COAL AGE

McGRAW-HILL COMPANY, INC.
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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

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Not at All Uncertain

A FEELING prevails that the British are questioning the value of rock dusting. This is not in any way true. Evidence of this fact is shown in the new order that makes its use obligatory in parts of bituminous mines naturally wet, though anthracite mines are still excepted, probably with good reason. Just because one enterprising road-material manufacturing company in Great Britain has been trying out a substance to replace rock dust is not at all a reason for questioning the value of that material for the suppression of explosions. Manufacturing companies there, as everywhere, are always trying to find a new market for their products. During the last decade the British have tested many materials intended to prevent the propagation of explosions and rejected them. We likewise.

In Germany and in this country gold is being made out of mercury, but we are not all rushing to buy the latter mineral nor are we in a panic about the gold standard. People have been discussing the possibilities of operating machinery by the energy in the atom, but we are not questioning the value of coal. Perhaps we may obtain a substitute for rock dust after a decade or two, but meantime we may have many explosions such as those at Sullivan, Ind., the Stein mine in Germany and Providence, Ky. So why delay rock dusting? Some people may be starving themselves in a hope that a new food may be discovered but the world with good common sense is taking its food daily in three square meals without waiting for the revelation of a new manna.

It is wise to use what is to hand if it will help even measurably to keep us in safety and health. Can we conceive that the City Coal Co., of Sullivan, Ind., would have refused to rock dust if it had realized that it would save the lives of only 80 per cent of the men who were killed by the gas explosion at its mines. Would the directors of that company have dismissed rock dust as a passing phase if they had known the disaster was coming. Ten or twenty years from now we may have a new expedient—perhaps, but not now.

It is interesting to note that in Great Britain and in our anthracite regions many explosions occur but they do not involve many men, because in rock-dusted mines or mines with non-explosive or little explosive dusts, coal dust does not extend what gas starts.

One-hundred per Cent Stores

IN A REMOTE mining camp where families must patronize the company store no matter what the prices may be, the company undoubtedly can take advantage of its men. In a time when margins on coal are narrow or nonexistent this temptation is greatest. We certainly hope the number of companies so unmoral as to exercise this advantage is few indeed. But when, in casual conversation the other day, one eastern Kentucky operating official said he invariably made his stores cover all losses on coal regardless of what other people were charging for merchandise, and when another brazenly declared he makes his stores "earn 100 per cent profit," the idea struck home that something must be wrong in some of these mine villages.

It goes without arguing that a company store ought to earn a profit. Nobody should expect the operator to conduct it as a benevolent enterprise. But after good business practices have been applied in the operation of the store, after allowances have been made to cover all charges that experience shows must be made against the business, and after a reasonable profit has been realized, then the profit line should be drawn squarely. There is nothing to justify a coal operator in making any charges against his store which would not be made if the store were conducted as a separate enterprise. That is the nub of the matter: The company store ought to be made to stand on its own feet.

"One hundred per cent profit" is the ambition of greed. It is the ambition of blindness; for such profit extorted from families in remote mining camps is one of the direct causes contributing to bitterness and resentment leading straight into industrial chaos. Unionism has already provided the coal industry with enough of such ill feeling and disorder, why should employers invite more? And in a field that the United Mine Workers would rejoice to organize, bitterness against the operators is the one thing the United Mine Workers are willing to spend money and effort to incite. Why hand the union the poison it expects to use against the donor? These are reasons altogether apart from the moral considerations involved but they must be considered.

Company stores should stand on their own feet, but they should not trample ruthlessly upon their communities.

A Lesson in Ignorance

IF ANY MAN in coal still deludes himself into thinking the public understands his industry he should have read a recent issue of a Chicago daily wherein "Senile King Coal" receives two more jabs to the wind. One is in an editorial condemning the whole industry because of a strike of coal wagon drivers in Chicago who demanded some outlandish things. The other is in a cartoon in which Judge Householder, his patience exhausted by dirty, old Coal's frequent appearances in court charged with offences against the public, sentences the ignorant and astonished scuttle-hat to be "electrocuted, gassed and boiled on oil." No doubt a great many readers on suburban trains that morning nudged their seat mates and chuckled: "By golly tha's all right, ain't it? Heh, heh, heh!"

We do not warm up over this because it breaks loose in a publication that announces from the masthead seven times a week that it is "The-e-e Wur-r-rld's Greatest Newspaper." It may be that, but what of it?

The point is, the W-G-N cartoon and comment is typical of newspaper opinion in too many regions of this land. That opinion, sounding the keynote for public thought, holds coal to be *unified* for one thing, and clings to moth-eaten "coal baronism" for another.

The unification of coal means, to the public, that the entire industry is responsible for everything even remotely affecting coal from mine face to industrial and household bin. Public opinion does not hold the dairy farmer responsible for the conduct of milkwagon drivers; but it holds all coal responsible for coal-truck drivers. To it coal is coal, no matter what kind the coal is, or what region it reaches, or who handles it.

And public opinion, clinging to "baronism," cannot see how anything good can come out of Nazareth. What if coal in 1924 *was* the cheapest ever, in proportion to costs of production foisted upon it by public demand during the war? What if the country, during 1924, *did* get its coal just exactly when, where and how it wanted it without a single hitch of any consequence? Does the general public think kindly of coal because of that? Hardly. It is trained to think along lines of "coal baronism." For everything favorable that happens, coal gets no credit. For every fuel difficulty, *all* coal receives one more of these popular jabs to the wind.

What ought to be done about it? Well, of course there are corrections to be made within the industry. Time, competition and ingenuity are performing that duty right now. But something else ought to be done. Coal must make a friendly and intelligent effort to get closer into the family circle of this nation. It must be companionable and tell its story truthfully and interestingly to every section of public opinion so that people will know coal and understand its problems, its trials and the reasons behind each one, its achievements and what they mean to the industrial and domestic life of America. These coal institutes that have been proposed comprise one of the important steps to be taken. Better feeling between capital and labor in the industry is another. Wider "consumer ownership" is a third.

Until this effort is made strongly and over a period of years "coal baronism" will continue in the public mind. The average citizen will continue to be so unintelligent about coal that he will exasperatedly blame *all* coal for every flaw in every ramification of the industry. There is keen need for coal to "join the family."

Other and Alien Words

REMARKABLE is the opposition of our paleobotanists and paleochemists to the words "durain" and "vitrain." "Fusain" may or may not be objectionable, but as we in America have no words, that we like, to express "mineral charcoal," fusain is likely to be accepted despite our doubt as to its correctness. It is a French word meaning charred wood. Now, what we term mineral charcoal may not be charred wood or charred coal at all. We may well look with suspicion on a word which recognizes a judgment that is still open to question. Still as it is French and has been accepted by the British to mean a specific substance, and as few know the French meaning, in using it we may overlook its origin and may forget the fact that the acceptance of the word carries the implication that we believe in an origin for the material which may or may not be correct.

But the other words, durain and vitrain, are expressions merely referring to the appearance of the coal without reference to origin. "Durain" is dull coal and "vitrain," vitreous coal. "Anthraxylon," meaning woody coal, and "attritus," meaning coal from fragments of the peat bog, are good words if they truly define the real origins of the coal. They appear to have that justification, but it must be remembered that no coal layer is pure anthraxylon or pure attritus but a mixture of both. Mr. Thiessen asserts as much, saying that dull coal contains the small anthraxylon and attritus. Furthermore, the cells, as Mr. Seyler observes, may have had post-mortem filling, and even the structure may be pseudomorphic, making the use of the wood "anthraxylon" only partially correct or entirely improper.

The faults, however, in these words may be profitably overlooked, especially as Mr. Thiessen would urge that anthraxylon and attritus as he defines them are not relative terms, but names of different kinds of coal in a mixture of both. We cannot see why "dull coal," or for that matter "durain," cannot be used to describe any dull coal whether in "anthraxylous" or "attrious" coals, to quote Mr. Thiessen. We are not sure that the British are unwilling to accept such a definition. Surely they are not disposed to declare that bright coal in a mass of dull coal is "durain" and not "vitrain" because the bright coal happens to occur in a dull mass. These words may be regarded as definite and not relative. They may have been used sometimes unguardedly, but so, doubtless, have the others.

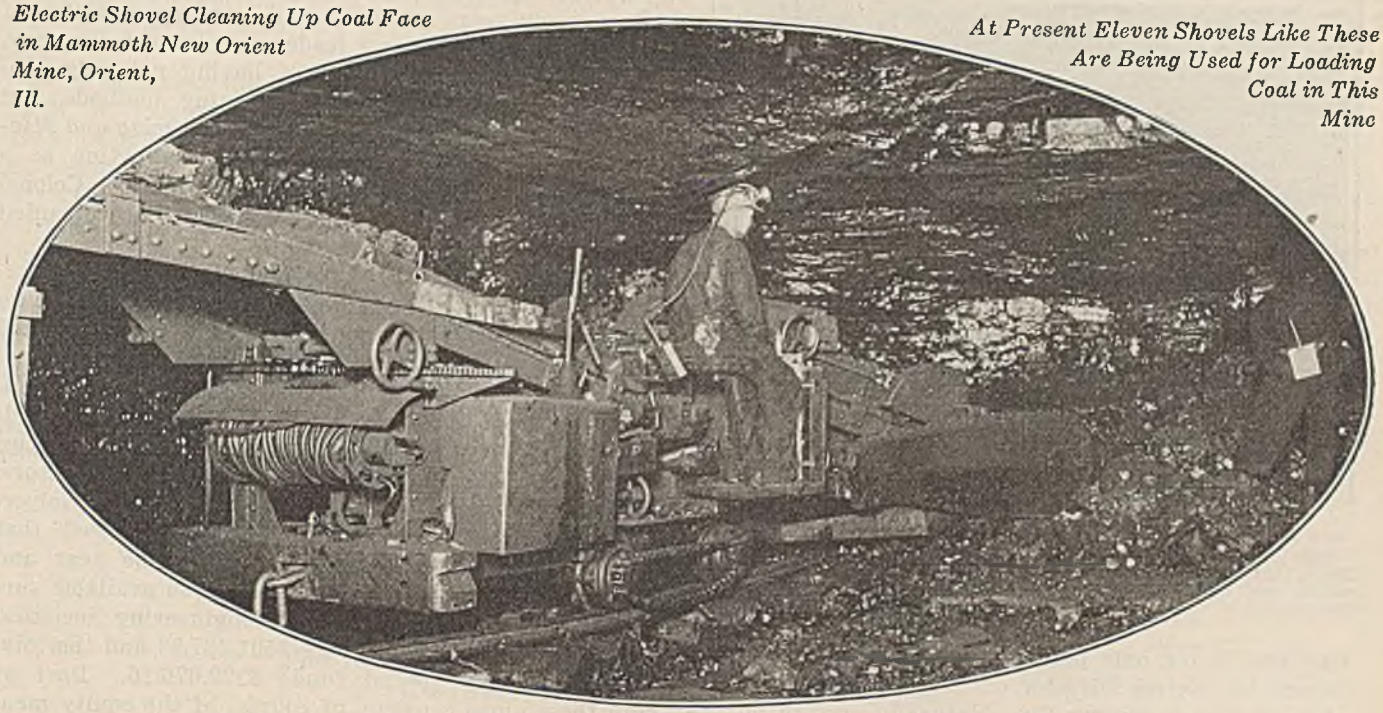
Why we should take exception to synonyms is not clear. The English language gains strength and richness from the many nomenclatures that have contributed to it. The Pictish, Latin, Anglo-Saxon, French, late Latin, Greek and American accretions have given us a wealth of synonymns that make the language flexible, if not exact, and have afforded us shades of meaning without which our language would be but a poor and inadequate tool.

The scientists proceed on the notion that what we should aim for is "One word, one meaning." That is alright so long as we believe only that a single word should have but one meaning. However, one idea or substance may well have a diverse nomenclature. Our words should be monogamous, linked, that is, to one idea, but our ideas may well be polygamous, linked, that is, to several words. We believe in the double standard for words and ideas. The electrical engineers by giving but one word to each idea have given us a nomenclature that makes the language of electricity devoid of beauty and violative of the standards which all natural languages observe.

The Fuel Research Board will do well, if it gives our paleobotany a few synonyms, though it will be but a small contribution compared with that for which it is constituted. Therefore, we hope it will give us durain and vitrain; perhaps also fusain or some other word, and not deprive us of attritus and anthraxylon, or mayhap "xyloticon." It would be well if our genial British visitor, Clarence A. Seyler, carries back with him the words we are using, for those who are hoping for a universality of language will regret to note how our technical, and indeed our common tongue is drifting away from the British, so much so that an American is uncertain what certain British words mean, and we are often at a loss to know what they are attempting to express to us.

Electric Shovel Cleaning Up Coal Face in Mammoth New Orient Mine, Orient, Ill.

At Present Eleven Shovels Like These Are Being Used for Loading Coal in This Mine



National Mining Society Holds Crowded Session

What Is Coal and How It Can Be Worked Are Studies Which Keep Coal Botanists, Geologists, Chemists, Engineers, and Sociologists Busy for Three Intensely Interesting Days

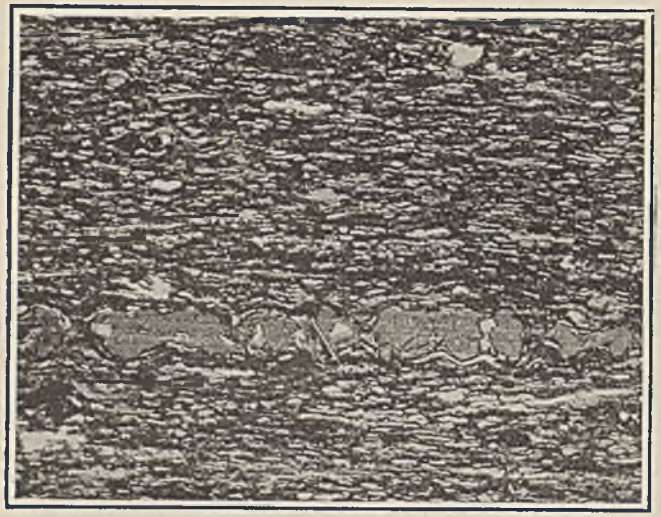
PERHAPS in no previous year have so many students of coal and its production attended a winter session of the American Institute of Mining and Metallurgical Engineers and at none doubtless have so many or such vital papers relating to coal and coal mining been presented. As usual the meeting was held at the Engineering Societies' Building, New York City. It opened Feb. 16 and closed on Feb. 18, but a trip was made to Lakehurst, N. J., Feb. 19 when the members and guests were entertained by a visit to the hangar in which the U. S. Government houses the Shenandoah and the Los Angeles.

The two sessions on the origin and constitution of coal expanded themselves into no less than three, the third, so great was the enthusiasm, starting earlier and lasting to a later hour than the morning session of the first day. Due to the efforts of David White the American investigations were well represented in a series of extremely valuable papers. George S. Rice, as representing the Fuel Research Board, obtained some excellent papers from England. Unfortunately only one of the authors of these papers could be present, and the single exception, Clarence A. Seyler, entrusting himself too confidently to the vagaries of the Atlantic Ocean, arrived only in time to attend a part of the third session, so the British point of view was only belatedly and therefore inadequately presented. However the American scientists were sufficiently divided in the conclusions derived from their varied researches and points of view to prevent a perfect harmony that, if it had existed, would have made the sessions less provocative of interest.

The session on "Ground Movement and Subsidence" was mostly devoted to the experiences of metal-mining men and so did not line up closely with coal-mining experience, but George S. Rice was afforded an opportunity to speak on "Rock Bursts and Bumps." His explanation of these phenomena are known to most *Coal Age* readers. Mr. Rice believes as do others that these phenomena arise from an overloading of the measures. Even without mining, the stresses on deep coal are sufficiently distressing, but when they are increased by the removal of part of the coal and when the coal is weakened by separation of the support into pillars that cannot aid one another laterally because they are separate, the coal gives under the terrific burden causing sudden collapse such as most of us have observed when specimens of coal and other bodies, elastic and non-elastic, are subjected to excessive pressure in a testing machine.

Discussions on the operation of coal mines absorbed three sessions and proved exceedingly interesting. The headpiece of this article shows the operation of an electric shovel in an "unusual coal mine" to quote the title of the interesting address by George B. Harrington.

Benjamin F. Tillson had prepared an interesting joint session with the National Safety Council. This meeting reviewed the progress of coal- and rock-dust investigations and methods, a subject of unflagging interest. This occupied an entire half day and was followed in the afternoon by an address by R. R. Sayers, chief surgeon, Bureau of Mines, on "Silicosis and Its Prevention," illustrated with the film "The Dust That Kills." This address was followed later with one by C. B.



Vertical Section, Cannel from Bluegrass, Ky.

This illustration, presented by E. C. Jeffrey of Cambridge, Mass., shows the presence of large numbers of spores, a dark matrix and a lighter colored material which he declares is wood now devoid of structure.

Auel who is not only president of the National Safety Council but Safety Director of the Westinghouse Electric and Manufacturing Co. Naturally enough he described the interesting and successful efforts of that corporation to lower its accident and fatality rates. This enlightening address was followed by one by C. F. Dietz, president, Bridgeport Brass Co., on the "Essential Factors of Industrial Relations." He has been unusually fortunate in arriving at a condition in which the men take an intelligent interest in the affairs of the company, and the president and his officials take an intimate cognizance of their employees' interests.

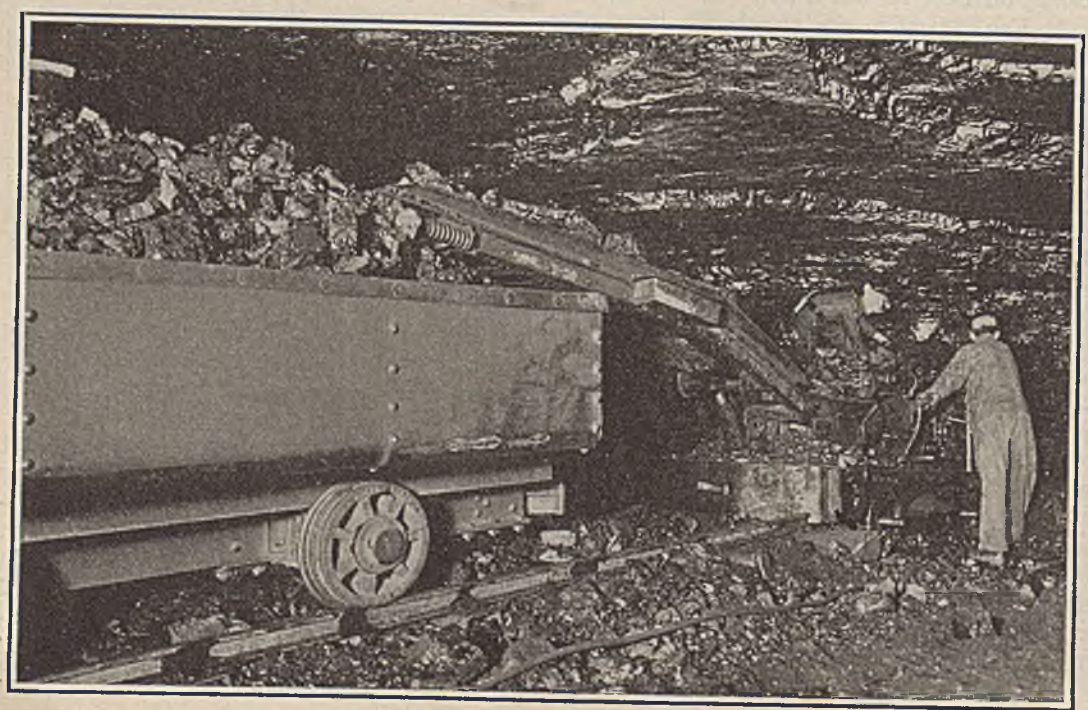
In the late afternoon of Tuesday, a meeting was held to organize a committee on ventilation, George S. Rice presiding and E. A. Holbrook acting as secretary. It was decided to establish subcommittees for the study respectively of coal-mine ventilation, metal-mine ventilation, fans and the physiological effect of ventilation.

Among interesting functions was the unveiling in the entrance hall of the Engineering Societies' Building of a life-size bronze tablet of Dr. Rossiter W. Raymond, for so many years secretary and secretary-emeritus of the Institute, as well as a leader in mining technology, mining law and editorial work, having not only contributed much to progress in mining methods, but pleaded at the bar and edited the *Engineering and Mining Journal*, to say nothing of his distinction as a divine at one of the Brooklyn churches. Colonel Arthur W. Dwight made the speech which accompanied the unveiling.

On Tuesday morning President William Kelly presided over the annual business meeting of the Institute and the names of the newly elected officers for 1925 were announced. The only changes in this personnel were: L. V. W. Reynders, president, and Ralph H. Sweetser, John L. Agnew, J. M. Callow, directors. Sidney H. Ball, George D. Barron, W. H. Bassett, Charles F. Rand and Mr. Reynders were re-elected as directors. The new officers met later and elected E. L. De Golyer, vice-president. The treasurer's report showed that $187,668.22 had been expended during the year and that $197,762.62 had been received. The available surplus including the equity in the Engineering Societies' Building was announced to be $531,467.83 and the total assets including special funds $729,676.16. Part of both these sums consists, of course, of the equity mentioned, which is valued at $491,642.36, leaving the available surplus other than this at $36,825.47, there being a further reserve for life memberships of $40,000.

During the year 609 members joined the institute including 46 who were reinstated, but 919 resigned, died or were suspended, leaving 8,818 members as against 9,128 on Dec. 31, 1923.

At luncheon served every day at noon the members met and renewed acquaintance. On Monday evening they were entertained at a smoker in the Café Savarin. That evening also the Industrial Relations Committee with the co-operation of the National Safety Council held an informal dinner in the Engineers' Club followed by a discussion. On the evening of Tuesday the members attended a dance at the Engineering Societies' Building. Wednesday evening was the occasion of the big banquet at the Waldorf-Astoria which was attended



Loading a Car

Eleven loaders like the one shown are used in the New Orient mine of the Chicago, Wilmington & Franklin Coal Co., described by George B. Harrington in his institute paper. By providing big cars for the reception of the coal handled by the shovel the intervals between the placing of cars are made less frequent. The men are provided with electric cap lamps, as the mine is gaseous. The coal is from 6 to 12 ft. thick and 500 ft. below the surface.

by 827, a high-water mark since the days when the annual banquet was held by a few members in a suite in the same hotel now serving as a "parlor, bedroom and bath."

W. L. Saunders was the genial toastmaster introducing B. B. Thayer who presented, as chairman of the James Douglas Medal Committee, the award which it is the pleasure of that committee yearly to dispense. This year that distinction fell on William H. Bassett "for constructive research in copper and brass and other non-ferrous metals and for his contributions to the establishment of the present accepted high standards of quality." Other speakers were William Kelly, retiring president; the Hon. Charles McCrea, minister of mines for the province of Ontario, Canada; Major General Charles P. Summerall, commanding the second corps area of the U. S. Army, and L. V. W. Reynders, the incoming president of the Institute.

On the final day, Feb. 19, a special train took the members to Lakehurst, N. J., where the hangar and airships of the U. S. Government were inspected. After luncheon Dr. R. B. Moore reviewed the development of helium production in a short address, following which the purification plant and the airship station were visited. A free air balloon was sent up with five officers as a special event for the edification of the Institute.

This inadequately reports a meeting that considered matters of great interest to ferrous metallurgists, non-metallic mining engineers, non-ferrous metals investigators, petroleum experts and students of metal-mining and milling methods as well as to coal men. Nothing can be said for lack of space as to the continuous and generous entertainment afforded the visiting ladies by the Woman's Auxiliary. In the pages that follow will be detailed the discussions in which the interest of coal-mining men was mainly centered.

Investigators Gradually Unfold Origin and Present Nature of Coal

New Methods of Etching Coal by Acid or Fire Prove That Dull Coal Has Much the Same Woody Structure as the Brighter Bands

AFTER all is said there is much agreement now as to the nature of coal. The British at first found no structure in the dull layers and believed them to be an exudation or at least a concentration from coal of certain oxidized materials generically called ulmins or humins. Now many have come to the American point of view as the result of Clarence A Seyler's etchings of polished coal with green oxide of chromium which show clearly that even dull coal has woody structure. Reinhardt Thiessen's coal sections show the same fact in a somewhat less clear and convincing manner, but nevertheless do show evidence of such structure. Chemical investigation also shows that dull coal and bright coal have a similar analysis. So it is now definitely concluded that all the coal in the bed is peaty material.

Tar is made from coal; however, no one would declare that it is coal or coke. It has exuded and separated from the coal under the influence of heat. It does not have the same structure as the material left behind. It is a different body. It was thought in like manner, not that dull coal resembled tar and had been separated under heat, but that it had an existence as separate from true coal as tar is separate from the coke which is left when tar is extracted. Now, at last we know that all coal is directly derived from peaty material, no difference remains, and all we have left to quarrel about is a few paltry names. The British have termed dull coal, durain and brilliant conchoidal coal, vitrain. These names are strange to our ears and being a simple people we prefer such euphonious words as "anthraxylon" and "attritus." There is no accounting for tastes.

As Mr. Seyler belatedly remarked, the British chose names deliberately which referred solely to outer manifestations believing it was risky to prejudge the character of the material being named by using such words as Dr. Thiessen invented—anthraxylon meaning woody coal and attritus meaning forest waste, namely leaves, twigs, boughs, cones and the like. As Thiessen's judgment as to the character of the material was correct,

Coal Ball from Lancashire, England

This shows a vertical slice made by means of a grinding lathe. The woody parts are remarkably well preserved. This is one of the illustrations of E. C. Jeffrey's paper. It is remarkable that the eons that have passed since this vegetable matter was deposited have left it so little altered.

Cross-Section of Brilliant Band in Coal

The walls of the wood fibers, says H. G. Turner, of Bethlehem, Pa., in his paper, have been folded and collapsed, although not greatly fractured. The whole section is brilliant under the microscope showing no dull matter. From the lower part of bed No. 5, Cameron Colliery, Shamokin, Pa. Magnified 140 diameters.

his nomenclature is now justified. He took his ground and with justice. However, now we have given them this new nomenclature of such a simple character what shall be said of them if they still continue to use such involved words as "durain, clarain, vitrain and fusain" and what shall be said of Seyler who uses "bogen?" We shall not wonder at them at all for what we know to be an "elevator" they persist in terming a "lift" and what we call "rubbers" they insist in dubbing "galoshes."

Dr. White Discusses Fusain

The "Coal and Coke Symposium" (misleading name) opened with an article presented by David White and entitled "Environmental Conditions of Deposition of Coal," but his remarks about fusain absorbed almost the whole attention. These appeared in full on page 254 of the issue of Feb. 12. Dr. White believes that at times the surface of the peat bog became exposed, that "the toxic decomposition matter in the solution as concentrated by evaporation impregnated and dried on the surface of pinnule, stem and wood fragment," not only protecting them "for a time from weathering but by its insolubility and toxic composition leaving them protected from, and resistant to, the renewal of microbian action when the peat bog was again submerged and the decomposition of peat resumed."

E. C. Jeffrey, professor of plant morphology, at Harvard University, said that he could not agree with those who declared that the mat layers in coal represented a high degree of decomposition. Fusain, mother of coal or mineral charcoal, whatever it may be termed, shows more, rather than less, structure than *glanz* or bright coal. Mr. White, said Mr. Jeffrey, had changed his views. He used to declare that fusain was due to fungus in the wood. If that was so either the body of the fungus would be visible or else the holes where the fungus had been, whereas neither can be found showing that Mr. White had used good judgment in revising his contention. Only the proposition advanced in his (Mr. Jeffrey's) volume, entitled "Coal and Civilization" would fit the case satisfactorily. In that book he had advanced the theory that fusain represented the charcoal resulting from forest or peat-bog fires.

G. H. Ashley, state geologist of Pennsylvania, Harrisburg, Pa., declared that only wind action would account for the thin layers which spread over hundreds and thousands of square miles, some thickening apparently toward a shore. In contrast with these we have some ¼- and ½-in. bands. The blue band in Illinois is 6 in. thick. It is so regular that it is impossible to imagine it laid down by water currents which could not have caused so great a uniformity. The immense areas answer effectively in the negative all those who would ascribe the parting to deposition by water.

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Charles David White

Chief geologist, U. S. Geological Survey and associate curator, Smithsonian Institute, who prepared the excellent symposium on the origin of coal.

Dispute Origin of Ashy Bands

Reinhardt Thiessen, research chemist, Bureau of Mines, Pittsburgh, Pa., declared that the thin bands of ash were due to wind-borne deposits, probably arising from volcanic eruption. Many doubt this and deny that the ashy bands are of similar character to the discharge from volcanoes. All the coals in Ohio and western Pennsylvania have been laid down in areas which were gradually sinking. Every now and again the moisture conditions would change, the beds be covered with water and the bogs would become areas of active growth so that the deposition of woody material would be resumed, until again the aqueous conditions would be restored once more. He has found evidences of this in every bed. Such aqueous conditions were doubtless generally caused by subsidence.

S. W. Parr, professor of applied chemistry, University of Illinois, Urbana, Ill., declared that he had analyzed thirty samples of the fusain of that state, not so much to ascertain the source of the material as the composition. If the fire theory is to be accepted we have to imagine a remarkable equality of partial combustion for the samples invariably show between 17 and 19 per cent of volatile matter. Normal mother of coal is low in ash which is hardly what we would expect as the result of the partial combustion of *glanz* coal which has the normal quantity of ash. Other mother of coal has as much as 25 per cent of ash, but this impurity is high in sulphate and carbonate of lime. Even the very poorest mother of coal has had an infiltration of these impurities, not native to the pure fusain. He was disposed therefore to give his vote to Dr. White.

Silt Theory Doubted

D. B. Reger, assistant geologist, West Virginia Geological Survey, Morgantown, W. Va., said he did not believe in the silt theories of ash deposition. Water might, however, have silt in solution. When the water evaporated, the silt would be deposited leaving a comparatively uniform layer. W. A. Nelson, state geologist of Tennessee, Nashville, Tenn., said that some of the partings in coal seams have been found to be volcanic. The volcano, of course, would have to be a long way away or the deposit would not be uniform. In Ordovician measures the volcanic ash is found to cover immense areas.

Mr. Ashley said that the difficulty of ascribing the partings in the coal to volcanic origin lay in the number of these layers. They are found throughout the coal measures, in the flint clay of the Pottsvilles up to the Pittsburgh seam. Adjacent to swamp areas must have been desert regions over which the air might travel with speed, lifting dust and distributing it over the surrounding areas, though he did not know any regions thus being bespread today. Mr. Nelson said that he would not connect all partings with volcanic action but that many may be found of that character.

Mr. Jeffrey added that a wide deposition of suspended matter might be accomplished without current if the dust was fine. After forest fires Lake Huron is often covered with charcoal. J. F. Kemp, professor of geology, Columbia University, New York City, remarked that a distinction should be made between original and infiltrated material. Calamites

were present in large quantities in mother of coal which consequently contains a lot of silica. But the infiltration must have been immense, and what occurred went to the porous sections such as mother of coal.

E. S. Moore, professor of economic geology, University of Toronto, said that the low percentage of calcium carbonate suggested that there was not much evaporation. He believed that muddy water might have overflowed something in nature resembling an artificial levee. If that had occurred a level body of suspended silt might be carried immense distances, laying down a continuous parting.

Vegetation Prevents Erosion

Mr. Jeffrey said a common conception was that all parts of the world's surface were constantly subject to erosion. This is an error, for where vegetation exists there is no such wearing of the earth's surface. Mr. Ashley referred to the beautiful display of mother of coal in the block coals of Indiana in which occur pockets in which may be as many as twelve separate layers to the inch. The topmost part of the seam is not block coal but ordinary "bituminous" coal and it goes over to the other basins.

Mr. Reger declared that in order to create a uniform layer of ash the silt must be in the form of suspended matter. Evaporation, however, may not be necessary to throw down the solids. Mr. Jeffrey declared that fusain was common in cannels and in oil shales both of which were laid down under water. Homer G. Turner, assistant professor of geology, Lehigh University, said that some fusain is so hard that it cannot be scratched with the thumb nail, other such matter shows a cell structure. Some is quite soft. In fact as to texture the fusain graduated in appearance from an anthraxylon to charcoal. Every evidence, said he, seems to point to the fact that fusain is peaty matter exposed to different chemical action rather than to forest fires. The great quantity of the material bears testimony to the same conclusion.

Mr. White said that the Post-Devonian coals all contain fusain, sometimes only ½ mm. thick. In them is no trace of Calamariales or Equisetaceae. He adds that a suggestion might be made based on the presence of marine shells in coal. The swamps may have been separated from the sea by a bank of sand. Every now and then the water might rise and pass over the sand bank engulfing the peat bogs. Those who regard the numerous layers of impurity as too frequent to be the result of recurring volcanic eruptions need only to be reminded that within the short span of their own memory immense quantities of dust have been spread by volcanic action at Kilauea, Katmai and Martinique.

John Van Wicheren Reynders

Who was elected president of the American Institute of Mining & Metallurgical Engineers as a tribute to himself and the Iron and Steel Section of the Institute. Bridgebuilder, metallurgist and executive.

Effects of Pressure Alone

Mr. Thiessen then introduced his paper "The Constitution of Coal. Part A—The Ingredient Material of Coals and the Biochemical Composition of the Deposit at the Close of the Process of Sedimentation." This paper, containing fifty pages contains much about plant chemistry in relation to biochemical changes. A part has reference to plants which may or may not have had analogues, one would surmise, in carboniferous periods, such as currants, gooseberries, apples, pears, carrots, turnips, peas and beans. Interesting statements are that pressure alone, not pressure as resulting in heat has had its effect not only in consolidation of the coal or lignite but in its chemical actions and progress in rank from lignite to anthracite. Mr. Thiessen showed several illustrations of modern peat bogs and an imaginative one that strove to represent those of Carboniferous times. He remarked that this last, quite popular with illustrators, showed most of the forms which were found in that era growing in juxtaposition. He had noted in modern bogs that the vegetation consisted principally of certain kinds of trees and not of an extensive variety. A cypress bog is tenanted almost entirely by cypress. In his opinion the bogs of which coal was formed were the habitats of but one species.

He declared that practically all coal was formed from peat *in situ*. Never had he found any coal that, in his opinion, was derived from drifted material. Mr. Thiessen said that peat grows only under wet conditions, that all the plant substances go into the bog and are subjected to a series of phases of decay which are (a) in the air completely above the water level but in relatively moist conditions (b) above the water level but covered with debris and (c) completely covered by both water and debris. In his opinion wood decay is accompanied by a rapid fall in the quantity of cellulose, whereas the lignon complex being far more resistant than the cellulose or not attacked at all, remains almost constant. Of the sound heartwood of Douglas fir, cellulose constitutes 58.96 per cent. When partly rotten it has fallen to 41.66 per cent and when more completely rotted to 8.47 per cent. As decay proceeds the cellulose disappears leaving finally little or nothing but the so-called humin, a product of the original lignin of the ligno-cellulose proper. Recent experiments with wood containing 60 per cent cellulose, after six months of rotting contained 26.8 per cent; after one year, 10.90 per cent and after three years, 6.05 per cent. The lignon complex lost about 3 per cent in three years and then remained constant. It must be remembered, he adds, that wood contains a number of adventitious substances, like fat and waxes. These are not attacked by organisms of decay as is shown in the ether extracts.

Plant Study Necessary

In three years, said Mr. Thiessen in his discussion, cellulose is gone but lignin remains. The cellulose has been converted to glucose and fermentation has been set up as has been shown in the Madison Forest Products Laboratory. Mr. Thiessen said the student of the origin of coal must study the chemistry of plants and of decay. It must be remembered, he added, that fungi can no longer attack vegetation after the bog gets under water, bacteria must do the rest. Peat is as great a reducing agent as nascent hydrogen. Bacteria must have oxygen and in

obtaining it they rob the bog of that element producing charcoal.

Mr. Jeffrey rose to the defense of his argument that the bogs had been charred at the surface by forest fires. He had found charred and uncharred branches intermingled. Why this should be, if the cause of the charring was bacteria he could not understand. In reply to Ralph H. Sweetzer, Mr. Thiessen said that all fusain showed plant structure. None was what could be regarded as amorphous carbon. All decay, he added, was the same chemically whether by aerobic or anaerobic bacteria. Both classes of organism required oxygen, which they must get from some source in order to live.

Chromic Acid Etching

Clarence A. Seyler's paper on the "Microstructure of Coal" was briefed by Mr. Thiessen. Mr. Seyler has devised a new method of preparing coal for the microscope. "The polishing is done, according to metallurgical practice, by the use of a polishing machine and successively finer emery paper, followed by polishing on cloth moistened with a suspension of levigated green oxide of chromium and a final rubbing on "selvyt" (a cotton velvet polishing cloth) moistened with alcohol. The polished specimen is examined by reflected light with a $\frac{2}{3}$ and $\frac{1}{6}$ in. objective. Bituminous coals usually show considerable structure, and even anthracites show it faintly in places. The sample is then etched by immersion in a boiling solution made by adding 10cc. of concentrated sulphuric acid to 30cc. of a saturated solution of chromic acid; enough water is then added to dissolve any precipitated chromic acid. The solution is boiled until chromic acid begins to separate and the polished sample is then immersed in the liquid which is kept boiling for a few minutes. The sample is then removed, cooled, washed and dried and very slightly rubbed on selvyt moistened with alcohol. Anthracites require three to five minutes, bituminous coals usually less than one minute. The coal may be etched in stages."

Mr. Seyler asserts that cortical (bark) tissue can give rise to bright coal (anthraxylon). "I have," he says, "some flattened stems of sigillaria and lepidodendron with a thin bright coaly layer marked by leaf bases and scars." "Dull" coal, he adds, "contains comminuted fragments of all sorts of tissue. Spore exines are frequently, but not always, present. Dull coal, however, appears to exist in small quantity in Welsh anthracite. When it occurs, it is often called "anthracite cannel" or pitch-like coal, but it resembles cannel only in appearance. If Thiessen is correct in attributing bright coal to larger fragments of wood (or perhaps one should say if this should be true of British coals) it has evidently an important bearing on the origin of anthracite."

Here again he gives evidence of the British idea that their anthracite is something different in origin to bituminous and not the same coal in a further stage of development. It is just possible that the dull coal may tend to become bright in the further process of carbonization though that is said not to be evident in American anthracite. It might explain, however, why dull coal exists in small quantity in Welsh anthracite. It is to be noted that Seyler nowhere uses Dr. Marie Stopes' expressions, "durain," "clarain" and "vitrain" in his paper. Still one expression "bogen" that he uses troubles his American friends. Probably they feel that it gives evidence of a belief that some of the structure in the coal is mineral and not biological and that perhaps the parts thus converted are exudations, extractions or concentrations of the original substance.

Arc or Bogen Structure

He says, "Cellular fragments of a characteristic shape and disposition are frequently found, chiefly in fusain lenticles, but also embedded in bright coal and passing into it. The fragments are bounded by arcs or bows, and the linear arrangement is sometimes well marked. Such fragments are familiar to the petrologist, and structure of this kind is termed by Mugge "bogen," that is, "arc" structure. This structure is highly characteristic of comminuted vesicular or cellular rocks, such as lava, tuffs of basalt, etc." All of this is anathema to our fundamentalists. No discussion followed the meager presentation of this paper except an indefinite expression of disapproval of the word "bogen," probably for the reason stated. Mr. Seyler did not arrive till the morning following, his ship having been delayed.

Homer G. Turner, assistant professor of geology, Lehigh University, Bethlehem, Pa., then presented his paper on "The Microscopical Structure of Anthracite," describing his method of etching highly polished coal by the flame of a blow pipe, the coal having been first heated to 220 deg. C. to remove moisture and to obviate the splitting of the surface as the results of sudden heating during the etching process. Some coals that split badly when being etched must be immersed in clean dry sand with only the polished surface exposed, heated to about 300 deg. C., and etched in place using a blast lamp. The etched coal is studied with the metallographic microscope using vertical illumination from a carbon arc. A good working objective is one giving a magnification of from 120 to 200 diameters.

Fusain Makes Cleavage

"Mineral charcoal," says Mr. Turner, "is abundant in almost all anthracite. Cleaving coal parallel to the banding exposes charcoal-covered surfaces in every specimen that shows distinct lamination. In fact, it is almost impossible to find a square inch of laminated coal that does not show charcoal either in thin sheets or lenses. On the other hand, the varieties that are poorly laminated and almost uniform in luster contain little charcoal.

"The absence of distinct lamination is no doubt due, in part, to the paucity of dull charcoal. In addition to the thin sheets of charcoal so commonly found in bedding planes, one finds occasional charcoal lenses several inches thick, composed of criss-crossing chips 2 cm. or more in length and 1 cm. in width. Detached chips of these dimensions are also found with the coal bands warping around them.

"Wood structure has been preserved in most of them although it is absolutely lacking in the majority. The cells range from almost perfect forms to others that have been greatly flattened. Most of the bands seem to have been greatly compressed." In fact, in some cases "the woody matter may be so flattened that it appears homogeneous. Most of the structureless bands will show wood grain on their sides and ends if examined through their length and width. It seems logical, therefore, to assume that the brilliant bands that are absolutely structureless are the result of extreme compression. Such structureless bands are not uncommon in certain English bituminous coals, where they have been named 'vitrain.'" The anthraxylon has attrital fragments intermixed.

Mr. Turner adds "As in bituminous

coal, the woody matter forms the largest part of the deposit. Aside from the pronounced woody lenses mentioned, small chips, single cells, small groups of cells and other woody products are found in the mass of debris designated here as bright coal."

As regards mineral charcoal Mr. Turner says that it may be so soft as to crumble in the fingers, the cells being thin or it may be so hard that it can just be scratched with the finger nail, owing to the thicker cell walls and component bright bands of hard coal material. Other fragments are too hard to be thus scratched. These may have been densified by infiltration of products of vegetal decay and further hardened by compression.

"In the duller portions of the coal, carbonized fragments are also found having perfect cell structure with the cells filled with dull structureless material. The charcoal-like materials are similar in that they show almost perfect structure. This would suggest that they escaped the jelly stage of the other materials in the bed. Differences in thickness of cell walls and of cell filling may indicate differences either in stages of carbonization or oxidation before burial, or in original composition, or in behavior after burial."

E. S. Moore said that microscopic study of the anthraxolite deposits of Ontario had been started for the purpose of determining whether this mixture of bituminous matter and sandstone was a bitumen of mineral origin or a peat. E. C. Jeffrey said that we were in measurable sight of obtaining a cross section of anthracite for the microscope, but that etching methods were of value.

Mr. Thiessen said that the work of making sections was not so burdensome as it appeared. As many as eighteen could be made in a day. H. J. Rose remarked that mother of coal or mineral charcoal could be found in metallurgical coke and that the wood structure was just as plain as in the original coke. With Mr. Turner's paper this session closed.

New Methods Develop Better and Cheaper Ways of Mining Coal

Engineers Hear Description of Six New Methods of Mining Pitching Coal and Details of New Illinois Mine With an Hourly Capacity Equivalent to 15,000 Tons Daily

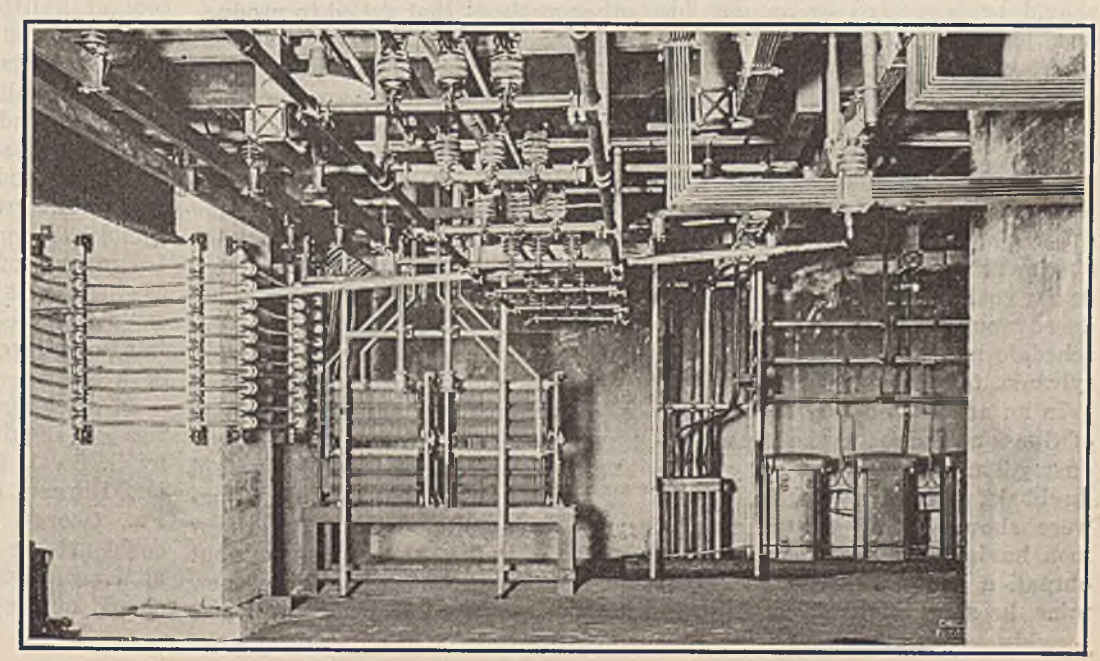
UNDER the chairmanship of C. M. Lingle, of the Buckeye Coal Co., Nemacolin, Pa., Henry H. Otto, mining engineer, Lehigh Coal & Navigation Co., Lansford, Pa., on Tuesday, Feb. 17, presented a paper on "Ultimate Recovery from Anthracite Beds," which was printed in last week's issue of *Coal Age*, showing that though percentage of recovery has been greatly increased in recent years and much concern is shown about it, it is still much below what is desirable. In the northern region this is partly due to the presence of highly populated towns and to insufficient cover over beds underlying water and quicksands. In the other regions the coal pitches severely and makes the percentages of small sizes excessive.

Rush N. Hosler, superintendent, coal mine section, Pennsylvania Compensation Rating and Inspection Bureau, presented a paper on "Schedule Rating of Coal Mines in Pennsylvania for Compensation Insurance Rates." Mr. Hosler said that the schedule rating was more stringent in many particulars than the state mining law, for it prohibited the use of oil lamps in any mine, of open lights in any part of a gaseous mine, fuse firing and the pushing of cars by locomotives. It also requires the use of approved electric lights by unofficial employees in gaseous mines, approved magnetically locked flame safety lamps for testing purposes, clearance at roomnecks, and gives credit items for additional inspection of working places daily and for thorough and effective rock dusting.

The schedules have two classes of items, one of which may be termed "moral" as reflecting on the morale of the operation. First-aid, mine-rescue facilities and telephones are examples of these. No one will deny the importance of providing these facilities, yet it is a difficult matter to measure their value by any cause analysis of accidents.

Under Big Hoist

Basement at New Orient hoist house containing control wiring and busbars for 4,000-hp. electric cylindro-conical hoist with a step-up type of drum, 10x17 ft. This machine has the Ilgner system of equalization with a modification of the Ward-Leonard system of control, the details of which were based on specifications and design of the coal company's engineers.



For this reason the values assigned to these items are not the outcome of statistics but of the best judgment of the authors of the schedule. The saving in compensation rate that they provide is sufficient in every case to encourage compliance with their terms.

The second class of items are those that can and have been measured by comprehensive statistics, which are tabulated to show not only the nature of the injury, the place and cause of the accident, but its cost also.

Based on 5-Year Average

The aggregate cost of different classes of accidents, said Mr. Hosler, becomes the basis upon which the average rate for the ensuing year is predicated. To avoid too much fluctuation in rates from year to year it has been deemed wise to use as a basis a period of five years. The experience for that half decade produces an average insurance rate in bituminous mining of $2.25 per $100 of payroll. Some bituminous mines have a schedule rate as low as $1.35 and others run as high as $3.50. Unfortunately it is necessary to draw the line in making schedules.

To illustrate, the designer and patentee of a frog for a mine turnout or switch claims for its use additional safety. There is merit to his claim, but to require the use of another schedule item on the ground that it was safer than others and make a charge for its non-use could not be justified and would involve a large expense for the new switches without equivalent rate reduction being possible.

No employer, Mr. Hosler stated, should be permitted to assume his own liability under the act unless qualified under the insurance laws of the state in the same manner as prescribed for insurance companies. If this were done, the schedule would be applied to all mines. That this would be a valuable provision, safety engineers agree. The greatest single factor in the interest of safety in our coal mines that could be introduced would be to extend the plan of schedule rating, as applied in Pennsylvania, to all coal mines.

In an address on the "Application of Gaussian Curves in the Mining Industry," an article prepared by Hugh Archbald, of Philipsburg, Pa., graphs were shown giving the number of men having any given earning and output, a study which made at any mine, he said, might do much to induce the company making it, to start an investigation that would stimulate improvements in mining conditions. These, in turn, would be likely to lead to reduced discontent and lower labor turnover. The curves would illustrate graphically either the inability of the employee to earn a full wage—whether by reason of his personal defect or the lack of opportunity—or his negligence and lack of effort.

On the afternoon of Tuesday, Feb. 17, the meeting, under the chairmanship of Thomas H. Clagett, considered the article on "Systems of Coal Mining in Western Washington," by Simon H. Ash, superintendent, Pacific Coast Coal Co., Carbonado, Wash. R. D. Hall, of New York City, briefly described the content of the paper, part of which appears in this week's issue. Eli T. Conner said that regular anthracite methods introduced by a man from Pottsville, Pa., were being used when he visited the Washington mines some years back. Later slant chutes were introduced, and these had saved breakage. The coal when mined was not as large as was obtained in the anthracite mines of Pennsylvania, and the slant chute had been introduced so as to preserve the size of the coal as much as possible. He said that the Washington method represented somewhat of an advance over Pennsylvania practice.

Breaking Precedents

J. S. Miller, of Lansford, Pa., presented his own paper which described a "Method of Mining a Steeply Pitching Anthracite Bed by Successive Skips." After detailing other methods that failed to produce good results he described a system of driving long slant chutes about 300 ft. long obliquely up the pitch so that the inclination is only 35 to 45 deg. This done, slant chutes are driven off this chute also at an angle of 35 to 45 deg. When these latter chutes are about 16 ft. long they are turned straight up the pitch, but before they have gone far they reach the long slant chute of another lift and then the pillars are drawn. Measured along the gangway these long slant chutes are 130 ft. apart from center to center. In discussing the paper later Mr. Miller said that he had not been able to compare the results of the old and new methods in the same gangway but in one roadway where the new method was used 75 per cent of prepared sizes was obtained and in another where the old method prevailed but where the coal was quite similar, prepared sizes constituted only 51 per cent of the whole product.

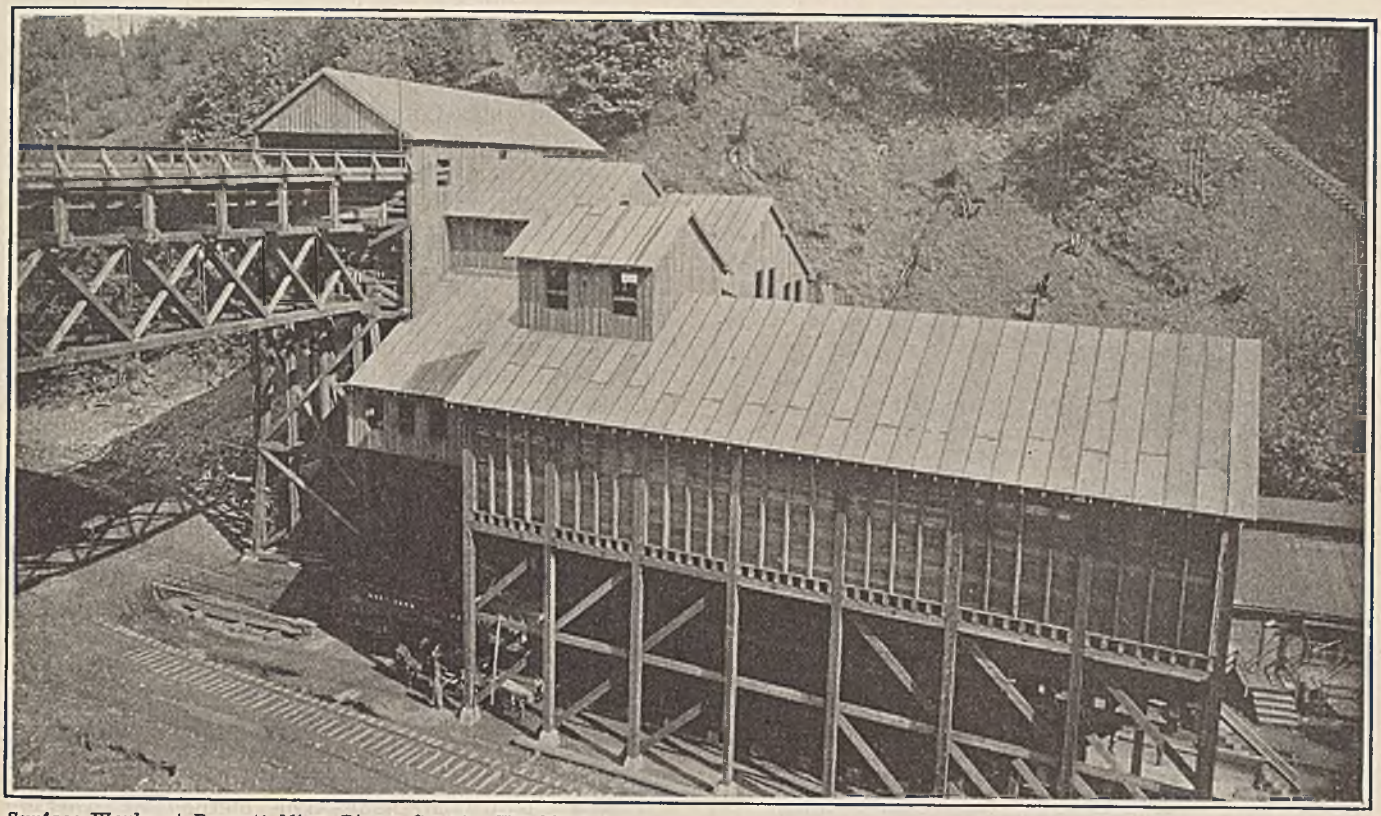
H. H. Otto read an article on "Simultaneous First and Second Mining on Steep Pitches," by Dever C. Ashmead, Wilkes-Barre, Pa., which describes an attempt to drive up breasts or chutes straight up the pitch and leave them full of coal except for the manway on either side, the surplus coal being dropped down the manway and loaded in the gangway below. Then the pillar is removed from the bottom up, but here again the central space is left full of coal to support the roof. Finally when two breasts have been driven, one pillar removed and the third is about to be mined, then the coal stored in the first breast is drawn out. This method is in use at the Wanamie Colliery of the Lehigh & Wilkes-Barre Coal Co.

15,000 Tons Daily?

George B. Harrington described the New Orient mine, some illustrations of which appear in this article. This plant, which will be described later in *Coal Age*, has a capacity to produce 1,875 tons per hour, though Mr. Harrington modestly and cautiously veils that fact. He won't even declare that it will produce 12,000 tons in an eight-hour day, much less 15,000, so many are the misfortunes of model mines and of the second mines of any one company in Illinois and elsewhere.

But it is designed on mammoth lines and all the coal will be hoisted up a single shaft in two large skips, each of which will take 13 tons of coal at a lift. The cars carry 6½ tons each and not 8 tons as was, at one time, suggested. John A. Garcia, of Allen & Garcia, the contractors, read a discussion of the plant, laying stress on details of construction, and Graham Bright declared that great economies in power would have resulted from the use of 16- instead of 13-ton skips, as with the heavier skip load the acceleration could have been greatly reduced owing to the greater time available for each hoist.

In discussing the article "Properties of Liquid-Oxygen Explosives," by G. St. J. Perrott, physical chemist, Bureau of Mines, Pittsburgh, Pa., George S. Rice said that he could not see why it was introduced at a coal session, for liquid oxygen should not be used in a coal mine.



Surface Works at Burnett Mine, Pierce County, Washington

Room-and-Pillar Work in Steeply Pitching Beds of Pierce County, Washington

At Inclinations on Which Coal Will Run "Chutes" or Rooms Are Driven Straight Up Pitch—With Dips of Over 65 Deg. Chutes Are Angled to Reduce Inclination—Safety Provisions in Manways

BY S. H. ASH
Superintendent, Pacific Coast Coal Co., Carbonado, Wash.

WITH THE EXCEPTION of the Roslyn field, a small but important area on the eastern slope, the coal-mining districts of Washington are mainly west of the Cascade Mountains among the foothills of the slope, the lignite fields of Lewis and Thurston counties extending into the valleys west of the mountains.

The coal fields of western Washington divide themselves into three areas, the north, the middle and the south, the bituminous coal fields and most of the active operations being found largely in the middle area. The southern portion contains a large field of lignite. In the northern portion, mining is practically restricted to one mine, the Bellingham, which is working a sub-bituminous coal seam near the city of Bellingham.

The degree of alteration that the coal of a particular field has undergone may be gaged roughly by the position of the field with reference to the Cascade Mountains. The lignites of Tenino, Tono, Mendota and Castle Rock, on the railway line connecting Seattle and Portland, occur in a region of low relief, in which the Eocene coal measures have suffered only minor disturbances. Sub-bituminous coals occur in the foothills, as at Renton, Newcastle, and Bellingham. Coals high in fixed carbon are found nearer the mountains, where the measures have been sharply tilted and folded, as at Black Diamond and Carbonado.

The two typical anthracite fields are located still higher, in the rugged mountains where outcrops appear both in deep gorges and on ridges at elevations approaching 5,000 ft. At Carbonado is found the only semi-anthracite seam worked on a commercial basis. The occurrence of this seam in a region of bituminous coal is due to the nearness of an igneous sill, which has changed its character from bituminous to semi-anthracite.

The coal-bearing rocks of Washington are of Eocene age and correspond, in time of deposition, with the lignites of the Dakotas, Montana, and Texas. In Washington, however, mountain-building forces were active in late Tertiary time; the measures were faulted on a large scale; intrusive agencies were active in some fields and much of the coal was changed in rank and structure.

The surface of the various coal fields has in general

NOTE—First part of article presented Feb. 17 to the American Institute of Mining & Metallurgical Engineers and entitled, "Systems of Coal Mining in Western Washington." This article was presented as a thesis at the College of Mines, University of Washington in 1924.

Fig. 1—Coal Areas, Northwestern Washington

The character of the coal is determined by its nearness to the Cascade Mountains of which Mt. Rainier forms an outlier. The fields close to these mountains are high in fixed carbon as at Black Diamond and Carbonado. Those in the foothills as at Renton, Newcastle and Bellingham are sub-bituminous and those in a region of low relief as at Tenino, Tono, Mendota and Castle Rock are lignites. The Roslyn field is east of the mountains.

a rugged contour. The covering of glacial material masks the continuity of the measures. Because of this, the fields have generally been subdivided arbitrarily, according to the county in which they occur; and reports on the coal areas of the state have been differentiated in this manner.

All the coals contain foreign material in the form of partings or binders, the coal of Washington including more of such partings than that found in many other parts of the United States. The old swamps in which the coal was deposited were apparently subject to many floods which washed in mud and sand from the surrounding higher lands. These materials formed a shale, sandstone layer or parting in the coal bed, which detracts greatly from its value, for the partings must be removed before the coal can be marketed. Removal is generally difficult and expensive. On account of the heavy dips, this foreign material cannot be gobbed in the mine, but must be handled with the coal and eliminated at the cleaning plant.

Based on the methods of mining, the state can be divided into two divisions. These are Kittitas, Thurston, Lewis, and Whatcom counties, which will be designated division 1, and King, Pierce, and Skagit counties, with a future development in Whatcom, called division 2. Under normal conditions the production of the two divisions is approximately equal. The conditions in division 1 cannot be regarded as unusual and the methods by which the coal is worked are similar to those practiced in many parts of the United States and so need not be discussed here. As a whole the coal seams are flat and clean, the rock can be separated at the face and gobbed, and the roof is good. The workings of division 2 are in the pitching seams of the state, where everything between walls must be removed in mining, the rock and accompanying refuse being separated in cleaning plants on the surface. The walls, as a rule, are bad, and the methods of working are diversified.

The daily and yearly output per man in division 1 is greater than that in division 2; the payment of miners in the former is on the tonnage basis, whereas in the latter the men are paid mostly on a yardage basis. Practically all the coal in division 1 goes directly from mine wagons into the railroad cars, whereas all that of division 2 must be washed or prepared for the market. The coal of division 1 is used mainly by the railroads, whereas that of division 2 finds its market as a domestic fuel, for coke, gas plants, steamship, and miscellaneous trade. Although the production is smaller in division 2 than the other division, more men are employed, the ratio being roughly 3 to 2. To show those methods of mining that depart somewhat from the ordinary, mines have been selected that, because of physical conditions, present problems that are typical of the district.

Pierce County Methods—The method of working steep seams about to be described is practiced, with slight modifications, in the different beds of the Pierce County coal measures, especially where explosive gas is likely to be met. In general, the method is always employed where gas is found and where the roof and bottom are troublesome. It is used on all dips where the coal will run, up to 65 deg.; whenever a dip exceeds 65 to 70 deg. the working place becomes unsafe, and the bed is hard to work. In such cases, chutes are driven across the pitch to give an inclination of 45 to 50 deg. The coal is mined by the chute-and-pillar system, for the character of the walls is such that mining by wide breasts is usually impracticable. The coals do not fire spontaneously. The seams worked by this method vary in thickness from 3 to 25 ft., although in Pierce County they do not reach the maximum thickness.

The gangway, Fig. 2, which is the intake airway, and the counter gangway, which is the return airway, are driven parallel. The counter gangway is located up the pitch from the gangway, and the stumps are from 20 to 50 ft. thick. Chutes are driven 6 ft. wide from the gangway to the counter on 50-ft. centers, from which point they are driven 8 to 10 ft. wide up the pitch to the top of the block. Lifts are arranged so that the chutes will be about 400 ft. long. It has been found impracticable to make the pillars between crosscuts over 50 ft. in length, although the law permits the crosscuts to be made so far apart as to give a 60-ft. pillar. The crosscuts vary in size from a hole just large enough for a man to crawl through to 6 ft. wide. On the gangway between every alternate chute, a "half chute" 6 ft. wide is driven from the main gangway to the counter gangway. Where much gas is encountered or conditions warrant such action, half chutes are driven between all the chutes. Each half chute is a traveling way between the gangway and the counter gangway, and from it access can be made to two chutes at all times.

As shown in Figs. 2 and 3, a board brattice is carried up the center of the chute from the counter gangway

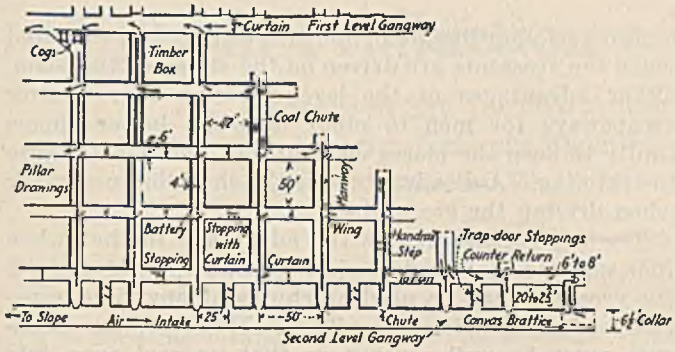


Fig. 2—Chute-and-Pillar System in Pierce County

A brattice is run up the center of each "chute" or breast, and coal is kept at the foot of every chute so as to block the air at that point. Wings are placed at each crosscut to protect the manway which is on the inby side of the brattice. Coal is mined by this method where the pitch is enough to insure its running and is 65 deg. or less. Above this inclination the system is modified by running the chutes obliquely to the pitch.

to the face, the inby compartment being used for a manway. The boards of this brattice are nailed on the side of the posts remote from the manway, these props being set from 2 to 4 ft. apart, depending on the character of the walls. Hand rails are fastened to the props on the manway side, and steps on the bottom are made by placing a prop on the upper side of the brattice props, setting one end in a hitch in the rib. Often a ladder is laid on the floor of the manway and nailed to props, which are placed on the floor at regular intervals to be used for steps.

The details of ventilation are shown in Fig. 2. The main ventilating fans are usually of the exhaust type, the main haulage roads being used as intake airways. In all mines where explosive gas is generated, the workmen use approved electric lamps.

The chute between the gangway and the counter gangway is always kept full of coal, thus preventing leakage of air from this source. At every crosscut and on the counter gangway, canvas curtains 2x2 ft. are hung in the brattice; access across the chutes can be made through these openings at all times. At each crosscut, wings are built of boards from the bottom to the roof on the manway side of the chute, starting at the chute brattice below the canvas curtain and extending to a wing post set in the center and slightly back in the crosscut. These wings not only deflect the air into the crosscut, but prevent any coal from passing below the crosscut as it runs into the coal side through

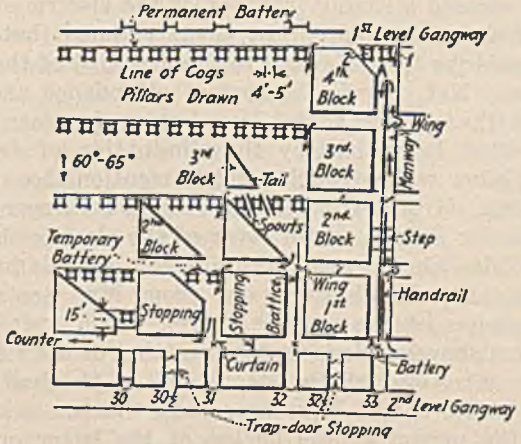


Fig. 3—Pillar Drawing, Chute-and-Pillar Workings

By cutting off the pillars at an angle the coal when it falls runs readily to the chute despite the fact that it may be some distance from it. Cogs have to be placed to protect the workman and his working place, but by the use of spouts or wooden chutes the coal can be run nevertheless.

the canvas curtain. This protects the men traveling in the chute.

Batteries or bulkheads are built at every alternate crosscut, and where necessary, at every crosscut, the chutes being kept full of coal. This not only arrests the coal and reduces breakage, but aids ventilation and makes it safe to pass from one chute to another through the crosscuts. A chute starter runs coal from the batteries when necessary.

Much of the shooting is done on the solid, an opening shot being fired first. Holes are drilled with ordinary hand machines, which are either post or breast augers, although drills of the auger type, such as the Waugh "Ninety," are finding favor where compressed air is available. Power drills are a distinct advantage, especially in a thick seam or a high chute where it is difficult to set up a post machine and where the coal is too hard for a breast auger. In some instances, half of the miner's time is used in drilling and with the power augers this time can be reduced considerably. Compressed air in the place also aids ventilation. In most cases only one miner works in each chute. In one seam averaging 4 ft. and with a coal of average hardness, the rate of advance in 8-ft. chutes is 8 ft. per shift of 8 hours.

In Fig. 3 is shown the method of pillar drawing. Four chutes are usually driven to the level above before any beginning is made to withdraw the pillars in the preceding rooms, three of which pillars are usually being removed at one time. They are attacked from their inby sides. In the illustration, which is typical of usual practice, pillar No. 30 is finished. Pillar No. 33 is just being attacked. When a pillar is to be drawn, the crosscuts of the chute are well timbered and a cog, 1 as in pillar 33, is built on the under side of the upper gangway or crosscut as the case may be; often right up against the face or top of the workings.

This cog is placed as close as possible to the inside rib of the chute. The corner *A* of the fourth block is then worked off and, as soon as space permits, a second cog 2 is placed 4 to 5 ft. from the first. A temporary battery of props is built above this cog to aid travel across the face and to prevent anything falling from above and injuring the men below or knocking out the props. The cogs and batteries are built of 6- or 7-ft. props, depending on the thickness of the seam.

Attacking a block in this manner is called "taking off the angles." The process is continued until half of the block is worked off, as in block 2 of pillar 31, leaving what is called the "tail." The same course is pursued in the next block below, as in 1 of pillar 31, after which the tail or half of the block above is worked and run out. When a tail is to be run out, as shown in block 3 of pillar 32, part of which has been run out, the temporary battery above the cogs is replaced by spouts or wooden chutes.

The coal is then run out between the cogs through the spouts, after which a permanent battery is placed above the cogs. In this way the pillars are drawn to the first block, from which only an angle is taken off as shown in pillar 30, and a cog and permanent stopping are placed in the chute neck. By working as shown, the roof breaks above the cog lines and is held up by the cogs. With good roof, 90 per cent of the coal is frequently recovered.

The timber is cut on the surface, at the mines, the lagging being made of either split or sawn timber. Split lagging is best suited to use in gangways, under

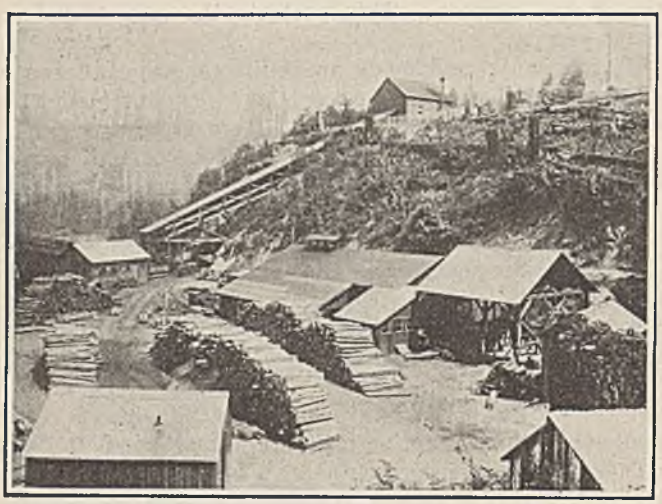


Fig. 4—Another Part of Burnett Surface Works

The illustration shows the piles of timber. The beds require large quantities of heavy posts, cross pieces and lagging, the transferring of which to the place where it is to be used being a job of some magnitude and difficulty owing to the steepness of the pitches.

heavy ground, and in chute batteries or bulkheads. Ordinarily, the gangway sets are made of heavy poles, set 6 ft. apart. They consist of two legs and a collar, above which split laggings must be placed to safeguard against the coal or shale roof. Ties are usually made of sawn lumber, the size and spacing varying with the gage of the track.

Timber, where possible, is brought down from the surface to a gangway or top counter gangway above the active mine workings. Chutes are driven from the working level to this gangway, or top counter, and one of these is used as a timberway from which props are taken to all parts of the pitch.

Posts Hitched Into Mine Floor

On the pitch, props are set 3 ft. or more apart, depending on the walls, above which cap pieces are placed if the roof is bad, otherwise they are set in a hitch. They are slightly underset on the top or bottom, depending on which wall is apt to move ahead of the other; if the bottom is bad, sills are used.

Where the mines are opened as slopes, the cars are raised or lowered by means of steam or electric hoists. In small mines, unbalanced or single-rope hoisting is used; but in the large operations, the partly balanced or two-rope hoisting system is common. The loads hauled vary according to the dip and size of the mine.

The mine cars have a capacity of from 1- to 2-ton, and, except for short hauls where mules are used, the cars are hauled on the gangways by electric locomotives of either the trolley or storage-battery type. As the cars are loaded from the chutes on the gangway and as the coal spills more or less over the sides of the car, it has been found economical to place the drainage ditch on the hanging-wall side of the gangway.

Where the chute-and-pillar system is used and the dip exceeds 65 deg., it is advisable in most instances to drive the chutes at an angle to the pitch rather than straight up it. The question then arises whether the crosscuts should be driven at right angles to the chutes. that is shall run at an angle to the strike or shall be driven on the strike of the seam. The general practice favors the level crosscut, whether the mine is gaseous or not. Probably the determining factor in working a steeply dipping seam is the distribution of timber and material on the pitch, and this is greatly facilitated when the crosscuts are driven on the strike of the seam. Other advantages of the level crosscut are: Better escapeways for men in pillar drawing, better opportunity to keep the places clear of gas, and greater ease in traveling. A disadvantage is the shoveling necessary when driving the crosscuts.

The angle crosscut has the advantage in that when it is used no coal need be shoveled and that, if desired, the crosscuts can be used as chutes at any time, especially when drawing the pillars. However, the crosscuts must be well covered so that no coal runs into them. There are times when it is a distinct advantage to drive angle crosscuts even when the chutes or breasts are driven on the full pitch when the dip is less than 65 deg. This will be described in a later article in detailing the system of working the Newcastle mine.

For and Against Electric Strip Shovel

At a general meeting of the Engineers' Society of Western Pennsylvania in the William Penn Hotel, Pittsburgh, Pa., on the night of Feb. 17, the discussion of a paper on "Modern Excavating Machinery," by W. W. Goetz of the Bucyrus Shovel Co., developed into a rather one-sided debate as to whether an electric or steam power unit is best suited for excavating shovels. Only five men, three of whom are electrical engineers, entered into the discussion. These three electrical men, including Mr. Goetz, were unanimous in the belief that electric drives would eventually supplant the steam plants on shovels where a reliable supply of electric power is available.

They pointed to the advantages derived from the use of the Ward-Leonard system, consisting of a motor-generator set with which the voltage supplied to the armature of the drive motor can be economically adjusted to give varying speeds. They also laid emphasis on the savings in labor and maintenance which the electric substation units mounted on the shovel provide. It was their opinion that in many cases electric power can be transmitted to the shovel at a cost less than that entailed in transporting coal thither and that the electric shovel will even prove more economical in the stripping of coal beds. A comparison of the costs of two similar shovels, one operating by steam and the other by electricity under the same conditions, showed a saving in favor of the electric shovel of $12,000 in one year. Mr. Goetz claimed that this saving paid for the difference in the first cost of the two machines. Not only is the cost of attendance and repairs on the electric shovel less, but an increase in a day's output is realized by the elimination of freeze-ups and other water troubles, not to mention those with the boilers. Mr. Goetz stated that nine out of every ten inquiries for shovels are in favor of the electric shovel.

Mr. White who operates several steam shovels in clay pits near Pittsburgh drew out from Mr. Goetz the disadvantages of the electric shovel, which are: (1) The steam shovel cycle is faster than that of the electric shovel. (2) Although the steady pull of the bail rope on an electric shovel is greater than that on a steam shovel, the impact of the bucket of the latter on the material being loaded is greater. To loosen up tight material the steam shovel depends upon a succession of such impacts for its success rather than on a steady pull as in the case of an electric shovel.

Shifts in Production of Bituminous Coal in 1924

Depression Set In with Adoption of Jacksonville Agreement and No District Entirely Escaped—In Elimination of High-Cost Mine Many Operations Were Hit—Prospects Brighten as Stocks Melt

By F. G. Tryon, W. F. McKenney and R. M. McKinney[a]

IN 1924 the bituminous coal mining industry experienced severe depression. From the effects of the depression no district or mine entirely escaped, but they rested unequally upon individual mines and districts. It is time to examine the statistical record of the industry and take stock of the results.

Such a stock taking is necessarily to a large extent a chronicle of the effects of the Jacksonville wage agreement, the outstanding event of 1924. Technically the agreement did not become effective until April 1. Practically its influence dates from Feb. 18, 1924, the day of signature. As soon as the news was announced the wave of buying for storage in anticipation of a strike subsided and depression settled upon the market.

Supporters of the agreement urged that it would "eliminate the high-cost mine." That it has certainly tended to do. The wagon mines had closed some months before the agreement was signed. Wagon coal had disappeared from the market in May or June, 1923. What of the commercial mines? Light on their condition is thrown by the weekly reports of the Geological Survey. Throughout the period before and since the agreement about 2,500 mines have reported each week to the Geological Survey. The mines included are substantially the same from week to week and the reports are comparable. These are not wagon mines. They are commercial operations of some size, affiliated with an operators' association, or large enough to maintain a permanent office force and to send in a report weekly to the Survey. Altogether, the 2,500 mines include about half of the output of the country. They may be taken as fairly representative of the commercial as distinct from the consumer-owned tonnage.

Output Limited by Car Supply

In Fig. 1 each bar represents the condition of these 2,500 mines for a typical week. The sections of the bar stand for the percentage of the total number of mines that were entirely idle in that week and the percentage that worked one day, two days, and so on up to six days, or full time. Let us pick up the story in October, 1922, just after the great strike. The market was then active. Prices were high and the railroad shopmen's strike had created a transportation shortage, so that the factor limiting output in most districts was car supply. Under these circumstances practically all mines that could get cars were in operation and only 4.2 per cent of the total mines reporting were idle. Another 8.8 per cent worked one day, 26 per cent worked two days, 25 per cent three days and so on to the group working six days, which constituted 13.1 per cent of the total.

The next bar shows the condition in the week of Feb. 17, 1923. The wage agreement had been renewed for another year, until the Coal Commission should have completed its work, and the after effects of the strike of 1922 were rapidly disappearing. Demand was still active and the number of mines closed had increased but slightly. For the week in question it stood at 8.4 per cent of the total. Production of the mines at work was limited chiefly by the available car supply, and few mines were able to get both cars and orders sufficient for full-time operation. As 1923 passed the market grew increasingly dull. More and more properties closed, with the result that in the week of Nov. 17 32 per cent of all the mines reporting to the Survey were idle, a percentage almost four times as great as that in the preceding February. Not less significant than the increase in idle mines was an increase at the other end of the scale in the number of mines working full time. By November, 1923, 14.8 per cent were working practically at capacity, and this included a large share of the biggest mines.

Thus, even before the Jacksonville agreement was signed a marked shift of business from high-cost to low-cost mines had begun. The tendency inherent in the existing wage agreement was clearly revealed in the last half of 1923. The renewal of the agreement for three years accelerated the tendency. A year ago, in the week ended Feb. 16, 1924, 30.2 per cent of all the mines were idle, but the number working full time had, significantly enough, increased to 18.4 per cent. At the worst of the depression in April, 1924, the percentage of idle mines rose to 46.7, but many of these later reopened and by August the percentage idle had settled down at about 43.8. By this time the group of six-day mines had increased until it included 22.2 per

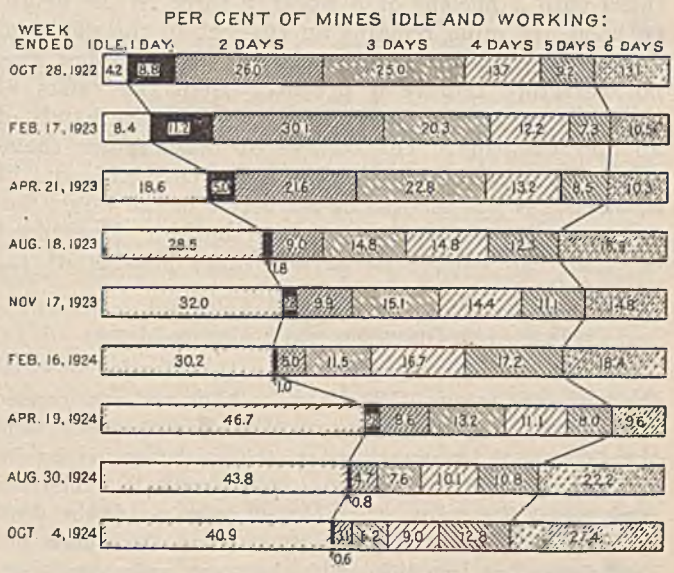


Fig. 1—Per Cent of Idle, Part-Time and Full-Time Mines in Nine Representative Weeks

This chart is based solely on mines reporting weekly to the U. S. Geological Survey, of which there are about 2,500. They represent about half the tonnage of the country. Though not complete the figures show the trend.

[a]Published by permission of the Director, U. S. Geological Survey.

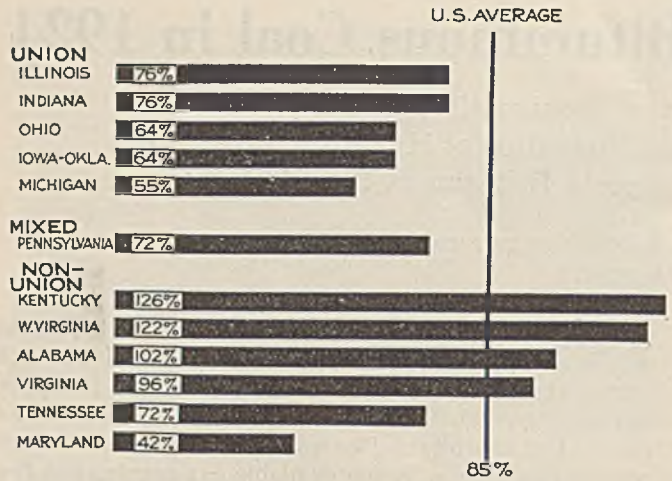


Fig. 2—Comparing 1924 with 1920 Output

This chart is based on the U. S. Geological Survey's preliminary estimates for 1924 and its final figures for 1920. The average for all mines in 1924 was 85 per cent of that in 1920. It will be seen from the illustration that Illinois mined in 1924 only 76 per cent of what it produced in 1920, and Kentucky 126 per cent as much in 1924 as it did in the latter year.

cent of the total. The last comparable record is for the week of Oct. 4, 1924. By this time the idle mines constituted 40.9 per cent and the group of six-day mines had risen to 27.4 per cent.

The tendency to concentrate more and more of the available business in the low-cost mines, permitting them full-time operation, while others are closed entirely, is vividly disclosed by Fig. 1. The zone of idle mines at the left becomes greater as time goes on. The zone of full-time mines shown by the segment at the right also expands, and the intermediate classes, working part time, grow less and less important. Were this tendency to continue to the logical end, there would emerge only three groups of mines, those entirely closed, those working full time, and a small marginal group called upon occasionally to make up what the full-time mines could not supply.

It is, of course, uncertain how many of the mines here shown as idle are in fact abandoned. In one sense no mine is abandoned until the iron rails and machinery have been pulled from it. As long as the equipment is there with a nucleus of a working force in the neighborhood, the mine remains an element in the potential producing capacity of the country. Bankruptcy does not certainly remove a property from the ranks of potential producers, for it may pass into the hands of another company. The owners of these mines themselves cannot tell whether they are permanently out of business. A few months of attractive prices would find the majority of them back in the market. How many of them can endure twenty-six more months of the present condition is a different question.

Business Diverted from Union Mines

The Jacksonville agreement has thus tended to close the high-cost mines. Whether the high cost was caused by difficult natural conditions—thin seams, faults and steep dips—or by great age of the workings, or by inefficient management and an unwillingness to modernize equipment, the mines that closed were no doubt unfit to survive. But all too often the cause has been not inefficiency but the differential between union and non-union wage rates. The union fields, attempting to pay the 1920 scale, have lost business to the non-union fields, where reports indicate a return to the 1919 and sometimes to the 1917 scale.

In every district some mines have closed and part of their business has gone to others in the same district. This is true of both union and non-union fields. Every district has reported its casualties, but in addition there has been a marked shift in business from district to district. The Geological Survey's preliminary statistics of production for 1924 indicate clearly what has been going on. In Fig. 2 the output for certain of the principal States is shown as a percentage of the output for 1920. The year 1920 is a better standard of comparison than 1923 would be, for, as already shown by Fig. 1, the shifting of business from high-cost to low-cost mines was well under way in the closing months of 1923. Comparison with 1923 therefore will not show the full results of present competitive conditions, nor would 1922 or 1921, both abnormal years, serve as a standard. In 1920, on the other hand, all districts experienced lively demand. In 1920 the present level of union wage rates was set. In comparison with 1920 what did 1924 show?

On the average, for the industry as a whole, production in 1924 fell 15 per cent short of 1920, and if all districts shared equally in the decline each would stand at 85 per cent of its 1920 mark. But it will be seen from Fig. 2 that the strong union states without exception fall short of the 85 per cent line. Illinois and Indiana both stand at 76 per cent of their 1920 performance. Ohio and the tier of states from Iowa to Oklahoma stand at 64 per cent, and Michigan has dropped to 55 per cent.

Pennsylvania Output Slumps

Pennsylvania, which includes both union and non-union territory, produced 72 per cent as much in 1924 as in 1920. Were the figures available by districts the comparative loss of the union territory might appear greater.

In sharp contrast, the non-union states of the South did much better in 1924. In part their favorable showing is the result of a more rapid normal rate of increase. Be the explanation what it may, the fact is that the best available data indicate a production in Kentucky 26 per cent greater than that in 1920. West Virginia was 22 per cent above 1920 and as the state contains some union mines the increase for the non-union portions alone doubtless was greater. The figure for Alabama is based on 1918, rather than 1920, for in 1920 a long strike curtailed the output of the state, and to use it as a standard of comparison would make 1924 seem unduly high. Even so, the state shows an increase of 2 per cent.

Virginia, though falling slightly short of 1920, was still far above the average for the country. Tennessee and Maryland are included in the non-union group in the diagram, in spite of the fact that from some points of view they might be grouped under the heading "mixed." So far as known in the Geological Survey, few operations in these two states were under contract to pay the union scale in 1924. They represent, however, high-cost areas within the non-union region, areas of thinner coal and older workings. Their less favorable showing proves that the same differentiation of business between high-cost and low-cost mines was going on in the non-union fields themselves as between the union and non-union fields.

Like estimates published by the Geological Survey in earlier years these estimates may be revised materially when the final returns are complete. The revision

Production of Soft Coal in the United States in 1924 Compared with 1920

	Produced in 1920 (Net Tons)	Estimated Output in 1924 (Net Tons)	Increase or Decrease in 1924 (Net Tons)	Per Cent That 1924 Output Was of 1920
Alabama.....a	19,184,962	19,490,000	+ 304,038	101.6
Arkansas.....	2,103,596	1,300,000	— 803,596	61.8
Colorado.....	12,278,225	9,840,000	— 2,438,225	80.1
Illinois.....	88,724,893	67,880,000	— 20,844,893	76.5
Indiana.....	29,350,585	22,340,000	— 7,010,585	76.1
Iowa.....	7,813,916	5,100,000	— 2,713,916	65 3
Kansas.....	5,926,408	4,150,000	— 1,776,408	70 0
Kentucky.....	35,690,762	45,000,000	+ 9,309,238	126.1
Maryland.....	4,065,239	1,720,000	— 2,345,239	42.3
Michigan.....	1,489,765	820,000	— 669,765	55.0
Missouri.....	5,369,565	3,140,000	— 2,229,565	58.5
Montana.....	4,413,866	2,700,000	— 1,713,866	61.1
New Mexico.....	3,683,440	2,550,000	— 1,133,440	69.2
North Dakota.....	948,625	1,090,000	+ 141,375	114.9
Ohio.....	45,878,191	29,200,000	— 16,678,191	63.6
Oklahoma.....	4,849,288	2,800,000	— 2,049,288	5.7
Pennsylvania (bit)	170,607,847	123,530,000	— 47,077,847	72.4
Tennessee.....	6,662,428	4,800,000	— 1,862,428	72.0
Texas.....	1,615,015	1,075,000	— 540,015	66.6
Utah.....	6,005,199	4,460,000	— 1,545,199	74.2
Virginia.....	11,378,606	10,900,000	— 478,606	95.8
Washington.....	3,757,093	2,400,000	— 1,357,093	63.9
West Virginia.....	89,970,707	110,000,000	+ 20,029,293	122.3
Wyoming.....	9,630,271	6,850,000	— 2,780,271	71.1
Other states b.....	159,054	145,000	— 14,054	91.1
Total c.....	568,666,683	483,280,000	— 85,386,683	85.0

(a) Because of the miners' strike in Alabama in 1920, the figure of 1918 is used here as a better standard.
(b) Includes Alaska, California, Georgia, Idaho, North Carolina, Oregon and South Dakota.
(c) Total production in 1920. The column does not add to this figure because of use of 1918 figure for Alabama.

can hardly alter the general showing here made. The shift in favor of the non-union fields may prove to be less than the preliminary figures indicate. It may, on the other hand, prove to be greater.

In some respects 1925 promises a larger demand for coal than 1924. The surplus stocks built up by consumers in anticipation of a strike in April last year have presumably been reduced to stable levels. The dullness of general business, which was particularly apparent in the steel industry from May to August, has been succeeded by a feeling of optimism. Competition of fuel oil, severe in 1924, is already slackening. How much these factors may change the situation we venture no opinion.

Speaker Suggests Anthracite Should Not Sleep on Its Problems

The Engineers' Society of Northeastern Pennsylvania held its twenty-eighth annual banquet Thursday evening, Feb. 19, at the Hotel Casey, Scranton, Pa., the toastmaster being E. J. Mehren, vice president of the McGraw-Hill Co. The principal speaker of the evening was Frederick Gehle, vice president of the Mechanics and Metals National Bank of New York. The other speakers were S. D. Dimmick, vice president of the Glen Alden Coal Co., the outgoing president of the Society, and J. W. White, of the Jeffrey Manufacturing Co., who was lately elected president.

According to the usual practice of the society of having speakers from both the engineering and banking professions, Mr. Mehren gave the engineering address of the evening. He dwelt on the growing competition of gas, oil, coke and bituminous coal. "Problems of competition," he said, "were good for every industry. They are a stimulus to the ingenuity of man." Industries cannot afford to sleep in view of the ever-changing conditions of modern life. The gas industry, for instance, had suffered severely by supinely enduring all that public opinion and energetic electrical advertising placed upon it. The coal industry must "merchandise" its product; it must help the dealer in selling; it must aid the consumer in using it to the greatest efficiency.

Although speaking on a far different subject than Mr. Mehren, there was a marked similarity in the keynote of the speech made by Mr. Gehle. Whereas, Mr. Mehren showed why the anthracite-producing companies should consider outside competition and public feeling; Mr. Gehle explained why the United States should become better acquainted with world markets and problems. From his personal experience and studies of the financial difficulties of European countries, Mr. Gehle discussed stabilization of German currency and the financial and industrial problems that confronted both Germany and France. He predicted that before long Germany would become the second leading industrial country of the world, standing second only to the United States. "If Germany is to pay her indemnities as outlined in the Dawes plan she must of necessity export her products to other countries. This in turn makes matters extremely difficult for France, which is now staggering under a debt greater than its national wealth."

Throughout his talk Mr. Gehle stressed the importance of our taking an active and sympathetic interest in the affairs of the European countries because of the influence and effect of foreign problems on livelihood and welfare of the American people.

Speaking of the present condition of the United States, Mr. Gehle declared that in recent years our country had changed from a debtor nation owing two billion dollars to a creditor nation to whom was owing sixteen billion dollars. Many of the out-of-town visitors to Scranton were the guests of the Glen Alden Coal Co. on Friday and visited several of its large mines.

Igneous Action Cokes and Carbonizes Coal

As a result of careful investigation of the coal beds of the Yampa River in northwestern Colorado, J. B. Eby, of the U. S. Geological Survey, in an article presented at the meeting of the American Institute of Mining & Metallurgical Engineers, Feb. 16-19, arrived at the following conclusions:

"Analyses indicate that the effect of a 25-ft. dike on a coal bed, is limited, to a distance of about 15 ft. Megascopic examination of the bed fails to reveal an observable effect for a lateral distance of more than 20 in. In a vertical direction, a sheet 75 ft. thick has affected coal up to an average of 80 ft. above the sheet. Analyses show that true anthracite is formed at least as far as 45 ft. above the sheet in this field and true semi-anthracite as far as 55 ft. above the sheet, provided the coals are not affected by dikes. It is also shown that a 200-ft. sheet or sill will alter to a true anthracite a low-rank coal occurring 26 ft. below it; and to a semi-anthracite a coal occurring 44 ft. below it."

The coals studied by Mr. Eby in his inquiries into contact metamorphism belong chiefly to the Mesaverde and Laramie formations. The Mesaverde seams, on the average, contain blocky low-rank bituminous coals; those of the Laramie formation, which are considerably younger, are of sub-bituminous rank. The coals of both formations in the northeastern part of the Yampa field have been greatly affected by basalt intrusives, yielding all variations of carbonized coal from natural coke to the unaffected material. The igneous rock that directly affects the coal is a fine-grained olivine basalt.

News Of the Industry

Pressure for Federal Aid in Modifying Miners' Wage Pact Is Without Result Thus Far

Officials Hope Workers Will Take Initiative — Labor Leaders, Fearing Political Oblivion, Seek Horny-Handed Hero to Pull Chesnuts from Fire—Operators Who Decried Government Interference in Business Ready to Modify Stand—New England Placing Few Coal Contracts

BY PAUL WOOTON
Washington Correspondent of *Coal Age*

Despite the pressure being exerted there are no indications that the federal government will call a conference to discuss the Jacksonville agreement or will take any other step looking to the relief of union operators and mine workers. It will be recalled that the administration was not represented at the Jacksonville conference. It is true that the Pittsburgh Coal Producers' Association was advised to "attend the conference and make every endeavor to set up a wage contract fair to both sides," but there was no suggestion, implied or otherwise, as to whether the contract should be long or short, high or low.

The representatives of the operators and the representatives of the mine workers sat in the conference with their eyes open. If they made a contract which has proved to be injurious to both parties to it, the feeling in Washington seems to be that the federal government has no moral obligation to attempt to extricate them from the predicament in which they find themselves.

Each Waits for Other to Move

In official circles the hope is expressed that the initiative in this matter will be taken by the men. If the operators brought forward a formal proposal to lower the scale it would tend to crystallize sentiment against it among the workers. The men are at a great disadvantage, however, because their leaders will hesitate to move for fear of the political consequences which might be visited upon them. The probabilities are that it would be political suicide for a labor leader to sponsor a movement for the reduction of wages. It affords an opportunity which would be grasped quickly by aspirants for his place. For that reason the leaders in the United Mine Workers are looking around for some one to pull their chestnuts out of the fire. They would like very much to have this act performed by some federal official.

While recent weeks have rung with operators' protestation against government meddling in business, many of them now are advocating federal intervention in an effort to effect a wage reduction. It is quite evident that the mine workers have taken enough punishment to convince them that it would be better to accept a reduction rather than continue to force the coal business to the non-union fields, to the permanent detriment of themselves and their employers.

Relief Seen in Freight Cuts

There has been renewal of the talk that great relief would come to the sorely stricken union territory were freight rates from the Southern fields readjusted. Any rate changes, however, within the range of probability mean only nickels and dimes a ton. Such changes easily could be offset by paring the labor cost. The capacity of the non-union fields, however, has grown to the point where they must have these Northern markets. They are not going to be taken away from them without a fight.

It is this continuing expansion which has alarmed some observers. The present situation is causing the opening of many new non-union mines and is keeping in operation the inefficient mines in that territory. At the same time more and more of the efficient capacity of the union fields is being put out of business. While the 1924 figures are not available, the increase in the number of miners during the 1918-1923 period was 15 per cent. Every time a man is added to the payroll the potential capacity is increased. The output per man has grown rapidly as the individual worker has been backed by more and more machinery. The development in that direction during the past two years has been startling.

All of this expansion, however, has brought no great amount of reward to the non-union operators. They have competed so keenly among themselves that few have much to show for all the hectic activity of the past year. Moreover, the public is being educated to expect coal at lower prices than are justified. This is paving the way for trouble when the day of reckoning comes.

An idea of the demoralization existing may be gained by the fact that New England is contracting for little coal. The boats come confidently into Hampton Roads certain of finding all the distress coal that they want. Captive mines, including those of the railroads, are shut down for the most part, and their owners are buying coal in the open market at much less than they can produce it in their own mines.

The seriousness of the whole situation is obvious to federal officials, but apparently they can see nothing in the situation which would justify their taking a hand. It is apparent that someone must do something soon or the Jacksonville agreement will wreck the whole industrial structure in the Central Competitive field. Operators and the union will be crushed in the collapse and the public ultimately will pay the bill.

Virginian's New Coal Pier Has Dress Rehearsal

The new $3,000,000 self-trimming coal pier of the Virginian Railway at Sewalls Point, Hampton Roads, dumped its first ton of coal Feb. 14, and officials announced that after certain readjustments of machinery the pier would be ready for business in about two weeks. Two cars of coal were dumped by the pier at the trial, and officials of the company pronounced the test entirely satisfactory. The pier will be opened after adjustments are made with a formal ceremony, to be attended by coal shippers and steamship men as well as a number of high railway officials.

Suit was filed in federal court at Columbus, Ohio, recently by E. F. McClure, of Kentucky, asking for the appointment of a receiver for the Alma-Thacker Fuel Co., with offices in the Huntington Bank Building, Columbus. It is averred that the liabilities of the company total $115,000, of which $5,900 is owing to the plaintiff. The company is capitalized at $500,000 and is engaged in producing and marketing coal. The company's mines are in the Thacker field of West Virginia, Charles Cohenour is president.

Union Moves to Check Abuses Of Co-operative Mines

The problem of co-operative operation of stock company mines, regarded by officials of the miners' union as one of the most critical that has ever confronted the Ohio union, was discussed at the annual convention of district No. 6, United Mine Workers, recently. So serious is the situation, they declare, that if the spread of the system is not checked, disruption of the union threatens. A plan to halt the spread of the system, which involves the working of mines by union miners on shares, and in violation of union laws, was formulated.

In banding together and working a mine co-operatively miners do not observe union wages and rules and are thereby able to produce coal cheaper than mines employing union men, mine officials say. At present there is a fine of $50 only.

A resolution was adopted providing that miners employed in co-operative mines would be barred from the union unless mine union officials were permitted to check the lease, examine the books and take such other steps as might be deemed necessary to maintain union working conditions.

To test the responsibility of firms reconsigning coal the Kentucky Fuel Co., Cincinnati, was named in a suit filed in U. S. District Court, Feb. 17, by the Detroit & Toledo Short Line R.R. The plaintiff asks for judgment of $1,134.78 alleged to be due as freight charges on reconsignments of five carloads of coal. It is charged that the coal originally was consigned to Latonia, Ky., and then was reconsigned to Monroe, Mich. At that point the shipment was refused, it is charged. The railroad company said that it then sold the coal for $91.72, and there still is a balance of $1,134.78 due on the shipment.

Steamer Takes 19,000-Ton Coal Cargo

The American steamer Chilore, of the Ore Steamship Co., sailed from Hampton Roads Feb. 14 with 19,792 tons of coal, the biggest cargo ever dumped there. The vessel got her cargo at the Lamberts Point piers of the Norfolk & Western, approximately 10 hours being required to load her. She drew 33 ft. of water forward and 34.5 ft. aft when she sailed. The next highest cargo figure ever registereed here was about 6,000 tons less than the Chilore cargo.

Complaint Against Coal Men In Midwest Dismisssed

The Federal Trade Commission has dismissed without prejudice its complaint against the Illinois and Wisconsin Retail Coal Dealers' Association, and J. B. Sanborn & Co., publisher of the *Coal Dealers' Blue Book*, of Chicago, Illinois, because of lack of evidence to sustain the charges of the complaint. The complaint alleged unfair methods of competition in the distribution of coal by the members of the association, which is made up of retail coal dealers in Illinois and Wisconsin.

Following is a complete list of respondents named in the commission's order: Illinois & Wisconsin Retail Coal Dealers' Association, its officers and members; Russell H. Jones, president; R. B. Herring, first vice-president; C. S. Dodge, treasurer; I. L. Runyan, secretary, and W. H. Baethke, W. J. Dambold, E. H. Keeler, A. H. Holcomb, R. S. Hunter, H. E. Eastman, J. H. Wall, F. A. Young, W. J. Baker, H. B. Gaines, R. C. Wagner, Jr., P. F. Irwin, W. S. Harwood, C. R. Burnton, J. V. Tapper, Joseph Rademacher, J. B. Sanborn & Co.

Fifty-One Miners Dead After Gas Explosion In Indiana Coal Mine

A gas explosion which killed 51 men in the City Coal Co.'s Pure Seam mine at Sullivan, Ind., Feb. 20, was the worst mine blast in Indiana's history. Seventeen bodies had been brought out by noon of the day after, but it was not until early Sunday that the last body had been recovered. The exact cause had not been determined by State Inspector Albert Dally and U. S. Bureau of Mines men under C. A. Herbert of the Vincennes rescue station but General Superintendent Ingleman said it was supposed that gas has been ignited by open-flame lamps. Where the gas came from is a mistery, for the mine is in No. 5 coal and distinctly not gaseous and the ventilation system, which was in good working order, is recognized as one of the most efficient in the state. A news story that a cutting machine broke into an adjoining abandoned working was not substantiated by early investigation.

Elmer Davidson, the only miner in the explosion area who came out alive —a man who has been through two other blasts and says he is not going to give up mining—told the only story to which any value is attached. He was on a main entry coupling cars when a miner went by him remarking that a bad squeeze was starting in the third and fourth north side entries. About a minute later the explosion occurred, leaving Davidson unconscious. He was the first man picked up by early rescuers.

The blast started in the first fourth north off the main east entry and spread only to include the main east and 23 rooms. This indicates that the back suction from the vacuum behind the explosion snuffed out the flame. Coal dust may have participated but No. 5 dust is not highly flammable. This is supposed to account in part for the small spread. The mine does not use rock dust and there is no sprinkling to wet down dust. All lamps used in the mine are carbides, as in the rest of the state.

The mine is two years old, well equipped electrically, employs about 140 men, 122 of whom were in at the time of the explosion—10:45 a.m.—and is operated by the Walter Bledsoe interests, of Terre Haute, Ind.

The compensation insurance on the City Coal Co. was carried in the Lynch Coal Operators Reciprocal Association, of Terre Haute, Ind. This is a reorganization of the Indiana Coal Operators Reciprocal Exchange, of which Mr. Lynch has been the manager.

The North American Co. reports a coal saving of 329,000 tons in 1924 as the result of the increased operating efficiency of its public utilities. At the same time the output of electrical energy gained 8.13 per cent over 1923. For the entire United States the Geological Survey reports that 2.2 lb. of coal was burned during 1924 for each kilowatt hour of electricity produced. Against this the average for all the North American Co.'s stations was 1.85 lb.

Anthracite Output and Value by Counties In the Calendar Year 1923

(Compiled by U. S. Geological Survey)

	Shipments		Total production	
	Gross Tons	Value	Gross Tons	Value
Berks *a*	23,000	$49,000	42,000	$79,000
Carbon	2,509,000	14,847,000	2,830,000	15,696,000
Columbia	940,000	5,146,000	1,079,000	5,386,000
Cumberland, Lancaster and York *a*	76,000	71,000	113,000	100,000
Dauphin	807,000	5,223,000	1,303,000	5,873,000
Lackawanna	16,861,000	114,842,000	18,446,000	119,417,000
Lehigh and Montour *a*	34,000	41,000	35,000	42,000
Luzerne	28,076,000	191,922,000	31,996,000	202,140,000
Northumberland	5,249,000	32,720,000	6,197,000	34,376,000
Schuylkill	17,802,000	112,558,000	20,161,000	116,416,000
Sullivan	281,000	1,913,000	294,000	1,978,000
Susquehanna and Wayne	770,000	5,066,000	842,000	5,285,000
Total	73,428,000	$484,398,000	83,338,000	$506,788,000

a Counties producing dredge coal only.

The difference between shipment and production—9,910,000 gross tons, valued at $22,390,000—represents the quantity sold to local consumers and used at the mines for power and heat.

Anthracite Output in 1923 by Fields

(In Gross Tons)

Field	Breakers	Washeries	Dredges	Total
Eastern Middle	7,039,000	122,000	0	7,161,000
Western Middle	16,548,000	1,019,000	194,000	17,761,000
Northern	43,510,000	1,859,000	28,000	45,397,000
Southern	11,077,000	1,016,000	632,000	12,725,000
Sullivan County	294,000	0	0	294,000
	78,468,000	4,016,000	854,000	83,338,000

Kentucky May Get Many Miles of New Rail Line

Kentucky will see a lot of railroad building over the next year or so. The Chesapeake & Ohio R.R. has announced plans for spending $2,000,000 in enlargement of yards and shops at Russell, Ky., a big junction point for handling coal coming out of the eastern Kentucky and West Virginia fields.

The Illinois Central R.R. is spending $6,000,000 at Paducah, Ky., on new shops, and will make it one of the big points on the system.

The Louisville & Nashville R.R., a third big coal carrier, according to published reports in the local press, quoting W. L. Mapother, president, and J. R. Smiley, of the engineering department, is working steadily on eastern Kentucky surveys for tapping the Cumberland Valley and eastern Kentucky divisions to the Carolina, Clinchfield & Ohio R.R., Mr. Mapother stating that reports to the effect that the survey was about completed, and the work to start shortly, were premature, as the surveys will take some time. The road plans to install heavy, permanent type of construction, with great care given to grades, curves, etc., in advance, to reduce divide pulling over the Cumberland mountains.

The Southern Ry., which wants to get into the coal-handling game in a larger way, is working steadily on a survey from Danville, Ky., to the Middlesboro (Ky.) district, which will tap into coal and timber properties in the southeastern Kentucky territory near Pineville and Harlan.

The Louisville & Nashville lines also will tap much new coal land in the eastern Kentucky section, around Hazard and Harlan.

Owensboro interests also are trying to get an Interstate Commerce Commission permit for a new 89-mile road from Owensboro to Elnora, Ind., there tapping the Chicago, Milwaukee & St. Paul road, giving a new outlet from western Kentucky to the Northwest. One of the troubles lies in the fact that there is now too much production available, and new roads through rich coal fields will bring further developments and greater overproduction.

Power Is Basis of Industry Says Julius H. Barnes

The potential possibility of industry must inevitably rest upon power service, said Julius H. Barnes, former president of the Chamber of Commerce of the United States, in an address before the British Empire Chamber of Commerce at the Bankers' Club, New York City, Feb. 17.

"The coal supply of the world today will last for 20,000 years at the present rate of consumption," said Mr. Barnes, "but the oil reserves of the world will last for fifteen years, without allowing for any new discoveries. However, the immense source of hydroelectric energy in this country is rated at 62,000,000 hp. and we have less than 10,000,000 hp. developed today."

Raymond Havemeyer Dies

Raymond Havemeyer, vice-president of W. A. Marshall & Co., of New York City, died on Feb. 21 of pneumonia after a few days' illness. Mr. Havemeyer was 41 years old and was the son of the late William F. Havemeyer and a grandson of former Mayor Havemeyer of New York City. He is survived by a widow, a brother, Arthur, and a sister, Mrs. William R. Willcox.

The Mississippi River Commission, 1006 McCall Building, Memphis, Tenn., will open bids March 7 (cir. 68) for 15,000 tons of run of mine and 3,600 tons of lump coal.

Rocky Mountain Institute in Live Three-Day Session

The twentieth regular meeting of the Rocky Mountain Coal Mining Institute was held at the Albany Hotel, Denver, Colo., Feb. 16, 17, and 18, 1925. Mine safety and rock-dusting methods occupied much of this three-day session, the subjects presented and discussed ranging all the way from explosives to the testing of mine safety lamps.

Among those presenting papers or addresses were the following: J. S. Pyeatt, J. H. Emrick, D. A. Stout, H. Peterson, Dr. Charles A. Lory, F. C. Miller, O. C. Irwin, Samuel Tescher, A. C. Watts, E. H. McCleary, W. J. Reid, John Crawford, W. D. Brennan, George B. Pryed (presenting a paper by Eugene McAuliffe), W. D. Ryan, F. P. Wood, B. W. Dyer, James Dalrymple, William Littlejohn, L. E. Norman, E. H. Denny and B. W. Snodgrass.

Resolutions were adopted extending sympathy to the relatives of the late George W. McNeil. Secretary Shubart announced the registration of 35 new members, 28 of whom are directly connected with the coal industry. The following officers were then elected for the coming year: President, J. B. Marks, of the Colorado Fuel & Iron Co.; vice-president for Colorado, H. H. Bubb, of the American Smelting & Refining Co.; vice-president for Utah, W. J. Reid, of the Lion Coal Co.; vice-president for Wyoming, Gomer Reese, of the Kemmerer Coal Co.; vice-president for New Mexico, William Moorehead of the Phelps-Dodge Corp., and secretary-treasurer, Benedict Shubart.

Standardization in mining methods is going forward with increased activity under the procedure of the American engineering standards committee, it was announced in New York, Feb. 5. Out of twelve coal-mining codes discussed at a recent meeting, four codes have been finally approved, as follows: For rock-dusting; for use of explosives in coal mines; safety in mine transportation and mine illumination.

Revised Estimates of Monthly Production of Soft Coal By States in 1924[a]

(In Thousands of Net Tons)

State	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Alabama	1,972	1,768	1,679	1,332	1,346	1,294	1,352	1,468	1,719	1,958	1,739	1,863	19,490
Arkansas	163	121	102	49	63	70	86	101	138	149	113	145	1,300
Colorado	1,161	845	854	690	648	543	588	674	894	1,010	945	988	9,840
Illinois	9,142	7,184	5,664	3,645	3,690	3,626	4,018	4,663	6,227	6,894	5,869	7,258	67,880
Indiana	2,799	2,429	1,912	1,234	1,399	1,295	1,398	1,560	1,992	2,104	1,864	2,354	22,340
Iowa	686	564	443	298	288	281	311	325	436	499	431	538	5,100
Kansas	497	378	357	216	234	258	290	315	382	435	363	425	4,150
Kentucky	4,345	4,057	3,651	2,840	2,992	2,928	3,206	3,537	4,175	4,778	4,228	4,263	45,000
Maryland	185	162	162	112	112	117	115	124	140	157	153	181	1,720
Michigan	115	94	74	50	51	33	57	57	62	86	60	81	820
Missouri	433	329	303	148	159	171	196	217	276	318	265	325	3,140
Montana	392	273	213	164	138	113	135	162	216	284	287	323	2,700
New Mexico	279	205	204	187	182	176	186	202	222	251	223	242	2,550
North Dakota	156	109	87	63	56	46	52	55	77	117	132	140	1,090
Ohio	3,305	3,113	2,624	1,843	2,001	1,889	1,960	2,066	2,461	2,862	2,486	2,590	29,200
Oklahoma	360	257	246	141	154	165	205	217	263	292	231	269	2,800
Penna. (bit.)	13,292	12,897	11,586	8,504	8,852	8,423	8,308	8,699	10,051	11,550	9,963	11,405	123,530
Tennessee	515	481	472	292	283	270	305	344	413	489	438	498	4,800
Texas	106	87	78	70	79	76	84	100	105	114	88	88	1,075
Utah	529	310	259	325	260	262	365	386	380	441	435	508	4,460
Virginia	979	1,021	914	765	784	768	846	875	942	1,067	954	985	10,900
Washington	309	220	203	177	153	141	154	154	192	241	215	241	2,400
West Virginia	9,857	9,763	8,569	6,823	7,936	8,142	8,696	9,101	9,915	11,520	9,941	9,737	110,000
Wyoming	884	583	585	423	375	334	393	479	650	744	631	769	6,850
Other States[b]	12	12	12	13	13	12	11	11	12	13	12	12	145
Total bituminous production	52,464	47,262	41,253	30,404	32,248	31,433	33,317	35,892	42,340	48,373	42,066	46,228	483,280

[a] Compiled by U. S. Geological Survey. Estimates of monthly production by states for the first 6 months of 1924 based on railroad shipments were published from time to time in the weekly coal report. In this table the original estimates have been revised in accordance with later information and they have been corrected for the usual error, which in the past has averaged about 2 per cent.

[b] Includes Alaska, California, Georgia, Idaho, North Carolina, Oregon and South Dakota.

Bill Bans Trolley Locomotives In Anthracite Mines

A bill providing for the protection of persons employed in the anthracite mines of Pennsylvania by prohibiting the use of trolley locomotives in mines and requiring attendants at ventilating fans has been introduced in the State Senate at Harrisburg by Senator Asa K. DeWitt, Luzerne County.

The bill provides that one year after the passage of the act it shall be unlawful to use electric haulage locomotives operated by means of a trolley wire in any gaseous portion of an anthracite mine except upon the intake receiving air fresh from the outside.

A second section of the bill makes it unlawful to operate any gaseous anthracite mine unless the ventilating fan used to supply air to the persons working in the mine shall be under the constant supervision and care of one attendant, if in the opinion of the mine inspector of the district the locations of the fans are such that the attendant can readily detect any stoppage or reduction in the speed of any of the fans.

It is provided that any owner, operator, superintendent or the agent or employee of any owner or operator who shall violate any of the provisions of the act or shall hinder or delay the officer in the performance of his duty in the enforcement of the act, shall be guilty of a misdemeanor and upon conviction shall be fined not less than $100 nor more than $200 or undergo imprisonment of not less than two months, or both.

Representative Charles A. Duddy, Luzerne, is the sponsor of a bill requiring the forwarding of miners' certificates to the Department of Mines as a safety measure for employees.

This bill makes it the duty of each owner, operator or superintendent of an anthracite mine or colliery, or the agent or employee of the owner or operator or any person having in his possession or under his control the miner's certificate of any person qualifying the person to work as a miner, if the owner of the certificate is no longer employed in the mine or colliery and has failed to demand the return of his certificate for a period to thirty days after the termination of employment, or if his whereabouts is unknown, or the owner deceased, to forward immediately the miner's certificate to the Secretary of Mines at Harrisburg. The Secretary must keep the certificate on file, except where he is satisfied of the death of the owner, in which case he will destroy the certificate.

Failure to forward the certificate to the Secretary of Mines subjects the owner, operator or superintendent to a fine of $25 for each certificate not forwarded, and in default of payment he shall be committed to the county jail for one day for each dollar.

Any person whose miner's certificate has been forwarded to the Department of Mines may apply to the Secretary of Mines for the return of it, and upon proof of his identity the certificate shall be returned.

A third section is as follows:

"After the first day of July, 1925, no miner's certificate shall be granted or issued by any miners' examining board unless there is written or printed on each certificate the following:

Notice—If this certificate is not demanded from the operator within thirty days after employment ceases, this certificate must be forwarded by the mine owner, operator, superintendent, agent or employee in possession or control thereof, to the Department of Mines at Harrisburg. In case the whereabouts of the owner of this certificate is unknown or in case of his death the person in possession or control of this certificate must immediately forward the same to the Department of Mines at Harrisburg. Neglect or failure to carry out this notice involves a penalty."

Boy Killed in Old Mine Playing "Collins in Cave"

Frank Grankowsky, 13 years old, lost his life Feb. 16 at Barnesboro, Pa., while playing "Collins in the cave." The boy was caught under a fall of rock and dirt in an abandoned mine to which he had led companions on an "exploration."

The companions escaped and summoned aid. Rescuers dug for several hours before the crushed body was recovered.

Clearing the Way for Two Additional Loading Tracks

The steam shovel is grading for two more tracks to this tipple at the No. 1 mine of the Elkhorn Piney Coal Mining Co., at Stanaford, W. Va. The company, which is a subsidiary of the Milwaukee Coke & Gas Co., now has two loading tracks at this tipple and with the additional two tracks will load 4-in. lump, 2-in. egg, ¾-in. nut and slack. The tipple was built about 25 years ago, but the first screening equipment was added in 1922.

Utah Wants New Joint Plan With U. S. Bureau

Negotiations have been opened by the State Industrial Commission of Utah for the renewal of the mine inspection agreement between the commission and the U. S. Bureau of Mines on a new basis. The present agreement, which the bureau desires to change, because, as stated in these columns recently, Washington complains that it is being blamed for shortcomings of the state inspection system, provides for inspectors and engineers of the bureau to act as state inspectors. It combines federal inspection of coal mines operated under federal lease with the regular state inspection.

B. W. Dyer, district engineer of the U. S. Bureau of Mines, has been heading both state and federal forces. Under the new agreement federal inspectors will not act as state inspectors, but reports on inspections of federal leased properties will be available for the commission, and in consideration of this the state will continue to furnish office space, heat, light and telephone service to the federal officials.

John Crawford has heretofore been the coal mining inspector of the state. He will be given one or two deputies, it is planned. O. F. McShane, chairman of the commission, said the budget submitted by that body to Governor Dern provides for the necessary additional funds.

More Mines Go Open-Shop in Northern West Virginia

Announcement recently made by John L. Lewis, president of the United Mine Workers, that there would be no wage reduction in so far as the union had anything to do with it, appears to have had an indirect effect in northern West Virginia in leading to resumption of operations at some plants on a non-union basis and in another instance to the suspension of operations at three mines operated by a company having an agreement with the union.

The Chesapeake mine of the Fairmont-Chicago Coal Co., at Barrackville, and the National mine of the National Fuel Co., at Brady, in Monongalia County, will be operated on a non-union basis.

The Maryland Coal Co. of West Virginia, of which J. W. Galloway of New York is president, has declared an open-shop policy and the large plant operated by the company at Wendel is now being operated independent of any agreement with the union. It also has been reported that the Blocky Pittsburgh Coal Co. would start, if it has not already done so, its 11 mines on an open-shop basis.

When it became known that the Wendel mine was to be operated open shop more than 350 miners in the Galloaway district went on strike in sympathy with those miners at Wendel who declined to work in an open-shop mine. One hundred miners at the Bear Mountain workings of the Blocky-Pittsburgh Coal Co., with headquarters at Flemington and Galloaway, also walked out.

Plan "Economic Study" To Aid Indiana Coal

In order that a scientific survey and research may be made to develop the market for Indiana coal, a bill has been introduced in the Indiana House of Representatives to provide for an annual appropriation of $10,000 to be used by the Indiana University School of Commerce and Finance in this research. Of this sum, $5,000 would be available each six months. The bill is said to be sponsored by Indiana operators and miners.

It is proposed to have combustion tests run to find the relative effectiveness and final cost of various Indiana and foreign coals; investigations of boiler and furnace construction to ascertain standard types of construction adapted to Indiana coals, storage tests to ascertain the feasibility of storage, thus possibly reducing seasonal fluctuation of production; the collection of records of the experience of successful users of Indiana coal and the ascertaining of the economic advantage in actual practice of Indiana coal under right conditions of burning. The tests would be made under the direction of suitable scientists, engineers, statisticians and economists.

The author of the bill pointed out that ordinarily from 8,000,000 to 10,000,000 tons of coal used in Indiana each year comes from mines in other states, which, he said, means that from a third to a half of the Indiana market is lost. He said that at the present time more than 10,000 Indiana miners are idle and fully as many more are able to obtain work only on a part-time basis. He said a measure of this nature would help to restore production and not only would benefit miners and operators but the community at large by putting more than $2,000,000 of purchasing power into circulation.

Coal To Replace Oil as Fuel On Baltimore Ships

The use of four coal burning ships in place of oil burners on the Baltimore line of the Emergency Fleet Corporation was approved Feb. 18 by President L. C. Palmer, in accordance with the recommendation of R. T. Merrill, director of the Baltimore district of the corporation. This approval is given on the basis of a maximum estimate of $100,000 as the cost of reconditioning the ships, which for several years have been in the "laid up" fleet.

The substitution of coal for oil has been brought about because of the big fuel saving possible by the use of coal. Government engineers estimate that the entire cost of placing the coal burners in condition will be recovered in less than 18 months through saving in fuel. It is predicted that several more oil burners will be retired from the Baltimore line in the near future and it is likely that consideration will be given to the increased use of coal burners on the three New York lines of the corporation. The ships of the Baltimore line operate to United Kingdom ports, and when the four additional coal burners are put in shape there will be eleven coal burners on this line as against ten oil burners.

When Is a Conspiracy?

What constitutes conspiracy between coal dealers and their association? The dealers are trying to find out during the progress of the hearing the Federal Trade Commission is giving the Northwestern Coal Dealers' Service Bureau at Minneapolis. The hearing, which is on a coercion and conspiracy charge, started Feb. 17. The commission's investigators introduced before Examiner John W. Addison a great stack of correspondence between the bureau and its members to prove price fixing. Among the "worst" was a letter from a Sioux City (Iowa) dealer asking how far dealers could go toward "trying to get together on prices and conditions of sale" and still be within the law. A letter from the bureau to a farmers' elevator company, in reply to a similar inquiry said: "no retailer can afford to handle either hard or soft coal and expect to make money at a less figure than $1.16 to $1.22 a ton over and above the cost of the coal on track at destination, and if he is to exact a profit commensurate to the amount of his investment, book accounts, cost of handling, salaries, etc., he ought to get at least $1.50 to $1.75 per ton on hard coal and from $1.50 to $2 per ton gross profit on soft coal. We give you this information as the result of the investigations we have made covering 2,500 retail yards."

At the annual meeting of the Association of American State Geologists held in Ithaca, N. Y., Dec. 29 to 31, the following officers were elected for 1925: President, Wilbur A. Nelson, State Geologist of Tennessee; Secretary, M. M. Leighton, State Geologist of Illinois; Member of Executive Committee, E. W. Mathews, State Geologist of Maryland. A memorial to the President of the United States requesting liberal support to scientific work was presented in person by the new president.

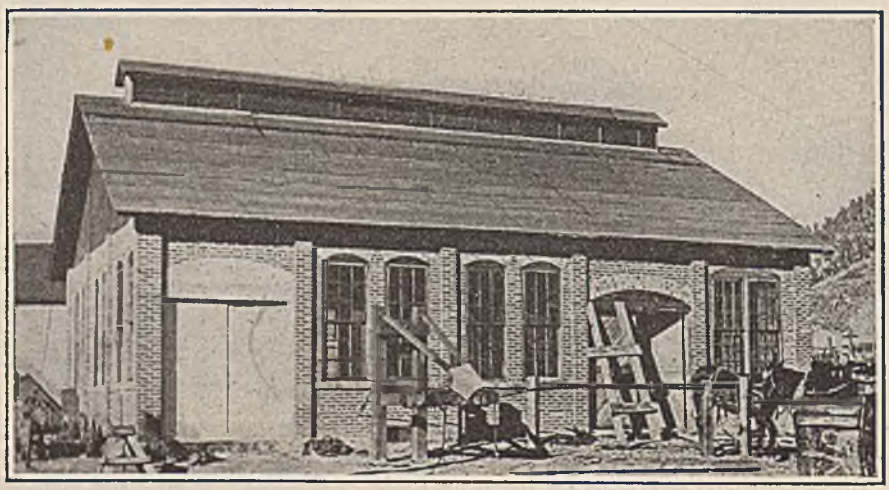
Domestic Oil Heating Meets Another Snag

The recent cold wave brought home to many residents of the cities of the Middle-West the folly of placing reliance upon oil as fuel for domestic heating. In addition to all the constant dangers involved such as flooding the cellar, fires and inability to obtain the necessary grade of oil, two new sources of difficulty directly related to the inclement weather made themselves prominent.

Ordinarily, domestic consumers of oil are equpped with approximately a week's supply. As a result of the heavy snow and inclement weather, deliveries of oil became impossible and many householders found themselves deprived of their fuel supply, and, if they had no other means of heating, were obliged to close their houses and seek warmer habitations.

Still more widespread was the interference with the operation of the heating plant as an indirect result of stormy weather. Nearly all domestic oil-heating appliances involve the use of electricity in driving the pumps to spray the oil. In many places the heavy storms broke down wires or otherwise interfered with the operation of electric public utilities, and householders were deprived of the power necessary to run their furnaces. Whatever caused the shutdown of the furnace, whether the lack of oil or lack of electric power, the result for the unfortunate dependents upon oil-generated heat was the same. At the very time when climatic conditions imposed the utmost need for adequate heat, their oil-heating plants failed them.

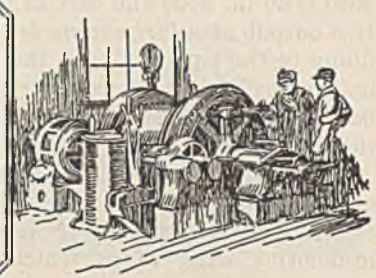
This is a possibility which should be given careful consideration by all residents of sections of the country in which inclement weather is likely to prevail before they abandon the use of coal. These, among other considerations, have led a large builder of apartments and homes in an Eastern city to cease installing oil-burning equipment in the residences built by him, on the ground that oil for domestic heating is a "shattered dream."



Blacksmith Shop of Phelps-Dodge Corporation at Dawson, N. M.

Like most of the buildings erected by this corporation at its metal and coal mines, this blacksmith shop is of brick. Large and high windows make a cheerful interior.

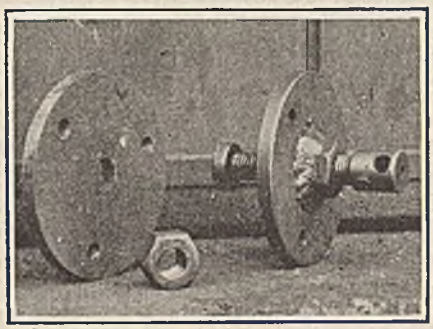
Practical Pointers For Electrical And Mechanical Men



Arc-Welding Cuts Cost of Making Armature-Bearing Puller

An interesting application of arc welding was seen recently in the central repair shop of the Island Creek Coal Co., at Holden, W. Va. This work was the welding of a standard 1-in. hexagonal nut onto a ½-in. plate to form the body of an armature-bearing puller.

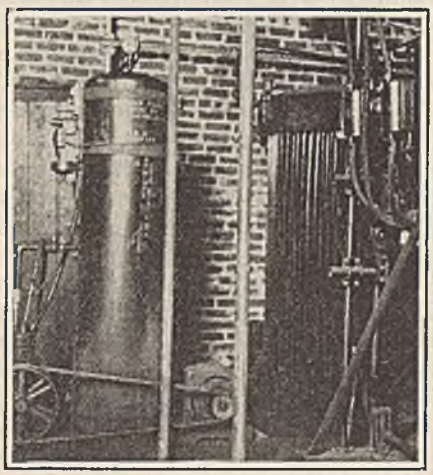
The necessity for making a number of new bearing pullers arose when the company adopted a new type of ball bearing and housing as standard for the armatures of its mining machines. The old type puller formerly used did not have a plate sufficiently large that it could be redrilled with three holes instead of four and thus adapted for pulling the new bearings. To get around the difficulty of having to use heavy stock for making the new type plate the combination of a standard tapped nut and a ½-in. plate was used. The nut was faced on one side so as to make the center-screw stand exactly perpendicular to the plate, and then the nut was electrically welded to the plate.



Same Effect as a Thicker Plate

Tapping the ½-in. plate would not give sufficient threads for the strength required. A standard 1-in. hexagonal nut welded to the plate is the solution.

Because a number of these pullers was required, one or more for each mine, several for the shop and a few for stock, a considerable saving was made by the aforementioned method rather than by turning the plates out of heavy material and then threading for the center-screw.



Lacks Style But Does the Work

The cost of installing air compressors for cleaning converters was held down to a small amount by purchasing the various parts and assembling them at the mine. Direct-connected outfits are most satisfactory but in thise case the cost was prohibitive.

Cost of Cleaner Reduced By Assembly of Parts

Those who have had experience in cleaning windings of electrical equipment know that it takes a surprisingly strong blast of air to dislodge the dirt which accumulates at certain points, for instance underneath the coil ends of a rotary converter armature. The strongest blast of air which can be obtained from the ordinary hand bellows will have no effect on the dirt which becomes packed by centrifugal force.

Most electrical men realize the need of a compressor for cleaning equipment in mine substations but they often have trouble in persuading the management to spend the money necessary to obtain a direct-connected outfit such as is the most convenient to purchase and install. The illustration shows an assembled outfit which for several years has served the purpose very well and yet which cost about one-third the amount which is ordinarily spent for such equipment.

ASSEMBLED OUTFIT

The photograph was taken in a 300-kw. synchronous converter substation of the Elkhorn Piney Coal Mining Co., at Stanaford, W. Va. This compressor outfit includes the following items: a 1-hp. single-phase repulsion type induction motor; endless leather belt; a 3 x 4-in. air-cooled vertical compressor, rated 350 r.p.m., 5.59 cu.ft. per minute; an air receiver, 16 x 60 in. tested for 150-lb. pressure, automatic pressure switch for starting and stopping the motor so as to maintain a receiver pressure of between 40 and 60 lb. per sq.in.; and miscellaneous fittings such as a check valve, gage, safety valve, hose and nozzle. The various parts were purchased from several manufacturers and assembled as a unit on a short length of 3-in. plank. The total cost of such an outfit is approximately $210.

40 TO 60 LB. PRESSURE USED

A pressure between 40 and 60 lb. is used because at least this amount is necessary to dislodge the dust and yet is not likely to tear the insulation as has been done by the use of 100- to 120-lb. air pressure. Moreover because the inspection of air receivers is often neglected, the use of the lower pressure is advantageous from the standpoint of safety.

Building a Conveyor Pulley When Break Occurs

It is seldom that the pulley at either the head or the tail end of a belt conveyor fails. When such a contingency arises, however, if the quantity of coal carried by the conveyor is large the pulley must be repaired quickly.

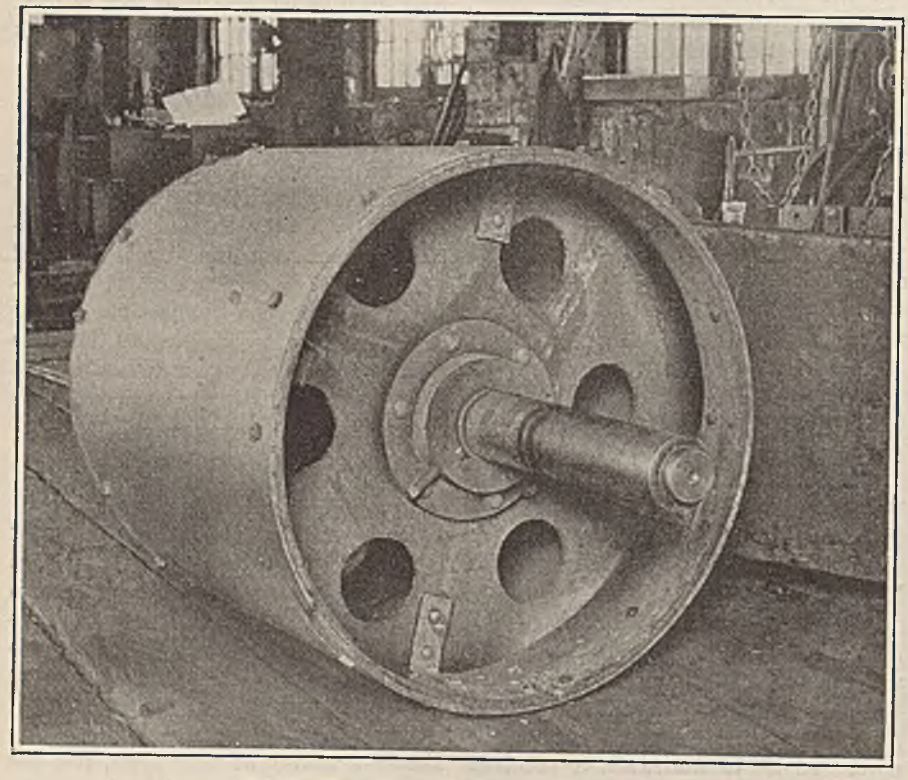
The accompanying illustration shows a pulley of this kind, not yet completed, built up in the shops of a large coal mining company. The conveyor in which this pulley will be

used is 36 in. wide and carries the entire output of a large mine from the dump to the tipple. When the original pulley failed therefore it was necessary that a new one be substituted without delay.

This pulley is 36 in. in diameter and has a 38-in. face. The two hubs are of mild steel forged from an old locomotive axle, after which they were turned up and bored. The "spiders" were made from ¾-in. steel plate, cut to size and the holes cut through them with an oxyacetylene torch. They are riveted to the hubs. The face or rim of the pulley is made of ½-in. plate curved or bent to shape and the edges where they met welded, also with the oxyacetylene torch. The rim is fastened to the spiders by means of ¾x1½-in. strap angles or knees, each leg of which is 4 in. long. These were riveted to both rim and spider and then welded along the edges. The outer edge of the rim is reinforced on the inside by means of a ¾x4½-in. strap, patch-bolted and welded to the rim in a manner somewhat similar to that employed on the knees.

SAVED TIME AND MONEY

When all patch bolting, welding and riveting is finished the entire face and edges of this pulley will be turned and trued up in a lathe. Making this pulley in this manner saved three weeks of the time that would have been required for getting a new one from the factory. Furthermore, comparison of the cost of manufacture of this built-up pulley with the price quoted for a new one made of cast iron showed a difference of $17.14 in favor of the home-made product. This balance is independent of all freight and delivery charges.



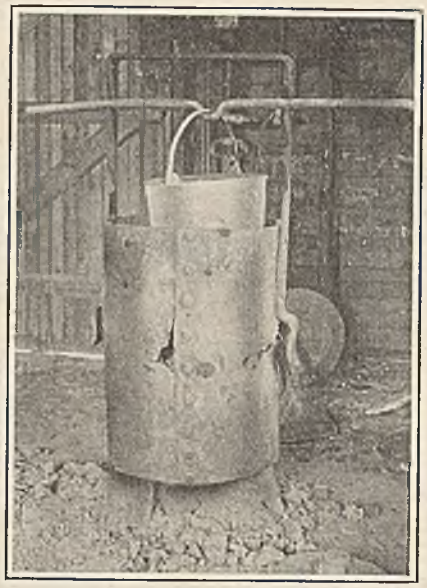
Partly Completed Pulley on Shop Floor

This pulley is built up of several pieces of mild steel securely riveted, patch bolted and welded together. Inasmuch as no cast metal whatever enters into its construction there is small danger of its ever breaking through wear or rough usage.

Babbitt-Melting Salamander Made in Shops

Babbitt metal is frequently used in fairly large quantities at the mines, not only in the shops but also in making repairs to machinery about the works. This metal usually is melted with little difficulty, but if proper means are provided it can be handled and used with greater advantage.

The accompanying illustration shows a device which, for lack of a better name, has been called a "babbitt salamander." It was made in the shops of the United States Coal & Coke Co., at Gary, W. Va., and has long been used by the shop force. In fact it has been used so long that, as may be seen, it is beginning to shows unmistakable signs of age. The salamander pictured was made from plate bent to a circular shape, but a piece of old pipe 3 to 6 in. larger in diameter than the babbitt pot to be used would answer the purpose equally well if not better.



Still in Use Though Much Worn

This shows the babbitt-melting salamander as it now appears after years of usefulness. This piece of equipment was built from odds and ends in the shops where it has long been used and has paid for itself many times over by its convenience and utility. With bars through the side hooks two men can carry it anywhere even though it is red hot.

A grate is formed at the bottom of such a salamander by passing parallel rods through the pipe or by riveting in strap knees or angles upon which a circular piece of old screen plate may rest. These knees may also serve as legs, as here shown. A strap-iron bail spans the top of this furnace. This is fitted with a series of slant notches to support the bar from which the babbitt kettle is hung. This bar is provided with a kink or depression at its center from which the babbitt pot is suspended.

KETTLE HEIGHT ADJUSTABLE

Coke is used as a fuel in this salamander and natural draft only is supplied. This generates ample heat to melt the babbitt. After melting, the kettle may be readily lifted off and carried to any desired point by two men, one on either end of the rod. If the quantity of metal in the pot exceeds that required for any one babbitting jog but more will be wanted within a reasonable length of time, the pot may be returned to the salamander but hung at such a height as merely to keep the metal molten until it is again needed. Naturally this salamander lends itself equally well to both the lining of bearings with anti-friction metal and the lead calking of joints in bell and spigot pipe, as well as other operations requiring the use of a low-fusing metal.

Production And the Market

Weak Tendency in Soft-Coal Market Reappears As Mild Weather Lingers

Everything, especially the weather, is making it too hot for the bituminous coal trade. Last week's halt in the downward tendency was only temporary, for with the almost general prevalence of unseasonably warm weather the market has again weakened to such an extent that the trade is in the dumps. Selling of distress coal at sacrifice prices is common. Domestic business is so slow in the Middle West that those sizes have backed up all around, causing a further curtailment in working time. While this has caused a nominal improvement in screenings it has not been sufficient to make it worth while to crush lump. Steam coal is moving in only moderate volume and competition is so keen that nobody is making any money. In some of the Illinois fields the working time is so curtailed that miners are leaving for west Kentucky non-union fields.

Conditions in Kentucky markets have not improved to any appreciable extent, plenty of unsold coal cluttering the tracks at mines, although production has been cut down. A good deal of coal is being offered in eastern Kentucky at less than market figures, though screenings are a little stiffer. Reduced demand and lower prices for smokeless in the West have caused a decline in output to about 900,000 tons a week in the smokeless fields. West Virginia high-volatile coals are in even worse shape, as demand is far below output.

Trade is quite brisk in Duluth, a taste of cold weather having revived interest. A revised price circular just issued shows strength in quotations, especially in screenings, and no cuts are expected any time soon.

Gloom Lifts a Little in Ohio

The atmosphere of the Cincinnati trade is of a slightly lighter shade of blue, for though there are no signs of anything approaching vim in the market, "bargain" sales are less numerous, due to a letup in the volume of coal from the mines that threatened to bury everyone. Conditions in Columbus and eastern Ohio continue to be practically comatose. The Pittsburgh and Buffalo markets are stagnant.

Demand in New England is holding up sufficiently to maintain prices, a gradual improvement being noted. The volume of business is still relatively small, however, and there is no immediate likelihood of quotations going higher. The trade at New York and Philadelphia is quiet, contracting being on a small scale. Though mild weather has taken most of the zip out of domestic business at Birmingham, the steam trade continues slowly but surely to expand.

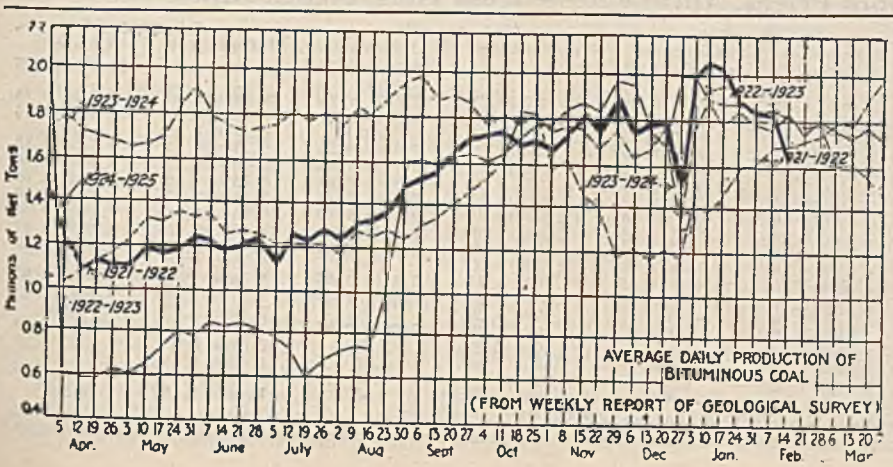
Anthracite Market Lifeless

The continuance of extremely mild temperature has taken all the life out of the hard-coal trade, demand having petered out to hand-to-mouth ordering. Chestnut still has the best call, followed by nut, but egg is in fair request and occasional orders for broken are coming in. Pea is slow. Steam sizes are in fair shape, barley leading in demand, though the one company making birdseye notes considerable activity in that size on contracts. Some of the smaller mines have closed because of lack of orders.

Coal Age Index of spot prices of bituminous coal slipped slightly, standing on Feb. 23 at slightly under $1.68, the corresponding price being $2.03.

Dumpings of coal for all accounts at Hampton Roads in the week ended Feb. 19 totaled 424,295 net tons, compared with 324,260 tons in the previous week.

Production of bituminous coal, according to the Geological Survey, continued to decline during the week ended Feb. 14, when the output was estimated at 9,745,000 net tons, compared with 10,910,000 tons in the preceding week, as shown by revised figures. Anthracite output in the week ended Feb. 14 was 1,824,000 net tons, compared with 1,909,000 tons in the week ended Feb. 7.



Estimates of Production

(Net Tons)

	1923-1924	1924-1925
BITUMINOUS		
Jan. 31	11,716,000	11,073,000
Feb. 7 (a)	11,891,000	10,910,000
Feb. 14 (b)	11,528,000	9,745,000
Daily average	1,921,000	1,624,000
Coal yr. to date (c)	497,471,000	414,970,000
Daily av. to date	1,856,000	1,545,000
ANTHRACITE		
Jan. 31	1,893,000	1,730,000
Feb. 7	1,906,000	1,909,000
Feb. 14 (b)	1,900,000	1,824,000
Coal yr. to date	80,208,000	77,707,000
COKE		
Feb. 7 (a)	286,000	276,000
Feb. 14 (b)	293,000	264,000
Cal. yr. to date (c)	1,743,000	1,711,000

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

Midwest Is In the Dumps

The bottom has sunk low indeed beneath the coal trade of the Midwest. Domestic business is slow even at the exceedingly low prevailing prices. This has caused a back-up of domestic sizes everywhere and a further curtailment of running time but the consequent improvement in screenings has not been sufficient to enable operators economically to crush their lump. Southern Illinois is steadily getting $1.90 for 1¼-in. coal. Indiana steam sizes from the Fourth Vein have climbed past $1.75 though Fifth Vein coal is below that and central Illinois is consistently getting $1.75@$2, but the volume is small and there is a considerable flow of competing and cheaper screenings from Kentucky. Thus nobody is able to make any money, and "the dumps" is general.

There is a summertime quietness in the Carterville field of Williamson and Franklin counties and also in Saline County. All mines have "no bills" of all sizes excepting screenings and working time is from one to three and four days a week, depending upon railroad contracts. A little stuff continues to move out every day but not any volume. Strip mines continue to get pretty near full working time and seem to have a place to put all of their coal, and prices on this are made to suit the occasion. Independent mines are slowing up and prices are the same as last week.

In the Duquoin field, two days a week is good working time and coal is hard to place at independent prices. The Mt. Olive field is slow and railroad tonnage seems to be the only thing that keeps it going. In the Standard field, mines continue to shut down and there seems to be no relief in sight. Railroad tonnage has eased up in this field and all kinds of coal are on track unbilled and selling at below cost. Working time ranges from one to three days a week, which is the exception. Miners are reported leaving this field and going to non-union western Kentucky.

Some cold weather at St. Louis keeps domestic tonnage moving in small quantities and usually for cheaper grades. There seems to be no regular mine price on Franklin County. The dealer who can use some can buy it at pretty near his own price although the circular is pretty well maintained in the country. Country domestic, however, is quiet excepting for the cheaper grades. There is a little call for higher grade fuels such as anthracite and smokeless, but coke is quiet. A little anthracite chestnut is moving to country points for broader purposes. Local wagonload steam is fairly good and carload is easing up with very little call from the country. An indication of what steam is doing on contract is to be seen at the Plant Milling Co., which is reported as closed up on a two-year contract on screenings from Zeigler, Ill., at $1.65 mines. All yards are pretty well loaded and there is no indication that any

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

Low-Volatile, Eastern	Market Quoted	Feb. 25 1924	Feb. 9 1925	Feb. 16 1925	Feb. 23 1925†
Smokeless lump	Columbus	$4.10	$3.85	$3.85	$3.75@$4.00
Smokeless mine run	Columbus	2.10	1.90	1.90	1.75@ 2.10
Smokeless screenings	Columbus	1.55	1.20	1.20	*1.10@ 1.45*
Smokeless lump	Chicago	3.60	3.50	3.60	3.50@ 3.75
Smokeless mine run	Chicago	2.50	1.50	1.60	1.50@ 1.75
Smokeless lump	Cincinnati	3.75	3.85	3.85	*3.50@ 3.00*
Smokeless mine run	Cincinnati	2.60	2.00	1.85	1.75@ 2.00
Smokeless screenings	Cincinnati	1.85	1.25	1.35	1.25@ 1.50
*Smokeless mine run	Boston	4.70	4.45	4.45	4.40@ 4.50
Clearfield mine run	Boston	1.95	1.95	1.95	1.75@ 2.20
Cambria mine run	Boston	2.60	2.30	2.30	2.10@ 2.50
Somerset mine run	Boston	2.30	2.10	2.10	1.90@ 2.35
Pool 1 (Navy Standard)	New York	3.00	2.75	2.70	2.50@ 2.90
Pool 1 (Navy Standard)	Philadelphia	3.00	2.80	2.80	2.65@ 3.00
Pool 1 (Navy Standard)	Baltimore		2.25	2.25	2.10@ 2.40
Pool 9 (Super. Low Vol.)	New York	2.25	2.10	2.05	1.90@ 2.25
Pool 9 (Super. Low Vol.)	Philadelphia	2.30	2.20	2.20	2.05@ 2.40
Pool 9 (Super. Low Vol.)	Baltimore	1.85	1.85	1.85	1.75@ 2.00
Pool 10 (H.Gr.Low Vol.)	New York	2.00	1.85	1.75	1.65@ 1.90
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.85	1.85	1.85	1.70@ 2.00
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.70	1.70	1.70	1.55@ 1.75
Pool 11 (Low Vol.)	New York	1.60	1.60	1.55	*1.40@ 1.70*
Pool 11 (Low Vol.)	Philadelphia	1.65	1.65	1.65	1.60@ 1.70
Pool 11 (Low Vol.)	Baltimore	1.55	1.50	1.50	1.45@ 1.60
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.60	1.50	1.50	*1.35@ 1.65*
Pool 54-64 (Gas and St.)	Philadelphia	1.70	1.50	1.50	1.45@ 1.60
Pool 54-64 (Gas and St.)	Baltimore	1.50	1.65	1.65	1.60@ 1.75
Pittsburgh so'd gas	Pittsburgh	2.55	2.50	2.50	2.40@ 2.60
Pittsburgh gas mine run	Pittsburgh	2.30	2.25	2.25	*2.15@ 2.25*
Pittsburgh mine run (St.)	Pittsburgh	2.10	1.95	1.95	1.90@ 2.00
Pittsburgh slack (Gas)	Pittsburgh	1.50	1.45	1.30	1.25@ 1.35
Kanawha lump	Columbus	2.60	2.50	2.50	*2.15@ 2.60*
Kanawha mine run	Columbus	1.60	1.60	1.60	*1.40@ 1.60*
Kanawha screenings	Columbus	1.15	.65	.75	.65@ .85
W. Va. lump	Cincinnati	3.00	2.00	2.05	**1.85@ 2.50**
W. Va. gas mine run	Cincinnati	1.60	1.35	1.40	*1.25@ 1.50*
W. Va. steam mine run	Cincinnati	1.60	1.25	1.30	*1.25@ 1.35*
W. Va. screenings	Cincinnati	1.20	.75	.75	.50@ 1.00
Hocking lump	Columbus	2.60	2.50	2.50	*2.25@ 2.55*
Hocking mine run	Columbus	1.85	1.60	1.60	*1.35@ 1.65*
Hocking screenings	Columbus	1.10	1.10	1.10	1.05@ 1.15
Pitts. No. 8 lump	Cleveland	2.10	2.30	2.30	1.90@ 2.75
Pitts. No. 8 mine run	Cleveland	1.80	1.85	1.85	1.80@ 1.90
Pitts. No. 8 screenings	Cleveland	1.35	1.30	1.30	*1.25@ 1.35*

Midwest	Market Quoted	Feb 25 1924	Feb. 9 1925	Feb. 16 1925	Feb. 23 1925†
Franklin, Ill. lump	Chicago	$3.50	$3.10	$3.10	$3.00@$3.25
Franklin, Ill. mine run	Chicago	2.35	2.35	2.35	2.25@ 2.50
Franklin, Ill. screenings	Chicago	1.95	1.60	1.85	1.75@ 2.00
Central, Ill. lump	Chicago	3.10	2.85	2.85	2.75@ 3.00
Central, Ill. mine run	Chicago	2.10	2.20	2.20	2.15@ 2.25
Central, Ill. screenings	Chicago	1.50	1.55	1.75	**1.75@ 2.00**
Ind. 4th Vein lump	Chicago	3.10	2.85	2.85	2.75@ 3.00
Ind. 4th Vein mine run	Chicago	2.60	2.35	2.35	2.25@ 2.50
Ind. 4th Vein screenings	Chicago	1.70	1.45	1.70	**1.75@ 1.85**
Ind. 5th Vein lump	Chicago	2.60	2.60	2.50	2.40@ 2.65
Ind. 5th Vein mine run	Chicago	2.10	2.10	2.10	2.00@ 2.25
Ind. 5th Vein screenings	Chicago	1.45	1.30	1.45	**1.55@ 1.60**
Mt. Olive lump	St. Louis	3.10	2.85	2.85	2.75@ 3.00
Mt. Olive mine run	St. Louis	2.50	2.35	2.35	2.25@ 2.50
Mt. Olive screenings	St. Louis	1.35	1.60	1.50	1.50
Standard lump	St. Louis	2.75	2.35	2.35	**2.50**
Standard mine run	St. Louis	1.95	1.95	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.15	1.10	1.25	1.15@ 1.35
West Ky. block‡	Louisville	2.85	2.55	2.25	2.00@ 2.50
West Ky. mine run	Louisville	1.70	1.35	1.35	**1.25@ 1.75**
West Ky. screenings	Louisville	1.30	1.05	.90	**.90@ 1.00**
West Ky. block‡	Chicago	2.85	2.35	2.35	2.25@ 2.50
West Ky. mine run	Chicago	1.60	1.35	1.35	1.25@ 1.50
South and Southwest					
Big Seam lump	Birmingham	3.85	2.85	2.85	2.50@ 3.25
Big Seam mine run	Birmingham	1.80	1.75	1.75	1.50@ 2.00
Big Seam (washed)	Birmingham	2.10	1.85	1.75	1.50@ 2.00
S. E. Ky. block‡	Chicago	3.10	2.75	2.75	2.50@ 3.00
S. E. Ky. mine run	Chicago	1.85	1.50	1.50	1.25@ 1.75
S. E. Ky. block‡	Louisville	3.25	2.60	2.35	2.00@ 2.75
S. E. Ky. mine run	Louisville	1.80	1.35	1.35	1.25@ 1.50
S. E. Ky. screenings	Louisville	1.30	.85	.75	**.60@ 1.00**
S. E. Ky. block‡	Cincinnati	2.85	2.60	2.50	*2.00@ 2.50*
S. E. Ky. mine run	Cincinnati	1.75	1.30	1.40	1.25@ 1.60
S. E. Ky. screenings	Cincinnati	1.10	.80	.85	*.50@ 1.10*
Kansas lump	Kansas City	5.00	4.85	4.85	*4.50@ 5.00*
Kansas mine run	Kansas City	3.50	3.35	3.35	*3.00@ 3.25*
Kansas screenings	Kansas City	2.25	2.50	2.50	2.50

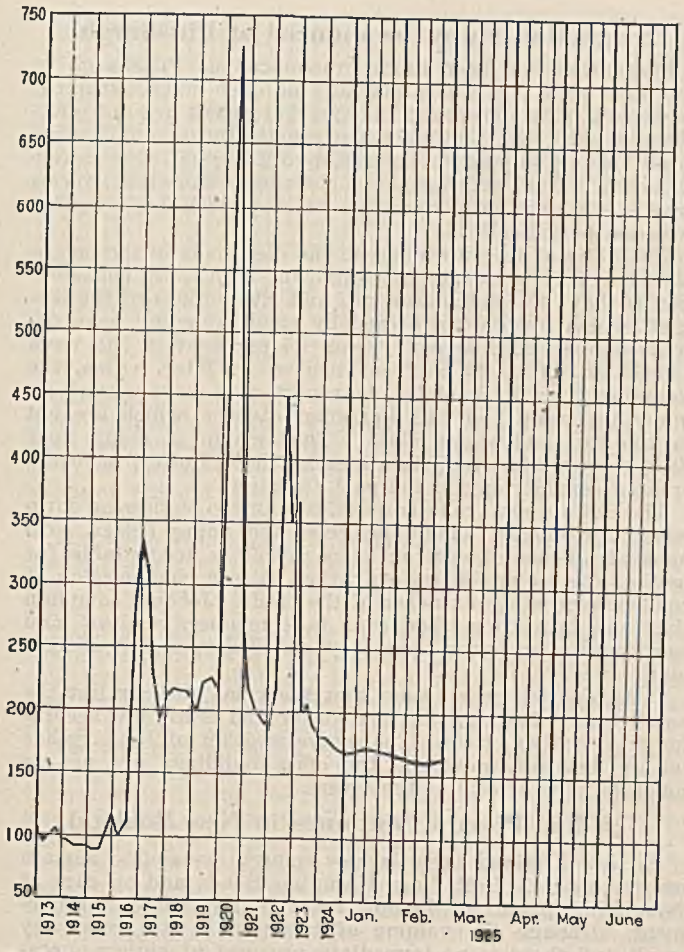
*Gross tons, f.o.b. vessel, Hampton Roads. † Advances over previous week shown in heavy type; declines in *italics*.

‡ The term block is used instead of lump in order to conform to local practice, but the same coal is being quoted as heretofore.

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

	Market Quoted	Freight Rates	Feb. 25, 1924 Independent	Feb. 25, 1924 Company	Feb. 16, 1925 Independent	Feb. 16, 1925 Company	Feb. 23, 1925† Independent	Feb. 23, 1925† Company
Broken	New York	$2.34	$8.00@$8.50	$8.00@$9.25		$8.00@$9.25		$8.00@$9.25
Broken	Philadelphia	2.39				9.15		9.15
Egg	New York	2.34	8.00@ 8.75	8.75@ 9.25	$8.50@$9.25	8.75@ 9.25	*$8.50@$9.00*	8.75@ 9.25
Egg	Philadelphia	2.39	8.50@10.00	8.75@ 9.25	9.45@ 9.75	8.80@ 9.25	9.45@ 9.75	8.80@ 9.25
Egg	Chicago*	5.06	7.50@ 8.80	8.00@ 8.35	8.17@ 8.40	8.08	8.17@ 8.40	8.08
Stove	New York	2.34	9.25@10.25	8.75@ 9.25	9.25@10.00	9.00@ 9.50	9.25@10.00	9.00@ 9.50
Stove	Philadelphia	2.39	9.85@11.00	8.90@ 9.25	10.10@10.75	9.15@ 9.50	10.10@10.75	9.15@ 9.50
Stove	Chicago*	5.06	7.95@ 9.25	8.00@ 8.35	8.80@ 9.00	8.53@ 8.65	8.80@ 9.00	8.53@ 8.65
Chestnut	New York	2.34	9.25@10.25	8.75@ 9.25	9.50@10.25	8.75@ 9.40	9.50@10.25	8.75@ 9.40
Chestnut	Philadelphia	2.39	9.85@11.00	8.90@ 9.25	10.00@10.75	9.25@ 9.40	10.00@10.75	9.25@ 9.40
Chestnut	Chicago*	5.06	7.95@ 9.25	8.00@ 8.35	8.61@ 9.00	8.40@ 8.41	8.61@ 9.00	8.40@ 8.41
Pea	New York	2.22	4.50@ 6.25	6.15@ 6.65	4.50@ 5.50	5.50@ 6.00	4.50@ 5.50	5.50@ 6.00
Pea	Philadelphia	2.14	4.75@ 6.50	6.35@ 6.60	5.75@ 6.00	6.00	5.75@ 6.00	6.00
Pea	Chicago*	4.79	4.50@ 5.60	5.40@ 6.05	5.36@ 5.75	5.36@ 5.95	5.36@ 5.75	5.36@ 5.95
Buckwheat No. 1	New York	2.22	2.25@ 3.50	3.50	2.25@ 2.85	3.00@ 3.15	2.25@ 2.85	3.00@ 3.15
Buckwheat No. 1	Philadelphia	2.14	2.25@ 3.50	3.50	2.50@ 3.00	3.00	2.50@ 3.00	3.00
Rice	New York	2.22	1.75@ 2.50	2.50	1.90@ 2.25	2.00@ 2.25	1.90@ 2.25	2.00@ 2.25
Rice	Philadelphia	2.14	1.75@ 2.50	2.50	2.00@ 2.25	2.25	2.00@ 2.25	2.25
Barley	New York	2.22	1.50@ 1.75	1.50	1.40@ 1.65	1.50	1.40@ 1.65	1.50
Barley	Philadelphia	2.14	1.25@ 1.50	1.50	1.50	1.50	1.50	1.50
Birdseye	New York	2.22		1.60	1.40@ 1.65	1.60	1.40@ 1.65	1.60

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



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

	1925			1924
	Feb. 23	Feb. 16	Feb. 9	Feb. 25
Index	168	168	168	184
Weighted average price	$2.03	$2.04	$2.03	$2.23

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

kind of weather will create anything unusual in the retail coal trade for the balance of the season. No change in prices.

Kentucky Trade Is Dull

The situation at Louisville has failed to improve much, and there is still plenty of unsold coal on tracks at mines, and much distress coal is being offered. Production has been cut deeply. In western Kentucky it is reported that there is not much distress coal on tracks of the Louisville & Nashville R.R., but plenty on the Illinois Central R.R., as the Chicago market hasn't been able to take much stock of late.

In eastern Kentucky there have been heavy offerings. A good deal of coal is available under the markets. Screenings are reported as a shade stiffer at 60c. and upward in eastern Kentucky, but $2.50 is the top of the block market, except on some specialty coals, and not much tonnage is moving at over $2.15@$2.35.

Western Kentucky in some instances is asking the trade as high as $2.55 a ton on block, but $2@$2.50 covers the range of block, egg and lump, the latter two being at a maximum of $2.25, while some block coal has been sold as low as $2 and even under that.

Steam consumption continues fair and there is a fair volume of coal moving to railroads, industries, gas plants, utilities, etc., but the market is not in shape to absorb any large production of prepared coal.

Softness of prices now extends to smokeless coal as well as to the high volatile coals produced in West Virginia. The fact that demand is better sustained in the East than in the West is enabling some fields to keep up production. There is a comparatively light demand, however, for any grade at the present time. Even with production curtailed, however, the weekly output of the four smokeless fields is in excess of 900,000 tons a week.

High volatile coals are in worse shape than the smokeless as there is no demand worth mentioning for any grade in comparison to the tonnage produced.

Lighter demand is to be seen in a lower output in the Upper Potomac and western Maryland fields. Upper Potomac mines are now producing only about 34,000 tons a week as against 42,000 tons a few weeks ago. There has also been a reduction in the tonnage originating in the Georges Creek region.

Virginia mines are able to maintain production at a somewhat higher level than is observed in other fields, approximately 75 per cent of capacity being produced.

Duluth Busy, Milwaukee Quiet

At Duluth a general revision in prices with screenings very strong is the feature of the market. The general tendency is for strength through the line, and there is no talk of cuts in the near future. The rush of cold weather has revived buying again and much coal is being moved. Nothing except an entirely unforeseen calamity can stop the docks from coming through with little stocks on hand at the opening of navigation. Optimism prevails.

One of the things which has happened at the Head-of-the-Lakes in the past week is unique in that market. The price of screened lump and stove in soft coal has been split. Until now they have always sold at one price. Prices are as follows:

	Lump	Stove	Run of Pile	Screenings
Youghiogheny	$5.75	$5.50	$5.00-$5.25	$4.25
Hocking	5.25	5.00	4.75	4.00
Splint	5.50	5.25	5.00	4.25
Kentucky	6.25	6.00	5.75	4.50
Pocahontas	9.50	....	5.50	4.50

The price of smithing coal has been advanced $1 to $9 in lots and $12 in sacks. There has been no change in hard coal. The market is firm because of the shortage in Pocahontas. Hard coal is going in large quantities to the Twin Cities. The outlet for buckwheat there is especially good.

Commercial and industrial demand is good. The cold weather has forced buyers into the market. On the Iron Range, however, trade is slack. Independent mines are not planning for the year until the price is fixed for the season. Last year they were caught by an 80c. drop in ore prices, which made their stockpiles a liability instead of an asset. Winnipeg still takes its share of hard coal. The present cold weather has helped keep up trade there.

The flow of coal from the Milwaukee docks has been slower thus far in February than it was last month, owing to the prevalence of warmer weather. The market is influenced by the weather quickly and sharply in the orders for domestic fuel, as householders economize to the limit and postpone calls for fresh supplies. The outflow of industrial fuel is more stable, and dealers report a fairly good demand from this source. Prices remain firm and without change.

West Suffers from Warmth

The Southwest's sojourn at the flesh pots is past and operators see lean days ahead. Retail yards and private bins are filled; orders, accumulated during the heavy cold weather demand, are out of the way and the market is beginning to soften. Last week Kansas shovel lump dropped from $5 to $4.50. This week some operators and jobbers are quoting shaft lump at $4.50. There has not yet been any general break, but it is expected before long. No changes have been announced in prices of other grades.

The continued mild weather has materially affected the coal markets in the Colorado general territory, resulting in a great many cancellations or orders and demoralizing the prices on nut coal orders particularly. The slackening of the demand has reduced the running time of Colorado mines about 10 per cent from the preceding week. No changes are contemplated in present prices, which will hold good until the storage prices go into effect, April 1.

The demand for steam coal has slumped off considerably due to the closing down of the sugar factories, which have ended their campaign. This is having a serious effect upon lignite slack coals in northern Colorado fields. Unless severe cold weather should set in a number of the mines probably will close down for want of orders. Transporta-

tion conditions have been excellent and there has been an ample supply of labor.

In Utah the mines are working about two days a week only. The market is dull in every section of the territory served. The domestic consumption has fallen off as a result of weather conditions and dealers are buying from hand to mouth. The metal mines and smelters continue to be the biggest industrial consumers.

Cincinnati Sees a Few Bright Spots

Though conditions are rather blue in the Cincinnati market there are a few bright spots. The extreme low on several classifications has shifted and it is getting harder to find "bargains." The principal cause is that the mines are slowing down in shoving coal at jobbers and wholesalers. Both West Virginia and southeastern Kentucky offerings of lump and block were quoted materially higher this week than last, though there was still distress coal and "no bills" to dispose of. Dealers that were filling such orders on West Virginia high volatile around $1.75 and under now ask $2. Two-inch and egg quotations were lumped at $1.50@$2. Mine-run is still jumpy. A peculiar twist is the failure of slack to come to a higher level with the curtailment of prepared coal and the slowing up or shutting down of the mines supplying this market.

Some softness is noted in the price of smokeless prepared. Standard Pocahontas shippers hold to $4 but some other offerings have been placed as low as $3.50@$3.75. Mine-run, the production of which is being held down, is rather firm at $1.75@$2, and slack is quoted at $1.25@$1.50, standard shippers refusing anything but the top of the market despite softness in high-volatile offerings.

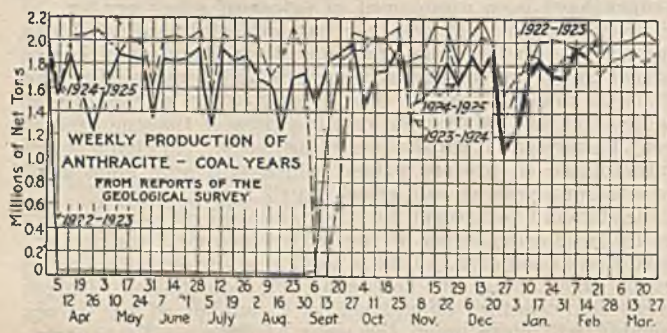
Lake business is beginning to show signs of life and some of the early birds are already getting their first cargoes lined up. River business, with the high stage of the river, has been slowed down though the weather has been unusually fine. Retail prices are practically unchanged with Pocahontas lump at $8.50; run of mine, $5.50@$6; bituminous lump, $6.25@$6.50, and slack, $4.50.

The coal trade in Columbus is quiet both in domestic and steam grades, it being a question which is the slower. Warm weather has taken activity out of domestic trade. Dealers are cleaning up and are not buying to any extent. The trade is asking for the better grades such as Pocahontas smokeless and splints. Hocking and Pomeroy varieties are extremely dull and there is little hope for immediate improvement. There is still considerable demurrage coal to be had but this is being reduced as producers are gradually discontinuing the practice of consigning coal. Mining in southern Ohio is scarcely 15 per cent of capacity.

In the steam trade distress coal is often picked up at very low figures. Utilities and railroads are the best consumers. General manufacturing is not expanding to any extent and thus their fuel requisitions are not large. Reserves are still good and there is no general tendency to increase surplus stocks under existing conditions.

Contracting is not attracting much attention; in fact it is believed that if low prices continue large steam users will try to fill out requirements by buying from the open market rather than enter into agreements.

In eastern Ohio last week was one of accentuated dullness with practically no inquiry from any quarter so far as spot sales are concerned. Mild temperatures reduced the consumption of both steam and domestic coal. Spot prices are holding firm at previous quotations, and as the demand has dwindled additional mines have found it necessary to close on account of lack of orders. During the week ended Feb. 14 production fell to 258,000 tons, or about 37 per cent of potential capacity.



Stagnation More Pronounced at Pittsburgh

Stagnation has been more pronounced at Pittsburgh in the past week. There is practically no open-market trading. In general it is considered that market prices are not quotably changed, but that they are practically nominal. Coal is still being shipped, of course, but it seems to be nearly all under special arrangements, consumers taking deliveries from their regular sources at prices which are secretly adjusted periodically.

Operation of the rail mines in the district is in the neighborhood of 40 per cent. A significant item as to consumption is that the combination rail and river mines of the district, which are chiefly owned by steel interests, have decreased operations sharply, from 65 per cent in the week ended Jan. 17 to 46 per cent two weeks later. Also, the Republic Iron & Steel Co. is reported to have closed its mines in Group 1 of the Bessemer district, which are not in the rail and water class. That group is doing very little now, while Group 2, mines north of Butler, have decreased considerably in the past fortnight.

The Buffalo coal trade is quiet, seeming to be slowing down when the demand should be good and doing better. An unusual amount of coal on track unsold is accountable for part of the sluggishness, or, rather, it is a confirmation of conditions in other branches of the trade. Jobbers complain that the operators offer coal to consumers as low and sometimes even lower than they will sell it to the middleman.

It is reported on all sides that slack has entirely lost the small lead it had early in the winter and is too low according to the other prices. The severe weather of January has let up decidedly now and the office buildings are not so much in need of coal as they were.

Gradual Pickup Continues in New England

In New England there is now enough demand to sustain present prices. Both f.o.b. Hampton Roads and on cars at rehandling plants at Boston there is noticeable improvement, although the volume of business is still relatively small and there is no immediate prospect of higher quotations. Production and request simply are now more in line than for several months, and there are no longer the accumulations at the loading piers that usually are a menace to the spot market. From practically all quarters it is understood that the present base price at Norfolk and Newport News is $4.50 for No. 1 Navy standard coals, with second grades shading off to $4.25. Transportation also is in better demand, but beyond slight advances in steamer rates noted some weeks ago there is no appreciable change in marine freights from Hampton Roads to Eastern points.

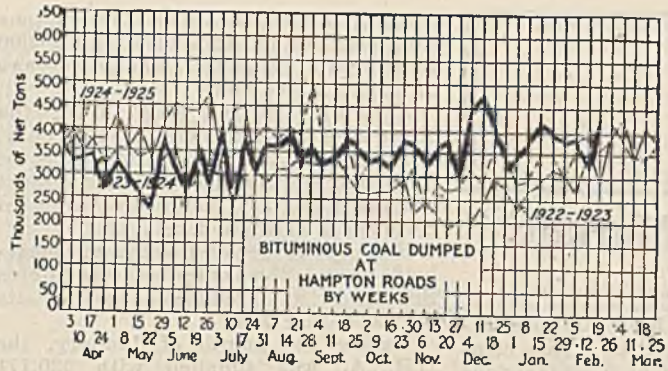
Sales agents are extremely active in combing over this territory for prospective business in the spring, but in spite of a somewhat improved call for spot coal there is as yet no interest among buyers in contract commitments. Of course there always are blocks of coal placed from year to year about in the customary channels, but now that the railroads have bought there is little heard on the subject of competitive contract making.

For distribution inland there has been almost no change in a week's time. The range is $5.75@$5.90 per gross ton on cars Boston or Providence, with an occasional sale at $6 for prompt delivery from rehandling wharves at Boston. Cargoes are now being absorbed practically on arrival, with reserve supplies being very little depleted. Most steam users are still buying only from hand to mouth, and until they themselves sell their finished products farther ahead than now seems possible they are expected to continue their present policy.

All-rail deliveries are light, and not yet have higher prices on the smokeless coals been reflected in any broad way. Quotations seem to vary not at all from the marks established months ago, and in no direction is there anything more than the average dull market that has been typical for more than a year.

Business Torpid at New York

As the end of the second month of 1925 nears, the bituminous coal market at New York is quiet. There is almost no inquiry and consumers are not showing any interest, although they are watchful for any sudden improvement. Producers, however, are trying to look at the bright side and expect that buying will improve about April 1.



Contracting continues on a small scale. Some of the more optimistic producers expect that on April 1 there will have been signed up for the new coal year as much tonnage as under ordinary conditions. Prices are being held on the basis of current market quotations with a slight betterment in some instances.

The Philadelphia market seems a bit quieter than usual, due to the springlike weather. There is a fair call on the spot market, with buying confined chiefly to high-grade coals.

Inquiries are beginning to float in from brick and cement manufacturers, yet the full force of purchases for this account is still likely to be somewhat in the distance. The business coming from the iron trade continues good and at times is inclined to grow in volume.

The contract situation is beginning to shape up a little better, with the producing houses displaying more interest in trying to line up the larger tonnages. The opinion prevails that the consumer will contract on a larger scale than last year, when he was particularly conservative.

Among gas coals, slack is the only coal that is not in sufficient supply to meet the demand, and the call for screenings increases as the orders for sized coal falls off. At tide the export trade shows slight signs of improvement, although bunkering is on the same scale as usual.

Though rumors are continually arising to the effect that there will soon be a change for the better in the coal trade at Baltimore these soon vanish. The uncertainty is intensified by inactivity in fuel exports.

Moderate weather is having a very baneful effect on the wholesale domestic trade at Birmingham, inquiry being negligible and movement very light. Operators are having much difficulty in disposing of lump and other domestic grades with any degree of promptness or in any considerable quantity, and some mines have been forced to decline steam business on this account. A large amount of domestic fuel is being applied on steam orders at only a slight premium above steam quotations.

The steam trade shows no important change from a week ago. Demand is reported as gradually but slowly expanding, a moderate amount of spot business being booked and contract movement somewhat better. Some railroads have bought a little spot coal and all lines are taking good tonnage on contracts. Bunker business is a little better than the average, some interests having about all they can handle under the present operating handicaps.

Quotations on coal and coke are about the same as last reported. While demand for domestic grades is weak, prices are holding steady on the high grades, a limited amount of the cheaper coals being obtainable somewhat under ruling figures. Foundry coke is having a good market at quotations of $5@$5.50 ovens.

Production took another upturn in the week of Feb. 7, reaching 389,000 net tons, the largest output since March, 1924. Furnace companies are mining a heavy tonnage for coke making, and commercial companies with byproduct ovens also are using a great deal of coal.

Conditions Lifeless in Hard Coal Trade

With temperature so mild last week it is not surprising that the anthracite market at New York was dull and lifeless. The wonder in many quarters is that coal moved as well as it did. There was almost no demand and no prospects were held out for immediate improvement unless low temperatures demanded. Consumers seemed to have organized a "hand-to-mouth" association and the indications point that it will function at least another month.

Independent operators are the worst sufferers. Although much of their coal can be bought at company prices the latter coal gets the preference because of standing orders placed by the retail dealers. Shutdowns of some of the smaller mines are reported because of lack of orders.

Stove and chestnut coals are the best moving sizes but there is a good demand for egg and an occasional sale of broken is reported. Steam coals, however, are not moving freely. They feel the effects of weather conditions and the low prices for the better grades of bituminous coal. Birdseye is in better demand for contracts than any of the other small sizes of anthracite, probably because it is made by only one of the large companies.

Very mild temperatures continue to prevail in Philadelphia; householders are buying only in moderate quantities. All producers are having difficulty in keeping their mines going at capacity, as demand is centered on one size —chestnut, and that not so very strong. Naturally company producers with their lower prices are receiving most of the calls for nut. The independents have plenty and to spare. Occasionally among the less desirable independent coals one hears of cuts of 50c. a ton on stove and nut, although sales are made quietly. Pea is in fairly plentiful supply at $5.25@$5.50.

Steam coals are in fair shape, with barley leading the demand. There is a plentiful offering of rice and buckwheat off circular. Steam users are beginning to feel around to learn what the new contract price for the coming season will be. Some think that because of the possibility of a strike there is not likely to be any change in quotations.

In keeping with the weather of the last two weeks there has been nothing unusual in the Baltimore hard-coal trade. Due to the lateness of the season the buying has been short and the supply has been sufficient to meet demands easily.

Taking account of the sunny days the anthracite trade at Buffalo is much less active than before the big thaw of early this month. The idea seems to prevail that the worst of the winter is past. There is much use of gas fuel and many other substitutes for anthracite are competing. The demand for stove and chestnut continues as before, but the shippers and dealers are not paying great attention to it. The demonstration of the use of buckwheat is on here and people are asking their dealers how to get hold of that idea, but mostly without having to pay an extra amount for grates and blowers.

The demand for coke is better than it used to be, consumers finding it a saving of $4 to $5 a ton. The demand of late has often exceeded the supply, especially as the steel trade does not take as much of it as awhile ago.

Coke Market Slumps Further

The Connellsville coke market has had a turn for the worse. The recent slump was due to overproduction, ovens having been put in without contracts, on an expectation that there would be spot demand. Poor demand caused coke to accumulate on track, and production was then curtailed. Buyers in general are reserved and furnaces accumulated some stocks on the last slump.

In the past week there have been some sales of spot furnace coke at $3.50, this being coke on track or distress coke, but $3.75 probably has been paid in some cases on small lots down to carloads, making the market quotable at $3.50 to $3.75. For regular delivery over a month coke could not be bought so low, but there is no inquiry, and furnaces are giving no attention to second-quarter contracts, pig iron being very dull.

Spot foundry coke, quoted a week ago down 25c., is down another 25c. this week at $4.25@$4.75, depending on brand. Most coke seems to be going at $4.50. Demand is light and sales are of small lots.

There is more talk about the necessity of reducing wages, the recent advance to the Frick scale having been too strong.

Car Loadings, Surplusages and Shortages

	Cars Loaded	
	All Cars	Coal Cars
Week ended Feb. 7, 1925	928,244	192,655
Previous week	896,055	192,339
Week ended Feb. 9, 1924	906,014	199,745

	Surplus Cars		Car Shortage	
	All Cars	Coal Cars		
Feb. 7, 1925	199,210	63,561	.....	.....
Jan. 31, 1925	213,921	69,736	.....	.....
Feb. 7, 1924	138,017	53,758	6,998	.....

Foreign Market And Export News

Trade at Low Level in British Market; All Factions Dissatisfied

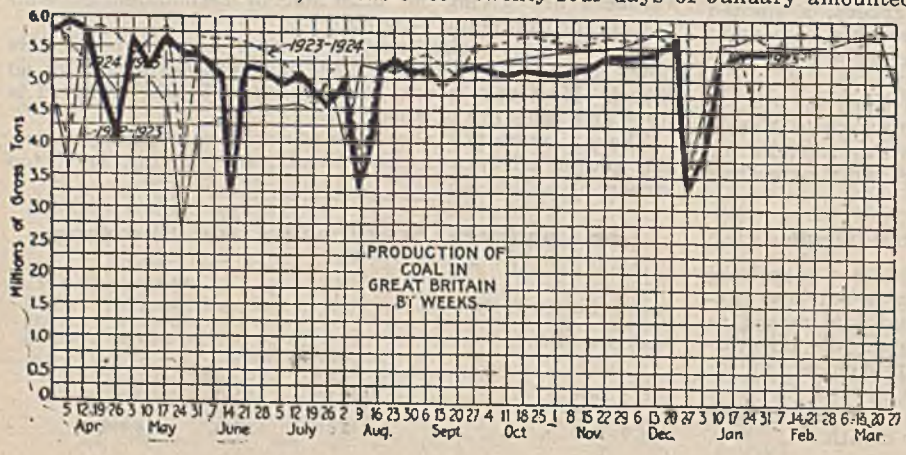
The Welsh steam coal trade is in pretty much the same state as last week. New business is coming in very slowly, and consists mostly of small lots to cover immediate requirements because buyers will not pay the prices demanded for later delivery. Prices for immediate delivery are being cut to effect clearances and to keep the pits going. Operators are holding out for higher prices for future delivery, because even at advanced figures they still lose money. Collieries are working irregularly owing to shipping delays caused by bad weather and the fact that German coal is competing with Welsh at a cut of around 7s. per ton.

Welsh miners' wages remain on the minimum of 42.2 per cent over the 1915 standard. Earnings of the collieries during December were 19.31 per cent above the standard, and the mine owners must make up the difference. Operators' loss in December was £121,-129, or 8.04d. per ton. Average output was 16.38 cwt. per man per shift, and earnings 10s. 10½d. per shift.

The Newcastle coal market is dull, demand has slowed down and operators are cutting their output to keep accumulations at a minimum. Beyond a little steam coal sold to Denmark there is no business to report. The Egyptian Government is inquiring for 150,000 metric tons of Monmouthshire large.

There is a feeling of considerable dissatisfaction throughout the coal fields which is shared alike by the operators and the men. The men are discontented with their wages, which are undeniably low, and the operators are dissatisfied both with the hours of work and the rate of output. The men are bringing their demands for a higher wage, while the operators meet this demand with one for longer hours, contending that the industry cannot pay higher wages when it is already running at a loss.

Production by British collieries in the week ended Feb. 7, a cable to *Coal Age* states, was 5,418,000 tons, according to official reports. This compares with an output of 5,434,000 tons in the preceding week.



Piers Clogged in Dull Market At Hampton Roads

Business at Hampton Roads last week was very quiet with nearly 500,-000 tons of coal on hand at the piers and shippers complaining of overproduction which was causing some distress at tidewater. Cargoes of pool 1 coal were offered as low as $4.15 to save demurrage.

Inquiries for contracts were negligible, and all branches of the trade appeared to have slowed down. There was practically no inland business reported. Coastwise trade and bunkers were slow and foreign shipments were widely scattered.

French Industrial Coal Holds Gains; Domestic Weak

The recent slight amelioration of conditions in the French industrial coal market has been maintained, but a further shrinkage has taken place in domestic trade.

Though the increase in wages in the Nord and Pas-de-Calais coal mines has increased the production cost of coal 2f. this has not advanced the selling prices, as the situation of the market would not permit it.

The Saar domainal mines contemplate wage increases corresponding to those recently granted in the Nord and Pas-de-Calais coal fields, which may avert the threatened strike, unless the men blindly follow orders from Berlin.

Following numerous protests, the new transport tariffs have been slightly reduced.

Deliveries of indemnity fuels to France and Luxemburg in the first twenty-four days of January amounted to 534,700 tons, of which 207,400 tons was coal, 301,300 tons coke and 26,000 tons lignite briquets; a daily average of about 22,300 tons.

According to the program of the Reparation Commission for February, France is to receive 750,000 tons of fuels during that month, as against 671,000 tons last month, in order to cover part of the deficiency.

Because of reduced sales of household fuels, the office of Houillères Sinistrees has reduced some of its prices, dating Feb. 1.

During the month of January, the O.R.C.A. was supplied with 320,771 tons of Ruhr coke, a daily average of about 10,400 tons. From Feb. 1 to 4, the receipts were 31,889 tons, a daily average of about 8,000 tons. The advance of 15f. in the price of indemnity coke, which ought to have taken place on Feb. 1, is now entirely out of the question, as the wage increases asked by the Ruhr workers have not been granted.

Export Clearances, Week Ended Feb. 19, 1925.

FROM HAMPTON ROADS

	Tons
For France:	
Br. Str. Ardenhall, for Marseilles	1,676
For Italy:	
Ital. Str. Aquitania, for Porto Ferrajo	6,403
For Uruguay:	
Br. Str. Saint Dunstan, for Montevideo	6,789
For Virgin Islands:	
Dan. Str. Lifland, for St. Thomas	3,083
For Canal Zone:	
Amer. Str. Chilore, for Cristobal	19,792

FROM PHILADELPHIA

For Cuba:	
Br. Str. Briarpark, for Havana	——
Br. Str. Seatonia, for Havana	——
For Italy:	
Ital. Str. Federica, for Trieste	——

Hampton Roads Pier Situation

N. & W. Piers, Lamberts Pt.:	Feb. 12	Feb. 19
Cars on hand	3,042	2,071
Tons on hand	198,186	130,918
Tons dumped for week	101,639	160,764
Tonnage waiting	10,000	12,000
Virginian Piers, Sewalls Pt.:		
Cars on hand	2,103	2,149
Tons on hand	143,700	146,000
Tons dumped for week	85,915	85,888
Tonnage waiting	1,203	21,231
C. & O. Piers, Newport News:		
Cars on hand	4,673	2,910
Tons on hand	133,810	147,180
Tons dumped for week	101,964	132,183
Tonnage waiting	515	6,125

Pier and Bunker Prices, Gross Tons

PIERS

	Feb. 14	Feb. 21†
Pool 9, New York	$4.75@$5.00	$4.75@$5.00
Pool 10, New York	4.50@ 4.65	4.50@ 4.65
Pool 11, New York	4.30@ 4.55	4.30@ 4.55
Pool 9, Philadelphia	4.90@ 5.25	4.90@ 5.25
Pool 10, Philadelphia	4.45@ 4.70	4.45@ 4.70
Pool 11, Philadelphia	4.30@ 4.50	4.30@ 4.50
Pool 1, Hamp. Roads	4.25	*4.15@ 4.20*
Pool 2, Hamp. Roads	4.10	4.10
Pools 5-6-7 Hamp. Rds.	4.00	4.00

BUNKERS

Pool 9, New York	$5.00@$5.25	$5.00@$5.25
Pool 10, New York	4.75@ 4.90	4.75@ 4.90
Pool 11, New York	4.55@ 4.80	4.55@ 4.80
Pool 9, Philadelphia	4.90@ 5.25	4.90@ 5.25
Pool 10, Philadelphia	4.75@ 4.95	4.75@ 4.95
Pool 11, Philadelphia	4.50@ 4.70	4.50@ 4.70
Pool 1, Hamp. Roads	4.30	*4.25*
Pool 2, Hamp. Roads	4.15	4.15
Pools 5-6-7 Hamp. Rds.	4.00	**4.10**

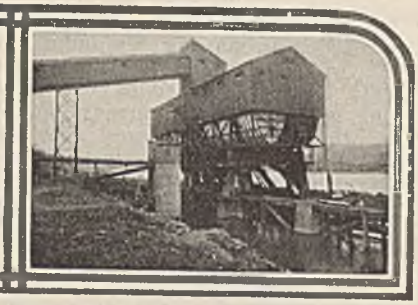
Current Quotations British Coal f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	Feb. 14	Feb. 21†
Admiralty, large	27s.	*26s.@26s.9d.*
Steam smalls	16s.3d.	*15s.@16s.*
Newcastle:		
Best steams	18s.6d.	18s.6d.
Best gas	20s.@22s.	21s.
Best Bunkers	18s.@19s.	*17s.6d.@18s.6d*

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

News Items From Field and Trade



ALABAMA

At a meeting of the southern directorate of the American Mining Congress held at Birmingham Feb. 16 it was decided to publish a volume on the mineral resources of the South, supplementary to the book previously gotten out by the Congress entitled "Natural Resources of the South." Dr. Henry Mace Payne was designated to assemble and compile the data for the publication.

D. A. Thomas, 1003 S. 28th Street, Birmingham, is reported to have purchased the mines of the Montevallo Coal Co., at Aldrich, the first week of this month.

The Alabama Power Co. is constructing a transmission line to the Banner Mines of the Alabama By-Product Corporation, in the western end of Jefferson County, and will shortly substitute its current in place of electrical energy now generated by the coal corporation at its colliery, where extensive changes and additions are being made to electrical machinery and equipment to facilitate and increase production.

The Pratt Fuel Corp., American Trust Bldg., Birmingham, is reported to have purchased a 220-acre tract of coal land the first of this month, near the Jagger mines, and will develop it.

Rumors originating in New York to the effect that negotiations were under way for another large merger of Alabama iron and coal companies, the Sloss-Sheffield Steel & Iron Co., Gulf States Steel Co. and Woodward Iron Co. being prominently mentioned, have been flatly denied by officials of these corporations at Birmingham.

ILLINOIS

The Witt mine of the Illinois & Indiana Coal Co. has quit work again. This big property was reopened Jan. 1 after a long period of idleness, but its run lasted only a few days over a month.

Nat C. McLean, of the real estate firm of McLean & Galvin, of East St. Louis, has been appointed receiver of the Southern Gem Coal Co. to serve with W. S. Wilson in place of Judge C. B. Thomas, who resigned.

The recent rain and snow storms have relieved in part the water shortage which has greatly curtailed production at several mines in southern Illinois during the latter part of January and the first part of February. The following mines were being operated on water which was hauled from outside sources: Harrisburg Coal Mining Co., No. 2 mine; O'Gara Coal Co., No. 3; Saline County Coal Corporation, No. 3, and the Wasson Coal Co., No. 1 mine. In some instances actual operations were suspended because of lack of water.

The Old Ben Coal Corporation for the three months ended March 31, 1924, reports net income of $225,667. The balance sheet as of the same date shows total assets and total liabilities of $26,636,908, while current assets were $2,215,704 and current liabilities $1,523,770.

INDIANA

With unofficial returns from 51 locals representing about one-third of the expected vote in the election of officials of District No. 11, United Mine Workers, comprising most of Indiana, incumbents of the chief offices, who are candidates for re-election, continue to fall behind. John Hessler, president, is a thousand votes behind Tyler G. Lawton, of Bicknell. Harvey Cartwright, opposing Vice-President Roberts, has piled up a heavy vote in the late returns and now is leading by a big majority. C. C. Webster has a good lead over W. H. Van Horn in the race for international board member. The last year has seen considerable dissatisfaction on the part of the miners with district officials, except the secretary, William Mitch, who appears more popular than ever and who was re-elected overwhelmingly on the first ballot.

There are only four mines now idle in the Vincennes-Bicknell field. The idle shafts are American Mine No. 2, Indiana Creek, Lynn and Bruceville. Many of those formerly employed at the American No. 2 are working at American No. 1.

Fire in the engine room of the Kern Coal Co. mine near Terre Haute recently damaged the property more than $4,000. When firemen, who were called from Terre Haute, reached the mine, the flames were beginning to envelop the tipple. The tipple, however, was saved. The origin of the fire is not known. Reconstruction of the boiler room will be commenced immediately, but the mine will be down for several weeks. It has the contract for supplying the city schools of Terre Haute.

Senator George W. Sims of Vigo County, has reintroduced in the Indiana Senate the bill that would extend the scope of the mine inspection law to cover all mines employing three or more men. "All misunderstanding relative to the bill," the Senator said, "has been cleared up, and it is reintroduced substantially in its original form. In addition to bringing mines employing three or more men under the mining laws, the bill provides that the inspection of tipple scales shall come under the jurisdiction of the state weights and measures department. The new bill further provides that gasoline engines cannot be used in mines. This is a safety measure which undoubtedly will prevent many fatal accidents."

The Excellent Coal Company of Linton, filed a preliminary certificate of dissolution Feb. 10.

KENTUCKY

The reorganization of the Kentucky properties of the Maynard Coal Co., located in the Hazard field, is about completed by Chicago bondholders, who took over the properties at receivers' sale recently. Al Allais, a well known coal man, who has been connected with the Columbus Mining Co., will be in active charge. The name Daniel Boone Coal Co. will be retained and the product will be sold through the William S. Harman Coal Co., Columbus. The three mines have a combined capacity of about 2,500 tons daily.

In Ohio County, western Kentucky, it is reported that the Beaver Dam, Holt, Broadway and Simmons mines are cleaning up and will soon start operating. In Muhlenberg County the Beech Creek, Nelson and Martwick mines cleaned up last week, and were to start this week.

NEW YORK

The Eastern Fuel Co. has added to its New York office sales force Thos. F. Macksey, who for many years was associated with Dickson & Eddy, of New York, as sales manager. R. M. Hires also has joined the Eastern Fuel Co. organization, working out of the Philadelphia office.

OHIO

Mine No. 25 at Chauncey lost its first day of work recently, the first in over five months. This is a record not equaled by any other large mine in the Hocking Valley section.

Co-operative methods seem to be a success at the Blackburn mine, south of Alliance. Since taking hold several months ago, when the mine appeared

to be closed forever, employees have succeeded in placing the mine in the list of daily producers. In January, 1924, this mine failed to load a single ton of coal for shipment, but last month it shipped 159 cars. The mine's capacity under present conditions is 300 cars a month. Other mines in the district barely broke even with records of 1924 and in many instances there was a loss instead of a gain.

Colonel Tom Morgan, who for the past year has had charge of the Western business of the Cheasapeake & Virginian Coal Co., has taken charge of the Cincinnati sales department of the Richvein Coal Co. in which C. Bascom Slemp, secretary to President Coolidge is largely interested. D. Price, formerly with the Maher Collieries Co., has succeeded Col. Morgan.

Capt. J. T. Hatfield has succeeded to the presidency of the Hatfield Reliance Coal Co. and its associated mining and river interests, which office was made vacant by the death of Julius Fleischmann in Miami, Fla. Julius Fleischmann, Jr., was elected to the vice-presidency of the company and J. Forest Butts, of Madison, Ind., fills the place on the board held by the younger Fleischmann. The directors met in Cincinnati on Feb. 17.

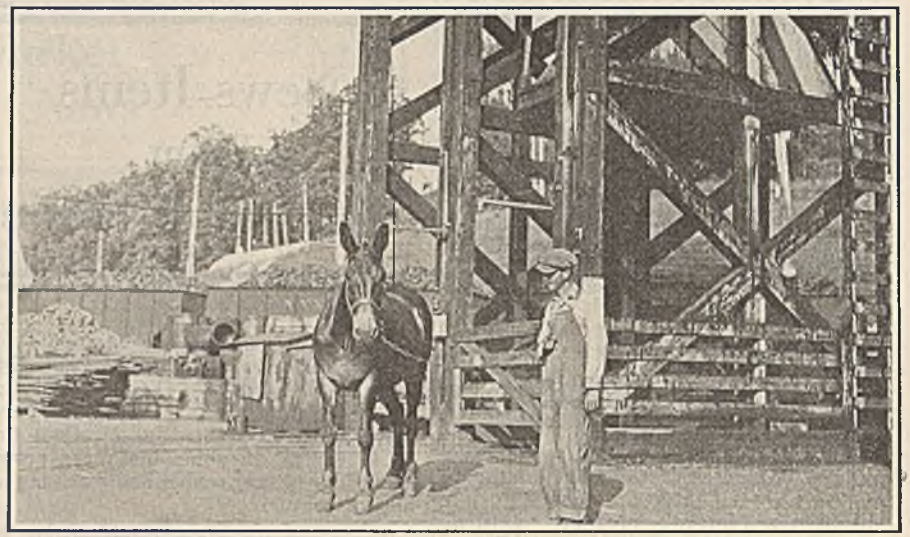
The Wyoming Coal Sales Co. in all probability will be liquidated as the result of the purchase of the six mines in the Sullivan Pocahontas group by the Cory Mann George Company. More, this is taken to mean that these exporters and Eastern dealers will push actively into the Western sales field. The Wyoming Coal Sales Co. has long maintained its principal sales office in Cincinnati.

PENNSYLVANIA

Sale of 212 acres of coal in Greene County by the Charles H. Seaton estate early in February was closely followed by an even more important deal in which Henry A. Phillips, of Pittsburgh, was the buyer of the largest block of Greene County coal assembled and turned over since the J. V. Thompson sales. Eight thousand acres in all are contained in the Phillips purchase. The acreage is in the clay district of Wayne township and Monongalia County, W. Va., and the price per acre averaged $275. This makes $2,200,000 represented in this deal. The land lies west of the Greene County Coal Co. along Dunkard creek. It is understood that cash is being paid outright where requested.

The South Penn Collieries Co. has contracted with Hugh Dolan, well-known Pottsville mining contractor, for the driving of 500 ft. of tunnel at the Randolph colliery in the Schuylkill Valley above Port Carbon. This tunnel will cut all the important veins on the property and will vastly increase the productiveness of the colliery. This improvement is in line with many others being made by the company.

An issue of $1,000,000 six per cent collateral trust notes of the Silver Brook Anthracite Co., dated Feb. 1, was offered last week by Green, Ellis & Anderson, 100 Broadway, New York.



Courtesy Bertha-Consumers Co.

Supply Shaft at Rachel Mine

This operation, owned by the Bertha-Consumers Co., is located in the heart of the Fairmont low-sulphur gas-coal field, at Downs, W. Va. It is one of the largest mines in the field, having a railroad rating of 68 cars per day. The gradual disappearance of the mule is robbing the industry of one of its picturesque figures, but his displacement by modern machinery is making for greatly increased efficiency.

The Silver Brook company, of which John C. Haddock, of Wilkes-Barre, is president, owns all the capital stock of the Candlemas Collieries Co., the lessee of 3,900 acres of land located a few miles south of Hazleton. This is being developed by the Haddock Mining Co., which has reopened the old Silver Brook Colliery located on the tract. It is estimated that at least 500,000 tons of the 6,000,000 or 8,000,000 tons which the property is estimated to contain can be recovered by stripping.

The U. S. Supreme Court has denied the petitions of more than a score of Pennsylvania coal companies for a review of the decree of the Pennslyvania Supreme Court enjoining them from emptying mine water into Indian Creek, Fayette County.

The Monessen Coal & Coke Co., a subsidiary of the Pittsburgh Steel Co., operating in Fayette and Greene counties, has acquired by purchase, about 2,000 acres additional Pittsburgh seam coal near its present properties.

The A. M. Byers Co., of Pittsburgh, well known manufacturers of wrought iron pipe, have reorganized and expanded, floated a large bond issue and have purchased from the Hillman Coal & Coke Co. the Orient coal and coke plant at Orient, Fayette County, vicinity acquired by the Hillman company at receiver sale of the properties of the bankrupt American Coke Corporation.

Issac Taylor, of Uniontown, president of the Snowdon Coke Co., who recently had his left leg amputated at the Presbyterian Hospital in Pittsburgh, has entirely recovered from the effects of the operation and returned to his home.

The Rural Valley R.R., running from Echo, Pa., to Margaret Mines, has been sold by the Cowanshannock Coal & Coke Co. to the Allegheny & Western Ry. Co. and the Buffalo, Rochester & Pittsburgh Ry. Co. for $345,977, apparently to further the reorganization of the coal mining and carrying trade on that system of railroad. The coke company controls coal lands carrying about 100,000,000 tons of coal, good for 50 years' operation, and the road will get the haul of the output.

Net income of the Lehigh Coal & Navigation Co. for 1924 was $2,548,067, equivalent to $4.35 a share on the $50 par value stock. This compares with $3,473,507, or $5.93 a share, in 1923. President S. D. Warriner, in his report to stockholders, said: "Production was affected adversely during the year by reason of labor troubles, mine fires, floods and unsatisfactory market conditions. A marked falling off in demand for small sizes of anthracite made it necessary to store a large quantity of No. 1 buckwheat coal and to curtail production from the culm banks, the washeries being idle throughout the year." The income account for 1924 compares as follows:

	1924	1923
Revenues	$24,462,781	$27,098,022
Expenses	18,083,912	18,540,690
Depreciation	1,045,802	1,069,532
Depletion	253,683	376,675
Other resources	205,607	783,418
Net revenue	$4,873,777	$6,327,707
General expenses	215,686	221,456
Taxes	1,243,539	1,646,709
Interest fund deb	866,485	986,035
Net income	$2,548,067	$3,473,507

James M. Armstrong, of Pittsburgh, general superintendent of the Pittsburgh Coal Co., has been appointed by Governor Gifford Pinchot to represent the bituminous coal industry of Pennsylvania at the inauguration of President Coolidge.

Annual election of officers for the Engineers Society of Fayette County was held immediately after the society's dinner at the Uniontown Country Club, Feb. 3. The following officers were elected for the year 1925: President, E. L. Zearley; vice-president, Homer L. Burchinal; secretary-treasurer, H. R. Blackford. The society had as its guest for the evening H. S. Harrop, of Pittsburgh, who is presi-

dent of the Engineers Practicing Section of the Engineers Society of Western Pennsylvania, and his remarks were warmly greeted by the members of the Fayette County Society.

The financial report of the Pennsylvania Coal & Coke Co., which operates mines at Winburne, Cambria County; Arcadia, Indiana County, and at a number of other points in Cambria County, including Patton, Cresson, Gallitzin and Ehrenfeld, shows a deficit for 1924 of $418,376, against a surplus of $750,793 in 1923. During 1924 there was no market for a large percentage of the normal output and approximately 75 per cent of the company's mines were closed entirely during the year.

Coal companies in central Pennsylvania that have been pursuing a reforestation policy for several years will plant still more trees this pear. District Forester E. B. Miller of Johnstown has received the following requests for trees for this spring: Berwind-White Coal Co., 100,000; Charles Gull, St. Lawrence, 50,000; Bethlehem Steel Co. and Bethlehem Mines Corporation, 80,000; Clearfield Bituminous Coal Corp., 100,000; Saltsburg Coal Mining Co., 55,000; Wilmore Coal Co., 100,000; Kier Fire Brick Co., 45,000, and the Penelec Coal Co., 50,000.

The Lehigh Valley Coal Co. will have jobs for about 800 mine workers when Centralia colliery, near Mt. Carmel, opens on March 1, after being idle since Aug. 24, 1924. The old Centralia breaker, which has been standing for over twenty-five years, has been replaced with a modern structure of from 1,500 to 2,000 tons daily capacity. The Centralia colliery is one of the oldest in the anthracite field. It was operated, according to local historians, before the Civil War. The coal is raised in a gunboat, having a capacity of about two cars.

With the completion of the big drainage tunnel connecting the Madeira-Hill Co.'s Natalie mines with the Hickory Ridge basin at Mt. Carmel, the next important improvement will be the erection of a modern steel breaker. The new tunnel will dispense with the pumping of 4,500 gallons per minute of water which accumulates at the bottom of the No. 2 and 4 slopes in the Natalie operation. The tunnel is pitched 4 in. to each 100 ft. This gradient will be sufficient to cause the water to drain away rapidly and lose itself in the Hickory Ridge basin. For the past two years workmen have been employed in placing the foundations and abutments for the new breaker, preparatory to the setting of the steel work, which will begin at once and will be completed in about 90 days. The new breaker will have a capacity of 2,500 tons a day and will take care of all the coal mined at the Natalie and Greenough operations.

The United Mine Workers are back of the bill introduced in the state Legislature by Senator Robert D. Heaton, which, if enacted, will repeal the tax on anthracite. C. J. Golden, president of District 9, said in an interview, "We are in favor of the repeal of the bill taxing anthracite." When the bill making the tax a law was passed it was presented with the plea that coal towns were losing their taxable wealth and that those who consumed it should make possible a refund to communities thus affected. After the Legislature got through with the bill the state grabbed all of the money, thus defeating the object of the legislation.

UTAH

A bill was introduced in the state Legislature the last week in January which would give the coal mine inspection division of the Industrial Commission the right to close any coal mine in the state whenever it is discovered that a violation of any of the mine safety provisions ordered by the Industrial Commission has been made. The bill was introduced by J. E. Pettit, of Carbon County, a mine superintendent employed by the United States Fuel Co. Opposition to an order would be a misdemeanor, punishable by a fine of not less than $50 and not more than $300. Each day that a mine superintendent, foreman or any other person in authority refused to obey an order to close a mine would constitute a separate violation under this bill. Mines have been closed by the coal department in the past, but it seems that the Industrial Commission desired statutory authority to back it up.

VIRGINIA

The Clinchfield Coal Corporation for the year ended Dec. 31, 1924, reports a net income of $604,325, which after preferred dividends is equal to $3.28 a share on the $14,547,600 common stock. This compares with $768,238, or $4.30 a share in 1923.

WASHINGTON

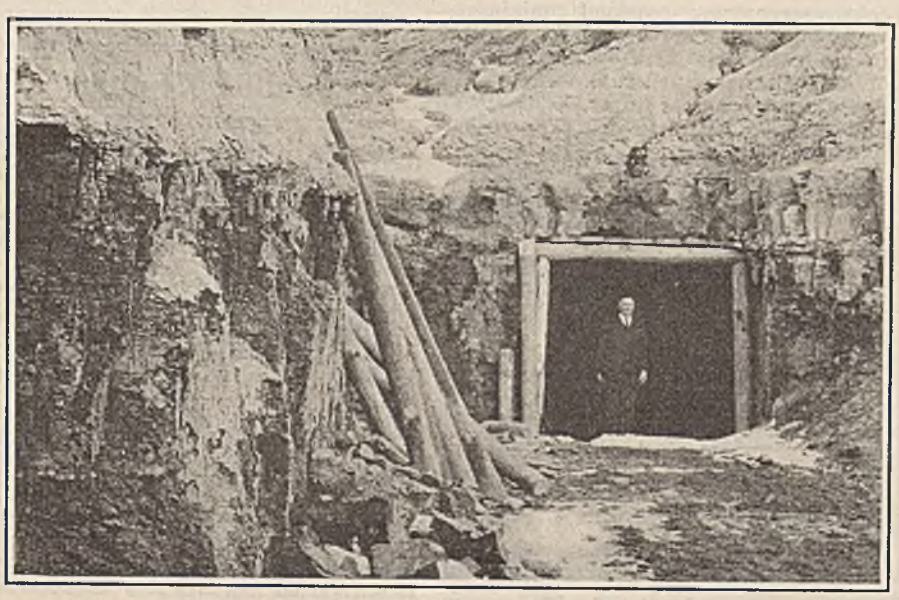
A tentative tabulation from the forthcoming annual report of Chief Inspector William R. Reese shows that the 1924 coal output of Washington totaled 2,654,915 tons. The 1923 total was 2,946,007 tons. In 1924 Pierce, Thurston and Whatcom counties all exceeded the previous year's output but all other counties showed declines. Sixty-two mines worked during 1924 and only 59 in 1923. The average number of men employed declined 32, which is a negligible drop in a 1924 total of 4,306 but the output per man was raised from 3.18 tons per day to 3.24 tons. The Victory Coal Co. at Centralia, Lewis County, leads the state with an output of 7.04 tons per man day.

WEST VIRGINIA

During the early part of February, Van Bittner and other officials of the United Mine Workers were cited for contempt by Judge W. S. Meredith of the Marion County Circuit Court for maintaining what is alleged to have been fortifications, dugouts and entrenchments on a hillside overlooking the tipple and dwelling houses of the New England Fuel & Transportation Co. at Grant Town. It was charged that the alleged fortifications constituted a violation of Judge Meredith's injunction issued several months ago. After writs had been issued the Sheriff of Marion County went to Grant Town and directed officials of the union to remove the structures consisting of heavy logs and timbers.

The Monongalia Coal Co., of Fairmont, has filed a certificate of dissolution.

In the second week of February the Consolidation Coal Co. closed the Gypsy mine, with a daily capacity of 1,600 tons; the Riverdale mine, with a daily capacity of 500 tons, and the Wyatt mine, with a daily capacity of 3,000 tons. During the previous week three mines closed down. Now out of 28 mines which the company started in



Seam of Coal at Red Deer River, near Drumheller, Alta.

As it outcrops fourteen miles below that city. The bed is clean and 7 ft. thick. It is such beds as this that make the Alberta coal situation even worse than that in the United States. One can hardly resist a disposition to open coal that is so easily uncovered and so inviting. Because of these temptations Alberta, like the United States, has too many coal mines for the limited market.

operation last April only ten are in operation in northern West Virginia. The company's mines in northeast Kentucky, southern West Virginia, Maryland and Pennsylvania are in operation —independent of any agreement with the union.

The recent decision handed down by the Supreme Court of West Virginia in the case of the state against the estate of the late J. A. Huddleston, of McDowell County, is exciting a great deal of interest owing to the fact that the estate has been practically confiscated by the state. When Mr. Huddleston died he left an estate of approximately $500,000 to numerous relatives, most of whom were cousins. The Prosecuting Attorney of McDowell County unearthed an almost forgotten law and levied taxes and penalties amounting to about $250,000 and his fee amounting to about $50,000.

William Devar, James Toney and Mike Poffish, who say they are members of the United Mine Workers, are being held for the burning of the tipple of the Francois Coal Co. at Lowesville. A previous attempt had been made to destroy the tipple at Lowesville and state fire marshals have been conducting an investigation since that time. According to the statement of the deputy fire marshals, Toney and Poffish were in jail in Logan County in 1921 in connection with the armed march. The Francois company operates an open-shop mine.

Strikes and lockouts would be prohibited under the terms of a bill introduced in the House of Delegates by Delegate Bartlett of Marion county. The measure makes it unlawful for any person, firm or corporation, organization or association to cause or make effective any strike or lockout or attempt to do so by any of the following acts: The inducement of any person to engage or continue in any such strike or lockout; the taking of any vote or issuing of any order relative to such strike or lockout; the paying of money or furnishing of material help of any kind or the agreement to do so, to any person on condition that such person engage or continue in such strike or lockout; the stationing of pickets or patrols.

CANADA

The Dominion government has under consideration a project for the erection of coking plants in such centers as Toronto, Montreal, Quebec, St. John and Halifax. The results of the establishment of coke ovens at Hamilton, Ont., have been encouraging and it is proposed that financial assistance be given to the scheme in the form of a government subsidy.

The British Columbia Department of Mines has announced that the following are the final figures for the coal production of the Province for 1924 Vancouver Island field, 1,495,897 tons; Crows Nest field, 274,262 tons; Nicola-Princeton field, 226,455 tons; Telkwa field, 1,228 tons, a total for the province of 1,997,842 tons. The falling off in output from the previous year, when 2,543,660 tons was produced, was due to the prolonged strike in the Crows Nest Pass Collieries. The largest individual producer was the Western Fuel Corporation of Canada, with an output of 553,949 tons from its collieries at Nanaimo, Vancouver Island.

Traffic

Rate Changes Suspended for Further Hearing

The Interstate Commerce Commission gives evidence of intending to make a further study of rates on coal from Illinois, Indiana and Kentucky to the Northwest. It has suspended until June 19 certain rates from fields in those states—other than from southern Illinois—which were to have taken effect Feb. 19, and will soon announce a general hearing. These schedules, covering Belleville, Ill.; northern Illinois, Springfield, Ill., and all Indiana rate groups were published after the carriers had agreed upon new and higher tariffs at the instance of the commission. What the Commission intends doing now remains to be seen. Meantime Indiana and all Illinois groups except southern Illinois retain 1920 tariffs.

New York Commission Approves New Lehigh Valley Rates

The New York Public Service Commission has approved reduced rates of the Lehigh Valley R.R. on bituminous coal and coke, in carloads, from East Buffalo to various stations on its lines. Rates and minimum weights established are the same as at present in effect from Buffalo; effective March 9, 1925; P. S. C. A-311.

The commission also has approved new joint rates on the Lehigh Valley R. R. (no joint rates hitherto in effect) on coke, coke breeze, coke dust and coke screenings, carload minimum weight in open cars 50,000 lb. (except that when car is loaded to full visible or cubical capacity actual weight will apply, but not less than 35,000 lb.), and when in box or stock cars 40,000 lb., from Harriet to the following stations on the New York, Chicago & St. Louis R.R., Angola, Farnham, Irving and Silver Creek, $1.51; Dunkirk, Van Buren, Concord, Brocton, Portland, Pomfret and Westfield, $1.24; Forsyth, Ripley and State Line, $1.76 (all per net ton); effective March 9, 1925; P. S. C. No. A-311.

New Companies

The Nebo Coal Corporation, Madisonville, Ky., capital $1,000, has recently been chartered by C. C. Beckwith, J. N. Stinehour and E. L. Wood.

The Blocton Coal Co., Columbus, Ohio, has been incorporated with an authorized capital of 1,500 shares, no par value designated, to mine and sell coal. The concern has acquired a considerable acreage in West Virginia which will be developed during the spring. The company's headquarters will be in Columbus. Incorporators are: Robert S. Fletcher, Hugh S. Butler, Jas. J. Dunn, Clarence A. Bovie and M. N. Neal.

The Cavanal Coal Co. was incorporated the last of January in Shady Point, Okla., with a capital stock of $500,000, by J. M. Kerns and J. M. Wood, of Poteau, and H. M. Waring, of Oklahoma City.

Association Activities

The St. Louis Coal Club held its regular monthy meeting Monday evening Feb. 9 at the American Annex Hotel with the Associated Engineering Society of St. Louis. The evening was spent viewing motion pictures. The program included showing of the B. & O. R.R. film, "The Three Atoms," which illustrates graphically the chemical action which takes place in burning coal and the Francis S. Peabody Memorial film, "When A Man's a Miner."

Obituary

Prof. Frederick Crabtree, head of the department of mining and metallurgical engineering at Carnegie Institute of Technology, Pittsburgh, since 1906, died at St. Petersburg, Fla., Feb. 14. Professor Crabtree, who was born in Bramley, York, England, in 1867, attended Massachusetts Institute of Technology, being graduated with the degree of bachelor of science in chemistry in 1889. He was chemist with the Illinois Steel Co. in 1889 and with the National Tube Co. from 1890 to 1900. He was superintendent of the Western Steel Co. in 1900-1901 and later superintendent of the blast furnaces with the Colorado Fuel & Iron Co. until 1904. From 1904 to 1906 he was professor of mining and metallurgy at Colorado College, Colorado Springs, Colo. On leaving that position he went to Pittsburgh and joined the staff of Carnegie Institute of Technology.

David Wallace, 75 years old, died at his home in Carterville, Ill., Feb. 14, following a long illness. For twenty-six years before his retirement he was a mine inspector. As a miner he helped to sink the famed Big Muddy Mine.

Joseph Taylor, veteran coal miner and operator, of O'Fallon, Ill., died at the home of his nephew, Samuel Taylor, in that city on Feb. 9. He was 86 years old at the time of his death and had been an invalid for six months. The funeral was held Feb. 12, interment being in Shiloh Cemetery, O'Fallon. Mr. Taylor was born in Oldham, England, and at the age of 21 migrated to America, settling in Pennsylvania. In 1864 he went to O'Fallon and obtained work in a coal mine there. He purchased his first coal mine in 1881, operating it as the Taylor Mine. Later he purchased the Ridge Prairie Mine and in 1904 the St. Ellen Mine. In 1905 his mining properties were consolidated as the Joseph Taylor Coal Co. He retired from the presidency of the company in 1915.

Coming Meetings

Canadian Institute of Mining and Metallurgy. Annual meeting March 4-6, Ottawa, Can. Sec. Geo. C. Mackenzie, Montreal, Que., Can.

Indiana Bituminous Coal Operators' Association. Annual meeting March 11, Terre Haute, Ind. Secretary, P. H. Penna, Terre Haute, Ind.

New England Coal Dealers' Association. Annual meeting, March 25-26, Springfield Auditorium, Springfield, Mass. Secretary, C. R. Elder, 141 Milk St., Boston, Mass.

Upper Potomac Coal Association. Annual meeting April 6, Cumberland, Md. Secretary, J. F. Palmer, Cumberland, Md.

National Retail Coal Merchants Association. Annual convention Traymore Hotel, Atlantic City, N. J., May 11-14. Resident vice president, Joseph E. O'Toole, Transportation Bldg., Washington, D. C.

Mine Inspectors' Institute of America. Annual Convention May 19, 1925, at the Jefferson Hotel, Peoria, Ill. Secretary, G. B. Butterfield, Hartford, Conn.

Chamber of Commerce of U. S. A. Thirteenth annual meeting, May 20-22, Washington, D. C.

Manufacturers' Division of the American Mining Congress. National exposition of coal-mining equipment, Cincinnati, Ohio, week of May 25. Secretary of American Mining Congress, J. F. Callbreath, Munsey Building, Washington, D. C.

New Equipment

Little Giant Permissible Coal Drill

A new drill has been developed by the Chicago Pneumatic Tool Co. to meet the urgent demand for a portable electric coal drill for use in gaseous mines. It conforms to the requirements of the U. S. Bureau of Mines for permissible electric motors for use in gaseous mines or dust-laden atmospheres, being built under approval No. 109 and No. 109-A.

The motor is fully inclosed and built to withstand internal explosion pressures without permitting any flame to pass to the outside of the motor or switch inclosure. In order to insure a cool running motor, an external ventilating system has been applied which permits of an absolutely tight inclosure for the running parts of the motor, where a spark may otherwise ignite explosive gases. Outside of the motor housing is a second or outer casing having an inlet and an outlet completely inclosing the motor casing at a distance therefrom and a rotary air circulator or fan arranged in a protected cavity which provides a current of air in the space between the casings, thus keeping the motor cool.

While a fully inclosed motor, especially one to withstand pressure of a considerable magnitude, must of necessity be heavier than an open or semi-inclosed motor of the same capacity, this coal drill has maximum capacity with minimum weight and complies with all of the requirements of the Bureau of Mines.

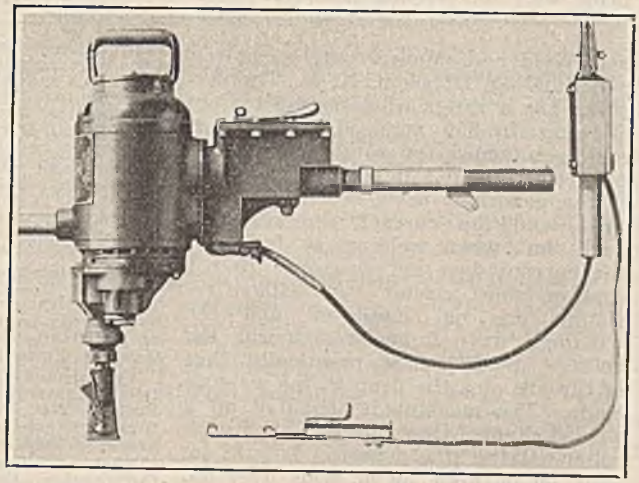
Careful examination and test of all castings entering into the drill are made and a most rigid examination of all the parts is conducted at the factory to insure safety to the operators and to comply with the requirements of the Bureau of Mines. The following legend appears on all inspection sheets passing through the factory with the parts in process: "The drill on which this part is used is designed to protect lives and property in gaseous mines. Its successful and safe operation depends entirely upon good workmanship and careful inspection at every stage of construction and test. Your co-operation with this end in view is essential."

Each tool is provided with two inclosed fuses located inside of the switch case casting and accessible through the cable inlet plug. These openings are sealed so that they cannot be tampered with by irresponsible persons without detection. Fifty feet of rubber covered, two-conductor cable is attached to the drill and terminates in a special fused connector, more lightly fused than the drill, for connection to the trolley or other lines; also through this connector another 12 ft. of cable runs to a special rail clamp for ground connection.

The arrangement of fuses, cable and connector has been designed with the object in view of getting the simplest and most convenient arrangement, consistent with the greatest safety from fire hazard. This tool is built for direct current only and can be furnished for 110, 230 and 250 volts.

Built to Work in Gaseous Mines

This motor is totally inclosed and designed to meet the Bureau of Mines requirements for permissible motors. A casing outside of the motor housing permits a ventilating system and assures an absolutely tight inclosure for the running parts of the motor.



Neutralizes End Thrust in Double Suction Pumps

An effective means of automatically neutralizing end thrust has been incorporated in double suction centrifugal pumps recently developed by the Earle Gear & Machine Co., Philadelphia, Pa.

Theoretically, a double suction pump, if properly designed, has no end thrust, but it is a well-known fact that end thrust or unbalanced pressure on the sides of an impeller is apt to result, because it is impossible to obtain absolutely accurate castings for the pump casing or the impeller. Small and apparently insignificant variations in the shape, smoothness, or size of the casing or impeller water spaces give rise to quite large differences of pressure on the sides of the impeller.

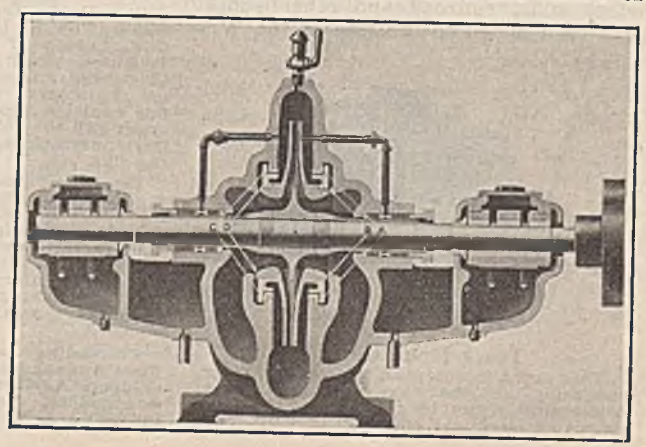
The unbalanced end thrust is eliminated in this device used exclusively in Earle pumps and shown in the illustration in a sectional view of a type "B" pump, because if the thrust is toward the reader's right, the radial seat at "B" will tend to close, while the radial seat at "A" is opened, building up a pressure on the total area of the right side of the impeller. While this is occurring, the radial seat at "C" is closed, and the radial seat at "D" has opened, placing a suction or reduced pressure on the area of the side of the impeller from "C" to the shaft. Hence, the area on the right side of the impeller, subject to high pressure, is greater than the area of the left side of the impeller, subject to same pressure. Because a suction or lower pressure is exerted against that portion of the left side of the impeller from "C" to the shaft, the pump rotor will tend to move slightly to the left until it reaches a point at which the total pressure will be the same on both sides of the impeller, and true hydraulic balance is obtained. The opposite cycle of events takes place if the original thrust tends to be toward the left.

Due to this hydraulic balance, no thrust bearing or collars are required, but since any device must ultimately wear out, and being inside the casing where wear is not visible, small fixed collars are placed on the shaft, set at a distance from the face of the bearing bushing, which will not become operative until the limit of allowable wear has occurred within the case, at which time the engagement of the collars and bearings becomes a visible indication of the need of replacing wearing parts.

The pumps are also designed so that high efficiency and long life will result. Split babbitted bearing shells are provided, with two oil rings. Bronze sleeves are provided to protect the forged steel shaft from the action of

Automatically Balanced

Hydraulic balance is obtained by varying the pressures on the sides of the impeller. Patents have been applied for this device.

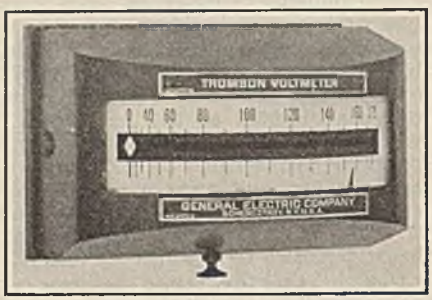


the liquid handled. Deep stuffing boxes with a brass stuffing box bottom, ring, and brass water-seal rings are incorporated in their design, and provisions are taken to keep the oil from splashing out of and water from entering the bearings. Provisions are also made to minimize the air pockets in the pump casing, and to keep the water from rotating with the impeller in the suction passages, thereby increasing the efficiency.

Improved Electric Meters

The horizontal edgewise switchboard indicating instruments, manufactured by the General Electric Co. and known as the H-2 type, have been redesigned and designated as type H-5. The line includes ammeters, voltmeters, wattmeters, power factor meters and frequency meters, for use wherever the measurement of electrical energy is necessary.

Among the changes made in this line are improved armature coil and pointer construction; increased insulation of current windings; non-corrosive finish on frame, magnets, screws, etc., and new strip-wound magnetic shield. The jewels and pivots in these instruments have been reversed, the jewels being mounted on the armature shaft



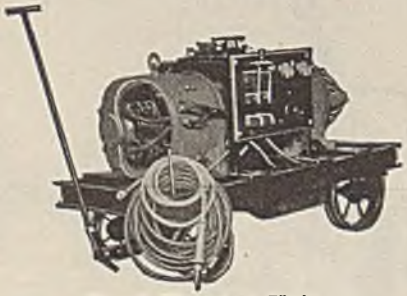
Edgewise Instrument Revamped

Better shielding and greater compactness are the new features of this meter.

while the pivots are mounted in the frame, thus permitting their ready removal. Resistors for the new wattmeters and voltmeters have been mounted inside the instruments, for the purpose of simplifying switchboard wiring and saving space.

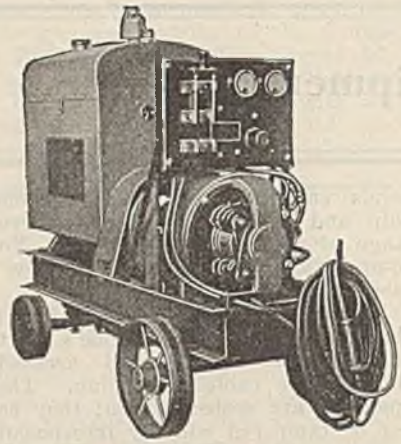
Portable Arc-Welding Machine

A motor-generator type portable arc-welding machine, intended for production and repair service in foundries, steel mills, railroad and other shops, has been added to the line of the Wilson Welder & Metals Co., Inc., Wilson Building, Hoboken, N. J. The machine has a range of adjustment from 75 amp. to 250 amp. in small steps and is intended for rapid work using electrodes up to ¼ in. diameter.



Truck-Mounted Unit

This outfit is equipped with a motor and generator so that the welding current power supply can be taken from the main source of electrical energy.



Portable Power Plant For Welding

Where jobs must be done in the field it usually is necessary to carry the power plant with the welding generator. This machine is mounted with a gas engine.

The generator is of the field-control type, and the current regulation is such that when welding at full load the current does not rise over 10 per cent on short circuit. As ballast resistors are not employed and the windings are of low resistance, the voltage generated is practically that of the arc plus the drop in the welding leads. The machine is mounted on a welded channel-iron base equipped with roller-bearing steel wheels. It is 52 in. long, 40 in. high, 30 in. wide over all, and weighs 1,260 lb.

Industrial Notes

J. W. Hildebrand, formerly connected with the Jones Foundry & Equipment Co. of Chicago, recently joined the sales force of **Foote Bros. Gear & Machine Co.,** Chicago as sales engineer.

The Scott Valve Manufacturing Co., of Detroit, Mich., has appointed **Russell F. Kleinman,** Land Title Building, Philadelphia, Pa., as sales representative in eastern Pennsylvania, southern New Jersey, Maryland, Delaware and the District of Columbia. **Chas. H. Tinker Co.,** 201 Devonshire Street, Boston, Mass., has been appointed as New England representative

Publications Received

Gas Masks for Gasoline and Petroleum Vapors, by S. H. Katz and J. J. Bloomfield, Bureau of Mines, Washington, D. C. Technical paper 348. Pp. 38; 6 x 9 in.; illustrated. Describes the results of work on the degree of protection afforded by the canister type of gas mask, the hose mask and the self-contained oxygen breathing apparatus against gasoline vapors and the like.

Electric Cables. By Wm. A. Delmar. McGraw-Hill Book Co., Inc., New York. Pp. 208, 6 x 9 in.; illustrated. Price, $2.50. Describes principles underlying the design, manufacture and use of electric cables of all important types for practically all purposes. Information on up-to-date practice in making wires and cables safe, adequate, sightly and economical is included.

Proceedings of the Fifth Regular and First Annual Meeting of the Atlantic States Shippers Advisory Board, held at the Hotel Commodore, New York, Jan. 7-8, 1925. Pp. 92; 8 x 10 in.

Circuit Troubles and Testing, by Terrell Croft. McGraw-Hill Book Co., Inc., New York. Pp. 224; 5½ x 8 in.; illustrated. Price $2.50. Practical discussions of the troubles which occur on power and lighting circuits and descriptions of the most effective methods of localizing and correcting such troubles.

Experiments in the Use of Back Pressures on Oil Wells, by T. E. Swigart and C. R. Bopp, Bureau of Mines, Washington, D. C. Technical paper 322. Pp. 66; 6 x 9 in.; illustrated.

Detection of Small Quantities of Petroleum Vapor with the Burrell Methane Indicator, by G. W. Jones and W. P. Yant, Bureau of Mines, Washington, D. C. Technical paper 352. Pp. 19; 6 x 9 in.; illustrated.

Connecting Induction Motors, by A. M. Dudley. McGraw-Hill Book Co., Inc., New York. New second edition. Pp. 361; 6 x 9 in.; illustrated. Price, $3. Covers the practical application of a designing engineer's experience to the problems of operating engineers and presents practical questions arising in winding and connecting alternating-current motors.

Trade Literature

Oil Circuit Breakers. General Electric Co., Schenectady, N. Y. Bulletin 47495.1. Pp. 32; 8 x 10½ in.; illustrated. Describes four improved types of oil circuit breakers bearing the designations FH-103, FH-203, FH-206 and FH-209, all for controlling and protecting circuits of large capacity.

Venturafin Unit Heaters. American Blower Co., Detroit, Mich. Bulletin No. 1218. Pp. 11; 8½ x 11 in.; illustrated. Two unusual features are the patented construction and consequent lightness and compactness of these heaters.

Industrial Type Spur Gear Speed Transformer. The Hill Clutch Machine & Foundry Co., Cleveland, Ohio. Bulletin T-220. Six-page folder describing the form of teeth, lubrication, selection and ratings. General dimensions are also given.

Synchronous Motors for Pumping. Electric Machinery Mfg. Co., Minneapolis, Minn. Bulletin No. 861. Pp. 15; 8½ x 11 in.; illustrated. Self-starting synchronous motors are described.

Pressure Type Water Filters. Graver Corporation, East Chicago, Ind. Bulletin 501. Pp. 7; 8½ x 11 in.; illustrated. Filtration methods are described and construction of the filters, which are furnished with a perforated strainer plate instead of a pipe manifold and strainer heads for the collection of the filtered water, are shown. Complete tables of sizes and capacities also are given.

The Voltage Drop Control System. General Electric Co., Schenectady, N. Y. Bulletin Y-2041. Pp. 12; 8 x 10½ in.; illustrated. Among the topics discussed are: What is voltage drop control? What extraordinary thing does it do? Can I use it in any of my work Is it worth while for me to adopt it?

Recent Patents

Mining Machine; 1,510,490. Martin W. Muehlhauser, Cleveland, Ohio, assignor of fifty-five one hundredths to S. W. Schofield, Cleveland, Ohio. Oct. 7, 1924. Filed Feb. 13, 1922; serial No. 535,985.

Mining Machine; 1,510,628. Edmund C. Morgan, New York; Olive E. Morgan, executrix of Edmund C. Morgan, deceased. Oct. 7, 1924. Filed July 6, 1914; serial No. 849,071. Renewed Sept. 6, 1919; serial No. 322,162.

Mine-Car Coupler; 1,511,103. James W. Burke, Eccles, West Va. Oct. 7, 1924. Filed July 13, 1921; serial No. 484,386.

Lamp Holder for Caps; 1,511,108. George S. Clark, Portsmouth, Ohio. Oct. 7, 1924. Filed June 22, 1923; serial No. 647,139.

Hydraulic Classifier; 1,511,643. L. C. Trent, Washington, D. C. Oct. 14, 1924. Filed Oct. 21, 1921; serial No. 509,317.

Fuel Producing Process and Product; 1,512,427. Walter E. Trent, Washington, D. C. Oct. 21, 1924. Filed Feb. 9, 1924; serial No. 691,831.

Treatment of Small or Finely Divided Coal; 1,512,499. W. W. Stenning, P. T. Williams, W. H. Beasley and A. B. Middleton, London, England, assignors to Minerals Separation North American Corp., New York City. Oct. 21, 1924. Filed Nov. 11, 1922; serial No. 600,407.