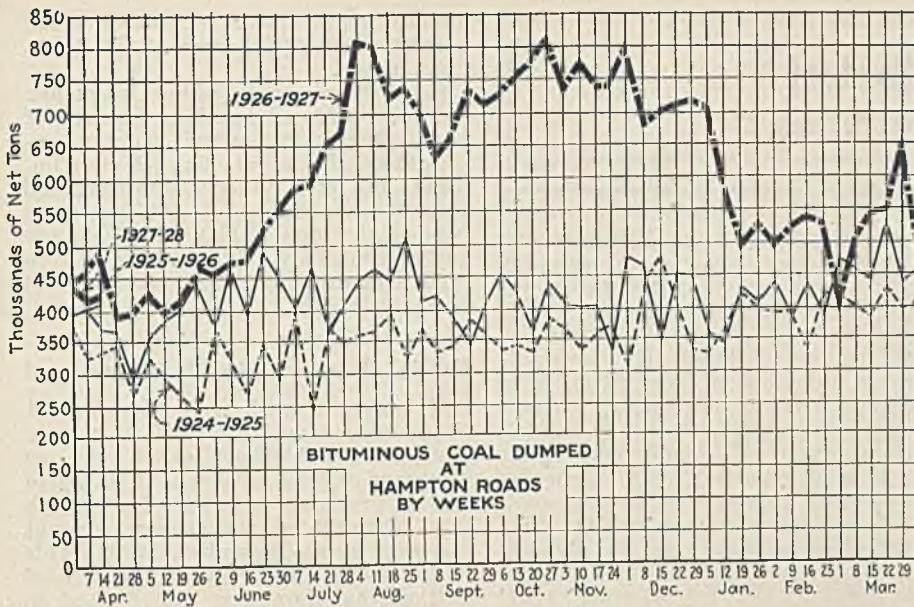
The undertone of the Pittsburgh district market is weaker although some choice steam mine-run brought \$2.35 last week. On the whole, however, demand is easier and offerings from nearby non-union areas are increasing.



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

	1927				1926	1925
	Apr. 18	Apr. 11	Apr. 4	Mar. 28	Apr. 19	Apr. 20
Index	174	178	172	171	158	161
Weighted average price	\$2.11	\$2.15	\$2.09	\$2.07	\$1.92	\$1.95

This diagram shows the relative, not the actual, price on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportion each of slack, prepared and run of mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 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 for April 11 and April 18 are tentative only.



The Westmoreland and Connellsville districts find it hard to move coal in the spot market. Some byproduct mine-run sold at \$2 last week, but such sales were unusual.

Decreased production due to waning demand characterizes the situation in central Pennsylvania. Mines are down at Bakerton, Barnesboro, Spangler, Hastings, South Fork, Beaverdale, Portage and in the Houtzdale and Dubois sectors. Prices are weaker. Pool 1 is \$2.35@2.55; pool 71, \$2.20@2.30; pool 9, \$2.10@2.15; pool 10, \$1.80@1.95; pool 11, \$1.65@1.70.

No Improvement at Buffalo

The Buffalo bituminous market has shown no change for the better in the past week. In the opinion of many sellers demand is diminishing, although three-quarter West Virginia lump is quoted 10c. higher than a few days ago. Slack is fairly steady at \$1.40@1.50 for steam grades and \$1.55@1.65 for Youghiogheny gas. Three-quarter Youghiogheny lump is \$2.50@2.75.

The New England steam trade is moribund. Demand is extremely slow and the general impression is one of weakness. Prices have sagged still further during the past week and there is nothing in sight indicating any improvement in the next month or two. Accumulations are again the rule at the Virginia terminals. Distress coal is heard of from day to day and occasional quotations down to \$4.10 per gross ton, f.o.b. vessel, are reported on No. 2 grades. On No. 1 Navy Standard the range is \$4.25@4.50.

Coastwise freights are easier. As a result prices on cars at Boston, Providence and Portland for inland delivery are down to \$5.75@5.85. Sales at \$6 are rare. The all-rail movement from central Pennsylvania is extra light. Operators still shipping are quoting within 20c. of the lowest prices made during 1926 and the prospect for betterment during the summer is not bright.

New York Market Slow

The New York bituminous market was slow last week. Contract coals moved steadily, but there was little demand for spot tonnage. Consumers, for the most part, are content to rely

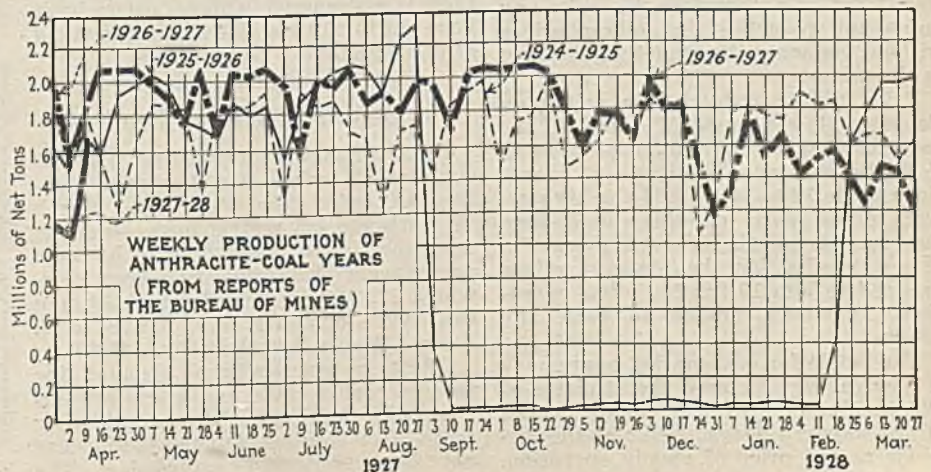
upon stockpiles accumulated prior to April 1 to keep their plants going. These piles are melting down, but are not low enough to cause any anxiety.

Indifference also characterizes the reaction of the Philadelphia consumer. Most of the movement now current is supported by contract customers. Railroad fuel agents continue to add to their stocks when a particularly attractive price is quoted on a block of tonnage. Spot figures, particularly on the low-volatile coals, are easier. Trade at Baltimore is no better than at Philadelphia or New York and shippers still push for orders.

Weakness continues to feature spot steam business in the Birmingham district. Contract shipments hold up and some new orders were placed last week. Among the more important of these contracts was that of the Louisville & Nashville R.R.; prices and tonnages are said to be practically the same as shown in expiring agreements. Domestic contracting for spring and summer delivery is on a very conservative basis.

Anthracite Shaping Up Better

Real improvement was reported in the New York anthracite market last week. Demand for domestic coals was stronger and there was a much better movement. All sizes shared in the heavier buying, but egg appeared to be the favorite, with pea a leisurely second. Some shippers are sold up on No. 1 buckwheat and certain others have



Car Loadings and Supply

	Cars Loaded	
	All Cars	Coal Cars
Week ended April 2, 1927.....	992,745	175,176
Week ended March 26, 1927.....	1,008,888	206,990
Week ended April 3, 1926.....	928,092	156,909
Week ended March 27, 1926.....	967,838	171,413

	Surplus Cars		Car Shortages	
	All Cars	Coal Cars	All Cars	Coal Cars
March 31, 1927	248,477	68,417
March 23, 1927	252,751	71,677
March 31, 1926	246,549	104,280
March 22, 1926	213,780	79,551

withdrawn offers on rice. Barley is in fair shape according to all indications.

With the Easter holidays cutting into production and season-end demand creating a fair market for small-lot orders, Philadelphia expects a stronger market the rest of the month. Operators now have a liberal backlog of orders. Pea is in excellent demand and company shippers have less nut to offer. Steam sizes are fairly active, with contract customers taking their full quotas. Retail demand for No. 1 buckwheat also has grown.

Baltimore Retailers Busy

Baltimore retailers are campaigning for spring fill-up business, but the results have not been up to expectations. Cool weather, however, has created a fair demand for immediate deliveries of one- and two-ton orders. Aside from small orders for current consumption the Buffalo retail market is quiet. Lake loading was almost at a standstill last week, but the total number of bottoms loaded in advance of the opening of navigation has been unusually large.

Connellsville Coke Weak

The Connellsville coke market was very dull last week. No grade was in good demand and offerings of spot tonnage were more numerous. In view of this situation, a drop in prices may be expected at any time although current quotations show no change. Standard furnace coke is held at \$3.25@3.50; foundry, \$4.25@4.75. Only small lots of furnace coke, however, could command above \$3.25.

Production of beehive coke in the Connellsville and Lower Connellsville region during the week ended April 9 was 144,850 net tons, according to the Connellsville Courier. Furnace-oven output was 77,100 tons, a decrease of 3,300 tons when compared with the preceding week. Merchant-oven output was 67,750 tons, a decrease of 1,270 tons.

Foreign Market And Export News

Repercussions of Wage Cuts Dominate French Trade

Paris, France, April 7.—The wage question is still the dominant factor in the French coal situation.

In the Nord and Pas de Calais, under the influence of government representations, owners and workers have agreed to a new schedule which cuts the wages of the best-paid miners 2.6 fr. per day, or 1 fr. less than the owners had proposed. Other adult underground workmen take a cut of 2.4 fr.; workers from 18 to 21 years, 2.15 fr.; workers from 16 to 18 years, 1.5 fr.; workers under 16 years old, 1.1 fr.

Adult surface workers suffer a reduction of 2.15 fr. in their daily pay; workers from 18 to 21 years, 1.5 fr.; from 16 to 18 years, 1.1 fr.; workers under 16 years old, 0.85 fr. The pay of girls over 18 years old is shaved 1.1 fr.; girls under 18 years, 0.95 fr.

In the Loire basin an agreement has been reached effecting reductions of 1.25 to 2.5 fr. The coal owners originally had proposed a decrease of 3.25 fr., or an average of 8.2 per cent. The schedules agreed upon make the average reduction 6.3 per cent.

The readjustment of prices in the Nord and Pas de Calais fields now in effect represents reductions of 12 to 18 per cent and includes the 2.5 per cent turnover or production tax. On industrial flaming and bituminous coals these reductions work out to 9 to 14 fr. per ton; on household flaming and bituminous coals, 12 to 16 fr.; semi-bituminous, quarter-bituminous and lean industrial coals, 9 to 14 fr.; ovoids, 20 fr.; briquets, 40 fr.; metallurgical coke, 10 fr.

Tardieu Explains Situation

Discussing the government's coal policy before the Chamber of Deputies last Friday, M. Tardieu, Minister of Public Works, said that, at the present time, compared with prewar figures, the fiscal charges against the French collieries reach the 10.85 coefficient; wages, 6.12; dividends paid, 3.13. It was impossible, therefore, to make any important reduction in selling prices without reducing the wages of the men in the mines.

Prior to the reduction in prices on February 1, continued M. Tardieu, the net profits of the best collieries were 18 to 23 fr. per ton. Medium-cost operations made 12 to 15 fr. and the highest-cost mines were running at a loss. Subsequent to the February cut in prices, profits for the low-cost mines dropped to 7 to 10 fr.; the other operations had been unable to earn any return.

The battle for coal-market supremacy is now raging, declared the Minister of Public Works. French mines cannot afford to carry heavy stocks at the pit-heads at the price of steady operation.

At the same time a rapid development of French mine capacity was essential if the country was to have its proper place in the industrial set-up of Continental Europe.

M. Tardieu declared that he would favor a reduction of from 4,000,000 to 6,500,000 tons in the overland imports of fuel and of 5,000,000 tons in the imports by water. He would make up the loss in land imports by the erection of new French coke ovens, mixing coals and more economical combustion. Substitution of mixed coals for straight bituminous and curtailment of anthracitic consumption, he believed, would offset the proposed drop in water imports. A heavy impost was suggested as a means of discouraging consumption of anthracitic coals.

Belgian Decline Continues

Brussels, Belgium, April 6.—Demand for Belgian coal is growing less and less, stocks are increasing and in some sections of the mining areas, notably in the Borinage, pithead accumulations of small sizes are becoming a troublesome factor. The Campine also is hard put to find space for the growing stockpiles. Prices naturally suffer under such conditions.

Today a slight reaction was noted. This upturn was attributed to the American strike. Well-posted observers, however, are well aware that the troubles in the union coal fields of the United States are too tenuous a thread upon which to hang any hope of a recovery in values and demand in the Belgian market.

As a matter of fact, Belgian coal owners are really crying for a wider market for their product. The multiplying declines in pithead prices which have taken place in the last two months have not stimulated sales. Competition is just as keen as ever and prices, therefore, are further endangered.

Coke is freely offered under 210 fr., despite "official" circulars. One producer in the past few days has been quoting 200 fr. The weakness in patent fuels is widespread. Official prices have been cut to 210 and 220 fr., but demand still is practically non-existent.

Britain Recovers Lead

Great Britain recovered first place as supplier of coal to the Argentine during the period from Feb. 25 to March 25, with 104,405 metric tons. Imports from the United States during the same period were 78,323 tons and from Germany, 37,880 tons. British and German coals were quoted at 37s. (\$8.98) c.i.f. Buenos Aires; American coal, \$8.80.

There is practically no demand for foreign coal in Chile and prices are unchanged. Local mines are experiencing some labor troubles, but production has not been seriously retarded. The

nitrate plants have purchased small quantities of native coal at 78 pesos, f.o.b. plants.

Great Britain captured the Uruguayan market in March, with shipments of 35,000 tons. No other country appeared on the import list. March imports into Rio Janeiro approximated 100,000 tons, of which 71,000 tons came from Wales and 29,000 tons from the United States. About 60,000 tons were reported en route. Welsh coal is quoted at 35s. c.i.f. Rio.

British Exports Reach High Level

Exports of coal from the United Kingdom during March of this year amounted to 4,820,000 gross tons, as compared with 4,172,000 tons exported in the preceding month. The March total represented the largest amount exported since December, 1924. This improvement in foreign shipments of British coal, however, was limited to South Wales. Trade is slow in other districts and production is curtailed.

Coal output of the United Kingdom during the week ended April 2 totaled 5,155,600 tons, representing a decline from the total of 5,185,700 tons produced during the preceding week. Employment increased slightly during the week to a total of 1,026,000 workers.

Export Clearances of Coal, Week Ended April 14

FROM HAMPTON ROADS

For Italy:	Tons
Ital. Str. Vejo, for Portovecchio	7,448
Ital. Str. Ida, for Ancona	4,826
For Cuba:	
Amer. Str. Astoria, for Havana	4,399
Br. Str. Hallside, for Ensenada de Mora	3,943
For Egypt:	
Br. Str. City of Tokio, for Port Said	3,020

FROM PHILADELPHIA

For Cuba:	
Br. Str. Mountpark, for Havana	—

Hampton Roads Coal Dumpings

(In Gross Tons)

	Apr. 7	Apr. 14
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	122,927	117,596
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	120,666	136,248
C. & O. Piers, Newport News:		
Tons dumped for week	126,437	127,915

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

Pier and Bunker Prices

(Per Gross Ton)

	PIERS		BUNKERS	
	April 7	April 14†	April 7	April 14†
Pool 1, New York	\$5.35@5.75	\$5.40@5.75	\$5.60@6.00	\$5.65@6.00
Pool 9, New York	4.70@5.00	4.80@5.10	4.95@5.25	5.05@5.35
Pool 10, New York	4.50@4.75	4.50@4.75	4.75@5.00	4.75@5.00
Pool 11, New York	4.25@4.50	4.25@4.50	4.50@4.75	4.50@4.75
Pool 9, Philadelphia	5.15@5.30	5.00@5.15	5.40@5.55	5.25@5.40
Pool 10, Philadelphia	4.85@5.05	4.75@4.96	5.10@5.35	5.00@5.10
Pool 11, Philadelphia	4.45@4.55	4.40@4.50	4.70@4.80	4.65@4.75
Pool 1, Hamp. Roads	4.60@4.75	4.75	4.60	4.65
Pool 2, Hamp. Roads	4.50@4.60	4.55	4.25	4.40
Pool 3, Hamp. Roads	4.00@4.10	4.35		
Pools 5-6-7, Hamp. Rds.	4.10@4.25	4.25		

	BUNKERS	
	April 7	April 14†
Pool 1, New York	\$5.60@6.00	\$5.65@6.00
Pool 9, New York	4.95@5.25	5.05@5.35
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	5.40@5.55	5.25@5.40
Pool 10, Philadelphia	5.10@5.35	5.00@5.10
Pool 11, Philadelphia	4.70@4.80	4.65@4.75
Pool 1, Hamp. Roads	4.75	4.85
Pool 2, Hamp. Roads	4.60	4.65
Pools 5-6-7, Hamp. Rds.	4.25	4.40

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

Trade Literature

Concrete Breakers. Sullivan Machinery Co., Chicago, Ill. Bulletin No. 81-1. Second edition. Describes two types of tools—a 75-lb. or heavy duty buster and a 48-lb. light buster. Pp. 16; 6x9 in.; illustrated.

Electric Portable Hoists. Sullivan Machinery Co., Chicago, Ill. Bulletin No. 76-G. Second edition. Both single- and double-drum types are described.

Enterprise Wheel & Car Corp., Bristol, Va., has issued a 22-page bulletin entitled *Lower Haulage Cost, Higher Net Profits*, containing testimonials from users of Enterprise mine cars, also descriptions and illustrations of types of cars used at various coal plants, with data and diagrams on cost reduction and mine-car wheels.

Smith Welding Equipment Corporation, Minneapolis, Minn., has issued its 1927 junior catalog. This is of convenient pocket size and contains information and prices on oxyacetylene equipment.

Automatic Water Still. Barnstead Still & Sterilizer Co., Boston, Mass. Catalog A. Pp. 32; 8½ x 11 in.; illustrated. Covers the various fields in which distilled water is used, including its use in storage batteries in coal and metal mines.

Henry B. Newhall Corp., New Jersey Foundry & Machine Division, Garwood, N. J., has issued a folder illustrating its cranes, trolleys, hoists and elevators.

American Abrasive Metals Co., 50 Church St., New York City, has issued a leaflet illustrating and describing its Feralun Brake Shoes.

Zinc Roofing and Siding for Industrial Buildings. The New Jersey Zinc Sales Co., New York City. Pp. 23; 8½ x 11 in.; illustrated. The economies of corrugated sheet zinc and its operating advantages are described. Tables for calculating the number of sheets and total weight required to cover a given area are included. The application of zinc to wood framed buildings also is described.

Bad Air Whispers Shirk is the title of a folder issued by the American Blower Co., Detroit, Mich.

The Door to Economy is the title of a booklet issued by Green, Tweed & Co., 109 Duane St., New York City. It covers the manufacture and sale of rod packings, the economical use of the ratchet in nut turning and contains information of use to anyone interested in the generation of power.

The American Rolling Mill Co., Middletown, Ohio, has issued a 16-pp. bulletin, *Armco, 1901-1927*, which tells of the growth of the company. The book is well illustrated.

100 Years of Steel Improvement, issued by the International Nickel Co., New York City, is the title of a bulletin which covers the important developments in the history of nickel alloy steels.

The Lincoln Electric Co., Cleveland, Ohio, has issued the 1927 edition of its *Instruction Manual*. Covers the latest practices used in manual electric arc welding. Price, \$1. Pp. 92; 5x7½ in.; illustrated.

New Equipment

New Type of Level Is Both Rapid and Accurate

An ingenious type of level, which has been named the "Auto-Set," has recently been perfected by Messrs. E. R. Watts and Son, Ltd., 123 Camberwell Road, London, S.E.5, England. The distinguishing feature of this instrument is the fact that, once it has been rough leveled, the final adjustment involves no motion of the leveling bubble or of the

which are engraved a pair of cross-lines. The parallel plate refractor, represented by *G*, is mounted on an axis transverse to that of the telescope. It can be tilted in either direction by means of the wedge *W*. This wedge, through the fine adjustment, moves horizontally in either direction under the toe of the lever *L* which is mounted on the axis of the glass plate *G*.

The spirit level is of the constant-bubble-length type. Tests show that the length of this bubble remains constant throughout a range extending from below 0 deg. F. to above the highest tropical temperature. Therefore, it is only necessary to read one end of the bubble, which can be done from the eye end of the instrument by means of the prism *P*. This prism moves with the wedge and has a cross-line engraved on its lower face at *X*. The bubble is lighted from below by a reflector and the position of the prism is adjusted until *X* and the end of the bubble *B* are seen to coincide. It then appears to the eye as indicated in the small drawing in Fig. 2. The "anti-parallax pointers," *YY*, are engraved on the vertical face of the prism and the line *X* on its horizontal face.

Great Accuracy Possible

When coincidence is obtained the line of sight is truly level although the geometric axis of the telescope may not be exactly horizontal. The bubble range is sufficient to allow for a fine adjustment of ± 4 minutes. Rough leveling, to this degree of refinement, is easily effected by the hand lever shown pendant below the instrument in Fig. 1.

The top of the instrument stand has the form of a hollow cup with a spherical interior surface. The telescope is mounted on a second cup, fitting into the first and to which it can be clamped by giving the milled head (shown at the lower end of the rod in Fig. 1) one-eighth of a turn. Rough leveling is effected by moving this rod, as required, to bring into a central position the bubble of a small spherical level which is mounted under the magnifying prism shown on the right of the telescope tube in Fig. 1. By means of a reflector, this bubble is also lighted

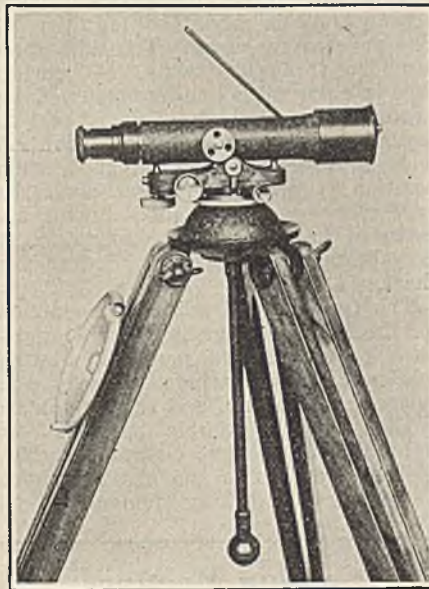


Fig. 1.—Ready for Use

This is a sturdy, high-speed level and, although not a delicate instrument, is equal in optical performance to the best 10-in. and 12-in. dumpy levels. It is, therefore, admirably adapted to the everyday work of surveyors, engineers and contractors.

telescope as this is effected by tilting the line of sight up or down by simple optical means. As a result, in making the final adjustment, no trouble is experienced from the oscillation of the leveling bubble.

In Fig. 1 the newly designed instrument is shown set up ready for operation, and Fig. 2 presents a diagrammatic cross-section of the telescope. In this illustration, *D* is a diaphragm upon

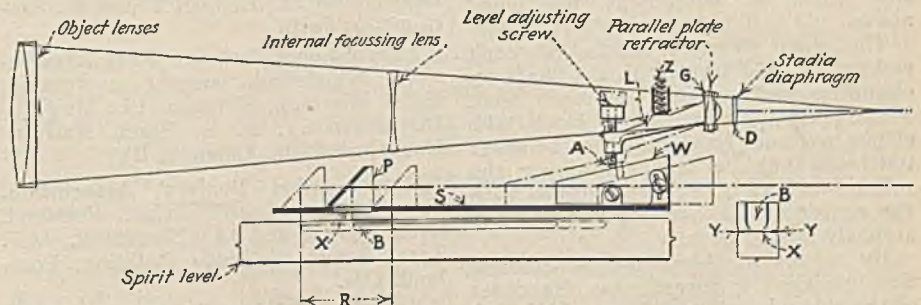


Fig. 2.—Details of "Auto-Set" Construction

Designed on an entirely new principle, viz., an automatic horizontal setting of the optical axis corresponding to any position of the air bubble along its run, this level is said to represent the acme of quick-leveling instruments. It is asserted that level readings may be taken, within 15 to 20 seconds from the time of setting up the tripod, with an accuracy of 0.01 ft. in 500 to 600 ft.

from below and is viewed from the eye end of the instrument.

In setting up the instrument, therefore, it is first necessary to center this bubble by manipulating the hanging rod previously described. When this is done, the two cups are clamped together by giving the rod one-eighth of a turn. The final adjustment is then made by turning the milled head shown near the prism in Fig. 1. This operation moves the slide *S* shown in Fig. 2 either backward or forward. On this slide are mounted the prism *P* and the wedge *W*. The motion of this wedge, as already explained, tilts the line of sight without moving the telescope. The latter can be swung in azimuth to any desired position, and can then be clamped firmly to its base. When the instrument is not in use, the spherical cup forming the head of the stand is protected by a cover of light-weight alloy. This also serves as a base for the instrument should it be necessary to set it up on a wall.

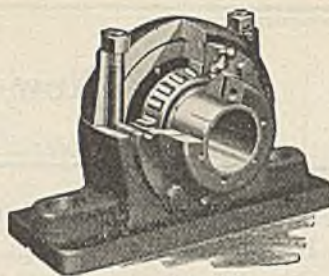
In fairly clear weather levels can be taken with this instrument to an accuracy of .01 ft. in 500-600 ft. Thus, it is equal in optical performance to the best 10-in. and 12-in. dumpy levels yet has the decided advantage of being about three times as rapid in its operation. Level readings in many cases may be taken in from 15 to 20 seconds after the time of setting up the tripod and the average reading time, as determined by several months use on a hydro-electric construction operation, was about 30 seconds. On this same operation, a closing accuracy of .005 ft. in 2,000 ft. was obtained with moderately long sights. With short sights, in rough country and working against time, the average accuracy was .04 ft. per mile. The instrument sells for approximately \$110 f.o.b. factory.

Tapered Roller Bearings Used In Transmission Parts

The Medart Co., of St. Louis, Mo., has recently announced a new line of Timken-equipped transmission machinery. Included in this list are spherical ball-and-socket pillow blocks, ball-and-socket hanger bearings, unit mounting and loose pulleys. The general construction of all of these units is essentially the same and comprises two tapered roller bearings assembled on a ground steel sleeve forming one unit and fitted into a finished cast-iron hub. This hub is machined to fit into a suitable housing adapted for use in any of the types of equipment mentioned above.

The steel sleeve is slotted at each end and is held tightly on the shaft by clamping collars—one on each end. When installing a pillow block, the sleeve must not be clamped to the shaft until the hub or unit containing the roller bearings is properly aligned with the center of the housing and the cap securely bolted down.

By means of Alemite-Zerk fittings, the lubricant is forced into the races of the roller bearings. Grease seals are placed in the flanges at the ends of the bearings and prevent dust from entering or lubricants from leaking out. The large end of the bearing-roll points inward or toward the center of the



Medart Pillow Block

This illustration shows the general construction of the Timken-equipped pillow block that is said to always maintain the bearings in proper alignment.

bearing and this assures that the lubricant will be pumped away from, instead of toward, the end enclosures.

It is claimed that the entire bearing arrangement is made thoroughly positive and tamper-proof. The take-up is provided through the use of bearing cups or outer races and by means of the cap-and-shim method. This is said to assure that the roller bearings will remain in the exact original application position regardless of how much the appliance may be handled during delivery to the user, or how many times it may be removed and reapplied to the shaft.

The fundamental advantage claimed for the Medart design is that the appliance comes to the user filled with lubricant, with bearings properly and permanently set up, and that it can be applied, by the simple operation of tightening up the two clamping collars of the sleeve, onto the shaft without disturbing the working elements.

Coming Meetings

American Welding Society. Annual meeting, April 27-29, at Engineering Societies Building, 29 West 39th St., New York City. Secretary, M. M. Kelly, 29 W. 39th St., New York City.

Chamber of Commerce of the United States. Annual meeting, May 3-5, at Washington, D. C.

Mine Inspectors' Institute of America. Annual meeting May 3-4-5, Charleston, W. Va. Secretary, C. A. McDowell, P. O. Box 64, Pittsburgh, Pa.

California Retail Fuel Dealers' Association. Fourteenth annual convention, Sacramento, Calif., May 5-7. Chairman of Convention Committee, George Burns, 19th St. between V and W, Sacramento, Calif.

International Railway Fuel Association. Nineteenth annual convention, Hotel Sherman, Chicago, Ill., May 10-13. Secretary, L. G. Plant, Railway Exchange Bldg., Chicago, Ill.

Oregon Coal Dealers' Association. Seventh annual convention, Portland, Ore., May 13 and 14. Secretary, O. F. Tate, Board of Trade Building, Portland, Ore.

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

Retail Coal Dealers' Association of Texas. Annual convention, McAlester,

Okl., May 19 and 20. Secretary, C. R. Goldman, Dallas, Texas.

American Society of Mechanical Engineers. Spring meeting, May 23-26, at White Sulphur Springs, W. Va. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

National Foreign Trade Convention, Detroit, Mich., May 25-27. Secretary, O. K. Davis, India House, Hanover Square, New York City.

Society of Industrial Engineers. Fourteenth national convention, Hotel Stevens, Chicago, Ill., May 25-27. Executive secretary, E. Van Neff, 17 E. 42d St., New York City.

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

Pennsylvania Retail Coal Merchants' Association. Annual convention, Wilkes-Barre, Pa., June 1-3. Secretary, W. M. Bertolet, Reading, Pa.

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

Association of Iron and Steel Electrical Engineers. Annual convention in conjunction with the Iron and Steel Exposition, at Pittsburgh, Pa., June 13-18. Secretary, John F. Kelly, Empire Bldg., Pittsburgh, Pa.

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

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

National Coal Association. Annual meeting June 15-17, at Edgewater Beach Hotel, Chicago. Executive Secretary, Harry L. Gandy, Washington, D. C.

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. Regional meeting, May 25-27, Pittsfield, Mass. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

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.

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

Production Management meeting will be held April 27-29 at the Book-Cadillac Hotel, Detroit, Mich., under the auspices of the production executives' division of the American Management Association, the management division of the American Society of Mechanical Engineers and the Detroit section of the Society of Automotive Engineers.