COAL AGE

McGRAW-HILL PUBLISHING COMPANY, INC.
JAMES H. McGRAW, *President*
E. J. MEHREN, *Vice-President*

Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 31 | NEW YORK, MAY 5, 1927 | Number 18

The Leaven at Cincinnati Will Lighten Labor

WITH MUCH PRIDE it is recorded that certain factories cover acres of land and that their buildings contain thousands of square feet of floor space. The coal mine often reckons in thousands of acres and never uses footage when estimating size. In some mines the haulage road to be traversed is three, four or even five miles long. If a coal-mine is to be run like a factory all the principles of factory management must be multiplied many times.

Those who would plan and manage a mine must use more than ordinary skill. This cannot be obtained without availing oneself of all possible sources of information especially in times like the present when a new technique is being developed and the demand for coal better suited for various purposes is being created by scientific research. Once a year, therefore, it is well for the technical forces at mines to get together to ascertain how the technique of coal-mining methods can be improved. Most engineers will grant that once a year is none too often for such meetings.

Every year a new slant is taken on mining problems. This year it is scientific management and organization, which last year was barely visioned. Now it is realized as the supreme need. Furthermore machines have been improved and developed. One might go on buying machinery for the mine of 1925 or 1926, forgetting that it has to be used in the mine in 1930 and 1931, but the wise mine owner will get ready for the future, buying for the mine to be rather than for the mine that was. This is why the exposition and the convention at Cincinnati will be well attended.

Many conventions are merely assemblages brought together for a vacation and good fellowship. Not so that at Cincinnati. It is attended by men who want to learn. It is a post-graduate course in mining. The classes are crowded; the students are eager; the lecturers are all experienced men, the best of their kind. There is no waste time. Cincinnati has no attractions for the merely convivial. The visitors do not come to be entertained but to be informed. They come out of no idle curiosity. They assemble that they may obtain the latest information. During sessions no one is on the street. They are all in the lecture hall eagerly listening, and between sessions they surround the booths seeking to have their problems answered by sales engineers and executives of the various manufacturing concerns who have taken space because they have information to impart.

No company that intends to continue mining will fail to send every executive it can spare. Mistakes are costly. Thousands of dollars can be wasted by operating in some wrong and extravagant manner. One can work day and night and harry one's assistants and men and often not get one-half the work from them that can be readily obtained when performing the work in the most efficient way. Any one looking back remembers some job that ten men did with difficulty that is now done by two with ease and without effort. That is not true in general, but it is true about many operations. Today the big items are being considered—loading and preparation. Great changes are being made in these operations. In a few years these jobs will be among those that have been made more efficient by 50 or even more per cent, as dumping, pumping, loading railroad cars, cutting and haulage have been in the past.

Gear Up the Furnace

UNQUESTIONABLY the automobile has done much to make a mechanic out of every citizen. Many men are now adept in the use of various tools, who but a few years ago were the veriest tyros in their manupulation. It is strange, however, how many people will insist that their cars must be in perfect operating condition, yet appear to be abundantly satisfied to permit so vital and important an element in their domestic establishments, as their house furnaces, to run on year after year without even so much as a periodic inspection.

Like other pieces of mechanical equipment, a house furnace cannot be expected to function indefinitely at a high rate of efficiency, unless suitable care is bestowed upon it. It is subject to deterioration in common with practically all other products of man's ingenuity. It is absolutely essential therefore, that if best results are desired, it must be at least cleaned periodically. With the steam or hot water furnace, also, it should be washed out occasionally.

It matters little whether this overhauling is done before the furnace is fired up in the fall, or just after it is shut down in the spring. The important consideration to the householder is that in order to avoid excessive coal bills he must assure himself that his heating equipment is in proper working order—doors and drafts must shut properly, the dampers function correctly and that no appreciable leaks exists between the uptake and the chimney.

In addition, however, the householder should make sure that during operation the heat-absorbing surfaces are kept clean. Soot and fine ashes constitute an excellent insulating material. This must be scraped or blown from all heating surfaces at frequent intervals if best returns in heat for money invested in fuel are to be realized. These returns are small enough at best; they should not be reduced still further by careless handling.

Imagination and Safety

MOST of the accidents that occur in mines come from a chain of circumstances, and imagination is needed to circumvent them. When it is realized that the human race has hardly arrived yet at such a degree of intelligence that it realizes, despite frequent demonstration of its possibility or certainty, that a half-quenched match, a lighted cigarette or the ashes from

a pipe will set fire to a pile of paper and burn down a house or a factory, it is not remarkable that some fail to realize the dangers of that same pile of paper in the immediate absence of match, cigarette or pipe.

The operator of a mine and his general manager must have imaginations if they would avoid accident. They must remove the possible links in a chain of circumstances which make an accident likely or possible. Someone, given the material for misjudgment, will always provide the links necessary to complete the chain leading to disaster.

The law today assumes that employees and the patrons of public facilities will be thoughtless, unimaginative and heedless of danger, and it demands that those who have proved themselves financial leaders or controllers of their fellow men shall shoulder also all the responsibility for the lack of judgment these employees and patrons display in the conduct of their occupation or in their use of facilities and equipment provided for their labor or convenience. This puts an unequal burden on some intelligences to the advantage of others which are presumed not to be as keen.

It must always be remembered that circumstances rarely work out as planned even if intelligence is displayed by all concerned. "In the fell play of circumstance" it is discovered whether any plan has been thoroughly thought out or carelessly devised. For this devising the management needs to study safety, its records and statistics. No man can draw solely on his own experience or on his own judgment. He needs to gather from those in his own industry and in others the means of making correct decisions. He would not try to be a physicist or a mathematician without a study of what others have done. Why should he consent to leave so vital a subject as safety to his chance experience or to the uncertain cogitations of his own brain? That one should study safety as one would study mathematics and physics becomes clear when one notes how slowly the dangers of certain kinds of equipment have been learned and borne into the consciousness of the industry. A half generation ago the mining man had little realization of one-half the hazards that today he regards as imminent and inherent.

Rock Dust the Main Roads

IN OLD and extensive mines with long haulage roads the cost of rock dusting is considerable, and the desire to save money raises the question whether it is necessary to rock-dust all roadways. It is thought that where there is no underground dump an intake roadway is not likely to contain much coal dust. There is some spillage from the cars, it is true, but this is probably coarse material, and the travel is not likely to grind it to powder. Then again causes of ignition are fewer There is no gas; no shots are being fired and unless an explosion comes from within the mine, no trouble seems likely to result. By rock-dusting the working entries and the main roads in the interior of the mine the rest of the roadways should be adequately protected.

All of which is extremely plausible theory, but in actual fact several severe explosions have had their origin in roadways far from the actual workings, and they were quite destructive. Some of these have come from tearing down of electric conductors and trolley lines by runaway and otherwise derailed trips.

Despite all that has been said the roadways near the entrance to the mine have great potentialities for mischief. The dust in them is likely to be exceptionally dry. The air entering the mine in the winter is less saturated than that which has traveled a long distance.

The dust also is unusually fine. Some of it comes from water leaking from the cars that carries fine dust in suspension. Another source is mine water flooding the track and carrying suspended dust. This dries and lies on the floor or is lifted by the air current and mine-trip eddies to be deposited on the ribs and timbers. The air also lifts light particles of dust from the cars. In most places there is plenty of timber forming the equivalent of rock-dust barriers only with coal dust stored instead of rock dust, ready to fall and stimulate, instead of quench, an explosion.

Then again the roadway is like a gun barrel, straight and without alternate paths. The crosscuts and side headings are blanked off with stoppings and road cleanings, the latter having potentialities for mischief. If there is the necessary confinement and turbulence only a little coal dust is needed to get the maximum result. The requirements are all there for a destructive blast.

In the heart of the mine there are often weak brattices, headings lead everywhere into rooms which are wide and into pillared places that are wider still. Cross timbering is not so general. Yet it is usually conceded that roadways near the face must be rock-dusted. It is at least equally necessary that the roadways near the entrance have like protection. The treatment need not be as frequent as in headings near the working face but the percentage of inert matter should be equal if safety is to be attained.

The Miner's Isolation

CARTER GOODRICH writes in a recent issue of *Harper's* about the miner's freedom, and how he clings to it. It is the freedom of isolation, like the freedom of the herder on a sheep range, but men are not happy alone. When men work together there is joy in labor. The farmers foregather that they may enjoy their combined work. The excitement of corn huskings, barn raisings or church sociables, gives zest to country life, otherwise somewhat dreary. These occasions are long anticipated, greatly enjoyed while they last, and looked on afterwards as treasured memories.

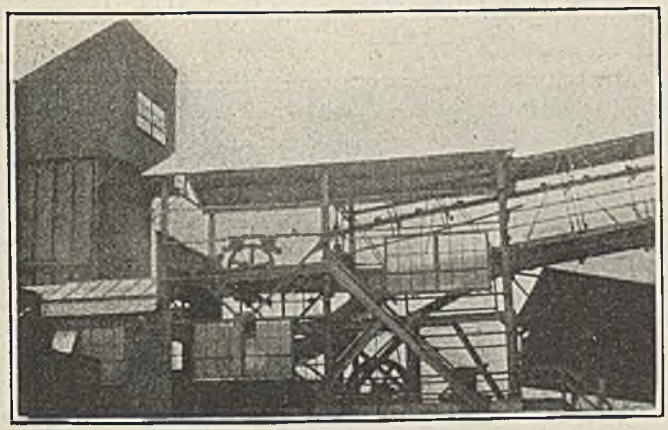
Combined achievement is better than solitary effort. Men are gregarious and working together prevents ingrowing pains. The long face with its hustle and bustle and its labor-easing appliances promises to the miner an existence more social and more pleasant. As it is different from the conditions in the past it may seem in prospect to be of questionable advantage. But the greater jollity displayed by those workers who gather coal, traveling from face to face meanwhile, as compared to the low spirits frequently evinced by those who labor within isolated rooms, testifies to the value of social contact. The dull, self-centered man of room-and-pillar workings will soon become a friendly, chatty individual in a longface. The foreigner also will learn to speak English with facility and get in friendly contact with his fellow workers of all nationalities. What the miner thinks of solitude abstractly can be judged by his readiness to come to the entry to discuss the topics of the day in the intervals when waiting for cars. Such waits and the opportunity for converse they afford are now bright spots in a somewhat cheerless day.

Installation Provides Data on Lessened Breakage Incurred with Rope-and-Button Conveyor

New Tipple Used Three Years with Monitor System—Installation of Rope-and-Button Conveyor Constitutes "Last Act" of Modernization Program so far Completed—Lump Shipments Increased 5.3 per Cent

IN SPITE of the many developments that are daily causing an ever-increasing quantity of coal to be used in a crushed or pulverized state, the percentage of prepared sizes yielded continues to be a highly important economic factor at most operations. Roughly speaking the price of bituminous lump f.o.b. cars at the mine ranges anywhere from 25 to 100 per cent above that realizable for screenings.

The mine operator, therefore, always listens with interest to any proposed change in the equipment employed or the methods followed that promises an increase in the percentage of lump but he has difficulty in satisfying himself as to just what that increase will be. The most accurate guide available for such an estimate is data showing the actual results secured at other plants operating under similar conditions.



Junction of Conveyor and Tipple

This photograph was taken before the siding was placed on the conveyor gallery. The end of the screen is practically directly below the tall sheave. The flywheel of the screen drive may be seen near the bottom of the photograph.

At many mines where the coal must be lowered down a hillside to the railroad tracks conveyors of the rope-and-button type are replacing the older monitor installations. Among the more common advantages claimed for this newer means of conveyance are: A lower cost of operation, lessened danger, uniform delivery at the tipple and reduced breakage. This latter factor is the most difficult of all to evaluate and predict for the reason that actual performance data are scarce. This is because of the fact that usually when a rope-and-button conveyor is installed the tipple is simultaneously rebuilt or fundamentally changed in design so that the altered condition makes it difficult to determine exactly what part the conveyor alone has played in the lessening of breakage.

An instance of where the substitution of a rope-and-button conveyor for a monitor system was not accompanied by any important changes in the tipple or preparation plant is furnished by the Nuttalburg mine of the Fordson Coal Co. This operation is located in the New River field of West Virginia and the change in the mode of conveyance adopted afforded an excellent opportunity for obtaining fairly accurate data on the advantage, so far as breakage is concerned, of the conveyor over the monitor installation. This conveyor is longer than the average of such installations but otherwise is not of unusual proportions.

Back in 1923, soon after its acquisition by the Ford interests, this mine was provided with a modern steel tipple fitted with screening equipment and loading booms, but it continued to use the old headhouse and monitor system of transportation alrealy installed. In the spring of 1926, however, a new headhouse was constructed and the monitor plane was then replaced by a rope-and-button conveyor.

Lower End of Conveyor Gallery

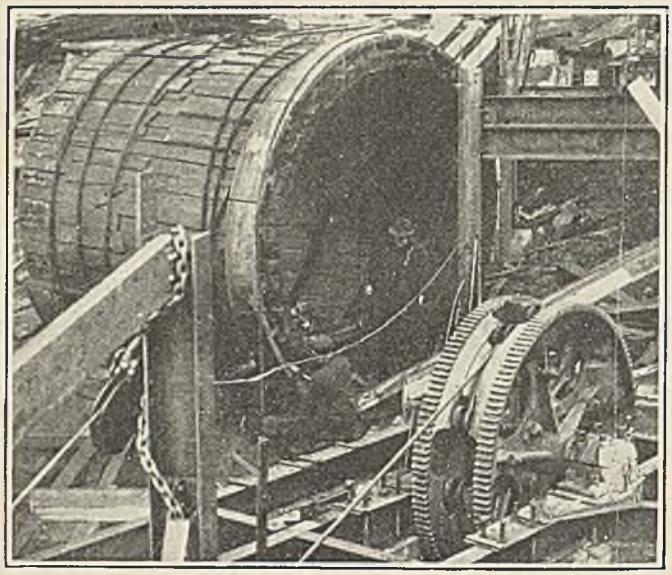
The wooden trestle of the old monitor landing has been torn down since this picture was taken. The old 7-ton monitors may be seen in the central foreground. The heights of the steel towers supporting the gallery were determined from the catenary curve of the rope when stressed to the tension necessary to convey the desired tonnage. Throughout its entire length the conveyor gallery is covered with corrugated galvanized sheet iron.

The acccompanying table, furnished by C. R. Bourland, of Stone, Ky., chief engineer of the Fordson Coal Co., shows the production by grades, not including run of mine, for the five months prior to and for the four months following the installation of the conveyor. It will be here seen that the production of lump alone, compared to the total production of screened sizes, increased 5.3 per cent, and that the percentage of lump and egg together, increased 3.4 per cent.

Prepared Sizes Shipped

	Lump		Egg	Total of Lump and Egg		Stove	Slack	Nut and Slack	Total
	Tons	Per Cent	Tons	Tons	Per Cent	Tons	Tons	Tons	Tons
Period of 5 months prior to starting of conveyor	7,897	11.7	11,874	19,771	29.4	6,559	40,922	.....	67,253
Period of 4 months after starting of conveyor	10,373	17	9,526	19,900	32.8	146	.....	40,912	60,959

These tonnages do not represent the total mine production because the run-of-mine shipments are not included. The lump is "over 5-in. round." The egg is "tnrough 5-in. round and over 2-in. round." The stove is "through 2-in. round and over 1-in. round."



Drive Sheave Beside Old Drum

Two gears, one upon either side of the sheave and fastened directly to it, relieve the shaft of all torsional stresses. The segments that support the rope are carried on heavy springs, and are thus self-adjusting. The rollers at each end of these segments aid in disengaging the buttons.

Inasmuch as all sizes were not made at all times and because considerable run-of-mine was shipped, the percentages of increase here set forth are probably highly conservative. The coal comes from the Sewall bed, and as described by C. W. White, superintendent of the mine, it is extremely friable and of peculiar structure without distinct cleat.

With the old arrangement the coal was discharged from the mine cars on a cross-over dump into a 50-ton bin. From there it was loaded through chutes into the 7-ton monitors that delivered it into a chute and bin holding 20 tons. From this point it was fed onto a short pan conveyor which delivered to the Marcus screen in the tipple.

With the new arrangement the coal is discharged over a cross-over dump, as before, into a receiving hopper from which it is fed into the trough of the rope-and-button conveyor by a reciprocating feeder. After moving it down the mountain this conveyor discharges the coal directly onto the Marcus screen.

The new headhouse and the rope-and-button conveyor were designed, fabricated, and erected by the Fairmont

Recent View of the Completed Headhouse

The upper end of the conveyor gallery may be seen in the lower right foreground. At the left is the portal of the main haulageway. With the completion of this headhouse and the conveyor line the modernization program of the Nuttalburg mine as at present planned was finished.

Mining Machinery Co. The conveyor itself is 1385 ft. long and the difference in elevation between the head or drive sheave and the tail sprocket is 561 ft. A 1⅛-in. plow steel rope built up of alternate regular and Lang lay strands, with independent wire-rope center, is used. By "alternate regular and Lang lay" is meant that the six strands all have a regular lay but that in three of them the 19 wires of which each strand is composed are laid up right hand and in the other three they are laid up left hand. The different types of strands alternate in position around the rope.

The buttons which are of cast iron and are provided with six clamping bolts, are pitched on 4-ft.-centers along the rope. The head sheave is of the spring-segment self-adjusting type with button-disengaging rollers. Two gears, one on each side and fastened directly to the sheave, relieve the shaft of all torsional stresses.

This conveyor has a rated capacity of 125 tons per hour at a rope speed of 80 ft. per minute. The drive is by a 75-hp. 440-volt induction motor of the wound-rotor type. The designer's calculations indicated that the maximum power required to operate the conveyor would be 64 and the minimum 41 hp. Because of this high minimum power requirement no mechanical brake was included in the drive and the motor is without even a solenoid brake. The conveyor follows two vertical curves. The one near the top is convex and has a 3,000-ft. radius; the other, near the bottom, is concave and has a 1,350-ft. radius.

Mine Portal from Inside the Headhouse

Cars of a loaded trip appear in the foreground. These are being fed to the dump by means of a Nolan cager operated in conjunction with the dump itself. Power for the operation of all underground equipment is furnished by two automatic substations, one located on the outside near the portal and the other below ground near the center of load.

At about the same time that the conveyor was built a new synchronous-converter substation was installed on the outside near the drift mouth. These recent changes practically completed the modernization program thus far planned for one of the oldest mines in the New River field. All equipment of the Nuttalburg operation is now comparable with that installed at the best equipped mines to be found in the New River field.

Coal Must Be Merchandised

The merchandising plan of the future will call for the following requisites: The development of new and original ideas; the formation and adoption of sound selling policies to meet present-day conditions; the application of intensive and aggressive advertising and selling; the program to be supported by constant research into the development of new uses and the exploitation of new markets.—*Charles F. Abbott, American Institute of Steel Construction, Inc.*

Study of the Ash from Alberta Coals Reveals Many Interesting and Important Facts*

In General, There Is No Definite Relation Between the Softening Temperature of Coal Ash and Its Color, the Percentage of Ash in the Coal, the Calorific Value of the Fuel or Its Geological Age

By Arthur G. Scroggie
Urbana, Ill.

AS NO DATA were available regarding the softening temperature of the ash from the various coals of Alberta, an investigation into this temperature was recently undertaken by the university of that province. This was conducted under the auspices of the Scientific and Industrial Research Council of Alberta which provided the necessary apparatus and samples of coal. Much of the work was performed in this organization's laboratories. The samples tested were originally taken by the provincial mine inspectors while systematically sampling Alberta coals. From the large number of representative samples forwarded by them during the last three years approximately fifty, representing all the larger producing areas, were taken for investigation. These were prepared and tested according to the standard methods of the American Society for Testing Materials.† Briefly, the method of preparation was as follows: The sample was finely powdered, ignited in air, the residue ground to pass a 200-mesh sieve, and finally heated in the presence of oxygen for two hours. The color of the ash that developed upon final ignition was found to be fairly characteristic for each particular bed or district. Low-ash sub-bituminous coals and lignites gave an ash that was brown, pink, white or intermediate in shade between these colors. That from high-ash sub-bituminous and bituminous samples was usually some shade of grey. When examined under a microscope all samples appeared to be a mixture of particles of various colors, the exact shade of the mass being determined by that of the predominating variety. The ash from three samples of coal, purified as far as possible by flotation in a mixture of carbon tetrachloride and gasoline, was found to be of about the same shade as that from the original sample. In this case, also, the color was not uniform.

Table I.—Characteristics of the Ash from Certain Alberta Coals

Area and District	Seam	No. of Samples	Ash Content, Per Cent	Softening Temperature, °F.	Softening Interval, °F.	Flowing Interval, °F.	Clinkering Index, °F.
BITUMINOUS							
Brule		1	16.7	2820+	752	...	...
Mountain Park	A	1	16.1	2410	410	212	203
	B	1	14.9	2820+	797	...	...
Nordegg		1	14.5	2515	509	140	419
Cascade	B Carey	1	9.0	1930	185	176	842
	B Stewart	1	5.4	2245	446	149	725
Crowsnest	A	1	13.8	2820+	788	...	...
	B	1	17.4	2775	743	...	...
Totals and averages		8	13.5	2546	579	169	460
SUB-BITUMINOUS							
Coalspur	A	1	8.6	2050	122	77	806
	B	1	20.3	2335	338	149	473
	C	1	11.9	2210	185	104	635
Saunders		2	7.0	2030	131	131	842
Pekisko	A	1	10.3	2310	509	131	572
Pincher		1	16.8	2335	428	140	527
Totals and averages		7	12.5	2212	285	122	642
LIGNITE							
Lethbridge	A	3	9.6	2145	266	131	698
	B	2	13.2	2290	383	122	554
Milk River	B	1	9.1	1950	122	167	851
Pakowki	B	1	11.0	1915	122	86	923
	D	1	8.2	2245	275	95	464
Taber	A	2	12.4	2290	374	104	527
	B	1	9.9	2210	410	86	581
	D	1	11.7	2595	626	68	176
Redcliff		1	8.5	1965	122	122	788
Brooks		1	9.7	2100	239	149	698
Pembina		1	9.6	2350	338	68	401
Edmonton	A	2	6.7	2140	257	122	635
	B	3	6.2	2120	221	176	662
Tofield		2	4.7	2020	158	77	743
Camrose		2	4.7	2010	167	122	752
Castor	B	1	4.6	2065	311	77	707
	C	1	8.2	1985	158	59	752
Ardley		2	8.5	2100	158	131	698
Big Valley	A	1	11.8	2470	356	77	284
	B	1	13.1	2085	140	212	680
Carbon	A	1	9.0	1965	167	131	842
	C	1	9.9	2020	185	221	779
Drumheller	A 5	2	6.9	1975	131	104	788
	C 1	2	5.0	2020	248	95	833
Champion		2	7.6	1995	185	86	833
Totals and averages		38	8.8	2121	245	116	666

To determine the softening temperature, small cones of the ash were placed in a gas-fired melter's furnace which was especially equipped to act as a muffle and to maintain a reducing atmosphere.† The temperature was taken with a Leeds & Northrup optical pyrometer calibrated against pure metals of known melting points. The *softening temperature* as hereafter used, is defined as the temperature at which a cone has fused to a smooth ball or has bent over until the tip touches its base. The difference between the temperature at which a deformation of a cone was first noticed and the softening temperature is designated as the *softening interval.* The *flowing interval* is defined as the interval between the softening temperature and that at which a cone has become flat and fluid on its base. The results of these tests are given in Table I, each figure representing the average value of all the samples tested from each particular district. The areas referred to in the table are those shown in the accompanying map. In some cases these have been sub-divided into districts which are shown in Report 14 of the Scientific and Industrial Research Council of Alberta.

An attempt was made to correlate the softening temperature of the ash with such characteristics as its color, the percentage of ash in the coal, the calorific value of the fuel and its geological age. No definite relations were established although, in general, the soft-

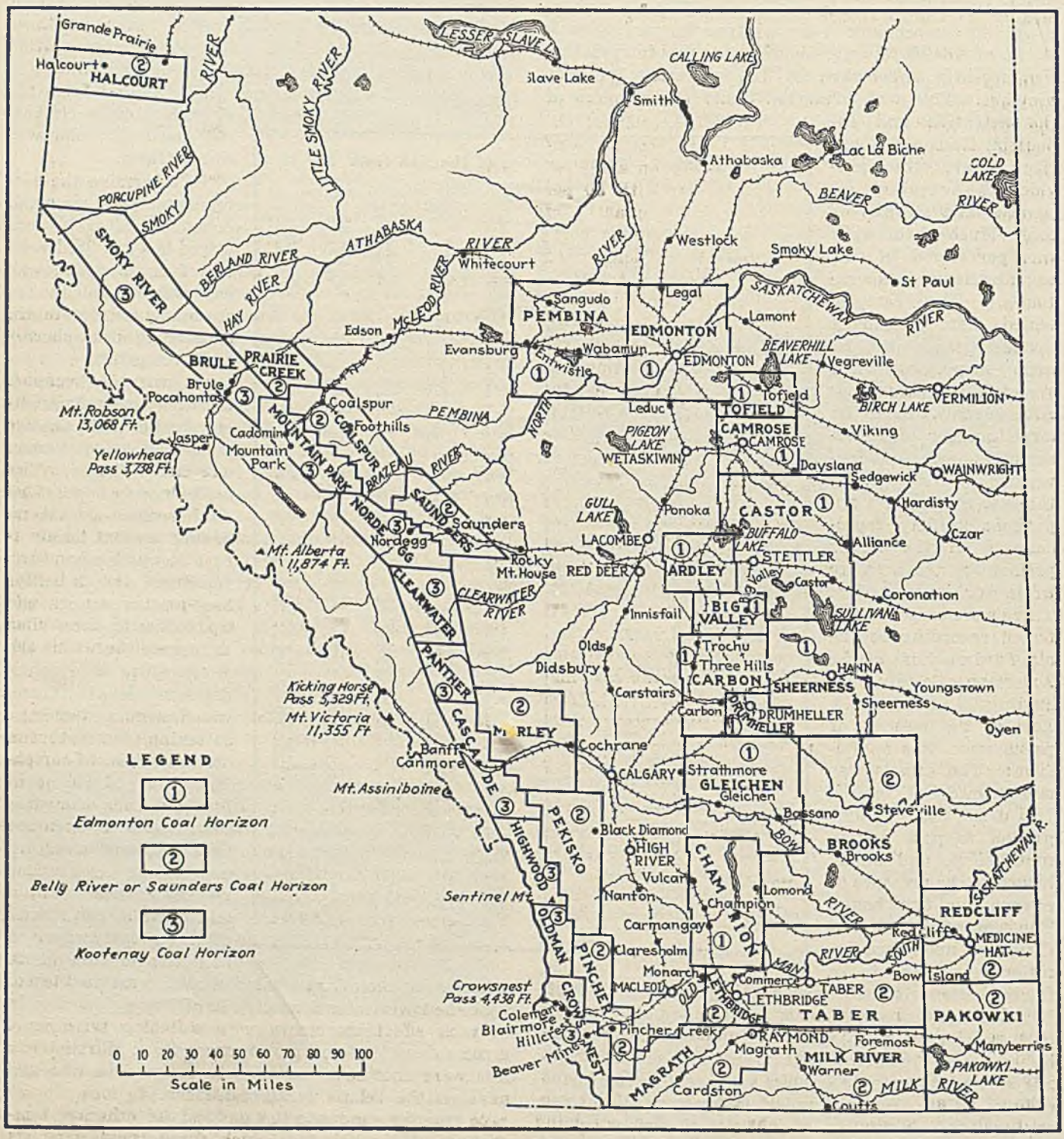
*Abstract of a thesis, entitled "An Investigation of the Softening Temperature of the Ash from Alberta Coals," presented to the University of Alberta for the degree of Master of Science. Published by permission of the university.

†A. S. T. M. Standard D-22-23.

ening temperature increased with the percentage of ash. This temperature, for most lignites, was below 2,400 deg. F. The corresponding range for sub-bituminous and bituminous coals was from 1,900 to over 2,820 deg. F. It is interesting to note that the lignites usually contain less ash than the sub-bituminous and bituminous coals.

The softening temperatures observed for different samples from the same district are generally in close agreement. This is particularly true of coals mined from the same bed. Where the temperature range is large, it is usually accompanied by a distinction in color and a difference in the ash content of the coal. In ten different instances, several samples from the same seam showed variations of only from 9 to 125 deg. F. although the maximum range for all of the samples tabulated in the present report was over 900 deg. F. The flowing interval is fairly characteristic of the bed and the softening interval appears to vary with the softening temperature.

In a series of commercial boiler trials, using some of the coals that were tested, a fairly close agreement was found between the tendency to clinker and the position of the coal in Table I. However, data collected during these trials include the following discrepancies not ex-



Coal Fields of Alberta and Geologic Horizon of Each

This map shows most of the areas and districts mentioned in the accompanying article. For detailed information regarding the various properties of different Alberta coals, the reader is referred to the Fourth Annual Report of the Scientific and Industrial Research Council. An abstract of this report appeared in *Coal Age*, Vol. 27, No. 6, Feb. 5, 1925, p. 226-227.

plicable by the softening temperatures given in this table: (1) The fact, recorded by different observers, that some coals formed more clinker than others that had a higher ash-softening temperature; (2) some coals with a moderate ash-softening temperature gave no clinker at all; (3) the variation of the amount of clinker formed with the rate of firing; (4) the formation of some clinker by coals with an apparently infusible ash (softening temperature above 2,800 deg. F.). This latter consideration, however, is not serious as the amount of clinker formed is usually too small to cause trouble. These facts were assumed to be due to the degree of heat to which the ash was subjected since most of the trouble occurs at high boiler ratings.

Calorific Intensities Calculated

In an endeavor to explain some of these apparent contradictions, the *calorific intensities* of a number of the coals were calculated. A brief description of the method employed follows: An estimate was made of the heat capacity of the gases formed when a coal of known ultimate composition was burned with 50 per cent excess air. A comparison between the quantity of heat necessary to raise the gases to a given temperature and the amount of heat available, as determined by calculation of the net calorific value, gave the maximum temperature or calorific intensity which could be obtained by burning the coal under the specified theoretical conditions. In those samples for which the ultimate analyses had been determined, a relation was found between the calculated calorific intensity and the net calorific value of the coal as received. This relation was then used in those cases where no ultimate analyses of the coal were available.

Clinkering Index Defined

The softening temperature of the ash was subtracted from the calorific intensity of each coal. The difference, termed the *clinkering index*, is submitted as a criterion of the tendency of the ash to clinker as it takes into consideration the possible excess of temperature above the softening temperature to which a coal might subject its own ash. It also takes cognizance of the fact that the comparatively cool fire with a low-grade coal may give less clinker than the hot fire with a high-grade coal, even though the ash-softening temperature of the latter fuel may be much higher than that of the former. These considerations will explain the first three discrepancies noted.

Table I also shows the clinkering indexes, as well as the ash content of the samples tested. The clinkering index, like the softening temperature on which it largely depends, should be used in conjunction with the ash content of the sample to which it refers. This is because the softening temperature of the ash may vary with the amount of ash present although in general, as previously stated, the softening temperature increases with the ash content. This implies that, in any given determination, the clinkering index is only typical of a coal so long as its ash content remains nearly constant and the ash has approximately the same composition. As a change in the ash content will usually be accompanied by an alteration in the composition of its constituents, a corresponding change in the softening temperature may be expected. (See Table II.)

The clinkering index does not explain the fourth discrepancy because for coals having a high softening temperature this index becomes negative. This indicates that no clinker could be formed whereas in actual practice, as already noted, some clinker is usually evolved.

Table II.—Variations in Softening Temperature with Ash Content of Coal

Area	District	Seam	Ash Content, Per Cent	Softening Temperature, °F.
Coalspur	A	.....	8.6	2050
	C	.....	11.9	2210
	B	.....	18.3	2530
	..	.....	20.3	2340
Taber	B	.....	9.9	2210
	A	.....	12.0	2250
	..	.....	12.8	2320
Lethbridge	A	.....	9.3	2080
	..	.....	9.6	2140
	..	.....	9.8	2210
	B	.....	12.5	2250
	..	.....	14.0	2330
Edmonton	A	.....	6.7	2250
	..	.....	6.8	1990
	B	.....	6.1	2140
	..	.....	6.2	2100
	..	.....	6.5	2100
Drumheller	A	No. 5*	4.7	2000
	..	.....	5.3	1950
	C	No. 1*	6.4	1895
	..	.....	7.6	2140
Ardley, Three Hills and Big Valley	..	.....	7.7	2130
	..	No. 14†	8.9	2060
	..	.....	9.0	1970
	..	.....	11.8	2470
	..	.....	13.6	2410

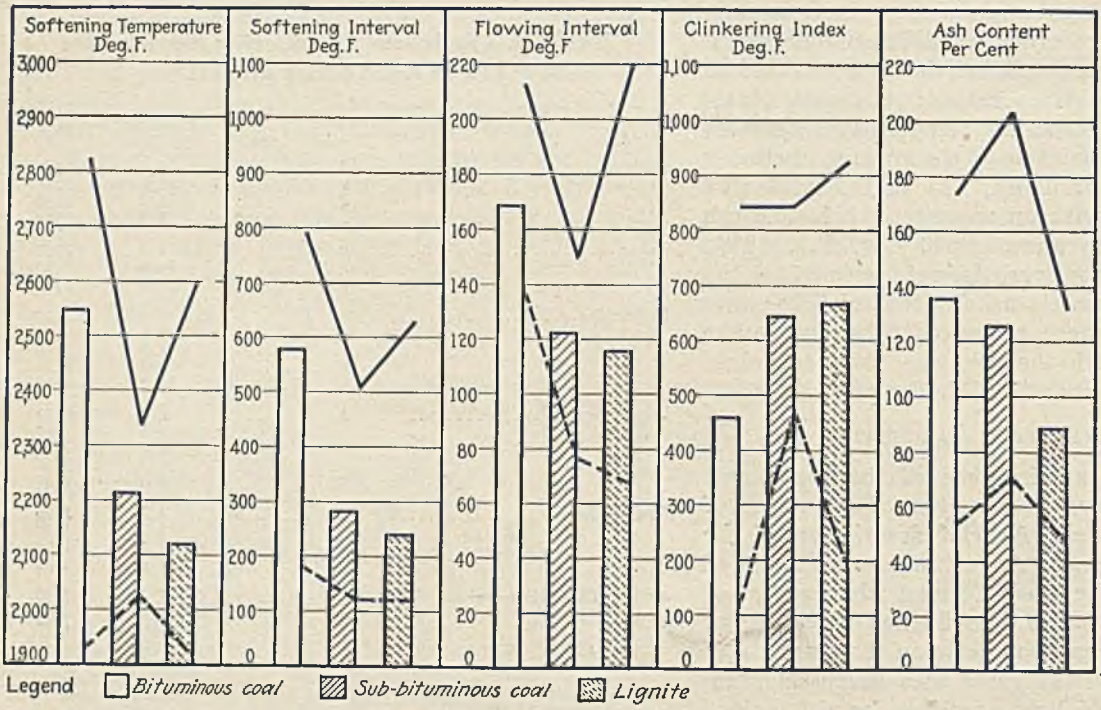
* See Report 4, Scientific and Industrial Research Council of Alberta.
† See Report 13, ibid.

The heavier part of several granular coal samples, composed chiefly of mineral matter, was separated by means of dense solutions. The residues were ignited and the particles of ash were separated on the basis of their color. These portions were chemically identified as resulting from shale, ankerite, calcite or some other minerals. A determination of their softening temperatures revealed low-fusing compounds present locally in the ash. Some of these portions fused at temperatures as much as 550 to 700 deg. F. below the softening temperature of the regular finely-ground ash sample. These separate portions of more fusible compounds probably cause local clinkering in so-called infusible ash.

Softening Fails to Vary With Washing

Results of other investigators show that washing a coal has no uniform effect on the softening temperature of its ash. This was confirmed for a number of samples separated by means of heavy solutions. In some instances the softening temperature of the ash was raised and in other cases it was lowered. This is attributed to the mineral matter removed, the nature of which will vary with each particular sample. In the same manner the softening temperature of the inherent ash, obtained from samples of coal by repeated washing with heavy solutions of gradually diminishing gravity, bore no definite relation to the softening temperature of the original sample. The difference was least in the coal with the lowest original ash content.

In an effort to correlate the softening temperature of an ash with its chemical composition, thirteen samples were analyzed. No definite conclusions were possible as the relations suggested by previous workers held true for some samples and not for others. A new formula was suggested which fitted these particular samples fairly well. Broadly speaking, it was found that the presence of a large amount of silica or alumina tended to raise the softening temperature. Bases, be-



Properties of Ash from Alberta Coals

This figure graphically presents some of the more important data of Table I. The bars represent the average values, for all samples tested, of the different characteristics indicated at the top of the chart. In each case, the solid upper line represents the maximum, and the broken lower line the minimum, value of the corresponding quality. It is interesting to note the fairly uniform variation in the average characteristics of the different coals.

cause of their fluxing action on the ash which was chiefly acidic, lowered the softening temperature. Silica and calcium had a tendency to raise the viscosity of the clinker.

These observations partially explain the divergent effects of coal washing. If the extraneous matter removed were sandstone or shale, the softening temperature would be lowered; if it were calcite, ankerite, or pyrite, the softening temperature would in all probability be raised to some extent and the clinkering index lowered. Finely-divided iron from inherent ash seems to have more effect on the softening temperature than large amounts of this element concentrated as ankerite residues.

Attention is also called to the importance of the ash content of a coal. There is the possibility that samples from the same mine, but containing varying percentages of ash, may have widely different ash-softening temperatures. However, as previously stated, the results obtained in this research generally hold in practice. The effect of the increase in ash content of samples from the same district can only be determined by a large number of tests. Preliminary observations indicate, however, that it probably would be definite within certain limits for any given district. (See Table II.) It is possible that a series of data could be developed for each district or seam and the softening temperature obtained directly from the ash content.

Complete Coal Gasification Produces Only Gas and Ash

According to R. S. McBride, of the editorial staff of *Chemical & Metallurgical Engineering*, complete gasification of bituminous coal is usually interpreted by gas engineers as the processing of a coal with production of only gas and ash. A wide variety of apparatus has been proposed for this purpose, some have been single-shell generators and others with two or more generating chambers. But in every instance the combination is intended to utilize for low-temperature coking of the coal the heat generated during the final gasification of the coke.

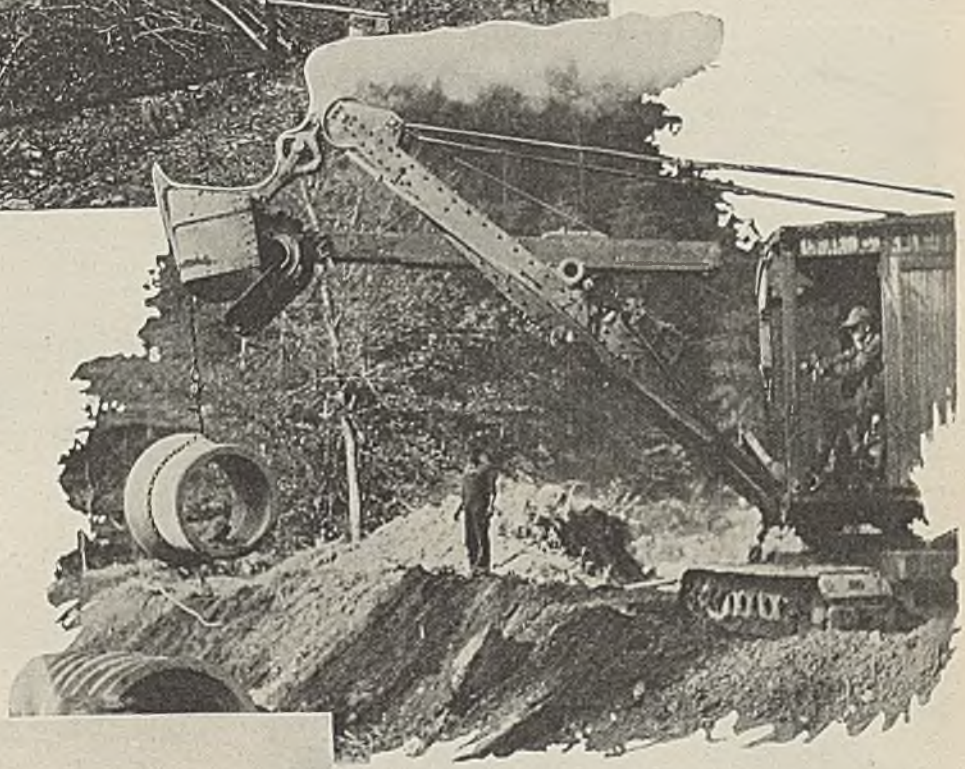
In a general sense complete gasification should include any process or combination of processes that converts substantially all of the bituminous coal into fuel gas without manufacturing coke as an end product. In this broader sense the gas producer and the water-gas machine when using bituminous coal are complete gasification devices. The combination of any coal-gas unit with a water-gas machine using the coke also affords complete gasification; and even the steaming of coke in a coal-gas unit may, at least theoretically, go a long way toward complete gasification of the coal. None of these schemes are, however, commonly referred to as complete gasification, but it appears that any profitable discussion of the subject should include them as they alone are now in practical operation.

The engineer of a public-service gas company must necessarily think in terms of unit costs per thousand cubic feet of gas made and sold. Such an engineer may be technically much interested in the by-product problem, but his major objective in considering such materials is the lowering of the net cost of the gas. Further, such a utility company engineer is desirous of using as his raw material bituminous coal, because this is the lowest and most stable in cost of all of the gas-making materials available to him. It is logical, therefore, that he should seek to make from the preferred raw material, bituminous coal, as much as possible of the principal product desired, city gas, and that he should seek to avoid making other products which at least indirectly represent annoyance and diversion of attention from the major job of city-gas supply. It is not surprising under the circumstances that gas engineers have at all times regarded with even greater interest than the commercial prospects would warrant any new suggestion for "complete gasification."

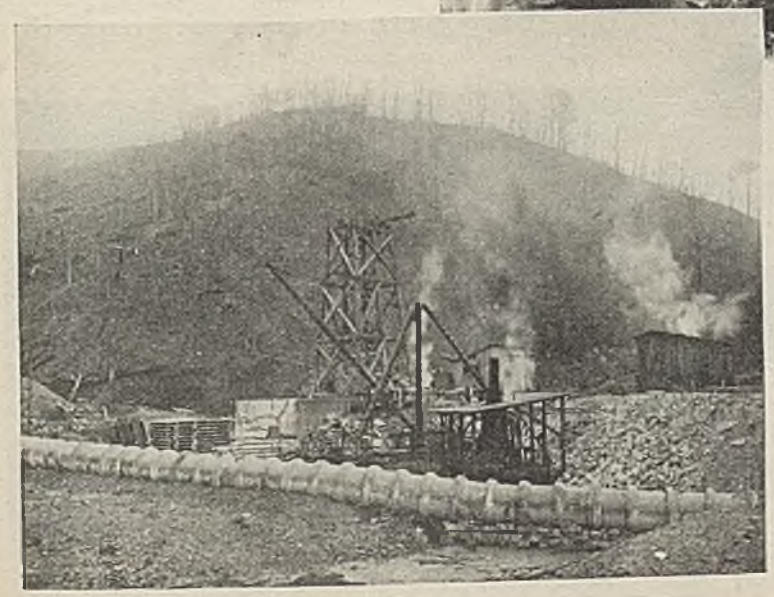
WORKING AGREEMENT—Apparently the bituminous coal miners cannot strike in an even numbered year without coming into conflict with an anthracite strike. —*N. Y. Herald-Tribune.*

A Mine in the Making—Island Creek Operation No. 22, Which Is Expected to Yield 5,000 Tons per Day

At left — Breaking ground in the late summer of 1926. The mine will be on a branch of the C. & O. railroad which is being extended to replace a logging road from Omar, 5¼ miles away. The coal company is building 5 miles of concrete highway and is paving 2 miles of county road so that the new mine will be accessible by paved road from Holden, the headquarters.



At right—Laying 36-in. reinforced concrete tile in grading the site for yards and town



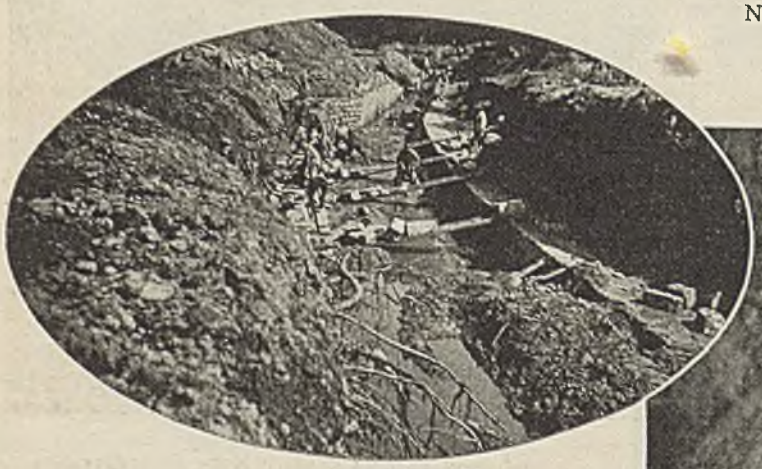
At left—Recent photograph of sinking operations at auxiliary shaft. The shafts are to be approximately 415 ft. deep. On March 23 both shafts were down to about 190 ft. and concreted to within a few feet of that depth. The auxiliary shaft is 14x32 ft. and will have a 4-in. reinforced curtain wall. Four 4-in. fiber conduits for electrical wiring are being cast into the walls. Wood buntons are to be used in this shaft. Note the reinforced concrete tile which has been laid where the mine yard will be made.

Winter view showing part of the town site. All of the building ground has to be "made." The creek is being confined to one side of the narrow valley or is being carried through large culverts, and the ground leveled the width of the valley for a distance of about 1½ miles. Space will be prepared for 200 double houses.

Working on the rubble masonry wall where the creek is to be confined to one side of the valley.

Part of a continuous stretch of 7,800 ft. of wall. There is another section of 1,500 ft. The walls average 6 ft. in height, are 18 in. wide at the top, and have a 3-in.-per-ft. batter.

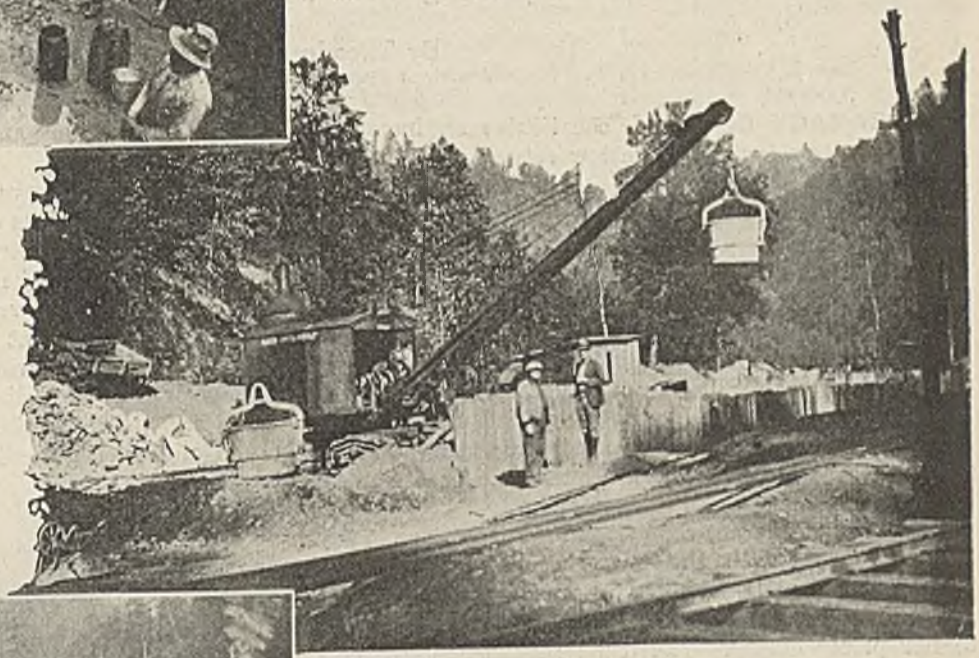
Not a concrete road but instead the reinforced concrete top of a culvert which accommodates the creek through part of the town site.



Working on the walls of the culvert.

In the main creek culvert before the concrete top was applied.

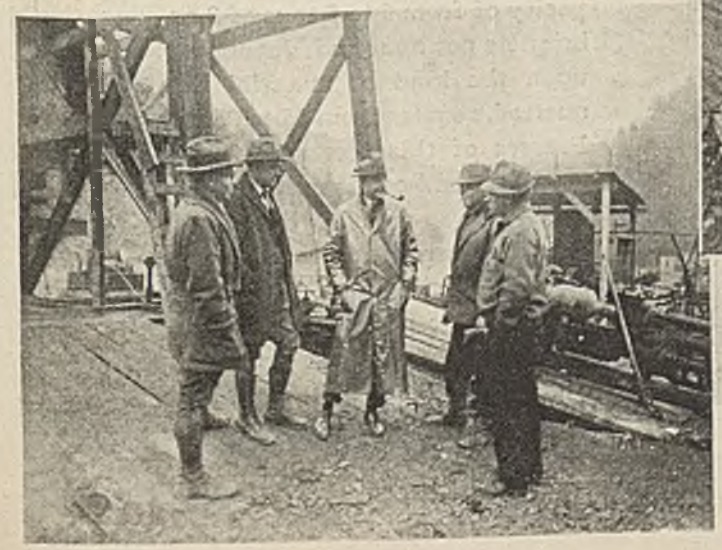
At left—The beginning of the main shaft; Sept. 15, 1926.



At right—An early stage of the main shaft.

At left—Shaft-sinking operation before the first section of concrete was poured.

At right—Recent photograph of skip shaft. It is 11x32 ft., and like auxiliary shaft, will be concreted all the way down. Field mix being used is about 1-2.3-4. Three 2½-in. fiber conduits are being put into the wall of this shaft.



At left—*Coal Age* on the job in spite of a drizzling rain. J. M. Carmody of *Coal Age* (center) is talking with F. C. Carothers, (left) Island Creek's engineer at the new operation, W. L. Long, (next) division engineer from Holden, Don H. Blanks, (extreme right) and Elick Forbes (next). The last two gentlemen named represent the shaft sinking-contractor, Thomas Connor & Sons.

Low-Volatile Coal, If Satisfactorily Briquetted, Makes Excellent Domestic Fuel

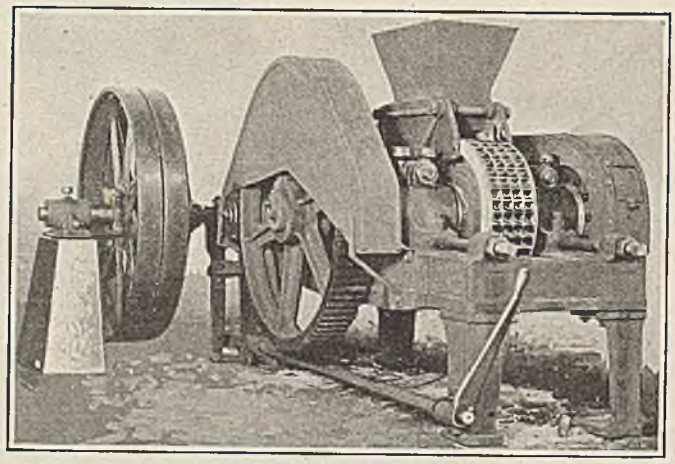
Disintegration of Coal During Its Mining and Preparation, Together With Low Return on Slack, Is a Major Problem of the Industry—One Solution Lies in Briquetting with Phosphoric Acid Binding Compound

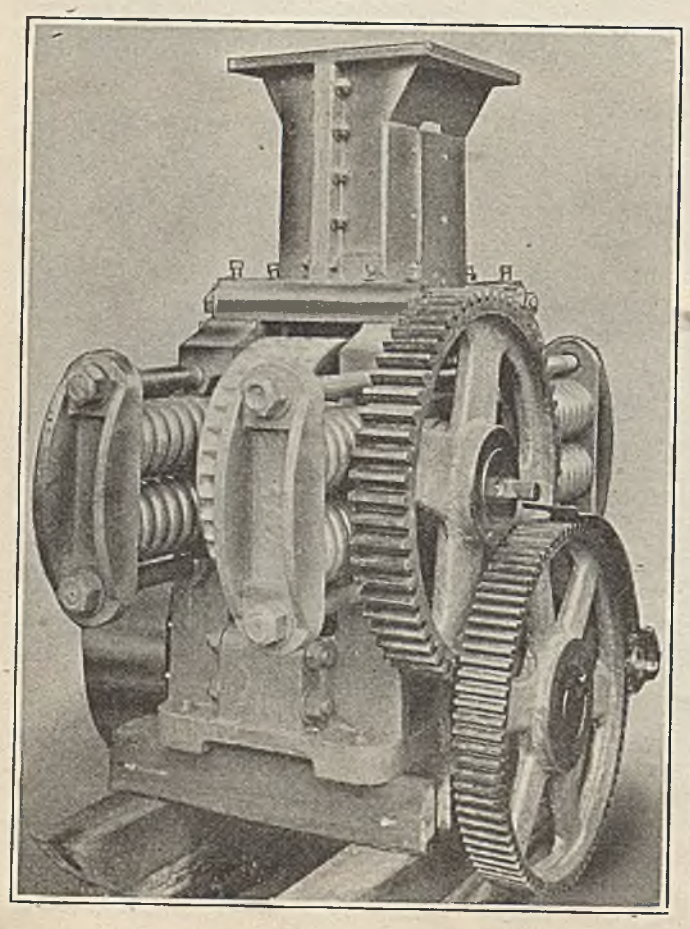
By Theodore Nagel
American Cyanamid Co., New York City

BREAKAGE OF COAL constitutes an important industrial waste. The low return on slack in a normal fuel market is one of the serious problems of the coal mining industry. This condition is attributable solely to lack of form value, as the intrinsic worth of the finer sizes of coal, as a fuel, is equal to that of the lump material. In endeavoring to increase its value, many methods have been tried to convert this smaller coal into a lump fuel that would command a price higher than the cost of the raw material and the expense of processing. Briquetting offers the cheapest practical method of agglomerating the finer sizes of raw coal and it also requires the least capital investment.

Coal briquets do not compete, in most sections of the United States, with the low-priced industrial fuels. Therefore, briquetting must be principally confined to the production of domestic fuel, in which market much higher prices obtain. The usual requirements of coal for domestic use are that it be practically smokeless and in the form of clean, uniformly sized lumps. This is particularly the case in the northeastern section of the United States where anthracite is the customary domestic fuel.

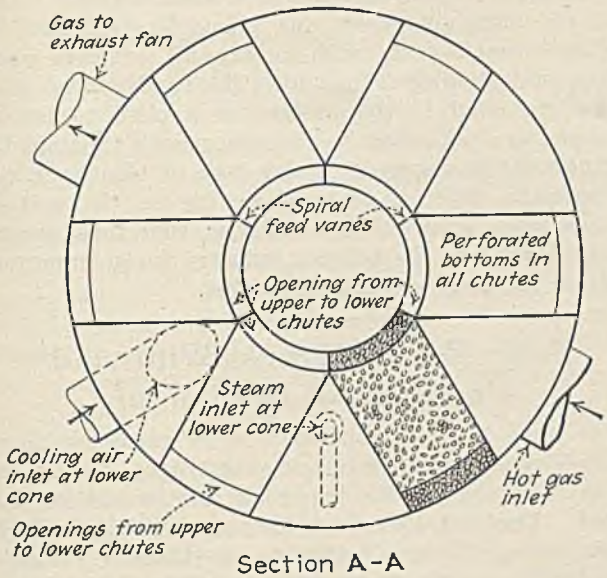
Many attempts have been, and are being, made by processing bituminous coal to produce a smokeless fuel equivalent to anthracite. In the last few years prepared sizes of byproduct coke have come into prominence as a domestic fuel. However, the production of this fuel is limited, by the extent of the domestic and industrial demand for the gas produced during the coking process, to densely populated districts. Because of these limitations, and the large plant investment required, byproduct coke cannot immediately become a serious competitor of anthracite.



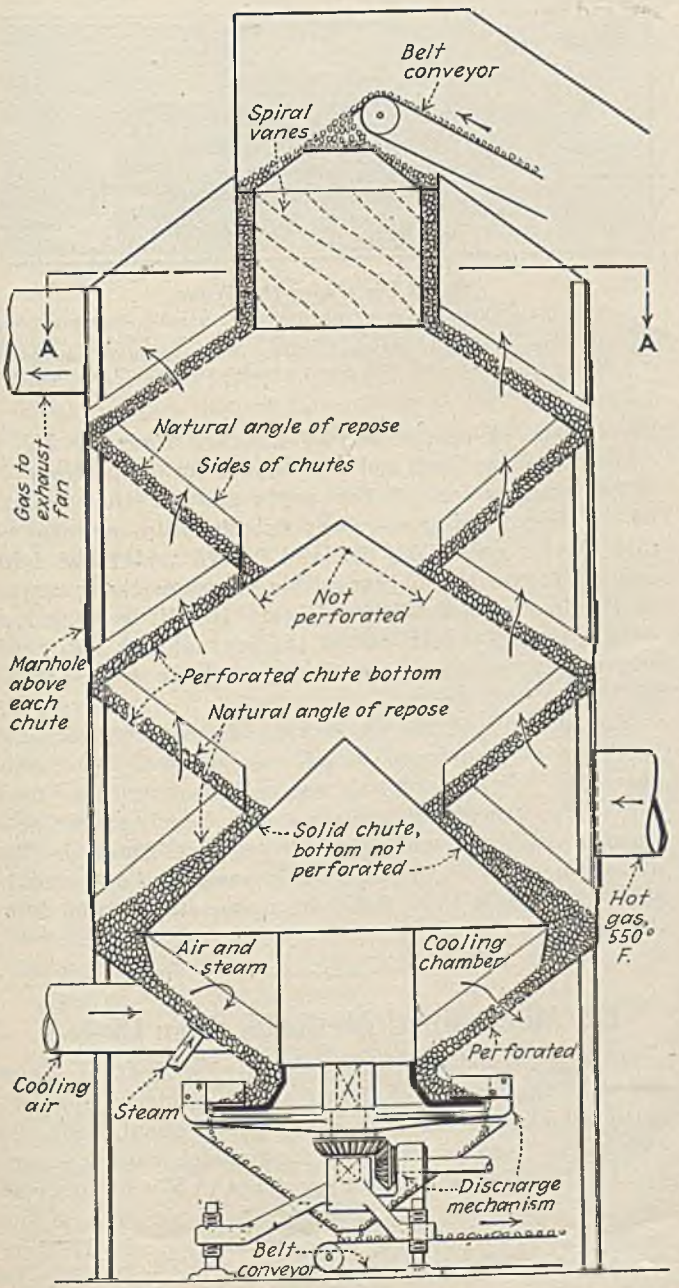


Pilot Plant Briquet Presses

These presses have a rated capacity of from 5 to 7 tons of 2 oz. briquets per hour and, depending upon the kind of material briquetted, require from 15 to 25 hp. Presses of this size are widely used in semi-commercial operations—the so-called "pilot plant" installations. Larger and more rugged machines of the same general type can be obtained in various sizes up to a maximum capacity of about 30 tons of coal briquets per hour.



Section A-A



Oven Hardens Briquets Without Breakage

During the anthracite strike of 1925-1926, a shortage of the larger sizes of this fuel developed and an active demand for prepared lump low-volatile bituminous coal arose in the domestic markets. This fuel, when properly fired, is practically smokeless and is known throughout the trade as smokeless coal. However, low-volatile bituminous coal is unusually friable and requires approximately two and a half tons of mine-run material to produce one ton of the prepared domestic lump fuel. In districts normally using anthracite, prepared lump low-volatile bituminous coal cannot compete with the former fuel because it is too friable. After shipping, handling, hauling and dumping into the coal bins of the consumer, such coal commonly degenerates to a condition comparable to mine-run. In this state it does not fulfill the requirements of a domestic lump fuel.

LUMP MUST REALIZE $3.50

In the usual market, low-volatile mine-run bituminous coal generally sells at about $2 a ton. Because of the larger quantity of slack produced in its preparation, the lump coal must realize at least $3.50 per ton. It is often difficult to find a market for the slack and, unless it is from a coking coal low in ash and sulphur, more than $1.25 a ton can seldom be obtained for it. Briquetting this slack with a phosphoric acid binding compound* so alters its burning qualities that a domestic lump fuel, the equivalent of anthracite, is produced. The cost of manufacturing this fuel is much lower than that of mining and preparing lump anthracite. When fired, this briquetted low-volatile bituminous coal is converted into dense, non-clinkering lumps of hard coke. This material responds to draft control and maintains a satisfactory fire when banked.

RETARDS OR CUTS OFF DRAFT

Low-volatile bituminous coal, in the disintegrated condition in which it is usually used, fills up the channels in the fuel bed and retards or entirely cuts off the draft. The surface area of this large quantity of small coal is much greater than that of lump coal and when it is freshly placed on a hot fire a large volume of gas is rapidly driven off. Under such conditions, the quickly-distilled volatile matter does not receive a sufficient volume of air for combustion and the various hydrocarbons pass off in the form of smoke, with a consequent loss of heat. A sufficient quantity of air, preheated by passing through the bed of burning fuel, is required to burn low-volatile bituminous coal without the formation of smoke. In domestic heating, where only natural draft is commonly available, a porous bed of fuel is the sole practical method of providing this condition. Such a fuel bed can be obtained only by using clean lump coal which exposes a minimum surface to the fire. As a consequence the rate of distillation is retarded to such an extent that complete combustion of the volatile matter can be obtained without the formation of smoke. Bituminous coal briquets, made from low-volatile slack with the binder previously mentioned, constitute an ideal domestic fuel having improved burning qualities.

When low-volatile bituminous coal is sold as a mine-run industrial fuel in an exceptionally competitive market, it yields the operators a small margin of profit. By briquetting the slack the producers are enabled to sell it as a prepared lump household fuel on a profit margin

*See "Binding Compound Makes Satisfactory Briquets," *Coal Age*, Vol. 31, No. 7, Feb. 17, 1927, pp. 262-263.

that is relatively much greater than that realized on the screened domestic sizes. The low prices that usually obtain for low-volatile bituminous coal are the result of over-production and should stimulate the operators to remedy the condition and prevent its recurrence. Briquetting this fuel will not only yield a substantial profit to the producers but will also absorb the excess production of slack and thereby automatically stimulate the price of this grade of coal.

The plant investment required to convert low-volatile bituminous coal into household fuel, such as that previously described, will approximate $2 per ton of annual output. For example, a briquet plant having an annual capacity of 150,000 tons should cost approximately $300,000. Including fixed charges and the amortization of the plant investment in ten years the cost of production, exclusive of the cost of the coal, will approximate $3.25 per gross ton. When the briquets are sold at the average cost of production of lump anthracite—$7.75 per gross ton†—the low-volatile producers will actually receive $4.50 per gross ton for their product. This is $3 per ton in excess of the usual return on raw slack. According to *Coal Age* weekly quotations, averaged for the entire year 1924,‡ the wholesale spot prices (f.o.b. mines) of stove anthracite for the New York market were $8.96 per gross ton for company producers and $9.58 for independent operators. The actual realization for low-volatile bituminous slack, if made into briquets and sold at the above figures, will vary from $5.71 to $6.33 per gross ton. It will, of course, be necessary to deduct from these figures the difference in freight rates between the hard and the soft coal fields to the market.

Minimum Output 500 Tons per Day

A commercial single-unit briquet plant should have a minimum output of approximately 500 tons per 24-hr. day. The plant should continuously operate at maximum capacity. In this way the fixed charges per ton of product will be a minimum. To operate continuously without interruptions from breakdowns, the plant and equipment should be of rugged design.

Briefly outlined, the operations of a domestic fuel briquet plant are: Coal is automatically and continuously conveyed through a crusher, dryer, and grinder, and is then mixed with the binding compound. The mixture is next compressed into briquets by passing between two horizontal rolls. The faces of these rolls carry a continuous series of half molds of the desired shape into which, as the rolls turn, the coal mixture is fed from above. After compression, the material is released below the rolls as raw briquets which are then passed through a continuous oven. To render the binding compound hard, water-insoluble, and smokeless, the briquets are heated in this apparatus to approximately 500 deg. F. Finally, they must be cooled in some manner before discharging into storage bins.

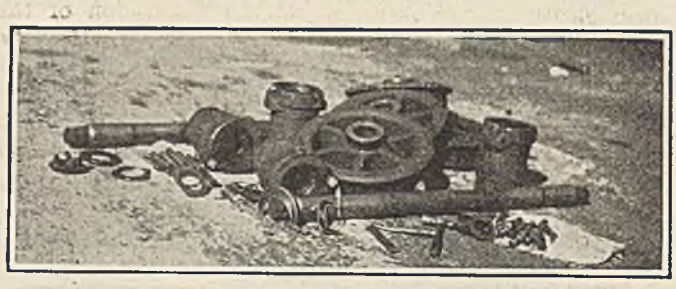
Machines for these various processes already have been developed and are in successful operation. The accompanying illustration shows a simple, continuous, large-capacity, gravity type of briquet bake oven that has no moving parts within the heated zone and which requires no housing. In this apparatus the binding compound is carbonized as the briquets, slowly sliding by gravity through the oven, are heated by hot gases circulating upwardly through and around them. This type of continuous oven was primarily designed for baking briquets made with an organic adhesive phosphoric-acid binding compound. The fundamental principles embodied in the design, as applied to baking briquets, are controlled by the American Cyanamid Co. Commercial development of this type of bake oven will undoubtedly effect a material saving in the cost of briquet manufacture. It should also, therefore, greatly aid in advancing the briquet industry to an important position in the domestic fuel market.

†Anthracite Bureau of Information, Philadelphia, Pa.

‡Chosen because it is the latest year during which the mines were in full-time operation.

Roller Bearing Trucks Withstand Onslaught of Hard Wear

For some time coal operators were suspicious as to whether roller bearings in mine-car trucks would stand up in the hard service to which they would be subjected. The Old Ben Coal Corporation installed 150 roller bearing trucks made by the Lincoln Forge & Machine Co., of St. Louis, Mo., in 1922. After nearly three years of service one of the cars from the No. 8 mine was taken out and torn down for inspection.



Stood Up Under the Wear

After nearly three years of hard service a roller-bearing truck was disassembled for inspection. All of the contact surfaces showed only little wear. Axles, rollers, thrust washers and wheel hubs were little affected and wear was only detected by micrometer measurements.

An examination of the parts showed that rollers whose original diameter was exactly 1 in. were after this service only 0.001 in. and 0.0015 under the 1-in. size. There was no perceptible wear on the raceway on the inside of the journal box. But little wear was noticed on the thrust wall of the journal box. Micrometer measurements of the thrust washers showed 0.004 to 0.005 in. of wear.

Examination of the wheel hubs showed no wear, and the bore of the loose wheel was perfect. The axle showed little wear and this was equally distributed over the entire machined surface. The bearing seat was smooth and true and no grooves were found in the axles caused by the rollers. Micrometer measurements showed the axle to be 0.003 in. under its original 3-in. diameter.

Do Mechanical Methods Save Lives?

In 1926 Wyoming, says the Mining Section *News Letter* of the National Safety Council, produced approximately 6,500,000 tons of coal, of which about 1,455,000 tons came from mines using mechanical loading equipment. There were 21 fatal accidents in Wyoming's coal mines for the year but *none* of them occurred in the mines equipped with the mechanical loaders. This indicates that mechanical loading may aid materially in the reduction of the annual fatality list of the coal mines of the United States.

Men and Women of the Mines

VI—Woman! Woman!

By H. S. Geismer
Birmingham, Ala.

There is no way to tell in advance just how a boost in salary or authority will affect a man's personality and the same thing is true of women. When one of our boss drivers was promoted to a foreman's job, over the heads of several older men of higher rank, no one would have been surprised if he had swelled up a bit. But he did nothing of the sort. In fact, if anything, he became more reserved and unpretentious. His wife, however, who deserved no credit for the honor thrust upon the husband, became so puffed up that she lost her head completely.

The retiring mine foreman obtained permission from the superintendent to have his family keep possession of the house they had occupied for a period of six weeks after his resignation became effective, because he wanted his children to remain in camp until the school term closed. This delay in getting possession of the house by the newly appointed mine foreman's wife (the house allotted to the mine foreman) hurt her feelings considerably. It seemed to her that the superintendent should have considered her before committing himself since the house unquestionably became hers by precedent on the day the other man resigned his position, and she managed to let the superintendent understand just how she felt about the matter in spite of the violent protests of her husband.

The Tumultuous Interlude

During the interim of six weeks she was in hot water most of the time; her immediate neighbors were not inclined to keep their distance, her children's playmates did not conduct themselves toward her children as she insisted they should, and the delivery boy from the commissary refused to understand why her house should be considered at the head of the row of tenements when in reality it was exactly in the middle.

At last the six weeks passed somehow and the latch keys of the mine foreman's house were delivered into her possession. Within one hour of that occurrence the superintendent was informed that the house had been left in a disreputable, uninhabitable condition, furthermore it had never had as many electric light plugs as the chief electrician's house (in six weeks a woman can discover many things) nor as convenient a bath room as the master mechanic's house, nor anywhere near the number of closets possessed by the boss carpenter's house and in comparison with the house occupied by the commissary manager why—here the woman's vocabulary failed to respond and the superintendent had to make a guess as to just how the houses compared or failed to compare.

Probably if the superintendent in charge had been just an average superintendent the newly appointed mine foreman and his wife would have occupied that house about two weeks and the camp would have witnessed the departure of their entire family immediately following. But he was not that kind of a superintendent. He realized just what his mine foreman was up against so he went quietly home and entered into conference with Mrs. Superintendent just as he had often done before. Mrs. Superintendent was so anxious to get into action that the husband had to follow her to their gate to make sure that he had explained everything. Then he went back to the office and dismissed the mine foreman's wife from his thoughts without more ado.

All this happened years ago. Today that mine foreman is one of the big men of the coal industry and his wife can entertain you by the hour telling of encounters she has had with mine foremen's wives who needed advice and were able to take it. At such times the husband remarks, "it takes a thief to catch a thief."

Ten Years Ago in Coal Age— May 5, 1917

"Rail-Bonding Precautions," by H. H. Febrey, describes several methods of making proper contacts.

W. A. Hamor's article, "Coke Braize and Its Utilization," discusses various means of burning this material.

"Utah Fuel Co.'s Somerset Mines Prosper Under Prohibition," states A. C. Watts in article illustrating numerous benefits resulting from Colorado's abolition of the saloon.

Labor Situation

Mine workers show their patriotism by working steadily almost everywhere. As a result, there are few strikes to record.

Many wage-scale readjustments and district agreements eliminate labor troubles in bituminous fields except for small "walkouts" in Illinois and Washington.

Markets

Anthracite.—Never before in the history of the anthracite trade has such a chaotic condition prevailed. The public has been thoroughly aroused as to the possibilities of the situation and enormous tonnages have been negotiated without either buyers or sellers fixing prices. Practically all of the output for the current month is already covered and urgent telegrams requesting coal are becoming so common that they are being ignored. Egg quoted $5.30 per gross ton f.o.b. New York tidewater; stove, $5.55; nut, $5.60; pea, $3.60@$4.10; buckwheat, $3.70@$3.80; rice, $3@$3.30; barley, $2.50@$2.80; boiler, $2.20.

Bituminous.—Market is very erratic with demand heavy, though buyers willing to meet the ruling high figures are usually able to obtain their requirements. Railroads are buying heavily and even confiscating coal. Considerable tonnages going to West and New England tend to limit supplies available in other markets. Constantly increasing scarcity of labor is causing widespread anxiety throughout the industry but selective draft will likely exempt coal miners. Average price of 12 representative bituminous coals for week ending May 5 is $4.04@$4.40 per net ton f.o.b. mines. Prices vary from $6.00@$6.25 for Pocahontas and New River to $2.50@$3.00 for Williamson and Franklin Co., Ill., mine-run and screenings.

Hard Coal Furnace Can Burn Soft Coal But Requires More Attention

That a hard-coal furnace when utilized for soft coal should preferably be of larger size than necessary when anthracite is used, because of the slower rate of combustion of bituminous coal, was the declaration of Prof. E. H. Lockwood, of Yale University, in an address delivered recently before the Metropolitan Section of the American Society of Mechanical Engineers, at the Engineers' Societies' Building. Speaking of the ease with which large sizes of anthracite are burned, he said:

"The ordinary type of anthracite furnace is well adapted for burning the large sizes of that fuel. A quantity of fresh coal can be stoked at one time above a kindling fire, say 40 lb. per square foot, which with coal of stove size in the ordinary furnace is equivalent to a depth of 8 in. This quantity of fuel will give out heat steadily for 6 or 8 hr. without attention, the fire being controlled by dampers which are opened or closed to accord with changes in steam pressure or water temperature. No special care or experience is needed in handling the fire, as the whole fuel charge can be shoveled into the firepot at one time and will kindle promptly without danger of a gas explosion.

Similar Furnace Burns Bituminous

"Bituminous coal can be burned in the same type of furnace, which should be preferably of larger size so as to permit a lower rate of combustion. A large charge of coal should never be spread over the whole fuel bed. The proper way to fire a large charge is to start with a moderate quantity of well-kindled fire, which should be pushed back as high as possible at the rear wall of the firepot, leaving a cavity in the front which should be filled with coal. Fresh coal should not be piled above the burning fuel, because the latter must serve as a torch to ignite the fresh coal. Thus placed, with the hot burning fuel in the rear and the newly fired coal in the front, the latter will slowly ignite throughout its mass.

Anthracite Superior in Heat Longevity

"Experience shows, however, that a firepot of bituminous fuel, such as just described, will not give steady heat for as many hours as an anthracite fire in the same firepot. The reason for the poorer performance of the bituminous-coal fire is found in the characteristic of bituminous coal to develop holes, or passages, through the fuel bed, which permit the air to flow in excess quantities into the combustion space over the fire, lowering the furnace temperature and the combustion efficiency.

"If an attendant is present to break up the fuel bed and close the holes when they appear, the bituminous-coal fire will give heat equal to that which would have been afforded had anthracite been provided. In other words, if bituminous coal has more frequent attention than anthracite it will give as much or more heat.

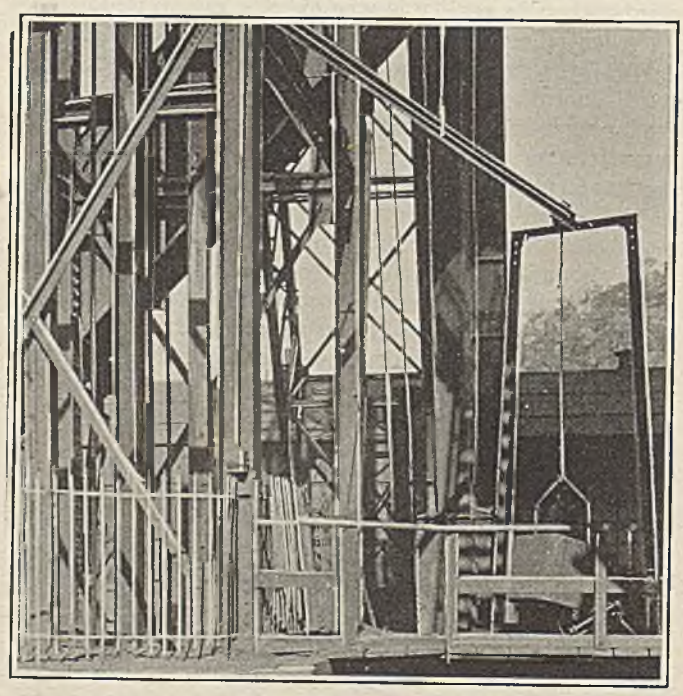
"For satisfaction in domestic heating the furnace should provide considerable heat for a period of 6 or 8 hr. without attention, a requirement that cannot be met by bituminous coal in an anthracite furnace. If the latter happened to be extra large, measured by anthracite rules, the probability of success with bituminous coal would be much increased, as under these conditions less draft would be required, and consequently the fire bed would be less likely to develop air holes. There appears to be little evidence of any general trend away from anthracite toward bituminous coal, which is not surprising when the inadequacy of existing equipment is recognized.

"There is plainly a need for a furnace of new design, capable of producing steady heat from bituminous coal for a fairly long period without smoke and with efficiency. This need is not met by existing furnaces of the conventional type even with the addition of extra air ports to aid combustion and reduce smoke. When the new bituminous furnace appears, it should replace existing furnaces in many places, combining anthracite convenience with bituminous-coal economy.

Bucket Is Attached to Skip When Cleaning Sump

Bucket elevators are sometimes installed at the bottom of skip shafts to facilitate the job of cleaning a sump. The spillage is shoveled into the buckets which lift and deposit it in one of the coal chutes above the loading gates of the skip. Inasmuch as this clean-up job is undertaken at more or less wide intervals, and the quantity of spillage removed is rather small, the installation of a bucket elevator is hardly justifiable.

An arrangement that simplifies the work of cleaning the sump of a skip shaft, and which might also be applied to a cage shaft, is in service at the Harmar mine of the Consumers Mining Co., near Pittsburgh, Pa. Spillage is shoveled into a swinging bucket which is attached to the bottom of either skip. As shown in the accompanying illustration, this bucket is moved to and from its point of attachment on the skips by a wire rope which is hung from a traveling carriage on a heavy single-rail track. One end of this track is fastened to the headframe and the other end is supported by a steel bent fashioned from rails. When this bucket is tipped, its contents are discharged into a chute leading to an underground refuse bin adjoining the shaft.



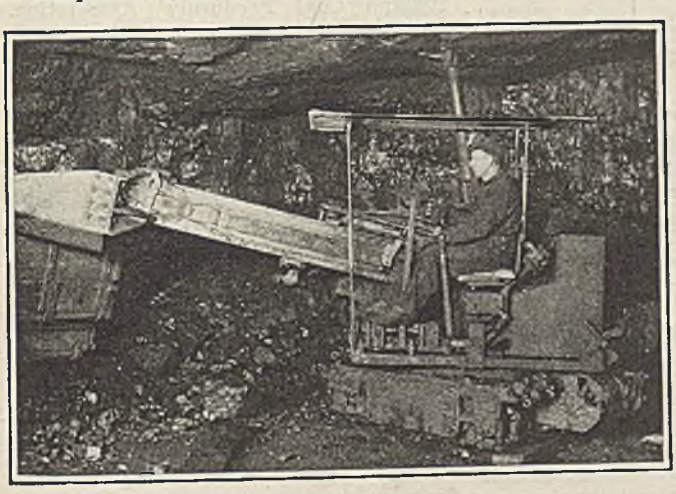
Convenient to Use

When it is desired to clean the sump the bucket shown to the right of the above illustration is attached to the skip. Its contents are discharged into a refuse bin.

Underground Operation

Safety Hood Proves Effectual

Mechanical loading by no means frees the coal face from the danger of roof falls. The accompanying illustration shows the safety hood or canopy employed by the Sheridan-Wyoming Coal Co., as a standard piece of protective equipment, on machines of the kind shown. It is composed of three adjustable standards supporting a



Protects Operator from Roof Falls

This hood or canopy is simple to construct yet efficient in operation. It is adjustable as to height so that the machine can be taken through low places. In the mines of one company it is credited with having saved the lives of six men.

sheet of No. 14 gage galvanized corrugated iron. This form of canopy was found to be far stronger and capable of resisting heavier falls of rock than a plain sheet of iron of equal thickness. The three supports are made adjustable so that the hood can be lowered if the machine has to be taken through a low place.

Credit for the invention of this safety hood is largely due to C. F. Shott and C. M. Shott, master mechanics, and to C. A. McIntire, machinist at Acme mine. The Sheridan-Wyoming Coal Co. is now entering its third year without a fatal accident, having produced over two million tons of coal during that time. The safety hood here shown is credited with having saved the lives of no less than six loading-machine operators.

Eye Injuries at Mines Fall 60 per Cent

According to the annual safety report of the Colorado Fuel & Iron Co. Fuel Department, January 1927, "Goggles have proved their worth; eye injuries have been reduced 60 per cent since their installation. Some of the twenty-six injuries that occurred in 1926 could have been avoided if the injured men had worn their goggles. The present rule regarding goggles is: 'Any employee that underground officials find working at the face without goggles will be suspended for three days for the first offense, six days for the second offense and discharged if violation occurs the third time within sixty days. Further, where eye injuries occur at places where goggles should be but are not worn, the company will seek to have the compensation for the injury reduced 50 per cent on account of the injured person's violation of the rule requiring the use of goggles.'"

Steel Crossbars Which Outlive One Mine Are Used in Another

Three years is the average life of the untreated timber used in Iowa mines. The roof of most mines in that state is so frail that practically all entries have to be timbered with sets from 3 to 5 ft. apart, and lagged between. The cost per set, erected, is approximately $3.70. The material, including the lagging sticks, costs $1.20 delivered into the mine; and the labor of erection is $2.50.

Considering these costs it is surprising that treated timber and steel are not generally used. The short life

Steel Crossbars in Central Iowa No. 4 Mine

These 6-in. x 8-ft. I-beams were recovered from another mine which was abandoned. Only six beams out of the car load purchased in 1914 were lost in the old mine. Because of the bad top, 8 ft. is a standard width for entries in Iowa mines.

of the mines—10 to 12 years—and the consequent necessity for a minimum investment is the principal reason. W. M. Malone, manager of mines of the Central Iowa Fuel Co. has concluded from experience that it does pay to make rather general use of steel crossbars even though this material will probably outlast the mine in which it is installed.

In 1914 the Central Iowa Fuel Co. purchased a car load of 6-in. x 8-ft. steel I-beams and used these as crossbars. Several years later when the mine was abandoned, all but six of the beams were recovered. This material is now in use in the No. 4 mine at Williamson, Ia.

News Of the Industry

Indiana Shaft-Mine Operators and Miners, in Parley at Terre Haute, Try to Effect New Wage Agreement

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

(By Wire from Terre Haute)

Terre Haute, Ind., May 3.—Wage negotiations between the scale committees of the Indiana Bituminous Coal Operators' Association and district 11 of the United Mine Workers opened here this morning with neither side sanguine that an agreement would be reached during the present joint conferences.

The prospects for a successful conclusion depended largely upon the possibilities of avoiding an early clash over the question of the specific renewal of the Jacksonville rates. Following separate meetings yesterday, spokesmen for both sides intimated that they were ready to hear whatever the opposing camp might have to say, but neither would give any indication that they had receded from the positions which wrecked the Miami interstate conference last February.

In view of this situation all rests upon the manner of approach. If the district union conferees insist that an immediate agreement be reached upon the platform of no reduction, it is a certainty that that proposal will be rejected by the operators. If the operators demand at the outset that the miners abandon their plea for a continuance of the Jacksonville rates, the union can be expected to refuse to consent to such a basis for negotiations.

Try "Sounding Out" Process

This analysis of the situation was borne out by the developments of today's joint sessions. For the most part both sides spent the day in trying to discover just how far the other side would yield to effect a new agreement. Spokesmen for the union stated their willingness to hear the operators on the question of modifications in working conditions and even made some tentative suggestions along that line although they withheld the formal presentation of any fixed program on the subject. The suggestions made, however, were later characterized by one of the leading operators as making conditions more onerous instead of less burdensome.

A motion offered on behalf of the producers for a reduction in the pick mining rate from $1.80 to 85c. was promptly amended by the miners, who moved to substitute the Jacksonville rates. Neither the motion nor the amendment, however, was put to a vote. No secret is made of the fact that forcing a vote at this time probably would mean the end of the conference. The strategy of the conferees opposed to an early break will be to delay consideration until the possibilities of relief in other directions have been thoroughly canvassed.

The miners also were asked whether they would consider a flat day rate—presumably to apply on loading machines. This particular proposal was not pressed by either side. This injection of the question of machine rates, however, raises one of the most critical issues of the present negotiations since it is upon this question that there is the sharpest division of opinion in the ranks of the operators.

Seek Full Discussion

Most of the pressure to prolong with joint parleys come from the producers who believe that a thorough consideration of machine rates and modifications in working conditions may establish the Indiana coal mining industry in a stronger competitive position without the necessity of making any changes in the best rates embodied in the Jacksonville contract. This group clings to the idea that the longer the conferees remain in session in full and frank discussion of the problems confronting the industry the greater will be the chances that there will be a meeting of minds in the formulation of a constructive program.

This view, however, is not shared by all of the operator-members of the joint scale committee. Spokesmen for this latter group are frankly pessimistic as to the probabilities of any agreement being reached at this time. They feel that the miners are not yet in a mood to make the concessions which, in the opinion of miners, must be made if the industry is to survive. While they decline to make any predictions as to the length of the conference they would not be surprised to see it end tomorrow or Thursday.

The miners, on the other hand, take a more optimistic view. The mere fact that they adjourned at half-past four this afternoon to meet again at half-past nine tomorrow morning inspires hope. They would not be surprised, however, if a recess should be taken later in the week.

Union officials, of course, have been much encouraged by the outcome of their recent conferences with the stripping pit interests represented by the Indiana Coal Producers' Association. As union spokesmen interpret the new contract signed two weeks ago, they not only retained the Jacksonville scale for another two years but made no important concessions in working conditions.

Most of the changes, they say, were in the line of clarification so that both parties to the contract would understand more clearly just what was required under the agreement. The one exception to this general statement is the changes in the provisions covering absenteeism. Under the old contract any worker who neglected to report for three days without a reasonable excuse or the consent of the management could be discharged. The new agreement provides:

"Any employee absenting himself from work without having previously notified the mine office, the mine superintendent or his foreman of his intention to be absent at least eight hours before starting time of his shift shall be fined a sum equal to one day's pay at his regular rate, unless he shows that he has made sufficient effort to give notice or that it was clearly impossible to report.

"Any employee absenting himself from work at starting time of his shift following one day's absence, without having previously notified the mine office, the mine superintendent or his foreman of his intention to be absent, or without having presented a reasonable excuse for such absence, shall be fined a sum equal to one-half day's pay at his regular rate."

Several Shaft Mines in Line

As in the old rule, three days' absence makes the worker liable to discharge. The fines collected shall be paid to the regular employees who work overtime to fill the absentee's place. When the company is compelled to work short-handed or the vacancy is filled on straight time the fines accrue to the local union to be used for the aid of disabled and decrepit members.

In addition to the success in signing agreements with the stripping and block producers, union officials also claim that several shaft mine members of the Indiana Bituminous Coal Operators' Association have signed two-year agreements with the district union renewing the old contract subject

to any changes which may be made in the agreement reached between the union and the association.

The district officials, however, decline to state who the producers are who have signed such separate agreements or to indicate their importance from a tonnage standpoint. The one exception was the case of the Pike County Corporation. It was admitted that the company had signed a contract with the union yesterday and would begin hoisting coal today. The Pike County company, which has two mechanized properties at Petersburg with a combined daily capacity of approximately 3,000 tons, has offered its resignation as a member of the Indiana Bituminous Coal Operators' Association. The resignation was received by the association today.

While the union claims that other association operators have signed up with the understanding that the union will not make their names public, no confirmation of such a report is obtainable from association sources. Although it is rumored that certain other producers are growing restive under the labor policies adopted by the majority of the members of the organization, it is said that the Pike County company is the only operator which has openly broken with the association.

Open-Shop Movement Gains

Further impetus was given the open-shop movement in the Pittsburgh district last week by the start in operations at the Coverdale mine of the Pittsburgh Terminal Coal Corporation and the Hazel mine of the Chartiers Creek Coal Co. The latter is paying the same scale as in effect at operations of the Pittsburgh Coal Co. and asserts that many of its old employees have severed connections with the United Mine Workers to dig coal at Hazel. The Valley Camp Coal Co. is planning to reopen its Kinlock mine, near Oakmont, on the November, 1917, scale.

In line with the new policy of secrecy, no definite statements of actual production at the Pittsburgh Coal Co. mines or at the operations which have recently gone non-union have been made public. During the week ended April 30, according to C. E. Lesher, executive vice-president of the Pittsburgh Coal Co., the 18 mines of that company now in operation produced 109,925 tons, as compared with 110,253 tons the week preceding. John L. Lewis, president of the United Mine Workers, who was in Pittsburgh late last week, asserted that the April 23 figures were padded to the extent of 44,000 tons. Coverdale loaded 600 tons on April 25, it was reported.

That the Pittsburgh Terminal Coal Corporation is preparing for a prolonged struggle was indicated by the action of the board of directors in passing the quarterly dividend on the preferred stock of the company. In explaining this decision, Horace F. Baker, chairman of the board, said:

"Net earnings for the first three months of this year exceeded preferred dividend requirements; however, the board thought it was wise and conservative policy, in order to maintain present strong cash position, not to pay the dividend in view of the strike of the miners, which began April 1, 1927, and the determination of the company to operate on the reduced scale posted April 1. The company has begun to mine coal under the reduced scale. Mine No. 8 has been opened and is producing 10 to 12 cars a day, but no one can tell when normal operations can be reached. Although it is felt that real progress has been made under the new order, the company's position can be won only in opposition to every resource of the striking miners."

Although it is admitted that the Pittsburgh Terminal has been unsuccessful in inducing its old employees to accept its new wage scale, the corporation is going ahead with its plans to reopen other mines in the Pittsburgh district. Mollenauer is reported to be scheduled to start up again in the near future and work on cleaning up at that operation is in progress. Curry and Library plants also are mentioned as other mines in line for an early reopening.

Announcement that work would be started on the erection of 200 miners' houses at Ritcheyville led to the report that the Vesta Coal Co. would soon make an attempt to reopen its mines on a non-union basis. Officials of the Jones & Laughlin Steel Corporation, however, denied that construction was being undertaken with that specific end in view. The erection of these houses, they said, had been decided upon months before the suspension and was part of a normal expansion program.

Union officials continue to win the honors in the legal skirmishes growing out of the suspension. The grand jury ignored the charges made against 19 miners accused of inciting a riot in Penn township. Fines assessed by a justice of the peace at Wilkinsburg were set aside by County Judge T. C. Jones and the costs were assessed against the county. An application for additional protection at Coverdale was turned down by Sheriff Braun of Allegheny County.

Not Much Disorder in Pittsburgh

On the whole there has been little real disorder in the Pittsburgh district. This was emphasized by the Sheriff in denying the request for more deputies at Coverdale. On Friday the Pittsburgh Coal Co. stated that a miner's house had been dynamited at Lovedale Hollow and an unoccupied dwelling at Black Diamond had been destroyed by fire believed to be of incendiary origin. The occupants of the dynamited house, eight non-union miners and their families, were at church when the explosion took place.

Union officials express themselves as well satisfied with the situation in western Pennsylvania. They declare that their ranks are holding fast and that there will be no desertions. "There is no question," said President Lewis, "but that the men belonging to the union will eventually go to work on the basis of no reduction in wages." The miners, he conceded, would be compelled to pay dearly for their victory, "but they cannot recede from their position under any circumstances."

In the eastern Ohio field it is still a case of marking time. According to the Ohio Coal Bureau, 5,000 miners have left the district since April 1—many of them to seek work in the non-union mines of West Virginia. Others are competing with labor in industrial centers and underbidding common labor on road work, particularly in and around Akron.

Ohio miners, said J. L. Good, director of the bureau, are "beginning to realize the futility of their ever expecting that the Ohio operators can start their mines except on a continuous competitive wage scale basis with miners south of the Ohio River."

So far no proposal for a general movement toward the open-shop has been broached. The Sunday Creek Coal Co., however, has sent out a letter to 1,400 of its former employees offering to reopen its mines at once if the men will agree to a maximum of $5 per day for inside labor, 58c. per ton for loading and 12c. for cutting in wide rooms, with differentials for other classes of work. "We are ready to meet and open the mines on a fair basis," said the letter. "We have tried to tell your officials this, but they will not listen to us. Maybe they will listen to you."

George W. Savage, secretary, district 6 of the United Mine Workers, retorted that "the men will not accept the offer. They will stay in line and fight it out."

The Lorain Coal & Dock Co. also posted notices offering striking employees work at the 1917 scale.

Ohio Operators Non-Committal

In accordance with the policy of the executive committee of the Ohio Coal Operators' Association, holding weekly meetings since the suspension, a month ago, a conference was held April 29 at Granville, the summer home of John S. Jones, president of the Sunday Creek Coal Co. There was a good attendance and matters of policy were discussed. President S. H. Robbins, the official spokesman for the association, left immediately afterward for his home in Cleveland. No statement was given out.

W. H. Haskins of Coshocton, labor commissioner for central Ohio operators, last week challenged Lee Hall, president of the Ohio miners, and several other officials to a debate before civic and commercial organizations on the issues leading up to the suspension in Ohio.

John L. Lewis, accompanied by Philip Murray, vice-president, and Oral Garrison, secretary to Lewis, was in Columbus April 29 for the purpose of visiting W. G. Richards, who is ill at his home in Columbus. Richards was one of the organizers of the United Mine Workers. While in Columbus Mr. Lewis conferred with Lee Hall, president of the Ohio organization, for a short time, but no statement would be given out. Lewis said that "All is quiet and satisfactory."

Illinois operators are marking time until the next meeting of their state association at St. Louis, Mo., on May 10. Seven small mines in the Belleville district have accepted the interim agreement, according to union officials. The companies named are the Prospect Park Coal Co., the Hickory Coal Co., Gundlach Coal Co., Bluff View Mining Co., Hippard Mining Co., Darmstadt Coal Co. and the Woodland Coal Co.

Firm Leader Needed to Bring Warring Factions To Appreciation of Public's Rights

Samuel S. Wyer, a well known consulting engineer of Columbus, Ohio, who was chairman of the fact-finding committee named by the Ohio Chamber of Commerce to inquire into the Ohio coal trade last fall, in an address before the Engineers' Club of Columbus recently said: "What the Ohio Coal industry needs is another Marcus A. Hanna, with appreciation of human rights to grasp the miner's side of the controversy. The man who appears to point the way must have character to inspire confidence in others, common sense to keep his feet on the ground, vision to see ahead, moral courage to face the facts as they are, and a dominating personality to swing the various conflicting operating interests into an integrated and cooperating unit."

Mr. Wyer gave what he styled his "coal code." The coal problem, he asserted, involves the interaction of three groups—miners, operators and the public. The following indicates the doctrines that must be recognized by all in order to secure effective team work:

(1) Human rights are superior to property rights.

(2) In case of conflict between the operator and the miner, the public's interest is paramount.

(3) In wage-rate fixing it must be recognized that: (a) The miner and his family must live by the year; with this goes the duty to do a year's work and not merely part time work. (b) Even though 200,000 men are struggling to stay in the industry, this does not justify the sharing of jobs. Superfluous men must get out and not expect to be subsized by the public. (c) The rate of wages must be competitive with the rates of similar labor in other industries. (d) Every man's wage is a part of some other man's cost of living.

(4) There is no vested right to make a living in a particular kind of work, and neither the common law nor the Fourteenth Amendment confers the absolute right to strike.

(5) Provision must be made for judicial review of labor controversies.

(6) Labor must show responsibility to go to work, stay at productive work, and produce an honest product.

(7) Capital is entitled to a fair return commensurate with the hazard of the enterprise and the managerial skill in directing, but is not entitled to profiteer, which is a tribute exacted above fair profit because of strategic position.

(8) After the operator has been paid for the additional cost of labor-saving equipment, he would be wise, in the long run, to share the net savings with the public.

(9) There must be continuous fact-finding from an independent agency that the public can trust.

(10) The public must change its opposition to and should aid consolidation because (a) with continuous fact-finding by a dependable agency, the public will be adequately protected; (b) consolidation will be in the public interest, in order to bring about more efficient mining and selling conditions, and therefore, better service and lower coal costs.

All told the mines involved employ about 350 men. The Lemmon mine in Randolph County also has resumed.

The Bellva Straight Creek Coal Co. and the Wallsend Coal Co. won a victory in the U. S. District Court at Richmond, Ky., last week when Judge Cochran issued an order directing 33 striking miners to vacate company houses. Decision on this question had previously been reserved.

Soft-Coal Imports Increase

Imports of bituminous coal into the United States in March were 63,031 gross tons, as compared with 45,153 tons in March, 1926. Canada was the chief source of supply for foreign fuel, with 49,422 tons. The United Kingdom furnished 7,146 tons, and Japan, 6,463 tons. In March, 1926, imports by countries were: Canada, 32,039 tons; United Kingdom, 9,854 tons; Japan, 3,260 tons.

Antharcite and coke imports, on the other hand, showed sharp declines. Anthracite imports dropped from 305,851 tons in 1926 to 13,486 tons. Coke imports fell from 85,524 to 11,006 tons.

Mine Inspectors Meet

Despite the absence of several West Virginia state mine inspectors at the Everettville mine disaster a large number from many states attended the opening session of the Mine Inspectors' Institute of America, at the Hotel Ruffner, Charleston, W. Va., May 3. The Governor of Kentucky sent his entire force of inspectors to the meeting.

V. E. Sullivan introduced acting president William Boncer, Richmond, Va., who replaced E. J. Hoey on his resignation Jan. 1. W. W. Wertz, Mayor of Charleston, in making an address of welcome, referred to his early experiences as a trapper boy at the tender age of twelve.

Committees on membership, resolutions and auditing were appointed. Ten delegates were elected to attend the informal conference at Cincinnati, Ohio, May 21, which is to discuss the advisability of formulating a basic national code on mine safety. C. A. McDowell, acting secretary of the Institute in place of G. B. Butterfield, resigned, presented a report on standardization. J. J. Rutledge, treasurer, announced that the Institute's finances were in a flourishing condition.

Mine Safety Act Amended In Pennsylvania

Provisions of the act of 1911, which was framed to safeguard the workers in bituminous mines of Pennsylvania, were amended April 28 when Governor Fisher approved the bill of Representative Howard F. Rieder, Westmoreland. The Rieder amendments, which under the Governor's approval became part of the act, provide as follows:

That cut-throughs in entry pillars and in pillars of rooms driven in the room and pillar system of mining shall be provided not less than 16 yd. apart.

In mines or portions of mines developed for the purpose of mining by a system other than the room and pillar, all openings except entries may be driven 100 yd. without cut-throughs, provided the following regulations are enforced:

That sufficient air be circulated to and along the face of each entry cut-through, chamber or other opening to sweep away and render harmless all smoke and explosive gases.

In gaseous mines there shall be kept at the face of every working place while the men are at work at least one approved flame safety lamp, if such place is driven more than 105 ft. without a cut-through.

That in every mine where a working place is driven more than 105 ft. without a cut-through, said place shall be examined by a mine official at least three times a day while the men are or should be at work.

In gaseous mines where it is necessary to drive openings more than 105 ft. off any entry or other road, not more than four such places shall be advanced at the same time and not more than six places shall be advanced at the same time in any air split without proper connection with the air circuit.

Booster or blower fans shall not be used in gaseous mines for the purpose of ventilating workings having no connection with the air circuit, unless equipped with government approved flameproof electric motor; provided, however, that the location of such fans shall have the approval of the inspector of the district.

In all gaseous mines where places are driven more than 105 ft. without the formation of an air circuit the coal dust in the entries shall be rendered inert to explosibility by the application of shale dust or any other incombustible material, and the coal dust in all other openings shall be taken care of as now provided by law.

Suspends C. & O. Increase

Increases in rates on bituminous coal from West Virginia and Kentucky mines served by the Chesapeake & Ohio Ry. to points on that railway between Low Moor, Va., and Deepwater, W. Va., have been suspended until Dec. 1, 1927, by the Interstate Commerce Commission. The issues affected by the Commission's order are supplements 12 and 13 to C. & O. tariff I.C.C. No. 10,103. These supplements, for example, would have increased the rate to Covington, Va., 29c.

Wide Expansion of Non-Union Fields Foreseen by Washington Observers; Discuss Effect of Storage in West

By Paul Wooton
Washington Correspondent of *Coal Age*

Wide extension of non-union territory is indicated by information reaching Washington. While there is an inclination to wait to see how the non-union operations in the Pittsburgh district fare, those close to the situation fully expect all of Pennsylvania to go non-union as well as the entire Southwestern Interstate field.

While it is regarded as obvious that Ohio never will obtain the so-called competitive scale for which it is standing, reports indicate that the operators there will hold out for some time before they will listen to any change of attitude. In Illinois there is more division of opinion, but little disposition to sign is in evidence. Indiana is reported as wavering with a rising market the only requirement to cause a very general secession. An increase in prices would cause wide defection from the ranks of the operators in that state, it is declared. It is reported, further, that the operators are being subjected to great pressure from their creditors, who are insisting that they get into production as soon as it can be done profitably.

Reports reaching officials in Washington as to a large number of unbilled cars in Illinois are challenged by representatives of Illinois operators. The total number of unbilled cars at the seventy-one mines in southern Illinois on April 1 was equivalent only to four days' run for the field as a whole. The record for the entire state shows the ratio to have been about the same. It is declared that Illinois producing companies had less coal stored this year, either on the ground or in unbilled cars, than in almost any other strike-year shutdown. It also is contended that Illinois operators went to no extreme lengths to encourage purchases for storage.

Low Prices Encouraged Storage

The unusual and outstanding extent to which Western consumers purchased coal is said to have been due largely to their own desires. They were actuated, in the opinion of Illinois operators, by the very low prices prevailing and by their desire to be fortified fully against every possible contingency. Others continue to contend that high-pressure methods were used to obtain heavy storage and that bad feeling will be engendered among consumers when they find that their storage has been a costly and unnecessary proceeding, which will offset any betterments the operators may get under the terms of the new contract.

Most of the coal specialists in Washington, however, sympathize with the view that the Illinois operators did the natural thing and the advisable thing in storing all of the coal they could and in calling upon their customers to store all the coal they could. It also is recognized as the natural thing that the operators would not want to be reduced to such an extremity by loss of market as to be compelled to make an abject bargain. There also is sympathy for the view that by inducing heavy storage the operators are in a better position to make a fair arrangement with their men and get their business on a basis where there will be an opportunity to produce coal at a reasonable profit, and at the same time supply the public at prices which will be generally satisfactory.

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.*

Mine-Rescue and Aid Meet In Pittsburgh Aug. 30

The sixth International First-Aid and Mine Rescue Contest, recently announced as to be held in Pittsburgh, Pa., will be held Aug. 30 and 31 and Sept. 1. The first-aid contests, in which teams from coal and metal mines, quarries, and oil-producing and refining companies from numerous states will compete, will be held at Duquesne Gardens. The mine-rescue meet, which will also be participated in by teams from widely-scattered mining communities, will be held on the campus of Carnegie Institute of Technology. The contest will be given under the auspices of the U. S. Bureau of Mines, in co-operation with the Pittsburgh Chamber of Commerce.

Various prizes will be awarded the teams which, in the opinion of the judges, prove themselves most efficient in first-aid and mine-rescue methods Each first-aid team will be composed of six men, including a "patient." Each team will be required to perform three or more definite problems in first-aid, calling for the treatment of injuries and the proper handling of the patient. The patient, assumed to be suffering from electrical shock, arterial bleeding, broken bones, or other injury, will be given the first-aid treatment prescribed in the manual of the U. S. Bureau of Mines. The events will be judged by physicians and expert laymen skilled in first-aid training and conversant with the Bureau of Mines first-aid standards.

The competing mine-rescue teams will be composed of five men provided with oxygen breathing apparatus and other necessary equipment used by rescue crews in coal and metal mines. The teams will be required to work out in a specially prepared smoke room a practical problem such as is likely to be encountered in underground rescue operations.

The International First-Aid and Mine-Rescue Contests are held each year under the auspices of the Bureau of Mines, with the co-operation of the National Safety Council, the American National Red Cross and various mine operators' associations and miners' organizations. Employees of mines, quarries and metallurgical plants and workers in the oil and gas industry are eligible to participate in the contest. More than 200,000 workers in the different mineral industries have been trained in first-aid or mine-rescue methods by the Bureau of Mines. A feature of the meet will be the awarding of the Congressional medal, given annually to the teams of miners adjudged most thoroughly skilled in first-aid and mine-rescue methods.

The Bureau of Mines has made the First-Aid and Mine-Rescue Contest the occasion for calling in from the field all of its mine-safety instructors for the purpose of giving them a brief, intensive course of instruction in the latest mine-safety and accident-prevention methods. For a period of two days immediately following the contest, these men, summoned from the principal mining communities of the United States, will be coached carefully in the latest safety kinks approved by the Bureau of Mines.

Teuton Industrial Wealth Based on Coal

"The history of Germany's present-day industrial efflorescence could be written around coal, chemists and cartels," Alfred Pearce Dennis, former American Commercial Attaché and present vice chairman of the U. S. Tariff Commission, asserts in the *New York Times.*

Germany's pyramid of wealth is founded upon a base of coal, Mr. Dennis declares. German chemists, he says, are upon the threshold of the liquefaction of coal. The Bergin process of coal hydrogenation has progressed beyond the experimental stage. This process provides for the liquefaction of coal under a pressure of about 100 atmospheres at 480 deg. C. for a yield of 45 per cent oil.

Furthermore, he states that the Coal Research Institute of Muehlheim has announced a solution of the problem of obtaining oil from coal without pressure and at the comparatively low temperature of 270 deg. C. through the use of a cobalt and chromium oxide catalyst.

Through this process, he predicts that Germany may free herself from dependence upon foreign petroleum products just as she emancipated herself from the former Chilean nitrate monopoly.

West Virginia Mine Blast Kills 11, Wrecks Tipple; Little Hope for 78 Others

A violent explosion in the Federal No. 3 mine of the New England Fuel & Transportation Co., Everettville, W. Va., at 3:30 p.m., April 30, caused heavy loss of life and almost totally destroyed the tipple. This operation is located in Monongalia County, W. Va., approximately half way between Fairmont and Morgantown. About 100 men were in the mine at the time of the explosion. One of these made his way out and reported that eight others on the old main entry, about 2,000 ft. from the outside, were alive but unable to escape unassisted. Volunteers equipped with gas masks and self-rescuers entered the mine and brought these men to the surface.

This blast, the cause of which is unknown, was extremely violent. It wrecked the tipple, killing 5 men who were at work upon it. At the time this report was written the bodies of 11 men had been recovered and small hope was held for the remaining 78 men still underground. This mine normally produces nearly 3,000 tons per day, employing approximately 300 men. The fact that the day upon which the explosion occurred was Saturday and pay day and the hour close to quitting time accounts for the underground force being so far below normal.

This mine is a drift operation working the Pittsburgh bed. It is only slightly gassy, the present workings lying in a crop area. Electric cap lamps are used exclusively. The main entry proper, from which the most recent workings are being developed, has been advanced a distance of about 8,000 ft. from the portal and lies on the dip. The main consists of 6 entries, from which 12 left and 9 right entries have been turned.

Restoration Work Slow

Fire has made its appearance in the mine. Indications would appear to show that this fire is located on the pillar line of the four south or left entries. Restoration and rescue proceedings have not yet reached this locality. Air locks were erected early Sunday morning, when the rescuers had proceeded only about 3,000 ft. from the surface. From that time up until Tuesday morning progress was slow, an advance of only 350 ft. being made in 48 hr.

Because of the dangerous conditions encountered advances can be made only in short steps through air locks. The progress will not be rapid until after the fire area has been sealed. In recovery operations two entries are made to serve as the intake and one as the return. The latest analysis of the mine atmosphere, made Monday night, showed the following results: Oxygen, 14.2 per cent; carbon dioxide, 3.8; carbon monoxide, 1.9, and methane, 4.6 per cent. This indicates that an explosive mixture of methane is being approached and that the fire is smouldering.

At the present writing the situation is grave. Rescue work is being conducted with all possible dispatch. Teams from the Consolidation Coal Co., Bethlehem Mines Corporation, Elm Grove Mining Co., Hillman Coal & Coke Co. and other firms in the vicinity responded to the call for assistance. The work is well organized and carefully supervised.

Outcome of Maynard Case Still Uncertain

The Maynard case, now pending in the Court of Appeals of the District of Columbia, involves the same fundamental question as was presented in the Claire case. There was a difference in the procedure in the Maynard case, in that the Federal Trade Commission had served a notice of default on the Maynard company before the suit for injunction was instituted, whereas no such notice had been served against the companies involved in the Claire case. In view of that distinction the future of the Maynard case is uncertain, notwithstanding the rule laid down in the Claire case.

Hard-Coal Output in 1926 Exceeds Year Before

Output by the anthracite mines of Pennsylvania in 1926 totaled 74,887,946 gross tons, compared with 54,762,629 tons in the preceding year, according to a report just issued by the Pennsylvania Department of Mines. The disparity is due largely to the fact that the mines were closed during the last four months of 1925 by the strike, which interferred with production only a month and a half last year. Production by counties was as follows, in gross tons:

Hard-Coal Output in 1926

Counties	Production	Employees	Fatalities
Carbon	2,369,132	4,283	10
Columbia	962,788	2,006	3
Dauphin	892,823	2,109	7
Lackawanna	17,567,452	39,275	110
Luzerne	29,957,530	67,207	191
Northumberland	5,973,477	14,372	39
Schuylkill	16,559,463	37,833	91
Sullivan	215,147	631	2
Susquehanna	371,054	1,018	1
Wayne	19,080	*	...
Totals	74,887,946	168,734	454

* The washery operation in Wayne County included the employees with Lackawanna County.

Hard-Coal Output in 1925

Counties	Production	Employees	Fatalities
Carbon	1,785,203	4,523	21
Columbia	611,875	2,033	5
Dauphin	690,536	2,101	1
Lackawanna	12,466,520	37,454	96
Luzerne	21,871,139	64,087	175
Northumberland	4,419,431	14,812	23
Schuylkill	12,545,295	37,523	77
Sullivan	127,174	597	...
Susquehanna	198,080	535	1
Wayne	47,376	160	2
Totals	54,762,629	163,825	401

The Cambria & Lackawanna Coal Co. has been awarded a contract by the U. S. Shipping Board to supply bunker coal requirements of passenger and cargo vessels at the Port of New York from May 1, 1927, to April 30, 1928.

Coke Output High in March; Byproduct Sets Record

Production of byproduct coke in the United States increased from 3,435,000 tons in February to 3,879,000 tons in March, a gain of 444,000 tons, or 12.9 per cent. This is the largest monthly output yet recorded, and exceeds March of 1926 and 1925 by 2.4 per cent and 12.4 per cent, respectively. The daily rate for the 31 days in March, 1927, was 125,117 tons, an increase of 2,435 tons, or 2 per cent, when compared with the February rate. There were 76 active plants and one idle one, the same as in January and February, and these plants produced about 87 per cent of their capacity.

Output of beehive coke also increased, the total for the month being estimated at 890,000 tons, a gain of 18 per cent when compared with the February production of 754,000 tons. The daily rate of 32,972 tons shows a gain of almost 5 per cent. Output of all coke amounted to 4,769,000 tons, of which 81 per cent was contributed by byproduct ovens and 19 per cent by beehive ovens.

Byproduct and Beehive Coke Output In the United States by Months*

(In Thousands of Net Tons)

	Byproduct	Beehive	Total
1924 Monthly average	2,833	806	3,639
1925 Monthly average	3,326	946	4,272
1926 Monthly average	3,712	957	4,669
December, 1926	3,706	780	4,486
January, 1927	3,700	787	4,487
February, 1927	3,435	754	4,189
March, 1927	3,879	890	4,769

* Excludes screenings and breeze.

The total quantity of coal consumed at coke plants during March was about 6,977,000 tons, of which 5,573,000 tons was consumed in byproduct ovens and 1,404,000 tons in beehive ovens.

Estimated Coal Consumed Monthly In Manufacture of Coke

(In Thousands of Net Tons)

	Byproduct	Beehive	Total
1924 Monthly average	4,060	1,272	5,332
1925 Monthly average	4,759	1,452	6,211
1926 Monthly average	5,334	1,509	6,843
December, 1926	5,325	1,230	6,555
January, 1927	5,316	1,241	6,557
February, 1927	4,935	1,189	6,124
March, 1927	5,573	1,404	6,977

Of the total production of byproduct coke during March 3,220,000 tons, or 83 per cent, was made in plants associated with iron furnaces, and 659,000 tons, or 17 per cent, was made at merchant or other plants.

Anthracite Circular Prices For May at New York

(Per Gross Ton, F.O.B. Mines)

	Broken	Egg	Stove	Nut	Pea
Lehigh & Wilkes-Barre Coal Co.	$8.25	$8.25	$8.75	$8.25	$6.00
Delaware, Lackawanna & Western Coal Co.	8.25	8.25	8.75	8.25	6.00
Lehigh Valley Coal Sales Co.	8.25	8.25	8.85	8.25	6.50
Lehigh Coal & Navigation Co.	8.35	8.35	8.85	8.35	6.00
Hudson Coal Co.	8.25	8.25	8.85	8.25	6.00
M. A. Hanna & Co.	....	8.25	8.85	8.25	6.00
Phila. & Reading Coal & Iron Co.	8.25	8.25	8.85	8.25	6.50

Steam sizes: No. 1 Buckwheat, $2.50 @ $3; rice, $2@$2.25; barley, $1.50@$1.75. Domestic buckwheat, $3.50.

News Items From Field and Trade

ALABAMA

Receiver for Pratt By-Product Co.—Unavoidable delays in refinancing certain obligations of the Pratt Coal & By-Product Corporation and a desire to protect the interests of both creditors and the corporation were reasons assigned by Walter Moore, president, for filing a voluntary petition in bankruptcy for that concern in federal court at Birmingham on April 21. The corporation's indebtedness totals about $930,000, the major portion represented by mortgages for mineral lands purchased some years ago from the Bankhead family, of Jasper, including the Bankhead Coal Co. and other coal lands in that section. Assets consist of coal properties and structures and equipment at the Bankhead mine. A. B. Aldridge, Birmingham, was named as receiver and a creditors' meeting has been set for May 17. Mr. Moore, who also is president of the Pratt Fuel Corporation, sets forth that that corporation is in no way involved and that the financial difficulties of the Pratt Coal & By-Product Corporation will soon be straightened out and receivership lifted.

New Holmes Chapters Formed.—The Joseph A. Holmes Safety Association and the Bureau of Mines have resumed activity in safety work in the Birmingham district and two chapters—one white and one colored—have been organized at the mines of the Stith Coal Co., America, Walker County. The campaign for renewed efforts in safety work is being conducted by H. E. Mills, secretary of the safety association, and F. E. Cash, district engineer of the Bureau of Mines, and every section of the mining field will be visited and new chapters perfected and the work among the existing organizations rejuvenated and interest fostered in the annual field meet to be held in the late summer.

COLORADO

Output Gains Steadily.—During March 1,013,306 tons of coal was produced in Colorado, bringing production since Jan. 1 to 3,123,324 tons. This is an increase of 496,052 tons over the output for the corresponding period of last year.

The Ute Coal Co. contemplates the construction of a branch railroad from Craig to its Mt. Streeter property, according to a report from the main office of the company at South Bend, Ind. Company engineers, it is stated, will soon make a final survey for the line, which was projected and partly constructed six years ago by M. T. Streeter. An agreement has been effected with the Moffat R.R. for the use of its rolling stock on the road.

C. F. & I. Starts Improvements.—Work on improvements totaling more than $100,000 to be made at five Huerfano County coal mining properties was started recently at the Robinson No. 1 mine, Walsen, by engineers of the Colorado Fuel & Iron Co. Proposed improvements include changes in underground workings and mine buildings, construction of garages, boarding houses and twenty-five residences. It also is planned to plant trees and shrubbery to beautify the properties. The plants slated for improvements are Walsen, Cameron, Tioga, Ideal and Pictou.

ILLINOIS

The Anthracite Service Bureau established in Chicago is receiving a number of requests from retailers and consumers for information on hard-coal burning. The bureau, of which Carlyle M. Terry is in charge, was opened three weeks ago at 30 North La Salle Street as a means of increasing sales of anthracite. Annual sales at retail yards in the city at one time totaled approximately 1,500,000 tons. At present it is estimated less than 800,000 tons are sold in Chicago during the year. The bureau functions primarily through the dealer. Retailers receiving and soliciting complaints pass the complaints on to the bureau for disposition. A similar bureau has been established at Milwaukee, Wis.

Output Heavy in March.—Illinois mines produced 9,543,209 tons of coal in March, compared with 5,741,023 tons in the corresponding month of last year. The number of men at work in March, last, was 70,505; 22 miners were killed and 2,915 were injured.

The thirty coal mines in St. Clair County that operated during March produced 585,435 tons of coal compared with an output of 267,546 tons in March, 1926. Ninety miners were injured during the month.

INDIANA

Abandon Wheatland Mine.—The mine of the Standard Coal Co. at Wheatland, Knox County, has been closed and sealed. More than 300 miners have been thrown out of work, some of whom went to work when the mine was opened. The sealing of the mine was due to the loss of a number of large contracts and to the action of the recent session of the legislature in passing the rock-dusting law. The men worked at a distance of about two miles from the hoist and the owners of the mine considered rock-dusting the intervening space would be too expensive. If sufficient contracts are obtained a new shaft will be sunk by the company east of Wheatland, it is announced.

The Big Vein Coal Co. has opened offices at 1317 Fletcher Savings & Trust Building, Indianapolis.

KENTUCKY

Three Companies Merged.—Consolidation of three coal mines on the Ohio & Kentucky Ry. into the Wolverine Coal Co. results in a new organization controlling 1,000 acres of coal and timber land in the Riverside, Gunna and Three Mile sections. Officers include S. P. Yandell, of New York, president; G. W. Leslie, of Cannel City, vice-president, and general manager; W. O. Stutler, of Cannel City, secretary and W. E. Bach, of Lexington, treasurer. Extensive improvements costing over $75,000 are planned and one mile of track will be laid at a cost of $10,000. Two hundred men are now employed in three mines in operation and a fourth will be opened soon.

River Traffic Curtailed.—Coal movement out of western Kentucky by river to the South is at a standstill, due to flood stages in the Mississippi River.

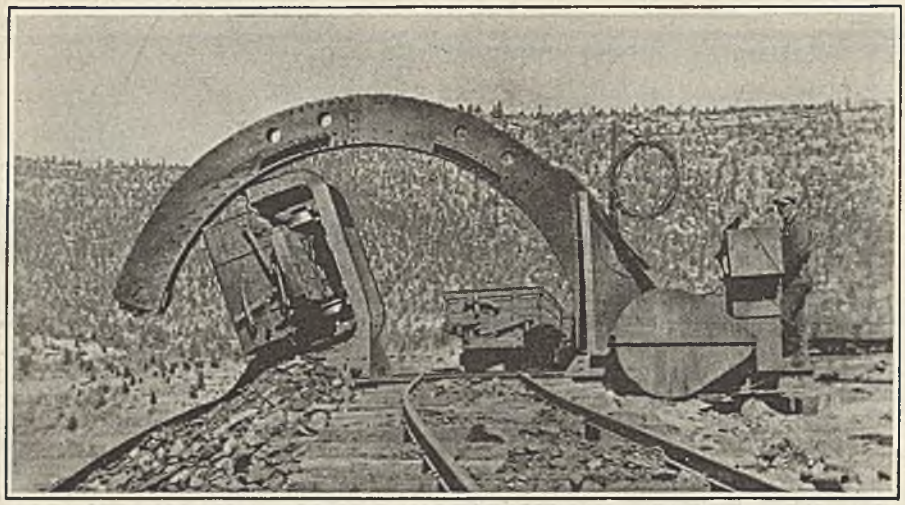
NEW YORK

The steamer *Pathfinder*, loaded with anthracite at Buffalo ran on the rocks at Lansing Shoal a few days ago while en route for Milwaukee. It was necessary to lighter 500 tons to release the vessel.

M. Balber & Son, of Buffalo, have been awarded the contract for furnishing 4,500 tons of anthracite to the schools of that city.

NORTH DAKOTA

Dr. F. A. Oetken and Dr. Frank Mueller, German scientists and engineers from Frankfurt, Germany, are on a trip to the lignite fields of North Dakota. Both are connected with the Lurgi Co., of Frankfurt, of which the American Lurgi Corporation of New



Putting Waste Rock Over Side of the Dump

Side dumping has the advantage that the progress in the movement of the equipment can be made at right angles to the direction of dumping and therefore on settled ground. In time, it is true, motion must be made on the material recently dumped, but by that time the dump has settled. When movement of the dump equipment is in the direction of dumping, as on an end dump, the equipment always is on shifting ground and unstable. This picture was taken at the Dawson (N. M.) plant of the Phelps-Dodge Corporation, Stag Canyon Branch.

York is a subsidiary. Their purpose is in connection with the proposed briquetting plant to be established at Lehigh, N. D., which will use the German process. They regard the Dakota lignite as of a superior grade, and predict that the development will furnish cheap fuel which will result in the development of new industries.

OHIO

The Harmeyford Coal Co., headed by William S. Harman of the W. S. Harman Coal Co., Columbus, is operating the modern stripping operation taken over about a year and a half ago from the Kehota Coal Co., after bankruptcy proceedings. Since acquiring the property, which consists of an excellent seam of Hocking coal, a modern tipple, shaker screens, picking tables and all other equipment has been installed. The stripping of both the overburden of approximately 25 ft. and the coal is done with an electric shovel with a capacity of 6 yd. The company is producing an average of 1,000 tons daily.

PENNSYLVANIA

Four Die in Glen Alden Blast.—Four mine workers were killed April 27 in an explosion in No. 2 shaft of the Truesdale colliery of the Glen Alden Coal Co., in Hanover Township, near Nanticoke. The cause of the explosion was not announced by the company.

Reading Settles Mortgage.—A mortgage for $135,000,000 dated Jan. 5, 1897, on the property of the Reading Co. and the Philadelphia & Reading Coal & Iron Co., including valuable tracts of coal land in Northumberland County was satisfied last week at the office of register and recorder John I. Carr at Sunbury. The Central Union Trust Co. of New York was trustee under the mortgage and the satisfaction was entered by Albert B. Tuttle, who held power of attorney for the bank. Under the plan filed May 10, 1923, holders of the bonds issued under this mortgage received 33⅓ per cent in Philadelphia & Reading Coal & Iron 5's. and 66⅔ per cent in Reading Co. general and refunding 4½'s.

P. & R. Installs Electric Pumps.—One of the three large electric pumps to be placed in the Gilberton mine of the Philadelphia & Reading Coal & Iron Co. for the purpose of doing away with the hoisting of water at the Gilberton water shaft and using the shaft only for the hoisting of men and timber has been placed in operation. Two more must be installed before the pumping can be started. Years ago when the water shaft was sunk and the water hoist started it was looked upon as a great triumph in solving the water problem for the mines.

P. C. & C. Earnings Rise.—Net earnings of the Pennsylvania Coal & Coke Corporation gave evidence of substantial improvement in the first quarter of 1927 with a total of $219,494, against a net loss of $20,205 for the same quarter last year. March net income was $71,130 against $46,470 for that month in 1926.

Terminal Omits Preferred Dividend.—Directors of the Pittsburgh Terminal Coal Corporation last week omitted the regular quarterly dividend of $1.50 on the 6 per cent preferred stock due at this time. Net earnings for the first three months this year exceeded the preferred dividend requirement, but the board thought it a conservative policy to maintain a strong cash position in view of the mine strike and the determination of the company to operate on a reduced scale posted April 1.

Would Oust Board Members.—Alleging that Stephen Beddoe and W. J. Jenkins, members of the mine foremen's examining board in the fourth inspection district, are serving illegally, William Elvidge, of the Underwood colliery of the Pennsylvania Coal Co., last week petitioned court to vacate their appointments. President Judge E. C. Newcomb received the petition and fixed May 5 for the officials to appear in court to show cause why they should continue to hold their position. Elvidge charges that neither Beddoe nor Jenkins is actually employed as a miner, as required under the state law. Beddoe, he alleges, is engaged as an outside laborer at a colliery in Dickson City, while Jenkins is an assistant foreman for the Glen Alden Coal Co.

Marshwood Breaker Ready Soon.—A large modern breaker of steel and concrete construction equipped with labor- and time-saving machinery is in course of erection at Marshwood for the Public Service Coal Co. The new structure, which will be ready for operation about June 1, will have a capacity for preparing more than 1,000 tons daily. The Public Service company has taken over the property formerly held by the Kemmerer interests, comprised of the Robert Lewis, Joseph Thomas, Lewis Farmer, Robert Waln and Dolph Hannah Bell tracts, containing in excess of 2,000 acres of coal lands. In addition they recently acquired a portion of the Sarah Bell tract. The company is building its own railroad branch from a connection with the Moosic and Carbondale branch of the Erie R.R., just east of Jessup. Edward B. Scott, a native of Dunmore, is president of the company. He is also president of the Scott Coal Co. and the Dupont Fuel Co. W. E. Sunday is vice-president and general manager of the Public Service firm. Mr. Sunday was in the employ of the Pennsylvania Coal Co.

Erects Modern Boiler Plant.—The Lehigh Valley Coal Co. is spending $250,000 on the erection of a modern boiler plant at its Franklin mine, in Wilkes-Barre. Three boilers are being installed, each having a pressure of 200 lb. One of the features of the new plant will be the suspension coal bunkers and automatic stokers. The foundation for the new plant has already been laid and by the time the summer ends the company expects to have the new boilers in operation.

To Install Byproduct Ovens.—New byproduct coke ovens were recently installed at the Sykesville mine of the Cascade Coal & Coke Co. The mine has closed down for an indefinite period, but experiments are being carried on with four coke ovens in order to gain the most efficiency from their operation. The ovens are heated indirectly from the bottom, instead of from the sides, as is common with most byproduct ovens. Fuel gas, ammonia and tar are being reclaimed. It is the plan of the company to install a full set of 200 byproduct ovens to replace the beehive ovens now in use, and if this is done it is hoped to have 6,000,000 cu.ft. of gas daily for sale.

Cosgrove-Meehan Has Big Year.—At the annual meeting of the stockholders of the Cosgrove-Meehan Coal Corporation, held in Johnstown on April 26, all the present members of the board of directors were re-elected, as follows: John C. Cosgrove, H. J. Mee-

han, George D. Prindible, Morton H. Fry, Frank Finsthwait, Joseph T. Kelly, George D. Cosgrove, Henry Flood, Jr., R. B. Mitchell, B. R. Lloyd and Ernest Stewart. The report of the company's activities for 1926, which was read, reflected substantial progress and a successful year in improvements, enlargements in holdings, sales and earnings. The directors were commended for their energetic management during the year. The corporation operates mines in central Pennsylvania, West Virginia, Indiana and Illinois, with a total annual production of 7,000,000 tons.

UTAH

The Columbia Steel Corporation has entered into a contract with the International Smelting Co. and the United States Smelting, Refining & Mining Co., operating plants at Murray and Tooele, for approximately 400 tons of coke per day for a period of five years. This will necessitate the construction of an additional battery of thirty-three coke ovens and further development at the steel company's coal mine. The enlargement of the mine with the equipment required will cost half a million dollars, it is estimated. Following the announcement, the Pacific States Cast Iron Pipe Co., organized last year with a plant near that of the steel company, made it known that it would increase the capacity of its own plant.

D. & R. G. W. to Lay Ties Soon.—The Denver & Rio Grande Western R.R. will begin laying ties and track about May 15 between Salina and Nioche, in Salina Canyon. About 12 miles of the 20-mile right of way between Salina and Nioche has been graded and it is expected that the entire 20 miles will be completed early next year. It was erroneously stated in the issue of April 14 that the company had lost its rights in the canyon; the adverse court decision applied only to another 20-mile section from Nioche eastward.

WASHINGTON

Black Bear Mine to Resume.—The old Black Bear coal mine, two miles from Tenino, will be reopened soon, employing about 200 men. The seam is 7 to 8 ft. thick and starts at the bottom of a canyon. The old mine was abandoned several years ago when a drop in price made it unprofitable to operate.

WEST VIRGINIA

Uncover 5-Ft. Seam.—Tests disclose the existence of a 5-ft. seam of coal on the property of the Spice Creek Land Co. at Roderfield. A slope has been sunk by D. W. Call of Bluefield, who has 240 acres under lease. This discovery, it is stated, will lead to the organization at once of a coal company to mine this byproduct coal. It was understood for some time that there was a seam of Fire Creek coal on the Iaeger estate, which includes about 30,000 acres, but no attempt was made heretofore to develop the seam, which was uncovered at the Coalwood shaft mine when that was sunk. The slope has been sunk in close proximity to the operation of the Roderfield Pocahontas Coal Co., not far from the Norfolk & Western Ry., which has agreed to build a sidetrack in case the seam was found.

This coal is on the property of the Roderfield Pocahontas Co. and the Princess Pocahontas Coal Co. Both of those companies are expected to sink slopes in order to reach the seam. The vein is only about 50 ft. below the surface.

The Indian Run Collieries Co. which recently filed a petition in voluntary bankruptcy in the U. S. District Court at Charleston, sets forth its liabilities at $208,834.27 and assets at $708,526.95.

WYOMING

Taylor Adds to Holdings.—Following an inspection tour of the company's properties at Sheridan, Harry N. Taylor, president of the United States Distributing Corporation, announced that he had completed negotiations for the purchase of 480 acres of coal property adjacent to the company's Acme mine. Mr. Taylor said the new property has been in the process of proving and will not be mined immediately.

The Superior-Rock Springs Coal Co. and the Premier Coal Co., operating at Superior, valued at more than $1,000,000, have been virtually merged through the organization of the Ideal Coal Co. The new corporation is composed of officers of the other companies and it will handle operations and sales for the other two.

CANADA

January Output Above Last Year.—Canadian coal output in January, at 1,561,499 tons, declined 9 per cent below December, but was 6 per cent above January, 1926. January imports were 1,460,659 tons, against 1,924,449 tons in December. January exports, at 223,772 tons, were up 11% over December.

Steady Work for Besco Mines.—While financial interests are waging a legal battle for control of the British Empire Steel Corporation the coal industry operated by that corporation is enjoying the greatest era of prosperity in the history of Nova Scotia. No matter what the result of the court actions may be, the coal mines of the province will continue to operate to capacity all during 1927, officials of Besco have stated to our correspondent. John W. MacLeod, president of district 26, United Mine Workers, says the miners of Nova Scotia anticipate the biggest year in the history of the industry in the province and steady work from now until late in the next winter is practically assured.

Alberta Rate Talk Renewed.—Charles Stewart, Minister of the Interior, speaking in the House of Commons recently, stated that if the Board of Railway Commissioners found the cost of transporting Alberta coal to Ontario was not more than $7 per ton this rate could be put into effect immediately by order in council without waiting for another session of Parliament. He intimated that if the Board found the cost to be greater than the government was prepared to grant assistance in order to make the transportation of a million tons of Alberta coal a year into Ontario economically feasible.

Coke Output Climbs.—Production of coke in Canada during March amounted to 171,894 tons, a gain of 8 per cent over the 158,248 tons of February and comparable with 152,480 tons reported for March of last year. During March the total quantity of coal used in the production of coke was 252,269 tons, of which 79,980 tons was from Canadian mines and 176,269 tons was imported. Imports of coke during the month were 70,375 tons as compared with 65,715 tons during February. The exports, which totaled 8,304 tons, dropped from 16,688 tons in the preceding month.

New Commissary and Office At High Splint Mine

The dimensions are 60x60 ft. This includes the meat shop on one side and the office on the other. There is no inside communicating way between the office and storeroom. The building is of brick, has an asbestos shingle roof, and is heated by a vacuum-vapor steam system. At the left beyond the small temporary building is the High Splint depot.

Among the Coal Men

J. K. Taggart, general manager of the Norton Coal Co., Norton, Va., for the last six years, has been appointed sales manager for Southern territory for Whitney and Kemmerer, Inc., effective May 1, according to an announcement by R. S. Graham, representative of the Kemmerer interests in the Norton section. Mr. Graham and Mr. Taggart left for New York for a conference with Mr. Kemmerer and other officers of the company before final transfer of the office to Mr. Taggart this week. The office will be continued in Norton, as it has been for the past ten years, which will enable Mr. Taggart to continue his executive duties as vice-president of the Norton Coal Co., where he has been associated with Webb J. Willits, president, for a number of years. John Cole, who has managed the Norton office since Thomas Brennan was promoted two years ago and transferred to the Pittsburgh office, will remain with the company as assistant to Mr. Taggart.

Fred W. Wolvin, sales agent of the Carnegie Dock & Fuel Co., Duluth, Minn., is expected to return shortly from a trip through the British Isles accompanied by his father, Captain A. B. Wolvin, and his mother. He made a special point of visiting the coal mining districts over there with a view to obtaining first-hand information regarding conditions in that trade .

Michael Gallagher, chairman of the five coal companies owned by the Erie R.R., says the companies look for a prosperous year. "The present management confidently expects coal earnings this year to far exceed those of 1925 and compare favorably with 1926, unless a general depression occurs in business, which, from the present outlook, is not probable," he said. Dividends from the Pennsylvania Coal Co. brought $5,350,000 into the road's treasury last year. For the last five years the average dividend income from the coal properties have been $3,883, 627.

R. W. Hunter, vice-president in charge of the Louisville office of the Groveland Coal Co., Chicago, was called to the Windy City on April 25 on account of the death there of Ross Marine, sales manager of the company.

E. W. Wilkinson of Uniontown has been named by Governor John S. Fisher of Pennsylvania as bituminous mine inspector of the 23d district, where he succeeds the late Edward E. Girod. Mr. Wilkinson had been mine foreman at the Phillips plant of the H. C. Frick Coke Co. and was one of the four residents of Fayette County eligible for the post.

The Ohio Senate failed to confirm the appointment of W. D. McKinney as a member of the Ohio Utilities Commission before final adjournment. This leaves the present member to continue until such time as an appointee of Governor Donahey is confirmed. Mr. McKinney was urged by the coal-mining and distributing interests in Ohio. He was formerly secretary of the Southern Ohio Coal Exchange and is well acquainted with traffic problems as it affects the coal trade. He fought the case against the alleged discriminatory rates between Ohio and West Virginia producing fields through the Interstate Commerce Commission.

L. G. Bruder has joined the sales staff of the Ogle Coal Co. in Chicago. He was formerly with Richard-Evans & Co., western Kentucky operators.

Obituary

Dr. Walter S. Blaisdell, a central Pennsylvania coal operator of many years standing, died at his home in Punxsutawney, Pa., April 26, aged 60 years. He was a graduate physician, educated at the College of Physicians and Surgeons in New York, and was for years head of the Adrian Hospital, Punxsutawney, and mine physician for the Rochester & Pittsburgh Coal & Iron Co. at Walston, Pa. About thirty years ago he became interested in coal operating and with Harry Yates opened the Frances mine, in Indiana County. He also operated mines at Horatio and Williams Run. Several years ago he sold his holdings because of ill-health. He was formerly a director of two Punxsutawney banks and was head of the Adrian Hospital board.

James T. Rogers, 68 years old, pioneer coal operator, died at his home in Bush Hills, Ala., April 21. Mr. Rogers was for 30 years connected with the Tennessee Coal, Iron & Railroad Co. as superintendent of mines, but for the last 15 years had been engaged in the retail coal business. He is survived by his wife, four sons and one daughter.

Judge Ferdinand Ericksen, chief counsel of the Utah Fuel Co. for a number of years and in charge of the administration of relief following the mine explosion in Castlegate, Utah, in March, 1924, when 173 men lost their lives, died last week in a Salt Lake City hospital.

Association Activities

The Marketing Committee of the National Coal Association will meet at the William Penn Hotel, Pittsburgh, Pa., at 10 a.m. (daylight saving time), May 20, according to an announcement last week by Chairman R. H. Knode, president of the General Coal Co., Philadelphia. In issuing his call for the committee meeting, Mr. Knode forwarded each member of his committee an analysis and digest of replies received to his general letter of March 5 to bituminous coal sales managers and agents, quoting six subjects that have been passed along to his committee by a former marketing committee of the association, and asking for suggestions. A goodly number of replies were received and a wide variety of opinions and suggestions offered. Having these before the members of the marketing committee will provide plenty of subjects for consideration. The committee also will outline the program for the sectional meeting of bituminous coal sales managers and agents that will be held at the Edgewater Beach Hotel, Chicago, on the afternoon of June 16 in connection with the tenth annual meeting of the association.

At a recent meeting of the Pennsylvania Coal Mining Institute of Johnstown, Pa., held in Johnstown on April 22 the following officers were elected: President, T. W. Gatehouse, Seward; first vice-president, T. J. Davis, Johnstown; second vice-president, J. J. McKernan, Johnstown; third vice-president, George Vickroy, Johnstown; secretary, Merle J. Ackerman; treasurer, V. A. Stanton, Ferndale. The executive committee is composed of former President Archie Miller of Cairnbrook and former Secretary William Fleming of Riverside, Prof. W. R. Shedsey, State College; Charles Enzian, Windber; Howard Fry, Ferndale; Thomas Gray, Cairnbrook; Frederick Frear, Seward; Dennis Boyle, Johnstown, and H. M. Kimmel, Stoyestown. Professor Shedsey stated that State College was prepared to give special summer courses in mining provided there are a sufficient number of students. He also announced that Dean Holbrook of the college believes that a course in coal salesmanship should be set up and hopes there will be a sufficient number of students to start a short course this summer.

The Virginia Coal Operators' Association recently held its annual meeting with about 200 operators and guests in attendance. Optimism for the future of the bituminous coal industry was freely expressed by the speakers, who included Edwin P. Morrow, former Governor of Kentucky; H. L. Gandy, executive secretary of the National Coal Association; C. E. Bockus, president, Clinchfield Coal Corporation; J. D. Martin, Virginia Iron, Coal & Coke Co.; E. A. Hults, Mathieson Alkali Works, Saltville, and Lee Long, Clinchfield Coal Corporation, Dante. Ralph Taggart, vice-president, Stonega Coke & Coal Co., was chairman. The following officers were elected: President, J. D. Martin; vice-president, R. S. Graham, Kemmerer Gem Coal Co.; secretary-treasurer, C. B. Neel.

B. F. Nigh, secretary of the Michigan-Ohio-Indiana Coal Association is busy on the program for the annual convention of that organization, which will be held at Cedar Point, Ohio, June 28 to 30 inclusive. Mr. Nigh assures his members that the program will be replete with interesting speakers on subjects allied with the retail coal trade and that no pains are being spared to make it the biggest and best convention in the history of the association.

Production And the Market

Soft-Coal Market Little Affected by Suspension; Anthracite Trade Stronger

Though the suspension of mining operations in the Central Competitive Field and the Southwest drags on in uneventful fashion there are few indications of apprehension on the part of consumers. As a matter of fact in some instances it is the producer with coal to sell who is concerned over the difficulty of finding an outlet at a profit. In large measure industrial consumers are placing reliance on storage accumulations to take care of current requirements, so that in many instances there is difficulty in moving tonnage in the absence of inducements.

There has been no weakening in the attitude of indifference shown recently by those who ordinarily place their orders in the Chicago market. Their stockpiles, they assert, are ample to take care of their needs for some weeks, and as a result scant interest has been shown in any fuel save smokeless, anthracite and coke. Of the unbilled loads in the southern Illinois mining fields, which number approximately 2,000 according to a recent survey, most unsold tonnage was domestic sizes.

Kentucky Enjoys Active Trade

Stimulated by more active retail buying and quickened demand for prepared coal from Western and Northwestern States, a brisk market is reported in Kentucky coals. Western Kentucky surpassed all district production records by approximately 12,500 tons during the week ended April 23 and the eastern district is supplying a healthy demand. Nevertheless the market quotations on steam grades are well maintained. The situation in the Southwest is so generally quiet that, for the time being at least, the stalemate between operators and miners is of minor importance. Industrial consumers in the Northwest have been buying briskly since the opening of navigation and shipments from the docks at the Head of the Lakes are steadily increasing.

West Virginia smokeless is notably stronger in the Cincinnati market with congestion at the lower lake ports clearing up and a generally better tone prevalent. Advancing prices on smokeless have had a favorable reaction on the sale of Kentucky and West Virginia high-volatile coals, with the outlook favorable for higher prices.

Tidewater Markets Soften

The trade in Atlantic seaboard markets continues to mark time. If anything, business eased up a little more last week, with prices showing a softening tendency; smokeless mine-run lost some of the ground it recovered in New England a week ago. Production is declining and "no bills" are increasing in the central Pennsylvania field.

Coal Age Index of spot bituminous prices on May 2 was 177 and the corresponding weighted average price was $2.14. Compared with the figures for April 25 these represent increases of 3 points and 3c.

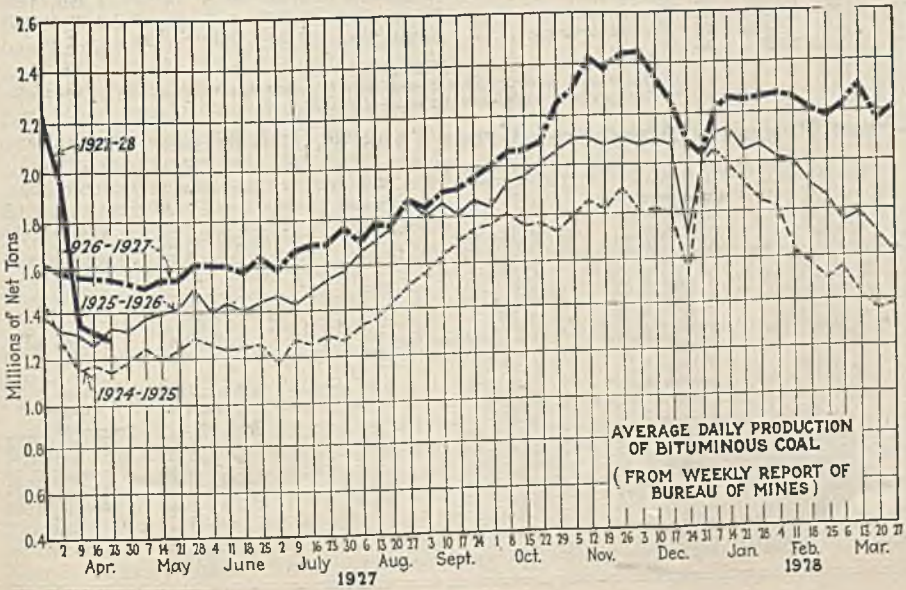
There was a further decrease in bituminous production during the week ended April 23, when 7,929,000 net tons was produced, according to the U. S. Bureau of Mines. This was a decline of 72,000 tons from the output in the preceding week and is attributed to the observance of Easter Monday. Loadings on Monday and Tuesday of last week, however, were larger than on the corresponding days of any other week since the suspension began, totaling 50,982 cars.

Further gradual improvement marked the course of the anthracite market last week. A steady pick-up in demand has encouraged producers to look for still larger business in anticipation of the advance in prices on June 1. Chestnut is the slowest moving domestic size, stove is tighter and pea is strong. No. 1 buckwheat is easier.

Despite a steady decrease in production, spot coke in the Connellsville market is moving only with difficulty. Spot furnace is quotably unchanged, but the undertone is weak. Spot foundry also shows no nominal change, but is far from strong.

Midwest Consumers Indifferent

Middle Western consumers are not at all apprehensive over the outlook. Those usually placing their orders in the Chicago market claim they have



Estimates of Production

(Net Tons)

BITUMINOUS

	1926	1927
April 9	9,420,000	8,255,000
April 16 (a)	9,306,000	8,001,000
April 23 (b)	9,271,000	7,929,000
Daily average	1,545,000	1,322,000
Cal. yr. to date (c)	176,496,000	196,193,000
Daily av. to date	1,841,000	2,046,000

ANTHRACITE

April 9	1,793,000	1,651,000
April 16	2,086,000	1,762,000
April 23	2,087,000	1,662,000
Cal. yr. to date (c)	17,469,000	23,717,000

BEEHIVE COKE

April 9	228,000	193,000
April 16 (a)	233,000	176,000
April 23 (b)	228,000	177,000
Cal. yr. to date	4,698,000	3,043,000

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

enough coal in storage to protect them for weeks to come. As a result, all fuels other than smokeless, anthracite and coke, are going begging. Prices are well maintained on western Kentucky screenings. Practically all the screenings in storage at the Illinois and Indiana mines have been absorbed.

A recent survey of the situation in southern Illinois showed approximately 2,000 unbilled loads. Most of the unsold tonnage was domestic sizes. Quotations on screenings have been withdrawn. Aside from the gradual depletion of mine reserves of steam sizes, conditions in the other Illinois mining districts are unchanged. Ground storage piles, however, have not been disturbed. As usual, the Standard district lags behind its competitors.

St. Louis Domestic Spurt Wanes

The weather spurt in the St. Louis domestic market is over. Local retailers are buying little coal to put into storage. Some southern Illinois prepared is moving, but most of the limited buying is of anthracite, coke and smokeless. Country domestic is quiet, although there are some calls for fresh supplies from communities in the receding flood area. Steam trade, both city and country, is slow.

Kentucky Trade Active

A more active market is reported from Louisville. Increased local retail buying and a healthy demand for prepared coal from Western and Northwestern states are responsible. Despite heavier production there has been no break in the market quotations on steam sizes. Many consumers are following the policy of maintaining their stockpiles at April 1 levels.

During the week ended April 23 western Kentucky smashed all district production records by approximately 12,500 tons. Nevertheless operations still are well under capacity output. The labor stiuation is satisfactory and transportation facilities are fully adequate to existing demands upon the railroad service. In the eastern part of the state the mines are enjoying a well-distributed demand.

The western Kentucky minimum on large coal is up 10c., with many shippers refusing to accept less than $2, or 15c. more than this minimum. Mine-run, nut and screenings are $1.65 and up. Eastern Kentucky block is commanding $2 as a minimum, with prespects of further advances when shipments in volume to the lakes are resumed. Lump and egg are $1.75@ $2; nut, $1.60 and up; slack, $1@$1.35.

Lively Market in Northwest

Northwestern industrial consumers have been active buyers since the opening of the new navigation season and shipments from the docks at the Head of the Lakes have shown substantial increases. Dock sales officials, however, decline to accept contracts for more than moderate tonnages at the prevailing prices, fearing that the labor

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

Low-Volatile, Eastern	Market Quoted	May 3, 1926	Apr. 18, 1927	Apr. 25, 1927	May 2, 1927†
Smokeless lump	Columbus	$2.60	$3.10	$3.10	**$3.25@$3.50**
Smokeless mine-run	Columbus	1.90	2.10	2.10	**2.00@ 2.35**
Smokeless screenings	Columbus	1.20	1.50	1.45	**1.40@ 1.75**
Smokeless lump	Chicago	2.60	3.25	3.35	3.25@ 3.50
Smokeless mine-run	Chicago	1.80	2.00	2.00	**1.90@ 2.25**
Smokeless lump	Cincinnati	2.85	3.00	3.10	3.00@ 3.25
Smokeless mine-run	Cincinnati	1.80	2.10	2.35	*2.25*
Smokeless screenings	Cincinnati	1.35	1.90	1.85	1.75@ 2.00
*Smokeless mine-run	Boston	4.30	4.30	4.45	*4.35@ 4.50*
Clearfield mine-run	Boston	1.80	1.80	1.75	*1.60@ 1.90*
Cambria mine-run	Boston	2.10	2.00	2.00	**1.85@ 2.25**
Somerset mine-run	Boston	1.90	1.90	1.85	**1.70@ 2.10**
Pool 1 (Navy Standard)	New York	2.60	2.85	2.85	2.75@ 3.00
Pool 1 (Navy Standard)	Philadelphia	2.80	2.85	2.85	2.75@ 3.00
Pool 1 (Navy Standard)	Baltimore	1.95	2.15	2.15	2.10@ 2.25
Pool 9 (Super. Low Vol.)	New York	2.05	2.10	2.10	2.00@ 2.25
Pool 9 (Super. Low Vol.)	Philadelphia	2.35	2.15	2.15	2.00@ 2.30
Pool 9 (Super. Low Vol.)	Baltimore	1.75	1.80	1.80	1.75@ 1.85
Pool 10 (H.Gr.Low Vol.)	New York	1.85	1.75	1.75	1.65@ 1.90
Pool 10 (H.Gr.Low Vol.)	Philadelphia	2.05	1.80	1.80	1.70@ 1.90
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.60	1.65	1.65	1.60@ 1.70
Pool 11 (Low Vol.)	New York	1.60	1.60	1.60	1.50@ 1.75
Pool 11 (Low Vol.)	Philadelphia	1.70	1.65	1.65	1.55@ 1.75
Pool 11 (Low Vol.)	Baltimore	1.45	1.55	1.55	1.55@ 1.60
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.40	1.50	1.50	1.40@ 1.60
Pool 54-64 (Gas and St.)	Philadelphia	1.45	1.45	1.45	1.35@ 1.60
Pool 54-64 (Gas and St.)	Baltimore	1.25	1.50	1.50	1.45@ 1.55
Pittsburgh sc'd gas	Pittsburgh	2.30	2.55	2.55	2.50@ 2.60
Pittsburgh gas mine-run	Pittsburgh	2.05	2.30	2.30	2.25@ 2.35
Pittsburgh mine-run (St.)	Pittsburgh	1.80	2.25	2.25	2.25
Pittsburgh slack (Gas)	Pittsburgh	1.55	1.65	1.65	1.60@ 1.75
Kanawha lump	Columbus	2.05	2.10	2.10	**2.25@ 2.50**
Kanawha mine-run	Columbus	1.55	1.55	1.55	**1.50@ 1.75**
Kanawha screenings	Columbus	1.00	1.10	1.10	**1.10@ 1.25**
W. Va. lump	Cincinnati	1.85	2.10	2.10	1.75@ 2.50
W. Va. gas mine-run	Cincinnati	1.50	1.55	1.60	1.50@ 1.75
W. Va. steam mine-run	Cincinnati	1.40	1.35	1.40	*1.25@ 1.60*
W. Va. screenings	Cincinnati	1.00	1.25	1.25	*1.00@ 1.35*
Hocking lump	Columbus	2.35	2.25	2.25	2.00@ 2.50
Hocking mine-run	Columbus	1.55	1.65	1.65	1.60@ 1.75
Hocking screenings	Columbus	1.05	1.15	1.15	**1.25@ 1.40**
Pitts. No. 8 lump	Cleveland	2.20	‡	‡	‡
Pitts. No. 8 mine-run	Cleveland	1.80	‡	‡	‡
Pitts. No. 8 screenings	Cleveland	1.40	‡	‡	‡

Midwest	Market Quoted	May 3, 1926	Apr. 18, 1927	Apr. 25, 1927	May 2 1927†
Franklin, Ill. lump	Chicago	$2.60	$3.15	$3.15	$3.15
Franklin, Ill. mine-run	Chicago	2.40	2.60	2.60	2.50@ 2.75
Franklin, Ill. screenings	Chicago	1.90	2.50	2.50	‡
Central, Ill. lump	Chicago	2.30	2.85	2.85	2.75@ 3.00
Central, Ill. mine-run	Chicago	2.05	2.35	2.35	2.25@ 2.50
Central, Ill screenings	Chicago	1.55	2.00	2.00	‡
Ind. 4th Vein lump	Chicago	2.40	3.05	3.05	3.00@ 3.15
Ind. 4th Vein mine-run	Chicago	2.15	2.45	2.45	2.40@ 2.50
Ind. 4th Vein screenings	Chicago	1.80	2.50	2.50	‡
Ind. 5th Vein lump	Chicago	2.15	2.65	2.65	2.60@ 2.75
Ind. 5th Vein mine-run	Chicago	1.95	2.15	2.20	2.10@ 2.35
Ind. 5th Vein screenings	Chicago	1.35	2.10	2.10	‡
Mt. Olive lump	St. Louis	2.50	3.00	3.00	3.00
Mt. Olive mine-run	St. Louis	2.15	3.00	3.00	3.00
Mt. Olive screenings	St. Louis	1.40	2.00	2.00	2.00
Standard lump	St. Louis	2.50	2.75	2.75	2.75
Standard mine-run	St. Louis	1.80	2.00	2.00	2.00
Standard screenings	St. Louis	1.15	1.75	1.75	1.75
West Ky. block	Louisville	1.75	1.85	1.85	**1.85@ 2.00**
West Ky. mine-run	Louisville	1.25	1.60	1.65	1.60@ 1.75
West Ky. screenings	Louisville	1.05	1.60	1.65	1.60@ 1.75
West Ky. block	Chicago	1.75	2.00	2.05	1.85@ 2.25
West Ky. mine-run	Chicago	1.15	1.60	1.65	1.60@ 1.75
South and Southwest					
Big Seam lump	Birmingham	2.15	2.00	2.00	**1.90@ 2.40**
Big Seam mine-run	Birmingham	2.00	1.75	1.75	1.50@ 2.00
Big Seam (washed)	Birmingham	2.00	2.00	2.00	1.75@ 2.25
S. E Ky. block	Chicago	2.40	2.25	2.25	2.00@ 2.50
S. E. Ky. mine-run	Chicago	1.65	1.65	1.65	1.60@ 1.75
S. E. Ky. block	Louisville	2.05	2.00	2.25	2.00@ 2.50
S. E. Ky. mine-run	Louisville	1.50	1.60	1.60	1.50@ 1.75
S. E. Ky screenings	Louisville	1.05	1.35	1.15	1.00@ 1.35
S. E. Ky. block	Cincinnati	2.50	2.35	2.35	2.00@ 2.75
S. E. Ky. mine-run	Cincinnati	1.50	1.55	1.55	1.25@ 1.85
S. E. Ky. screenings	Cincinnati	1.00	1.25	1.25	*1.00@ 1.40*
Kansas lump	Kansas City	4.00	4.35	4.35	4.25@ 4.50
Kansas mine-run	Kansas City	3.00	2.85	2.85	2.75@ 3.00
Kansas screenings	Kansas City	2.50	2.50	2.50	2.50

*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

	Market Quoted	Freight Rates	May 3, 1926 Independent	May 3, 1926 Company	April 25, 1927 Independent	April 25, 1927 Company	May 2, 1927† Independent	May 2, 1927† Company
Broken	New York	$2.34	.....	$8.25@$9.25	.....	$8.25@$8.35	.....	$8.25@$8.35
Broken	Philadelphia	2.39	$9.25	9.00@ 9.25	.....	8.25@ 8.50	.....	8.25@ 8.50
Egg	New York	2.34	9.00@ 9.50	8.75@ 9.25	$8.00@$8.40	8.25@ 8.35	**$8.25@$8.35**	8.25@ 8.35
Egg	Philadelphia	2.39	9.25@ 9.85	9.15@ 9.25	8.25@ 9.00	8.25@ 8.35	8.25@ 9.00	8.25@ 8.35
Egg	Chicago*	5.06	8.48	8.13	7.63	7.63	7.63	7.63
Stove	New York	2.34	9.25@ 9.75	9.25@ 9.50	8.50@ 8.85	8.75@ 8.85	8.50@ 8.85	8.75@ 8.85
Stove	Philadelphia	2.39	9.60@10.10	9.35@ 9.50	8.85@ 9.50	8.85	8.85@ 9.50	8.85
Stove	Chicago*	5.06	8.84	8.33@ 8.58	8.08	8.08	8.08	8.08
Chestnut	New York	2.34	9.25@ 9.50	8.75@ 9.15	8.00@ 8.35	8.25@ 8.35	8.00@ 8.35	8.25@ 8.35
Chestnut	Philadelphia	2.39	9.25@ 9.75	9.00@ 9.15	8.25@ 9.00	8.25@ 8.35	8.25@ 9.00	8.25@ 8.35
Chestnut	Chicago*	5.06	8.71	8.38@ 8.58	7.63	7.63	7.63	7.63
Pea	New York	2.22	6.50@ 7.25	6.00@ 6.25	5.75@ 6.50	6.00@ 6.50	5.75@ 6.50	6.00@ 6.50
Pea	Philadelphia	2.14	6.50@ 7.00	6.00@ 6.50	6.00@ 6.75	6.00	6.00@ 6.75	6.00
Pea	Chicago*	4.79	6.03	5.65@ 5.80	6.10	6.10	6.10	6.10
Buckwheat No. 1	New York	2.22	1.85@ 2.50	3.00@ 3.50	2.75@ 3.00	2.50@ 3.00‡	*2.65@ 3.00*	2.50@3.00‡
Buckwheat No. 1	Philadelphia	2.14	2.25@ 2.75	2.50@ 2.75	2.50@ 3.00	2.50	2.50@ 3.00	2.50
Rice	New York	2.22	1.50@ 2.25	2.00@ 2.25	1.75@ 2.00	2.00@ 2.25	1.75@ 2.00	2.00@ 2.25
Rice	Philadelphia	2.14	2.00@ 2.25	2.00@ 2.25	2.00@ 2.75	2.00@ 2.25	2.00@ 2.75	2.00@ 2.25
Barley	New York	2.22	1.00@ 1.50	1.50@ 1.75	1.15@ 1.50	1.50@ 1.75	**1.25@ 1.50**	1.50@ 1.75
Barley	Philadelphia	2.14	1.50@ 1.60	1.75	1.50@ 1.75	1.50	1.50@ 1.75	1.50
Birdseye	New York	2.22	1.00@ 1.50	2.00	1.35@ 1.60	.....	1.35@ 1.60	.....

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

situation may cause sharp advances in mine quotations before the season is over.

Receipts since the opening of the season have been heavy. During the week ended April 23 there were 53 cargoes, including 2 of anthracite, discharged, and 45 more loads were reported en route. Docks have been pushed to handle the tonnage and, in a few cases, slight congestion has ensued.

Dock quotations are stronger. Prepared sizes of smokeless coals are now listed at $7.50@$7.75—an advance of 25c. The maximum on mine-run also is up a quarter. Other prices are unchanged, but there is no sign of weakness in any part of the bituminous list. Early orders on anthracite, however, have been below expectations, but no price concessions have been offered to stir up consumer interest.

Everything is serene in the Milwaukee coal trade; demand is seasonable, fluctuating with the weather. Dock managers are busy giving dispatch to colliers which are coming in every day with stock for another season. There is no evidence whatever of anxiety over the suspension. Prices remain steady and unchanged.

Southwest Demand Listless

In the Southwest demand continues dull. Flood waters have closed the few mines operating in Arkansas and only strip pits are running in Kansas. Shaft mines are unionized and, even if they were not, no business is in sight to justify reopening. Railroad orders are the mainstay of the limited production from Oklahoma. No announcement of semi-anthracite prices has been made by Arkansas. Hune-Worland mines in Missouri are quoting $3 on lump and nut and $2.75 on crushed mine-run.

With weather conditions approaching a seasonal normal the brief boom in Colorado demand has suffered a speedy deflation. Running time does not average over 2½ days a week and the number of "no bills" is growing. The recent reduction in prices has not stimulated business. Walsenburg, Canon City and Crested Butte bituminous lump is $4.25; nut, $4; Trinidad lump, nut and chestnut, $3.

Raton and Dawson (N. M.) fancy lump and egg are quoted at $3.25; fancy nut and pea, $3. Slack from this district is $1.35@$1.50. Wyoming slack has dropped to $1@$1.25; lump is $4, and nut, $3.50. In Utah demand is easier, with mines running less than half-time. Slack, which was scarce a year ago, is in oversupply.

With congestion at the lower lake ports breaking up, permits for new shipments are easier to obtain and there is a better feeling in the Cincinnati market. May circulars on smokeless are 50c. above the April figures. Spot lump and egg are strong at $3@$3.25. Slack is $1.75@$2 in the open market and the weakest size in the low-volatile list.

High-Volatile Livens

Advances in smokeless prices have helped the sale of high-volatile coals. Hazard is up 10c. and it would not be surprising if the next few days witnessed a jump of 25c. in quotations on lump from southern West Virginia. Egg is in a stronger position and some of this size is now being diverted to the lakes on 2-in. orders. Mine-run is softer, but slack appears to have reached solid ground.

Coal loads moving through the Cincinnati gateway increased markedly last week. The total interchanged was 14,613, an increase of 785 when compared to the week ended April 23 and 3,532 ahead of the total for last year. Included in last week's total were 3,124 cars en route to the lakes. The biggest increase was on the C. & O. The number of empties en route to the mines increased from 13,347 to 13,837 cars.

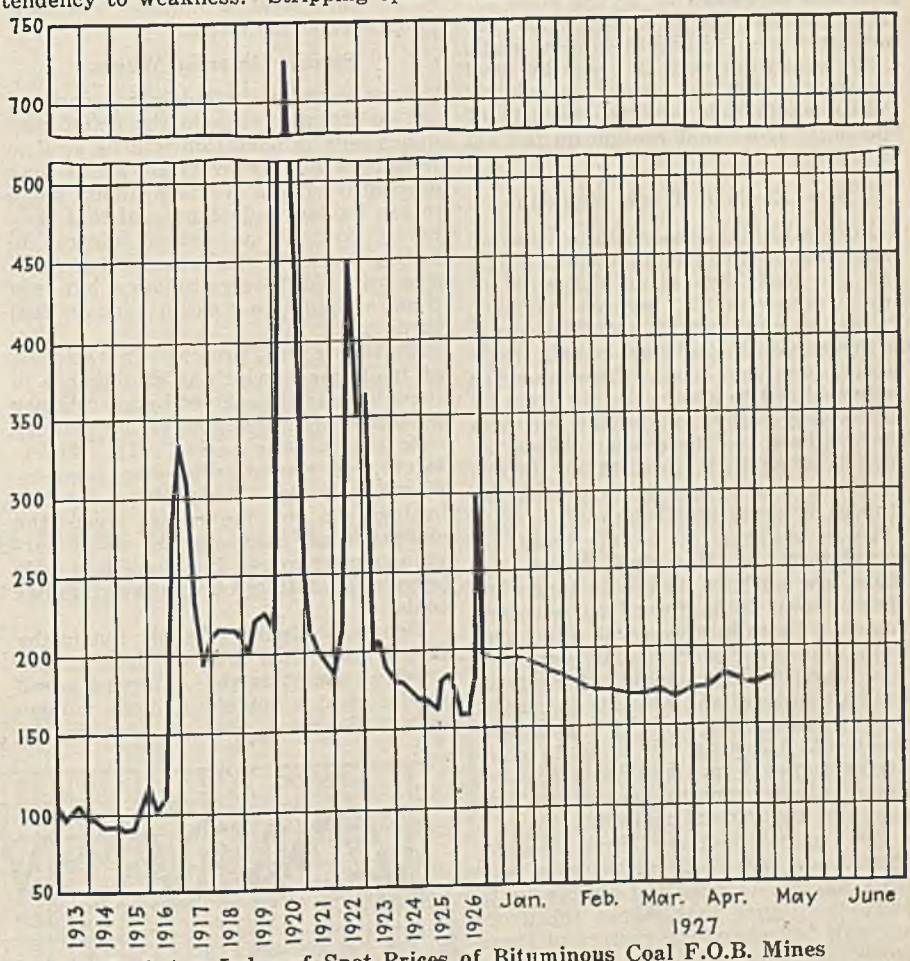
Demand is increasing slowly in the Columbus market. The additional tonnage, of course, is going to West Virginia and Kentucky producers. Retail prices have advanced to $8 on smokeless, $6.75@$7.25 on splints and $6.25@$6.50 on Hocking and Pomeroy. While there has been some improvement in steam buying and some contracts renewed at advances of 15 to 25c., the activity is less marked than in the retail section of the trade.

At Cleveland the only anxiety discernible is on the part of producers who have coal to sell. Steam buying is exceedingly light, as consumers seem to be well stocked, and prices show a tendency to weakness. Stripping operations in the No. 8 field offer mine-run and screenings at $1.45@$1.50 and the Moundsville district quotes $1.80@$2.75 on lump, $1.65@$1.70 on mine-run and $1.30@$1.45 on screenings. Retail yards bought lightly during the past week and found smokeless lump plentiful at $3.

Trading Light at Pittsburgh

Actual trading in the Pittsburgh district is light. As a matter of fact, until some of the coal on track has been sold, non-union competitors for business in this section will have hard sledding. Prices on Connellsville and other non-union western Pennsylvania fuel are soggy and the same is true with respect to offerings from West Virginia. No official statistics are available on open-shop production in the district, but the determination to go non-union is spreading.

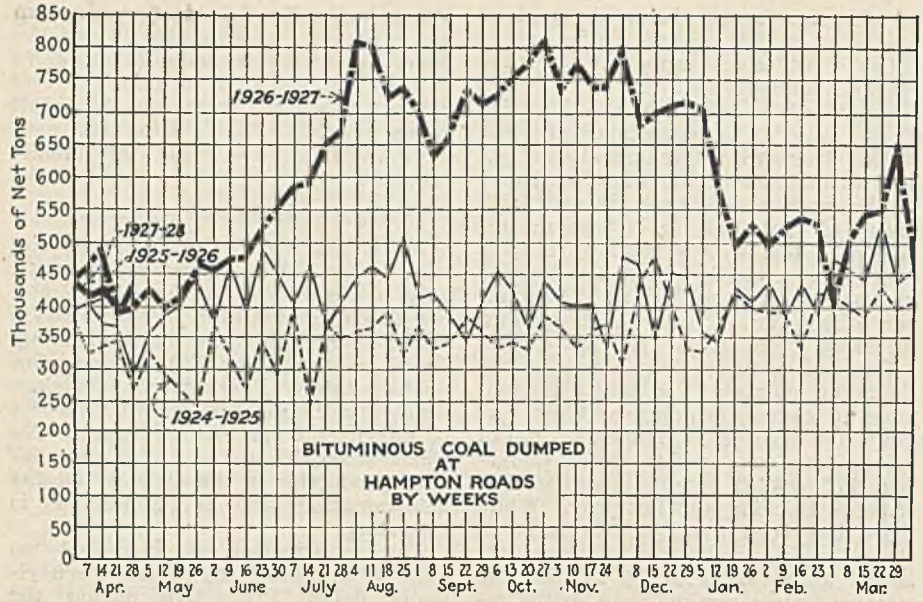
Lower production and increased "no bills" is the lot of the central Pennsylvania field. Production during the week ended April 23 dropped from 12,481 to 11,556 cars and the number of "no bills" increased to 3,200. Total loadings for the first three weeks of April were 14,174 cars under the figures for the corresponding period in March. Current quotations are: Pool 1, $2.50



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

	1927				1926	1925
	May 2	Apr. 25	Apr. 18	Apr. 11	May 3	May 4
Index	177	174	174	178	159	162
Weighted average price	$2.14	$2.11	$2.11	$2.15	$1.92	$1.96

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, 18 and 25, and May 2 are *tentative* only.



Car Loadings and Supply

	Cars Loaded — All Cars	Coal Cars
Week ended April 16, 1927	956,875	152,778
Week ended April 9, 1927	959,474	152,876
Week ended April 17, 1926	964,935	167,249
Week ended April 10, 1926	929,506	163,897

	Surplus Cars — All Cars	Coal Cars	Car Shortages All Cars	Coal Cars
April 15, 1927	269,473	93,866	.....	.....
April 8, 1927	254,095	80,309	.....	.....
April 15, 1926	284,396	130,152	.....	.....

@$2.55; pool 71, $2.15@$2.25; pool 9, $2@$2.10; pool 10, $1.75@$1.90; pools 11 and 18, $1.65@$1.70.

No appreciable improvement is seen in the Buffalo market. Much of the coal now offered is from the Fairmont region and is quoted at $1.75@$1.85 for three-quarter lump, $1.55@$1.65 for mine-run and $1.35@$1.40 for slack. Little encouragement is given by local buyers to offerings from the central Pennsylvania field and the reports of "no bills" from that section do not aid in selling.

New England Trade Sluggish

In New England the steam coal market drags along without material change and the trade has about despaired of any improvement before summer. Prices are soft, but apparently there is no disposition to go below certain levels merely to move coal. The agencies seem inclined to accept the situation by supervising output and paying per diem charges here and there when obliged to. Buyers show little interest in current quotations and only in scattered instances is there any business.

There continue to be moderate accumulations at Hampton Roads, but there are perhaps fewer instances of distress coal being forced on reluctant buyers. Those interests who allow coal to pile up at the piers usually are those who have a fair amount of contract business in hand and are able to correct overshipments one week by curtailment the week following. It is quite clear the non-union mines will be in position for months to come to meet all requirements of the current market.

For inland delivery from Boston, Providence and Portland there is very little buying. Prices are draggy, with $5.75 the figure that marks the average sale by rehandling factors at these ports.

All-rail from central Pennsylvania there is only an extremely light movement. By rail and water through New York and Philadelphia only a minimum tonnage is moving. All the producers find the going extremely hard.

Bituminous buying slowed down in the New York market last week. Many consumers still relied upon their stockpiles and those who entered the open market found plenty of free tonnage to meet their needs. Shipments on contracts are up to the mark, but few customers are willing to increase their quotas. Many operators still look for a sharp improvement about July 1; some insist that a change will take place before that date.

Storage Interest Wanes

Consumers in Philadelphia territory are so strongly sold on the belief that mines now in operation will be able to take care of any overload which may develop if Middle Western plants begin to use Eastern industrial coal that they refuse to take an active interest in adding to their stockpiles. Railroads, it is true, still take on tonnage, but only when a chance to make a bargain deal turns up.

Baltimore, too, preserves an attitude of indifference which is augmented in some industrial quarters by uncertainty as to the rate of manufacturing activity over the summer period. This uncertainty, of course, increases hand-to-mouth ordering. Competition for this business is so keen that even the choicest coals can be picked up at bargain-counter prices and there is a wide range in quotations on relatively similar coals.

Depression is more keenly felt in the Birmingham coal district than at any previous time this year. Buying of all grades is at a low ebb and the volume of new business does not sustain the market. There has been a general slowing down in industrial activity to which the flood conditions have contributed. A number of railroad fuel contracts, however, have been renewed without substantial change in prices.

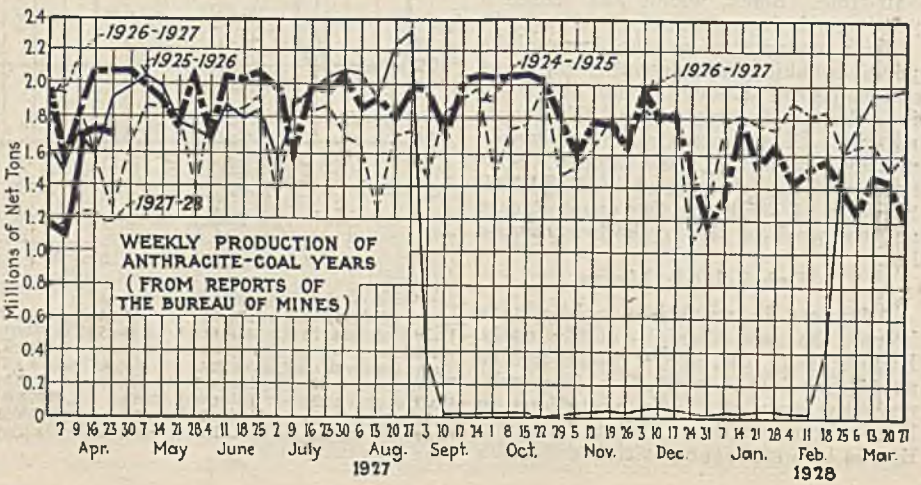
There has been little or no request for curtailment of contract shipments of domestic coals, but the total requirements only call for about half-time production. Mine quotations were advanced on Monday. The new May prices are: Big Seam lump, $1.90@$2.40; Carbon Hill, $2.65; Cahaba, $3.70@$4.20; Black Creek, $3.95; Corona, $2.90; Montevallo district, $4.45@$4.95. Egg prices are 25c. less.

Hard-Coal Trade Improves

The New York anthracite market was in better shape last week. There has been such a steady improvement in demand that operators look for a much larger business this month. Increases in prices on June 1 will act as a spur to buying. Some of the smaller independents raised their prices last week, but failed to top the market. Chestnut is the most bothersome of the domestics. No. 1 buckwheat is easier.

More interest is being shown by Philadelphia retailers. Increasing demand for stove has tightened this size to such an extent that there is some complaint of slow delivery. Pea also is in a strong position, but nut, despite large sales, is draggy. Egg is moving in better shape. Steam coals are well sold up. The market for domestic buckwheat has broadened. In the strictly industrial field there are no troublesome accumulations of the juniors.

A month-end touch of cold weather stirred up consumer interest in anthracite in the Baltimore market. Some householders who needed a little tonnage to carry them through have been induced to lay in next winter's supply. Local trade at Buffalo is light. Lake shipments the week ended April 23



were 31,100 tons; one cargo of 7,000 tons cleared for Milwaukee; the rest went to the Head of the Lakes. A number of loaded vessels are still in the harbor.

Connellsville Coke Backward

Notwithstanding a steady fall in production, it has been growing more difficult to sell spot coke in the Connellsville market. Spot furnace has declined to $3.15 and a firm offer on 10 or 15 carloads probably would bring a still lower price. Spot furnace, while quoted at $4.25@$4.75, is weak. Some fairly good coke can be had at less and heating coke is for sale at prices ranging from $3 down.

Production of beehive coke in the Connellsville and Lower Connellsville region during the week ended April 23 was 129,260 tons. Furnace-oven output was 70,100 net tons, a decrease of 1,000 tons in one week. Merchant-oven output was 59,160 tons, a decrease of 5,570 tons. A year ago the output was 169,300 tons. The production for the calendar year to April 23 showed a loss of 1,198,550 tons when compared with 1926.

Railroad Fuel Cost Declines In February

Class 1 railroads of the United States paid an average of $2.69 per net ton for coal used in locomotives in transportation train service during February, according to figures prepared by the Interstate Commerce Commission. The cost includes freight. The average cost by districts was as follows: Eastern, $2.81; Southern, $2.20; Western, $2.91.

In comparison with January figures these averages show a decrease of 3c. in the Eastern district; 4c. in the Southern district; an increase of 2c. in the Western district, and a decrease of 2c. for the entire country.

Number and Yearly Output of Commercial Bituminous Coal Mines, by Size Classes, 1905-1925*

(Exclusive of wagon mines)

Tons	Class 1 (More Than 200,000 Tons)	Class 2 (100,000 to 200,000 Tons)	Class 3 (50,000 to 100,000 Tons)	Class 4 (10,000 to 50,000 Tons)	Class 5 (Less Than 10,000 Tons)	Total
			NUMBER OF MINES			
1905	411	612	808	1,514	1,715	5,060
1910	618	763	960	1,568	1,909	5,818
1913	694	837	959	1,558	1,728	5,776
1917	792	914	1,044	1,996	2,193	6,939
1918	821	929	1,198	2,636	2,735	8,319
1919	550	854	1,181	2,784	3,625	8,994
1920	701	1,031	1,279	3,160	2,750	8,921
1921	482	807	1,003	2,346	3,400	8,038
1922	416	848	1,084	3,139	3,812	9,299
1923	748	935	1,176	2,742	3,730	9,331
1924	646	819	943	2,047	3,131	7,586
1925	714	833	891	1,969	2,737	7,144
			OUTPUT IN THOUSANDS OF TONS			
1905†	126,499	85,920	57,386	38,995	6,034	314,834
1910	191,519	107,052	68,858	42,282	6,561	416,272
1913	241,463	118,476	69,018	42,292	6,280	477,529
1917	285,366	129,486	74,894	51,596	8,824	550,166
1918	281,267	131,027	87,143	67,453	11,387	578,277
1919	174,848	120,926	84,625	71,334	13,198	464,931
1920	237,468	142,750	90,669	82,129	10,716	563,732
1921	162,438	115,607	71,160	56,099	10,618	415,922
1922	131,876	117,195	77,287	77,203	15,248	418,809
1923	265,804	130,804	84,342	68,769	13,639	563,423
1924	237,338	237,217	67,967	52,606	10,559	483,687
1925	279,190	117,987	64,578	48,900	9,339	520,053
			PERCENTAGE OF TOTAL NUMBER OF MINES			
1905	8.1	12.1	16.0	29.9	33.9	100.0
1910	10.6	13.1	16.5	27.0	32.8	100.0
1913	12.0	14.5	16.6	27.0	29.9	100.0
1917	11.4	13.2	15.0	28.8	31.6	100.0
1918	9.8	11.2	14.4	31.7	32.9	100.0
1919	6.1	9.5	13.1	31.0	40.3	100.0
1920	7.9	11.6	14.3	35.4	30.8	100.0
1921	6.0	10.0	12.5	29.2	42.3	100.0
1922	4.5	9.1	11.7	33.7	41.0	100.0
1923	8.0	10.0	12.6	29.4	40.0	100.0
1924	8.5	10.8	12.4	27.0	41.3	100.0
1925	10.0	11.6	12.5	27.6	38.3	100.0
			PERCENTAGE OF TOTAL TONNAGE			
1905	40.2	27.3	18.2	12.4	1.9	100.0
1910	46.0	25.7	16.5	10.2	1.6	100.0
1913	50.6	24.8	14.4	8.9	1.3	100.0
1917	51.9	23.5	13.6	9.4	1.6	100.0
1918	48.6	22.7	15.1	11.6	2.0	100.0
1919	37.6	26.0	18.2	15.4	2.8	100.0
1920	42.1	25.3	16.1	14.6	1.9	100.0
1921	39.1	27.8	17.1	13.5	2.5	100.0
1922	31.5	28.0	18.5	18.4	3.6	100.0
1923	47.2	23.2	15.0	12.2	2.4	100.0
1924	49.0	23.8	14.1	10.9	2.2	100.0
1925	53.7	22.7	12.4	9.4	1.8	100.0

* This table shows mines, not companies, and should not be confused with other tables that include country banks and many wagon mines shipping by rail.
†Figures for 1924 and 1925 include Class 1A and 1B.
Compiled by U. S. Bureau of Mines.

Anthracite Cargo Coal Shipped from Lake Erie Ports, By Months, 1918 to 1926

(In Net Tons)
(Figures as reported by the Ore & Coal Exchange.)

	March	April	May	June	July	August	September	October	November	December	Season
Buffalo, all roads											
1918	.....	63,757	375,887	437,533	443,216	519,612	501,446	542,847	607,022	129,544	3,620,864
1919	128,425	291,566	350,812	466,689	616,716	496,877	484,980	645,483	561,101	37,685	4,080,334
1920	.....	72,519	388,936	569,829	516,977	580,157	300,432	569,036	537,231	67,234	3,602,351
1921	110,440	349,292	461,254	472,563	617,877	703,262	416,418	403,342	277,970	31,843	3,844,261
1922	.....	(a) 18,871	(a)	(a)	(a)	(a)	(a) 45,144	466,152	536,723	115,436	1,182,326
1923	.....	139,615	442,895	491,118	569,495	443,554	91,908	453,923	417,175	5,723	3,091,406
1924	48,101	185,598	227,446	409,620	538,793	567,662	253,205	232,057	214,169	33,203	2,709,854
1925	171,840	317,486	268,024	349,426	230,273	168,498	(a) 34,311	(a)	(a)	(a)	1,549,858
1926	.....	.....	275,197	469,408	454,439	419,364	176,930	263,425	267,665	21,398	2,347,826
Erie											
1918	.....	.....	52,792	37,922	60,504	46,393	40,320	71,474	51,356	.....	360,761
1919	21,447	.....	35,526	32,327	58,268	90,691	57,408	87,305	72,382	.....	445,354
1920	.....	27,134	44,447	44,950	62,885	74,095	56,720	61,532	58,875	.....	430,638
1921	20,327	19,273	24,492	54,155	77,852	76,752	55,317	64,239	29,046	.....	421,453
1922	.....	(a)	(a)	(a)	(a) 6,000	(a)	(a) 17,836	79,747	81,423	14,614	199,620
1923	.....	.....	30,558	60,860	69,108	58,977	20,889	86,861	93,420	.....	420,673
1924	10,067	21,085	15,595	57,441	54,273	88,107	44,742	45,417	46,267	1,240	384,234
1925	9,480	27,709	78,625	27,888	47,649	31,984	(a) 20,323	(a)	(a)	(a)	243,658
1926	.....	.....	66,451	80,633	108,549	80,593	45,121	73,493	55,251	.....	510,091
Both ports											
1918	.....	63,757	428,679	475,455	503,720	566,005	541,766	614,321	658,378	129,544	3,981,625
1919	149,872	291,566	386,338	499,016	674,984	587,568	542,388	732,788	633,483	37,685	4,535,688
1920	.....	99,653	433,383	614,779	579,862	654,252	357,152	630,568	596,106	67,234	4,032,989
1921	130,767	368,565	485,746	526,718	695,729	780,014	471,735	467,581	307,016	31,843	4,265,714
1922	.....	(a) 18,871	(a)	(a)	(a) 6,000	(a)	(a) 62,980	545,899	618,146	130,050	1,381,946
1923	.....	139,615	473,453	551,978	638,603	492,531	112,797	540,784	510,595	51,723	3,512,079
1924	58,168	206,683	243,041	467,061	593 066	655,769	297,947	277,474	260,436	34,443	3,094,088
1925	181,320	345,195	346,649	387,314	277,922	200,482	(a) 54,634	(a)	(a)	(a)	1,793,516
1926	.....	.....	341,648	550,041	562,988	499,957	222,051	336,918	322,916	21,398	2,857,917

(a) General strike in anthracite region.

Foreign Market And Export News

British Demand Weakens

London, England, April 22. — The Welsh coal market has fallen off and demand all around is very much quieter. Many of the leading collieries are fairly well sold up for the rest of the month, but difficulty is experienced in maintaining recent price quotations.

European demand is poor. Spain, however, is a fairly good buyer. In other export markets encouragement is given by the rate of buying for shipment to the South American countries.

The North Country market is in a weak state. So far there has been no indication that this condition will be materially bettered very soon.

These holidays were responsible for a decline of approximately 50,000 gross tons in exports from South Wales last week. There was a slight increase in tonnage destined to France, Portugal, Greece, Holland and the Irish Free State, but in all other directions movement was lighter. The total clearances of 383,328 tons wer divided as follows:

France, 130,142 tons; Italy, 63,023; South America, 59,833; Spain, 28,985; Portugal, 18,124; Greece, 10,299; coaling depots, 33,452; Belgium, 6,497; Holland, 4,020; Irish Free State, 9,897; Canada, 9,321; other countries, 9,735.

Coal output for the week ended April 16 was 4,683,000 tons, against 5,294,000 in the preceding week. The decline was due to the Easter holidays.

Continental Markets Dull

Paris, France, April 21.—Continental coal markets are in the doldrums. During the past week there has been a slight improvement in demand for household grades in France, but industrial consumption has shown no increase and new orders placed do not support running time at the French collieries.

The slight improvement in domestic grades is due largely to the fact that prices will move upward next month. Under the price system in vogue, sales this month are made at a discount of 15 fr.; next month the discount drops to 12.5 fr.; in June to 10 fr.; July, 7.5, and in August, 5 fr.

French government authorities are busy trying to increase the consumption of French-mined coal by home consumers. Since the naming of the interdepartmental committee headed by André Tardieu, Minister of Public Works, considerable impetus has been given to the study of the problem.

During March France imported 1,832,299 metric tons of coal, as against 2,047,093 tons in February. Great Britain was the chief source of supply in March, shipping 866,658 tons. Germany was second, with 720,360 tons, and Belgium-Luxembourg third, with 115,145 tons. The United States followed with 57,641 tons. Holland furnished 46,214 tons, and Poland, 19,407 tons. Coke imports totaled 394,187 tons, of which 327,343 tons came from Germany. Patent fuel imports—85,604 tons—were contributed in major part by Great Britain, Belgium-Luxembourg and Germany.

Exports of coal for the month were 343,693 tons, including 114,967 tons to Belgium-Luxembourg, 91,024 tons to Germany, 87,951 tons to Switzerland and 44,207 tons to Italy. In February the exports were 413,063 tons. Coke exports, on the other hand, increased from 22,363 tons in February to 30,753 tons in March. Patent fuel exports dropped from 17,216 to 12,783 tons.

The Easter holidays have further depressed the Belgian markets, according to a report from Brussels. Aside from anthracitics there is little life to any division of the trade. Producers of anthracitic coal, however, are enjoying a larger market, particularly in the Paris metropolitan region. Most of the coal sold comes from the Charleroi basin.

Industrial prices are weaker and stocks still accumulate. Foreign competition in Belgian steam markets is unusually active. The only bright ray in the situation is the belief that prices on native coal will not and cannot sink much lower. Some confirmation for that theory is offered by the fact that at the present time prices on coking smalls and lean duffs are firmer.

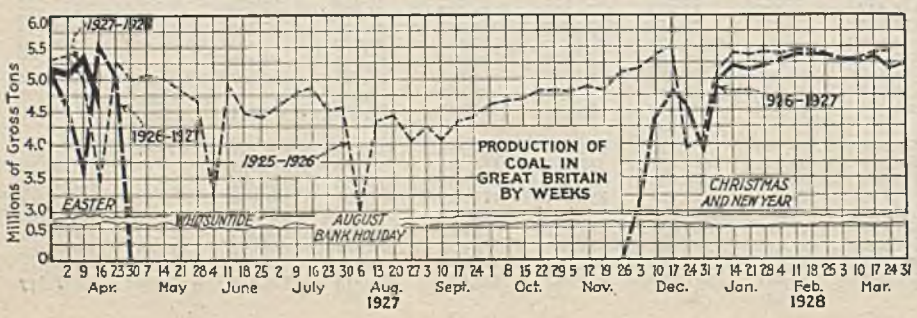
Ruhr Working Hours Cut

The German Federal Labor Ministry has approved a decision shortening the working hours of miners in the Ruhr coal field. At mines where shifts are broken working time is reduced from 10 to 9 hours and from 12 to 10 hours. The arbitrators of the new working periods also upheld the 7-hour underground shift, subject to 1 hour prolongation by special agreement. In plants with continuous shifts two-shift time is sustained, and the tenth hour given overtime.

This agreement is effective from next Saturday, May 7, and declares it is not to be canceled prior to Jan. 31, 1928. It becomes operative as the Belgian coal industry, according to advices to the Department of Commerce, grows less active, and German and English coal undersells the domestic product in the large Holland-Belgium maritime markets.

A steady decline in activity is noticeable in the German coal market. Although output as reported for the first quarter of 1927 totaled 41,145,162 tons, as against 33,225,507 in the same quarter of 1926, the latest returns show an increasingly sharp decline.

Thus the average daily production in the Ruhr is now only 372,000 tons, as compared with nearly 420,000 at the best period earlier in the year. Hitherto the Ruhr syndicate has fixed its sales at 15 per cent below the combined "production quotas" of its member firms. This has been altered to 40 per cent, which means selling at the rate of 82,000,000 tons annually, instead of 115,000,000.



Export Clearances of Coal Week Ended April 28

FROM HAMPTON ROADS

	Tons
For Colombia:	
Br. Str. Arant, for Cardenas	503
For Bermuda:	
Amer. Schr. Horatio G. Foss, for Hamilton	1,081
For Canada:	
Ital. Str. Sursum Corda for Montreal	7,717
Ital. Str. Valperga, for Quebec	7,290
Ital. Str. Dalmazia, for Three Rivers	9,345
For Cuba:	
Nor. Str. Skigheim, for Havana	4,164
For Miquelon:	
Nor. Str. Margret, for St. Pierre	1,951
For Brazil:	
Jap. Str. Japanese Maru, for Santos	6,930
Br. Str. Mistley Hall, for Rio Janeiro	6,922
For Far East:	
Br. Str. Cyclops, for Far East ports	2,505

Hampton Roads Coal Dumpings

(In Gross Tons)

	Apr. 21	Apr. 28
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	135,031	134,085
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	82,408	131,617
C. & O. Piers, Newport News:		
Tons dumped for week	143,294	129,532

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

Pier and Bunker Prices

(Per Gross Ton)

PIERS

	April 21	April 28†
Pool 1, New York	$5.40@$5.75	$5.40@$5.75
Pool 9, New York	4.80@ 5.25	*4.80@ 5.00*
Pool 10, New York	4.50@ 5.00	**4.60@ 5.00**
Pool 11, New York	4.25@ 4.50	**4.30@ 4.75**
Pool 9, Philadelphia	5.00@ 5.05	5.00@ 5.05
Pool 10, Philadelphia	4.75@ 4.95	4.75@ 4.95
Pool 11, Philadelphia	4.40@ 4.50	4.40@ 4.50
Pool 1, Hamp. Roads	4.75@ 4.90	**4.90**
Pool 2, Hamp. Roads	4.50@ 4.70	**4.70**
Pool 3, Hamp. Roads	4.15@ 4.25	**4.20@ 4.25**
Pools 5-6-7, Hamp. Rds.	4.25	**4.25@ 4.40**

BUNKERS

Pool 1, New York	$5.65@$6.00	$5.65@$6.00
Pool 9, New York	5.05@ 5.50	*5.05@ 5.25*
Pool 10, New York	4.75@ 5.25	**4.85@ 5.25**
Pool 11, New York	4.50@ 4.75	**4.55@ 5.00**
Pool 9, Philadelphia	5.25@ 5.40	5.25@ 5.40
Pool 10, Philadelphia	5.00@ 5.10	5.00@ 5.10
Pool 11, Philadelphia	4.65@ 4.75	4.65@ 4.75
Pool 1, Hamp. Roads	4.90	**5.00**
Pool 2, Hamp. Roads	4.70	**4.80**
Pools 5-6-7, Hamp. Rds.	4.35	**4.35@ 4.50**

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

Publications Received

Report of Engineering Foundation for the year ending Feb. 17, 1927. Engineering Societies Building, New York City. Publication No. 12.

A Thermodynamic Analysis of Internal-Combustion Engine Cycles, by George A. Goodenough and John B. Baker. Engineering Experiment Station, University of Illinois, Urbana, Ill. Bulletin No. 160. Price, 40c. Pp. 69; 6x9 in.; illustrated.

Electric Power Transmission, by Alfred Still. McGraw-Hill Book Co., New York City. Price, $4. Pp. 412; 6x9 in.; illustrated. Third edition. This book has been rearranged and revised and to a large extent rewritten. The additions have to do mainly with calculations for the design of the longer extra high-pressure transmissions, which are the outcome of rapid developments during the last few years.

Foremanship Training, by Hugo Diemer. McGraw-Hill Book Co., New York City. Price, $2.50. Pp. 230; 5x7 in. Describes the purposes sought through better foremanship, the qualifications of foremen and the place and purposes of the various programs of foremanship training.

The Practice of Lubrication, by T. C. Thomsen. McGraw-Hill Book Co., New York City. Second edition. Price, $6. Pp. 616; 6x9 in.; illustrated. In addition to presenting for each type and class of engine or machinery the technical background necessary to focus the lubricating problems and to determine the character of the oils required to give the best service, the book points out the conditions under which lubricants have to work for particular types of machinery and the influences to which they are subjected during use.

Slate in Northampton County, Pennsylvania, by Charles H. Behre, Jr. Pennsylvania Geological Survey, Fourth Series, Bulletin M9. Dept. of Forests and Waters and Topographic and Geologic Survey, Harrisburg, Pa. Pp. 308; 6x9 in.; illustrated.

The Domestic Oil Burner, by Arthur H. Senner. U. S. Dept. of Agriculture, Washington, D. C. Dept. circular 405. Pp. 30; 6x9 in.; illustrated. Gives information based on tests of oil burners of different design.

Coke-Oven Accidents in the United States during the Calendar Year 1925, by William W. Adams. Bureau of Mines, Washington, D. C. Technical paper 408. Pp. 40; 6x9 in.

New Companies

The Parsons-Elkhorn Coal Co., McDowell, Ky., with a capital of $50,000, has been incorporated by A. F. Parsons, C. G. Hall and Earl Shagley.

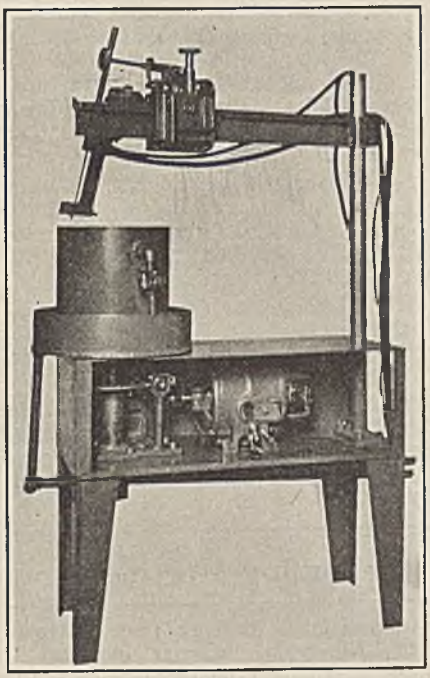
The Thompson Coal Corporation, of Honaker, Va., with capital stock of from $5,000 to $10,000, has been chartered to own, develop and mine coal in Virginia and elsewhere. The incorporators are A. A. Thompson, president; B. F. Thompson, secretary, and Bert C. Thompson, all of Honaker.

New Equipment

Makes Welds Under Water

Rapid extension of the field of usefulness of electric arc welding has induced manufacturers of this type of equipment to bring out many new and interesting welding machines. The accompanying illustration, showing a new carbon-arc welding machine built by the Lincoln Electric Co., Cleveland, Ohio, is an example of one of the latest machines of this kind.

Automatic carbon-arc machines have been found adaptable to welding of pieces in which no preparation of the edges to be joined is made. The machine shown will weld circular seams up to 12 in. in diameter. A particular feature of its design is the cooling tubs around the revolving table which carries the piece being welded. The piece on which work is being done may be partially or totally immersed in water during the welding operation. Cooling water is in circulation in the tubs continuously.



Automatic Carbon-Arc Welder

Cooling is effected in this machine by continuous circulation of water in tubs.

The novel cooling arrangement used on this equipment was developed to meet the requirements when welding high grade alloy steels on which the heat disturbance due to application of welding temperature must be reduced to a minimum. In the case of 12 per cent manganese steel the welding may be done with the piece totally immersed in water and the arc submerged. This cooling arrangement is well adapted to the welding of manganese steel since the rapid quenching of the molten metal gives it the physical properties desired in steel of this character.

The frame and other parts of the machine are all of welded steel construction and the entire mechanism is an excellent example of the rapidly growing tendency to use welded steel construction in place of gray iron castings.

One-Yard Diesel Shovel Of Convertible Type

A new one-yard Diesel shovel, convertible to dragline, clamshell, and crane, has just been introduced by the Bucyrus Company, South Milwaukee, Wis. It will be remembered that this company was the first to manufacture the Diesel-driven excavator.

Lower fuel, yardage, and upkeep costs, together with increased power, were the objectives in the construction of the D-2. The combination of a high-speed digging cycle with the economy of Diesel power gives the shovel such features as swift and economical operation.

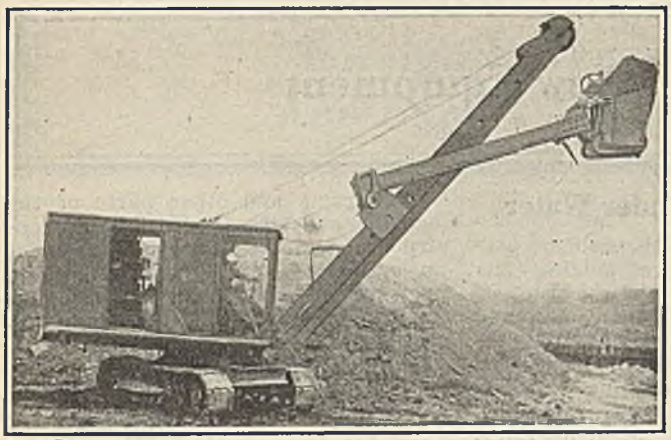
The power plant of the D-2 is a four-cycle full-Diesel engine. Fuel is fed into it mechanically, providing high economy of fuel consumption and avoiding the use of air compressor. In addition, the engine can be started from stone-cold to full load in twenty seconds, no priming and pre-heating being necessary. The engine is mounted on a raised base which is bolted securely to the cast revolving frame—a mounting that provides a direct connection between the main machinery and engine, and which insures perfect alignment at all times.

The center pintle construction relieves the vertical propelling shaft of all digging strains, keeps the revolving frame centered on the base frame, and protects the vertical propelling shaft from wear and breakage.

A patented rope crowd is used on the machine, which makes it possible for crowding and hoisting operations to take place individually as well as simultaneously. The new straight boom of the D-2 Diesel has all the advantages of the Bucyrus bent boom, with the added advantage that the machine operates better with the boom at low angles. Because this boom is lighter, the machine has a quicker swing and better stability.

The two-part hoist and the big drum used in the main machinery and on the boom insure proper tracking of the ropes and lengthen their life. Outside dipper handles insure that the full force of the engine is transmitted squarely behind the dipper. The lightweight box girder boom with outside dipper handles requires less counterweight at the rear of the D-2 shovel—there is less flywheel effect to act against the swinging machinery, making the D-2's swing fast at every stage of the cycle.

An outstanding feature of the caterpillar mounting of the D-2 is its sim-



This Diesel shovel can also be used as dragline, clamshell and crane

plicity and fewness of parts, with more than sufficient tractive power to enable the excavator to climb up inclines as steep as 30 per cent.

Steel Switchboard Panels Now Available

A simple construction of steel switchboard panel, possessing several advantages, can now be furnished by the General Electric Co., Schenectady, N. Y. This construction is such that the new board partakes of the conventional switchboard design to such an extent that it becomes possible to even install the new and old types together, either temporarily or permanently. Combinations of steel and slate or ebony asbestos panels on one board will be practicable with the use of the new design.

Pipe supports are retained on the steel panels. Each panel can be shipped completely wired without unusual care or bracing in packing. In erecting the board, the framework is set up first, and the individual panels are then installed one by one. The panel wiring is grouped in trough-shaped recesses at the sides of each panel.

When installing slate or ebony asbestos panels adjacent to the new steel design, the so-called angle-pipe construction of support is used; i.e., the former are mounted on light angles placed ⅛ in. inside the edges of the panels. These angles serve to support the several sections of the panels, and the wiring during shipment. The dimensions of the steel panels with their supporting edges are the same as those of corresponding slate or ebony asbestos panels with supporting angles. The rounded edge of the steel panel matches the rounded edge on the next steel panel, or the ¼- or ⅜-in. bevel on the adjacent old panel.

The new panels are made in standard widths of 16, 20, 24, 28 and 32 in., with a standard height of 90 in.

Recent Patents

Vibrating Screen; 1,621,949. Gustave A. Overstrom, Pasadena, Calif. March 22, 1927. Filed Sept. 28, 1920; serial No. 413,376.

Clinker-Removing Device; 1,622,312. Wm. Gaughrin, Chicago, Ill. March 29, 1927. Filed Feb. 12, 1926; serial No. 87,816.

Wood Preservative; 1,622,751. Karl H. Wolman, Berlin-Grunewald; Fritz Peters, Berlin, and Hans Pelug, Berlin-Steglitz, Germany. March 29, 1927. Filed Jan. 30, 1926; serial No. 85,017.

Scraper Loading Apparatus; 1,622,823. Edward J. Doberstein, Chicago, Ill., assignor to Goodman Mfg. Co., Chicago, Ill. March 29, 1927. Filed Dec. 29, 1922; serial No. 609,570. Renewed Sept. 7, 1926.

System for Mining; 1,622,837. James W. Pearce, Chicago, Ill., assignor to Goodman Mfg. Co., Chicago, Ill. March 29, 1927. Filed Dec. 26, 1924; serial No. 754,262.

Mine Door; 1,620,669. Thomas E. Littlejohn, Lookout, W. Va. March 15, 1927. Filed June 16, 1926; serial No. 116,428.

Method and Apparatus for Breaking Coal; 1,620,838. Peter G. Seigle, Dunmore, Pa., and George E. Dean, Scranton, Pa. March 15, 1927. Filed Jan. 2, 1925; serial No. 201.

Coming Meetings

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.

National Industrial Conference Board. Eleventh annual meeting, Hotel Astor, New York City, May 19.

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

Illinois Mining Institute. Summer meeting June 16-18 at La Salle, Ill., by Steamer Cape Girardeau. Secretary, Frank F. Tirre, 603 Fullerton Bldg., St. Louis, Mo.

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.

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

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

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

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

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

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