

# COAL AGE

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## Make a Scale in Haste And Repent at Leisure

NO ONE can afford to set a tonnage scale for mechanical loading until its technique has been perfected. If one is made now it will be little lower than that for hand loading. Once fixed no changes in machines or methods will be allowed to modify it, and the art of loading will be arrested in its youth. The operator will be left only with his regrets. The hasty provisions made when mining machines were introduced have hampered development seriously from that time to this. To this day there are only two scales, that for punchers and that for chain machines and the operator has no advantage if he introduces a shortwall or arc-wall machine, provides means for ready loading and unloading of the machine or affords a long working face. In consequence the operator has been slow to adopt the better classes of machinery and advanced methods of operation.

The union is today quite strong. We question whether at this juncture a change in loading machines as revolutionary as that between punchers and chain cutters would cause a revision of the tonnage scale. Consequently it is well to go slowly in forming a scale so that the industry can go rapidly in developing its loading machinery.

## Wage Standardization

NON-UNION operations cannot but feel some alarm at the constant wage reductions. They must know that their employees will compare the wages paid in non-union mines with those current in the union regions. If the practice of lowering wages to meet every new contract made continues, the wage rates will fall below a level at which any working man can live. The non-union regions may then be overrun by the union as easily as was the Pittsburgh region in the nineties.

Information has been received that at least one company in West Virginia is paying \$2.88 per day to its underground daymen and \$2.80 to its surface employees. In one Pike County, Kentucky, mine, it is said, drivers are getting 35c. an hour, trackmen 45c. an hour, hand mining is 52c. and machine mining 42c. a ton. Compare these rates with those in the Pittsburgh regions where drivers and trackmen receive 93½c. an hour, where the pick-mining rate is \$1.1164 per ton (thin vein) and \$1.0311 per ton (thick vein) and where the rates for mining by machine and loading by hand are 94c. (thin vein) and 88.31c. (thick vein) in wide work with extra allowances for narrow work.

To all appearances the wage rate in non-union fields tends to decline and will continue to do so unless the non-union operators meet together and decide to stabilize the wage. The present cut-throat competition cannot fail to have an unfavorable reaction on the non-union regions.

## You Can't Please Everybody

IT IS sometimes quite difficult to understand the Canadian viewpoint. One man will declare that American coal should be excluded from Canada as she has plenty of her own, another that it is to be regretted that the anthracite operators discriminate against Canada so woefully. As a matter of fact there is no such discrimination, Canada and all remote markets being served first for good and substantial transportation reasons.

Hearing these contrary arguments, one is disposed to believe that Canada argues for herself all the time. As a matter of fact the man who wants to exclude American coal is quite likely to be a coal producer or a Canadian Government engineer, and the man who condemns the slow receipt of anthracite is probably a coal consumer of Ontario. Their point of view is different and so their plans for Canada clash.

What of it! We have advocates in the United States of foreign markets for United States coal and we have those who believe that we ought to ship only manufactured articles, keeping our fuel at home. There are those who believe that the Canadian who has bought our anthracite for years has just as much right to receive it as the consumer in New York. Others contend that we have but little and should keep it for our own consumption and perhaps, in the last analysis, that it is Pennsylvania's coal and it should be kept in Pennsylvania. The miners it will be remembered tried to keep the coal at the mines till the needs of their own communities were fully satisfied.

In England also there are many viewpoints. At one time a tax was put on exported coal to prevent it from leaving the country. But on the whole most people are in favor of the foreign coal trade and of making it easy to get the return cargoes of ships engaged in the transport of coal.

Mr. Geddes shows a little acerbity at times about America's "big stick." Canada has in her time used her "big stick" also. She has trade that some people in the United States want and she can quite readily insist on getting what she wants in return for what we want. She has not been slow to do it. The problem must be settled with equanimity and good will. Our markets should be unrestricted.

If Alberta can displace anthracite coal in Manitoba and Ontario she surely is welcome to do so. Let the best man win. However, it would seem unfair to rest the situation on Sir Henry Thornton and the railroads. Why not for a change try to make the Alberta mines more efficient? Of course there is place for the inefficient operation serving a small local market, but we fear that Alberta has few, if any, mines with the most up-to-date equipment and till she has she must continue to have a relatively narrow market. The vision of Alberta men is on the development of resources. They might well narrow it to developing technique. Properly operated



mines will command their own markets. Economies in operation will do more for Canada than polemics about resources and national heritage.

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### Fallen in the Pit They Dugged

**I**N TIMES of coal plethora the operator will do anything to please. He will make all kinds of coal to meet the demands of consumers. As a result he will make sizes he can move only at an immense sacrifice. Once prepared to make that fine size he is likely to continue to make it—first because he has created a demand for it, secondly because he has created a desire on the part of those who have had it excluded from the size they have bought to get coal with the smaller size excluded, thirdly because both parties get to know they can burn that particular coal to advantage and doubt if any other coal would be as economical or desirable in price or quality, fourthly, because much money has been expended in preparing for sizing and the operator does not want to throw it away by ceasing to make the additional size, fifthly, because the consumer buying the finer size will not want to pay more for the mixed size and the consumer buying the larger coal will want to pay less if the coal is mixed. For these reasons, we may cry aloud for simplification of sizes without getting it. Once started it continues forever.

Some sizing is advantageous. Probably, too much mine-run coal is used; it would be better if almost all coal were separated into three or four sizes. Combustion would be better regulated and less coal would be lost on the grates. But the many sizes we now have are a ridiculous excess and serve no useful purpose, except to make marketing difficult. The manufacturer can make sufficient collars or shirts to suit the demand. If there is a shortage of "fifteens" he can put his factory to making that number and cease making "fourteen and a half," but the coal man must continue making all the sizes though perhaps he has sale for only one of them. There is a call for lump and to supply that size perhaps six sizes are made for which there may be little or no market or there is a call for some one of three kinds of screenings with a like result. If coal men could make coal of any size to order without also making sizes that are not desired there would be less harm in this meticulous sizing.

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### Faults and Mining Fractures

**I**N DISCUSSING the action of the longwall face a speaker at the Cincinnati Convention questioned whether the fracture below the "point of draw" was vertical or sloping. Knox and Statham have held the British point of view that the crevice was inclined at an angle of about 70 deg. and sloped forward to a point somewhat in the rear of the advancing face, that is over the gob, from which point it sloped back toward the coal face.

The interesting point about the British contention is that the crevice in the roof if thus inclined closely follows the slope of faults, many of which have been traced repeatedly in coal and metal mines. Most of these faults are inclined at 70 deg., and the line drawn from the coal face to the point of draw is about 20 deg. from the vertical or 70 deg. from the horizontal, a striking but perhaps misleading coincidence. No one has ever seen in nature, as far as can be learned, any

turn in a fault corresponding to the angular fracture in the roof of the coal which British theorists describe. Perhaps that is because no one has ever traced faults far enough below the surface. The suggestion, however, that faults are fractures like those in mine roofs is intriguing, and would be more so if the British had been able to make good their contention.

There is no reason why an absolute proof of the British point of view should not be attempted. Suppose a mine is opened in the lowest of several seams and the coal is removed so as to cause a longwall break extending up to the surface. There the locus of the points of draw could be carefully followed on the top of the ground. Openings could then be made in one or more intermediate seams, places being driven till the fracture was reached. The maps of the lowest and intermediate workings and of the surface would show whether the fracture was approximately vertical or sloped down to the coal face or to some line in front of that face. The work done would not be lost, but could be used to advantage in the future development of the seams. Perhaps this interesting experiment yet may be made where conditions favoring this sequence of development would make the operation profitable or at least not unduly costly.

The question is not an unimportant one. On it depends many of our conclusions as to the possibility of working extensive longwall faces without back filling. The problem may appear valueless and a mere abstract question of roof stress and breakage, but it has a distinct economical aspect and is worthy of elucidation.

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### Consolidation or Bankruptcy

**C**ONSOLIDATION is being considered as a way of avoiding bankruptcy but unfortunately there are many concerns which are not yet convinced that the inventory value is not the true value. The money may have been invested and the investment may have been made in good faith, but the value of the mine is wholly different from the investment. If the coal is not clean and readily salable, if the equipment will not produce cheap coal it is immaterial if \$500,000 or \$1,000,000 has been invested. The headworks have been built for the coal beneath them, and the profit must be derived from that coal and not from the invested capital.

Estimates of value are made only with difficulty. Some will consider only the cost of equipment and unused development; others will base the estimate on possible profit, but that quantity greatly varies. In times of close competition a mine may be valueless; at times of coal shortage the mine may have real value. The true commercial value is hard to obtain. Most consolidations are made on the basis of valuations that do not represent the commercial but rather the inventorial value. Consolidations thus made in many cases have excessive capitalization. In fact a consolidation based on a really conservative estimate of value is hard indeed to establish.

However, consolidation whether with a watered or a true valuation is worth while. The consolidated company is able to keep such mines as it operates working full time. It can work those supplying the cheapest and best coal. It can use experience gained from tabulations in one mine as guides for the operation of another. It can reduce overhead and the cost of selling coal.





McDermid Tipple West of Edmonton

## Alberta Seeks to Fill the Coal Bins of Canada

Would Seek Tariff to Keep Out United States Coal but Would Like to Continue to Sell Coal in Spokane and Adjacent Markets — Too Many Mines Cause High Costs

BY M. D. GEDDES  
Calgary, Alta., Can.

**A**LTHOUGH it is not generally known Canada, in coal resources, ranks second among the nations of the world. Unfortunately for her, however, her immense coal reserves are far removed from her present industrial activities and main centers of population.

What a different story there would be to tell today if the North American continent had been discovered by way of the Pacific instead of the Atlantic. Alberta with her coal supremacy would by this time have been a mighty hive of industry and wealth. No nation on earth, during modern times, ever became truly great unless it possessed within its borders an abundance of coal.

As determined by the geological survey of 1913, the total coal reserves of Canada, which includes the Northwest Territories, the Yukon and the Arctic Islands, are placed at 1,234,269,000,000 metric tons, of which Alberta is credited with 1,072,627,000,000, or over 85 per cent.

The figures, as taken from the report just mentioned, are as in Table I.

Quebec and Prince Edward Island, it will be noticed, have no coal so far as is known. The report shows the tremendous preponderance of coal in Western Canada which holds practically all the coal in Canada except what is contained in Nova Scotia. The entire quantity

in New Brunswick and Ontario, as shown by the report, would only last Canada five and a half years, as the present rate of consumption exceeds 32,000,000 tons annually.

The total world reserves are placed at 7,397,553,000,000 tons so it will be seen that out of every seven tons of coal in the world one is in the province of Alberta. To put this another way, Alberta has 15 per cent of the known coal supply of the world, over 70 per cent of all coal known to exist in countries under the Union Jack and fully 85 per cent of all the coal in Canada.

Table II gives the estimated coal tonnage in British possessions, other than Canada.

It has been figured that Alberta alone has sufficient coal to supply a hundred million people for 170 centuries. The coal deposits of that province cover an area

Table I—Probable Coal Resources of Canada

Province	Metric Tons
Alberta .....	1,072,627,000,000
British Columbia .....	76,035,000,000
Saskatchewan .....	59,812,000,000
Nova Scotia .....	9,719,000,000
Arctic Islands .....	6,000,000,000
Yukon .....	4,940,000,000
Northwest Territories .....	4,800,000,000
Manitoba .....	160,000,000
New Brunswick .....	151,000,000
Ontario .....	25,000,000
Total .....	1,234,269,000,000



Table II—Coal Resources of British Possessions  
Omitting Canada

Countries	Tons
Great Britain and Ireland	189,553,000,000
Australia	165,572,000,000
India	79,001,000,000
South Africa	56,200,000,000
New Zealand	3,386,000,000
British Islands in the Pacific	75,000,000
Total	493,767,000,000

exceeding 81,000 square miles and the grades range from lignite to anthracite with the poorer grades greatly predominating in tonnage as is usual in all coal countries. Authorities tell us there are over 45 billion tons of anthracite, semi-anthracite, or high-carbon bituminous coals and this quantity at the present rate of consumption would last over 14 centuries before the low-carbon bituminous or lignite coals would require to be used. Quite a considerable quantity of the lignite coal is of extra high quality and as it is close to present railway lines, is being used extensively.

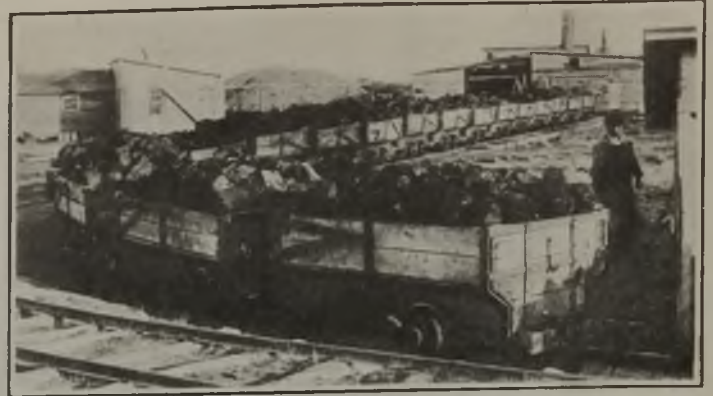
To an outsider it would seem that Canada could not possibly have any fuel problem, that she is absolutely self-contained on that score at least, yet the irony of the matter is that annually she is paying over a hundred million dollars to a neighboring country to purchase fuel and thus assisting in the commercial prosperity of a foreign land at a crucial time in her own development. The reason obviously is that the major portion of Canada's coal wealth is so far removed from present main centers of population that it does not appear to be economically expedient to use it as a main supply in Ontario and parts of Quebec. Then of course monied interests are well rooted in established mine holdings and allied industries in the present locality where the east gets its main fuel supply and naturally these powerful organizations are doing, and will continue to do, all they possibly can to block "Home fuel for Home fires."

F. W. Gray, coal-marketing expert of the British Empire Steel Corporation, an organization which holds controlling interests in Nova Scotia's coal mines, is quoted as saying: "By the summer of 1950 the larger half of Canada's population will be west of the Great Lakes, and what will take them there will be coal and the industries which must grow up about coal. Ontario's doom as the commercial leader of Canada, has been sounded."



Cutting a Good Seam at Pembina, Alta.

This is one of the better and more up-to-date mines of the province of Alberta. Note the shortwall machine and the electric cap lamps. Only the last word in efficiency can, and indeed ought to, justify an attempt to bring coal all the way to Ontario to compete with coal mined almost on its borders.



Mine at Cardiff, Alberta

The cars at this mine greatly resemble those of central and western Pennsylvania. The coal piled on the top of the cars is blocky and attractive and evidently not piled so as to provide maximum capacity. However, thus loaded there is less waste and less explosive dust on the roadways.

It is well known that the United States is getting a strangle-hold on some of Canada's natural resources, particularly her forests, owing to Ontario's dependence upon her for fuel. In looking at the coal map of the North American continent, it will be noted that the two major coal fields are, south of the Great Lakes commonly called the Pennsylvania field, and on the easterly slope of the Canadian Rockies in Alberta. Canada's main industries have been drawn as by a magnet toward the dominating coal field of Pennsylvania, so today are bunched in the lower peninsula, over 2,200 miles removed from the main coal bins of Canada.

This being the present situation, Ontario from an economic standpoint will naturally remain quite an extensive purchaser of American soft coal, but there is no reason why she should continue to do so in any way that will in the very remotest degree imperil other natural resources of the Dominion. That day has passed. Today Canada can be self-contained, although from an economic standpoint it is not advisable that she should, yet the stage in her development has been reached when no big-stick tactics have any right to intimidate her into negotiating treaties that are detrimental to her general progress. The time has come when Canada should call her soul her own.

Nova Scotians can take care of the coal needs of the Maritime Provinces and Quebec and reach out in portions of Ontario as well. Then in the extreme West, British Columbia can look after her own needs and be prepared at some later date to do a colliery business at least as far south as San Francisco, leaving Alberta with her enormous coal bins to supply the prairies, New Ontario, part of Central Ontario, and in addition steadily pour a stream of coal into Montana, Idaho, Washington and Oregon.

Although quite a large percentage of eastern Canadians claim to favor a reasonable amount of protection, which sometimes is a misnomer through unduly stretching the meaning of the word "reasonable" yet when it comes to putting the same theory in practice, but changing the location so that the westerner might become the beneficiary, the whole principle is considered void and meaningless. How human we are and prone to see merit in that which makes for personal gain with the other fellow footing the bill!

There is no doubt, however, that a large number of those who live in Eastern Canada are beginning to realize the national importance of Canada becoming more self-contained from a fuel standpoint. At the



sixth annual meeting of the United Boards of Trade and Chambers of Commerce of Western Ontario, held recently, a resolution was passed unanimously urging the Dominion and Provincial Governments and Canadian railways and others concerned to endeavor to make it economically possible for Ontario to use Alberta coal.

The main reasons advanced were that thereby it would be possible to avoid a repetition of the unfortunate conditions that have prevailed on several occasions when sufficient coal could not be obtained from the United States, and also that interprovincial trade would be stimulated. As a means of assisting the introduction of Alberta coal into Ontario, over 10,000 tons of domestic coal, as trial shipments, were sent east last fall at specially reduced rates. This coal was, in most cases, well liked, hence the resolution by the western Ontario Boards of Trade, a most representative body of business men in the territory most vitally affected. Another splendid sign of the times is that Premiers Ferguson of Ontario and Greenfield of Alberta, representing the main consuming and producing provinces, are consider-

"Two years ago the U. S. Bureau of Mines unofficially warned the Canadian Department of Mines that within a short time Canada would have to work out her own solution for replacing the anthracite now imported from the United States. No less than three bills were recently before the U. S. Congress to place an embargo on the export of anthracite to Canada. They did not pass, but the fact that they were introduced indicates the drift of public sentiment. This contingency ever hangs above us like a sword of Democles, and the Board considers it of the utmost importance that the use of coals of domestic origin should be more widely extended and that other native fuels should be more fully developed so that the resources of our fuel supply may be widened and diversified."

It is common knowledge that the United States anthracite supply which is found in an area of only 484 square miles, will at the present rate of consumption last only 80 to 100 years. This coal has given excellent satisfaction to Ontario and Quebec consumers, but the time is at hand when of necessity they must make a

#### Strip Pit at Drumheller, Alta.

An admirable opportunity for big stripping equipment, yet here the men are not even loading into cars but instead are using wheelbarrows, which could hardly be justified even at a local mine for supplying farmers. This mine is north-west of Calgary on the Red Deer River.



ing ways and means of overcoming, or at least greatly lessening, the present difficulty.

Continuing the same line of argument, the Dominion Fuel Board in its Interim Report, 1923, says:

"During the ten-year period from 1912 to 1921, Canada's bill for importing coal exceeded \$580,000,000. In the same period the Canadian coal-mining industry increased its output materially, but the value of the total production from our enormous coal resources was considerably less than the sum of our payments for foreign coal. It is not necessary either to underestimate the natural obstacles in extending the use of native coals, or to set the desirable but doubtful objective of complete fuel independence, in order to warrant a systematic search for practicable methods of permanently re-adjusting a branch of Canadian commerce which has for many years yielded one of the main trade deficits of our national balance sheet and which, with equal constancy, has drawn its increased volume only in minor degree from natural resources within the Dominion.

change and so far as possible that change should be from United States to Canadian coal.

In a small way Alberta is beginning to offset this and is supplying coal to small areas in the adjoining states of Montana, Idaho, and Washington, the chief market at present being the city of Spokane where Alberta coal today can be laid down 75c. per ton below the price of Utah coal. This market consumes about 100,000 tons of Alberta coal annually and is a growing market.

Although Alberta is so remarkably endowed with coal wealth, her average annual output is still under 6,000,000 tons. Table III shows what growth has been made during the past 30 years. It includes, however, a small portion of the southeastern corner of British Columbia, which in this case is included with Alberta shipments as its natural market and railway facilities are identical.

The coal statistics for Canada for the calendar year of 1922 published under the authority of Hon. Thomas A. Low, and prepared by the Mining, Metallurgical and



Table III—Output of Alberta and Part of British Columbia

Year	Tons
1890	128,753
1900	518,253
1910	4,259,586
1920	7,851,760

The tonnage of the latter year was made up as follows:

Kinds of Coal	Tons
Steam	4,363,082
Domestic	3,361,105
Anthracite	127,573

Chemical Branch of the Dominion Bureau of Statistics, in dealing with Ontario's fuel problem, says:

"The consumption of coal in central Ontario in 1920 was 13,331,000 tons comprising 10,385,000 tons of bituminous and 2,946,000 tons of anthracite coal, nearly all of which was imported from the United States. A total of 2,259,000 tons of United States coal was dumped at the head of the Lakes in that year. Of this quantity, 296,000 tons was anthracite and the rest bituminous. About 15,000 tons of western Canadian coal were also shipped into the area served by the ports at the head of the lakes.

"In 1921, the total consumption in central Ontario declined to 11,543,000 tons including 2,809,000 tons of anthracite and 8,734,000 tons of bituminous. The ports at the head of the lakes received approximately the same quantity of coal as in the preceding year. The total coal made available for consumption in that area was about 2,249,000 tons, of which 11,900 tons was Canadian coal, 260,890 tons was United States anthracite, and 1,976,000 tons was imported bituminous coal.

"During 1922, owing to the great strike in United States coal fields, the supply of imported coal obtained by central Ontario was considerably reduced and shipments of coal from the Maritime Provinces, particularly New Brunswick, were brought in to help meet the fuel needs of the province. Shipments from Eastern Canada mines amounted to 16,864 tons while Western coal shipped to Ontario points was not brought farther east than the head of the lakes. The total consumption of coal in central Ontario was 9,095,977 tons comprising 1,586,936 tons of anthracite and 7,509,041 tons of bituminous coal. At the head of the lakes, 2,019,794 tons of United States coal was dumped including 57,525 tons of anthracite and 1,962,269 tons of soft coal."

Now let us move westward to Manitoba. Up until about three years ago, that province used Pennsylvania anthracite almost exclusively. At that time, Winnipeg was faced with a fuel problem similar to the situation confronting Ontario today. The citizens of Winnipeg felt no other fuel than the best that could be imported from the far-famed coal fields of Pennsylvania could be expected to prove satisfactory in their rigorous climate. Increased prices, coupled with uncertain delivery, labor and freight difficulties paved the way for Alberta coal and now experience has demonstrated that they can get more heat with less money by using Alberta coal.

The same report on page 75, in dealing with the output and disposition of Alberta coal says:

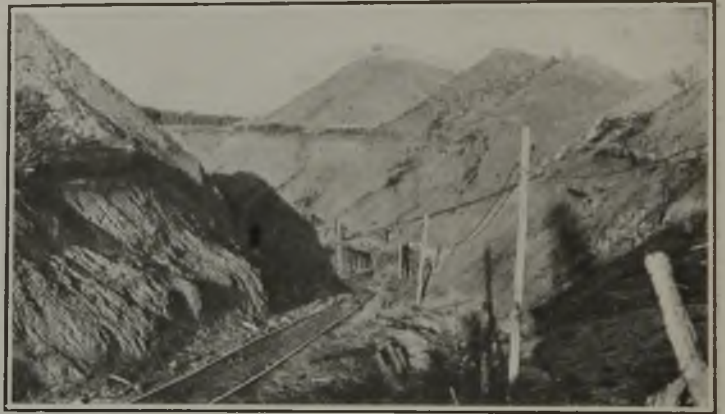
"Alberta retained in 1922 the premier position among the coal-producing provinces of Canada, a position reached in 1920 when the record output of 6,907,765 tons was produced. The production in 1922 was, however, only slightly in excess of the 1921 output and was also nearly one million tons below the 1920 peak, reaching a total of 5,990,911 tons. Anthracite, bituminous, and lignite coals are all produced within the province."

The following interesting figures are taken from a table in the same report which includes Alberta coal output from 1886 to 1922. In 1886 the output was 43,220 tons. With that as a basis, we will show how often it has doubled. In 1888 it was 115,124 tons; in 1893, 230,070; in 1903, 495,893; in 1906, 1,246,360; in 1910, 2,894,469; in 1918, 5,972,816; and in 1920 the banner year, 6,907,765.

The problem today is, how can Canada's vast storehouse of fuel be used to meet present needs? Alberta is turning out a coal well-suited for eastern domestic use at from \$4.50 to \$5 per ton at the mine mouth. The all-rail haul appears to be prohibitive under present conditions, but so it is with grain. The best solution seems to be rail to the head of the lakes, then water to Toronto.

Canada's coal deposits, and her railways are two of her resources that should, in the common interest of a greater Canada, be interlocked, thus making her more self-contained and less dependent upon the United States. This naturally calls for the lowest possible freight rates which in turn means real co-operation between railway companies, mine owners and government officials. To accomplish this, coal would require to be shipped from mine to treating plant at such times as the railways were slackest and in solid train lots.

By concentrating in this way, as many tons as the physical character of the roadbed will carry, providing locomotives powerful enough to haul the heaviest trains



Lignite Stripping in Saskatchewan

Apparently this is not a machine stripping. Eventually it got too deep for operation in the open and a mine was opened in the depth of the cutting. It would furnish a good opportunity for a big shovel provided the market would be reasonably steady the year round which probably is not the case.

and running them solid from division point to division point, the freight rate should be reduced to the minimum. In addition, the railroads have a lot of rolling stock usually idle for several months of each year and further they have large numbers of box cars that are past the useful stage for hauling grains, yet have years of usefulness for such purposes as coal haulage. These are some of the facts that should induce the railway heads to establish a rate that will permit large consignments of Alberta coal to be marketed in Ontario.

Many feel that under conditions as mentioned, \$6 per ton should be a fair price. The Alberta government freight supervisor wrote Sir Henry Thornton and other Canadian Northern Ry. officials and a quotation from one of his letters reads as follows:

"If we had a \$6 per ton rate in train lots from Coalspur to Toronto, there is no doubt but that Alberta coal could be put down there in competition with American coal and an extensive trade developed which would have the dual effect of keeping Canadian money in Canada and creating work for the unemployed in Alberta.

"The distance from Coalspur to Toronto via Port Arthur is 2,282 miles. A train of fifty 40-ton cars readily could be hauled over this entire route. Fifty 40-ton cars would be 2,000 tons at \$6 per ton which would be \$12,000 per train, \$5.26 per train mile.



"In Canadian Pacific Ry. statement, year ending Dec. 31, 1920, freight train earnings per train mile, lines west, were \$5.82, operating expenses per train mile, lines west, were \$3.58. This of course includes all kinds of trains, but if the average operating cost was \$3.58 per train mile, the actual cost for hauling this 2,000-ton train should be much less and should therefore provide a large margin of profit.

Anyone conversant with coal mining in Alberta knows that the cost of production is abnormally high. How to reduce this is an exceedingly intricate and difficult phase of the situation. In the first place, there are far too many mines in operation for the quantity of coal produced. Increased consumption would assist in cheapening production provided additional mines were not opened up. There are some 380 coal mines of one kind and another in operation in the province of Alberta. Of course, it is easy to open up a mine in many parts of the province as the coal outcrops along river banks and in numerous places farmers and ranchers can back their wagons or sleighs to the seam and

### Miners' Wages and the Cost of Coal

Isador Lubin on behalf and in collaboration with the council and staff of the Institute of Economics has published a book on "Miners Wages and the Cost of Coal" which he denominates "an inquiry into the wages system in the bituminous coal industry and its effects on coal costs and coal conservation." It is not a muck-raking treatise but a sober, careful study of coal mining by an unprejudiced outsider. It must be admitted that at times outsiders get erroneous ideas. Mr. Lubin has not always escaped, but when that occurs it is Mr. Lubin's misfortune and not his fault and the facts he has gathered will be useful for those who know the coal industry well but do not have its statistics at their fingers' ends.

Mr. Lubin has gathered some exceedingly useful information. We are justified in regretting that he writes about mining 16- and 18-in. seams. Perhaps they are worked in the United States but it must indeed be rare. Those who know the industry well will be hard put to it to say where these low seams are being worked.

The author believes that the price paid for mining should bear relation to the sacrifice and time expended in producing a ton of coal. That is an excellent assumption but unfortunately neither the company that has expended its money nor the miner that has established his home has ever been known to pay much attention to it. The operators and mine workers establish a scale which Mr. Lubin says is for certain mines inequitable and which possibly is as inequitable as he declares it. Nothing compels the miner to accept it. He can move to some other district but he does not. Prices in the city vary from store to store but some go to one store and some to another.

Something besides financial advantage rules. John T. Ryan remarked about the varying wage scales in France. Others have spoken about it in England. Mr. Lubin has found it in the United States. It is found everywhere. It appears, nay it is, unreasonable, but the United Mine Workers of America will never change it. The union is not ready to depopulate any district, to close down any mine. The economics of the industry does both, but it would not do for the labor union to be as inexorable as economics. So the inequality con-

shovel a weathered soft coal right into their vehicles. In a larger way some of the coal companies, after scraping off some six or eight feet of surface soil, use steam shovels to load railway cars with coal. Professor Allen of the Geological department of the University of Alberta has made the statement that the sixteen largest coal mines in the province have sufficient capacity to supply the entire output required at present.

Thus, in a nutshell, is given the main reason for the excessive cost of production, excessive overhead, and yet how to adjust that to a reasonable minimum in a democratic country where everyone is free to acquire coal leases who feels there is a possibility of making a little over a mere living out of the operation, is a puzzle. The records show that mine operators on the whole are not making fortunes. Each year a lot of companies go out of business, but there usually is about a like number ready to take a chance on what seems to them a profitable venture. And thus it is that a long-suffering public pays a high price for fuel in the midst of plenty.

tinues and will continue and men will keep on making scales that assure them of their jobs be they good or bad. A job almost always appeals to a man and the closing of a mine or a factory brings its heartbreaks.

But this is beside the issue. It is not the part of the conscientious critic to quarrel with 0.5 per cent of a book when he approves 99.5 per cent, though that is just what he usually does. In 316 pages 5x8 in. Mr. Lubin has packed an astonishing quantity of information. The book is published by the McGraw-Hill Book Co., 370 Seventh Ave., New York City. A. M. Ogle read the first nine chapters. One wonders he allowed the author to say, as he does on page 14, that a "horizontal tunnel" is "sometimes called a drift or *slope*."

### Much Heat Wasted in Furnace Walls

An insulated wall loses only about 40 per cent as much heat as an uninsulated wall and the savings through insulation aggregate approximately 480,000 lb. of coal per year for 1,000 sq.ft. of wall surface. At \$5 a ton for coal delivered, this would represent a loss of \$1,200 actually saved by insulation of the walls. Data for various insulators and refractories show that a layer 0.5 in. to 1.5 in. thick of the various insulators has an insulating value equivalent approximately to 9 in. of fire or silica brick.

The thermal conductivity of insulators varies with the temperature at which they are used, their density, the unevenness of the distribution of the pore spaces, the temperature to which the material has been subjected during manufacture and possibly with the elasticity.

The need for insulation increases without an increase in the temperature of the furnace. These facts were presented by Roberth Calvert, Lompoc, Cal., at the Heat Transfer Symposium of the Division of Industrial and Engineering Chemistry in connection with the meeting of the American Chemical Society at Washington. The heat losses by the industries of the United States, said Mr. Calvert, are equivalent to fuel costing approximately a billion dollars yearly. Part of the loss is carbon in the ash, part is heat that goes up with the draft and part is heat passing through the walls.





## How Wire Rope Is Manufactured and Used and How Its Life May Be Prolonged in Mine Service

Physical and Chemical Tests Constantly Check Wire-Drawing Process — Saturated Core Acts As Cushion and Lubricant — Care of Ropes and Their Application to Mine-Hoist Problems

BY LAWRENCE W. BEVAN

**W**IRE rope was made some time prior to the destruction of Pompeii, which occurred in 79 A.D. for we find exhibited in the Musio Borbonico in Naples a short length of 1-in. diameter bronze wire rope which was excavated from the ruins of Pompeii. Beyond the fact that it was made of wires twisted into strand and the strand into rope we have no further information. Subsequent to this date there is no record of the existence of stranded rope until early in the nineteenth century.

However history records that prior to the year 1351 single wire was hammered to shape by smiths, but since that date it has been drawn by power. It may be worthy of note that the first wires were those of precious metals.

The application of wires to make rope is first mentioned in the construction of a suspension bridge in Geneva, Switzerland, in 1813. Such ropes as these, however, would not strictly be classed as wire rope today, for they were made by laying a number of charcoal-iron wires parallel to each other and binding them together by a serving of smaller iron wires which in turn were covered with yarn. In 1835 a cable of this type was made for the Freiburg Suspension Bridge in Germany with a span of 800 ft. in the clear. The supporting cables were composed of twenty bundles of wires of  $\frac{1}{8}$  in. diameter laid parallel, the total diameter being  $5\frac{1}{2}$  in.

NOTE—Paper read at Anthracite Session of American Institute of Electrical Engineers. Head piece shows a small rope haulage system at the coal face. Such systems have largely supplemented mine locomotives.

Cables manufactured according to this principle, known as the Selvagee construction, have been applied in this country on the Niagara Suspension Bridge, Ohio River Bridge, Brooklyn, Manhattan and Williamsburg bridges in New York City. It is interesting to note that this same type cable will be used for the world's largest suspension bridge, with a span of 1,750 ft., which is now being constructed between Philadelphia and Camden. The main supporting cables will be of 30 in. diameter, and will contain 16,531 galvanized steel wires of  $\frac{1}{8}$  in. diameter. The wires for these main cables if placed end to end would completely encircle the globe at the equator.

### FIRST STRANDED WIRE ROPE USED AT MINE

The first so-called stranded wire rope was made in Germany in 1834 by a mining engineer by the name of Albert, who used a rope which was composed of iron wires, for hoisting ore in the shafts of the Hartz mines. This rope, fabricated with much difficulty, demonstrated its superiority over its hempen predecessor. In 1837 Albert, before the Engineering Society of Berlin, read a paper on the "Construction and Manufacture of Stranded Wire Ropes" in which he mentioned that ropes made of 4, 6 or 8 strands of four wires of 0.144 in. diameter were used.

In England in 1840 R. S. Newell was granted the first patent papers for "Improvements in the Manufacture of Wire Rope, and Machinery for Carrying Same into Effect." In these papers we find the first mention of the use of a central heart or core in the making of wire rope.



In the year 1812 a partnership was formed by Erskine Hazard, father of Fisher Hazard, the founder of the Hazard Manufacturing Co. and Josiah White for the purpose of operating a mill on the banks of the Schuylkill near Philadelphia for the manufacture of wire and nails. These men built a bridge of wire over the river for the use of their workmen, and thus demonstrated its practicability for this purpose. To the best of my knowledge this was the first wire suspension bridge in America.

At this time no well-constructed machinery was in use for the manufacture of wire, so these two men exerted their inventive genius to produce equipment for the purpose. In the early '40's Erskine Hazard invented and made the first wire-rope machinery in this country.

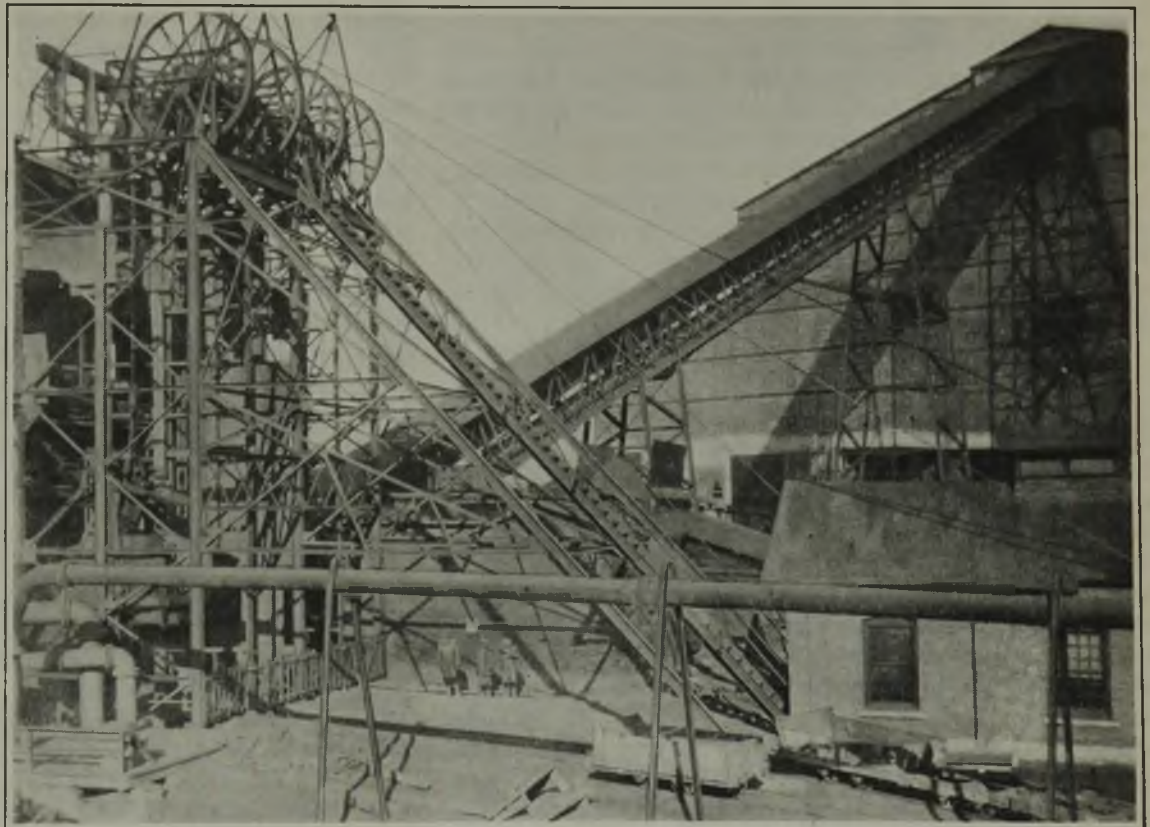
The first wire was made, of course, of wrought or charcoal iron, and it is worthy to note that the first successful attempt to use anthracite in the iron industry was by these two men in their wire mill. Historians

materials used in wire rope are divided into seven classes, iron, low-carbon steel, traction steel, cast steel, medium plow steel, plow steel and olympic steel. These materials vary in breaking strength from approximately 65,000 to 280,000 lb. per square inch. As purchased they must meet rigid specifications in order to insure the high quality demanded by the various users. All iron and steels as received are carefully inspected and before being drawn into wire they are thoroughly tested in physical testing machines and a complete chemical analysis made. In fact all materials entering into any process of wire drawing or wire-rope making are thoroughly tested and analyzed before use.

Iron and steel are received by the wire mill in coils of rods varying in diameter from No. 0 to No. 5 gage, i.e., from 0.34 in. to 0.22 in. diameter. These rods are as a rule covered with rolling-mill scale which is removed by pickling in sulphuric-acid baths until the scale is entirely dissolved. The rods are then given a lime

**Fig. 1—Fast Frequent Hoisting**

High headframes usually increase the distance between the sheaves and hoist drums and greatly lengthen the life of the rope. Such hoists as these are less severe on ropes because the rope is generally wound in single layers. Reverse bends and sudden shocks soon break the small strand wires.



write that "Cist, Miner and Robinson succeeded in sending two arks of anthracite to Philadelphia, via the Lehigh and Delaware Rivers. The cargo was bought by White and Hazard at \$21 per ton. The mill hands while experimenting with the new fuel kept stirring the coal, but it refused to burn. Finally, being disheartened, they threw a quantity of anthracite into the furnace, closed the door and quit work. A workman returning for a coat some time later found the furnace red hot. Hurriedly he summoned other workmen, and they succeeded in running off three separate heats of iron."

At a later date, with the introduction of the Bessemer process, and later the Siemens-Martin or open-hearth process, iron wire was replaced to a large extent by steel. It is apparent that with this change of material it was necessary to make changes in all processes incident to wire drawing.

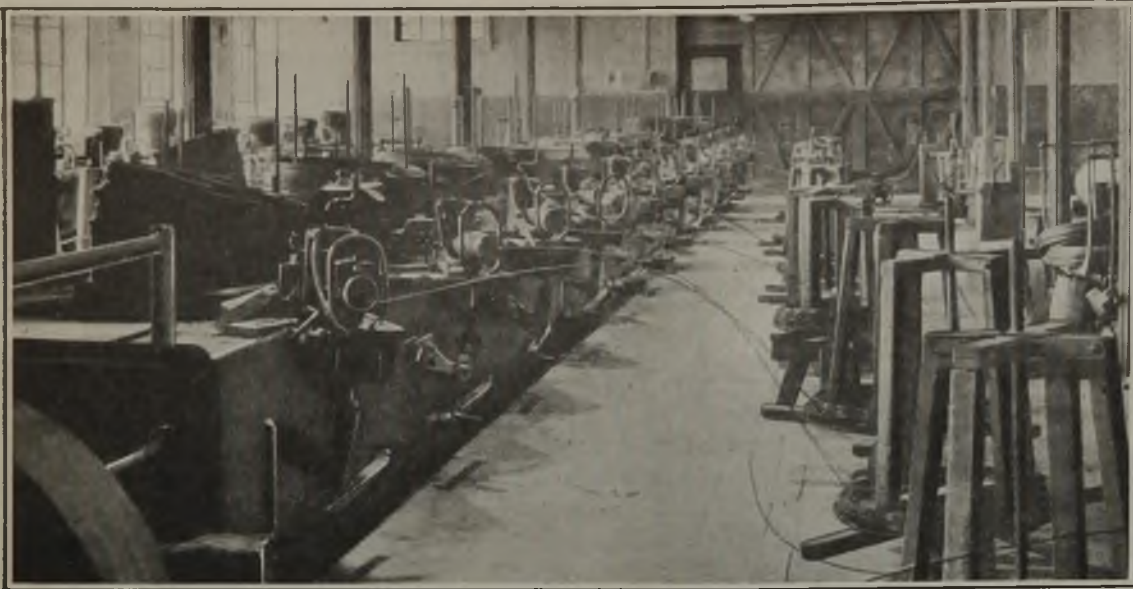
It is only within recent years that English steels have been replaced by steel of American manufacture. The

bath to neutralize the acid. After this they are heated in bakers or ovens to drive off acid or hydrogen.

When cool, the rods are taken to the wire-drawing mill where without preheating the rod is passed through a steel die, and reduced in diameter. The rod is then taken to the annealing furnace or the patenting furnace and heated to relieve the effects of wire drawing and permit the rod to be further reduced in diameter. This heating leaves a certain quantity of scale which is then cleaned off in an acid bath as before. The rod is then lime coated, baked and taken to the wire drawer for further drawing. Cast steel, which is the material used in the majority of operations in the anthracite region, has a tensile strength 50 to 55 tons per square inch when the wire drawer receives it for the final drawing.

This rod is reduced in area approximately 75 per cent in a series of 5, 6 or 7 passes through the wire-drawing die and will finish not more than 0.001 in. from the required size, and have a tensile strength of 80 to 85 tons per square inch. It is well to remember





**Fig. 2—Drawing Wire**

These are the wire drawing benches where the steel is reduced in size before being twisted into rope. The tensile strength of the material is high and much power is required to pull the wire through the dies.

that the physical and chemical laboratories are constantly checking the material as it passes through each process. It may seem that the process just described is excessively long, but it is merely a good example of the usual procedure necessary for making the wire which goes into the manufacture of  $1\frac{1}{2}$  in. diameter rope. For rope of smaller diameter, say of  $\frac{1}{2}$  in. diameter in which 0.019 in. diameter wire is used there is much more processing. For wire rope the wire sizes range from 0.009 in. in diameter to any larger size desired.

#### ROPE-CLOSING MACHINE COMPLETES PRODUCT

After the wire is drawn to the desired size it is spooled on bobbins and placed in a stranding machine, which twists 7, 19, 37 or any number of wires into a strand. The strand as it leaves the nozzle of the machine passes through a die and then on to a larger bobbin or spool which in turn is placed into a larger unit called a rope-closing machine. This device operates in the same way as a stranding machine, twisting the 6 or 8 strands into a rope. Through the center of the shaft of this machine a core of manila, heavily saturated with a good lubricant, passes and the strands are twisted around it. This core acts as a cushion and holds the grease or lubricant in reserve. This does not however, obviate the necessity of the subsequent

use of a lubricant when the rope is placed in operation.

It was previously mentioned that wire rope was primarily designed for mining operations, and it is therefore still used in enormous quantities in the anthracite and bituminous coal regions for hoisting coal, water and men, outside and inside the mines. A notable operation, which depends to a great extent on wire rope, is the Ashley Planes near Wilkes-Barre, Pa.

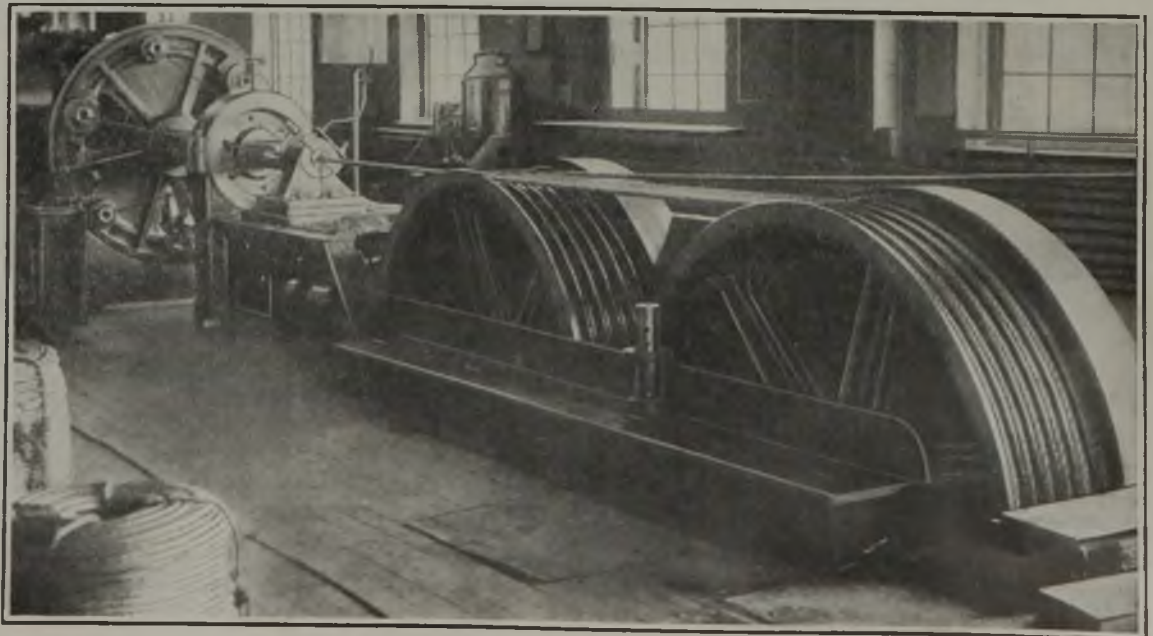
This hoisting incline consists of three planes with a total elevation of 1,025 ft. in about 3 miles, on which is hoisted 10,000,000 tons per year. The largest main cable on the middle plane, weighs 12 lb. per foot and is of  $2\frac{3}{4}$  in. diameter. The main cables on the other two planes are of  $2\frac{1}{2}$  in. diameter. The three back cables or tail ropes are of  $1\frac{1}{2}$  in. diameter. The total weight of the wire rope used is 190,000 lb.

The question, "When has a wire rope reached the end of its usefulness, and when should it be removed?" has been much discussed. As the result of a study of this subject made by the Bureau of Standards the investigators stated in substance that a rope should be removed after a certain number of broken wires appear in each of the strands.

Tables have been prepared supporting this conclusion, but undoubtedly certain definite loads, speeds, head-sheaves, drum diameters and shafts of varying depth were used to arrive at the results. The report

**Fig. 3 — Rope-Closing Machine**

Most steel ropes are now made with a core of manila. This material is saturated with a good lubricant and assists the external lubricant which should be applied occasionally after the rope has been placed in service.





is no doubt a useful guide, provided it can be applied where conditions are the same, or nearly like those from which these tables and figures were compiled.

However, each operation varies, in some cases considerably, sheave and drum diameters are not standard; therefore, it is quite necessary that for each operation a separate study be made to determine exactly the factor of safety so that with any number of broken wires or with a reduction in cross-section due to wear the remaining breaking strain of the rope may be known. It is obvious that, due to difference in mining conditions and operations, no set rule for the removal of the rope can be set down to govern each case.

In the catalog of wire-rope manufacturers, tables appear showing "Proper Working Loads" of wire rope of given sizes and grades. This proper working load in most cases is  $\frac{1}{5}$  of the approximate breaking strength, or in other words, the factor of safety is 5. The proper working load must not be interpreted to mean tons of material which can be lifted, but the load should be figured to include the material, the carriage, the rope itself, the bending stresses, the stress due to starting, etc. Bending stresses should receive careful consideration from the engineer. In the anthracite mining field sheaves and drums of ample size have been employed in 90 per cent of the operations, so that the stress due to bending has been reduced to a minimum.

#### DANGEROUS STRESSES OCCUR IN REVERSE BENDS

Reverse bending, such as occurs with an underwind rope brings severe stresses on the steel causing an early deterioration by reason of a definite set given the rope, as it comes off the head sheave. The permanence of the set depends on the relation of rope diameter to sheave diameter. The smaller the sheave the greater the set. Obviously the set is not altogether overcome when the rope starts to wind on the drum in an opposite direction to the way it comes off the head sheave, hence the effect of the latter bend is more severe. Individual wires removed from ropes which had operated under conditions of reverse bending show under the microscope minute cracks, sometimes running in planes between the grains. In other cases the grains themselves are cracked. On mine hoists the distance between the head sheave and hoist drums is such as to favor the rope, but in some installations the bend is reversed in a few inches, thus causing a much earlier breakage of the iron or steel wires.

Wire rope may often fail due to repeated shocks being thrown on the rope, not one of which in itself would be sufficient to cause fracture. Suddenly applied loads approaching the elastic limit, even though at intervals days apart, eventually tire out the rope so that at some time or other when a heavy load, which ordinarily would not cause fracture, is suddenly applied the rope will break. The man in charge will be most positive that the load was much less than the rope should lift. The effect of these strains or over-strains can best be shown by microscopic examination of the metal.

The overlapping of the rope on the hoisting drums with the occasional slipping down of the top layer into grooves made by the lower layer will have two bad effects. First, it will cause jerks which increase the load on the rope by a quantity depending upon the slack between the drum and head sheave. In most cases this is small, but in time the wires will show the effect of these shocks not only because of the in-

creased load but also because a vibration is set up in the rope which usually settles at one point causing trouble later. Second, the inner wires will crush somewhat from the squeezing between the top and bottom layer and will assume a pear or bell shape. In this disturbed condition it is impossible for these inner wires to perform their proper function, and the outer wires will be forced to take more than their share of the load, also they will tend to take the form of the inner bell-shaped cushion thus causing abrasion on themselves. Overlapping, cannot in all cases be eliminated, and therefore the need for frequent rope inspection is essential.

All users of wire ropes appreciate the value of protecting them from mine or other injurious water, which corrodes the steel, but it might be well to state that as the sulphur water acts on the steel, hydrogen is

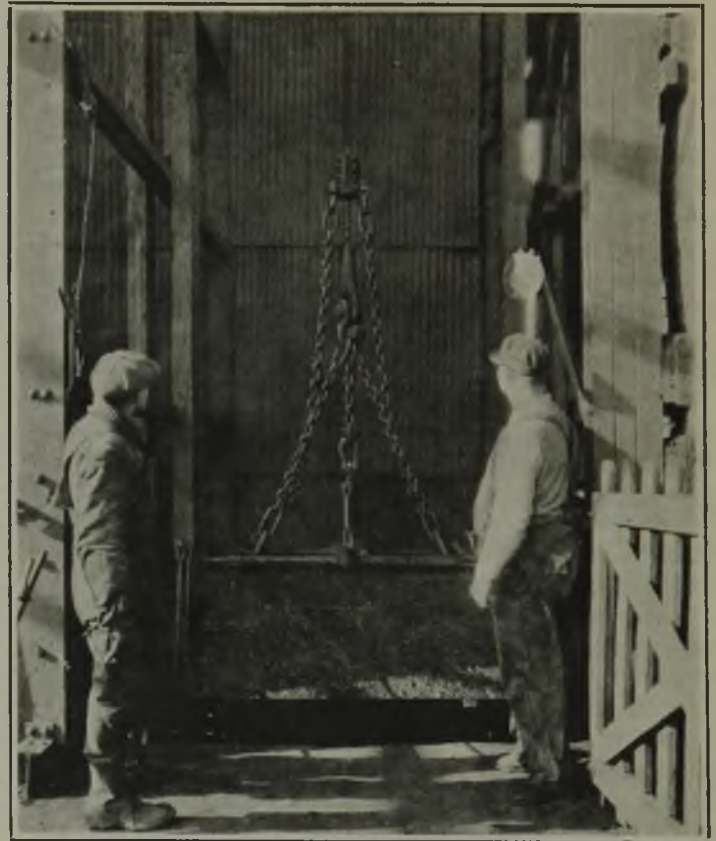


Fig. 4—Nothing Can Take the Place of Rope Here

The hoisting shaft is the neck of the bottle and much depends upon the steel cable. Here, as in other service, it is important to lubricate the rope properly. Accidents due to rope failure are extremely rare; occasionally, when an accident occurs and the headframe is wrecked, the rope is not broken.

liberated which replaces the iron in the steel, acting as a metal itself and remaining occluded. Heat of the correct temperature applied a definite length of time will drive off the hydrogen, but in the case of a wire rope in operation this is impractical, therefore it is imperative that the rope be protected by the use of some mineral compound which will resist the action of the acid and so prolong the life of the rope.

Where wire rope plays an important part in an industry, it is most essential that an inspector who is familiar with the construction and application of wire rope be employed. The duties of an inspector are too numerous to mention, but the mere fact that most mining companies recognize this need and have in their employ such a man, emphasizes the point that wire rope is a part of the equipment which requires expert knowledge, careful handling and the most rigid inspection.



# What Kind of Rock Dust Should Be Used in Mines?

Fifty per Cent Should Pass Through a 200-Mesh Screen—A Smaller Percentage May Be Thus Fine Under Certain Conditions—Some Mines Need Seventy-Five per Cent of Non-Combustible—Effect of Methane

BY GEORGE S. RICE, J. W. PAUL AND R. R. SAYERS\*

**S**TANDARD rock dust for use in the rock dusting of coal mines might be defined tentatively as powdered mineral, light colored and free of carbonaceous matter and free silica, all of which will pass a 20-mesh screen while 50 per cent of it will pass through a 200-mesh screen.

Such dust may be prepared from limestone, gypsum, anhydrite or shale free of sand and flint. For the initial rock dusting of the average non-gaseous bituminous-coal mines enough standard rock dust should be applied so that the combustible content of the resulting mixture of rock dust with mine dust shall not exceed 45 per cent, a range somewhere between 35 and 45 per cent being the practical objective sought.

All entries, slopes or passageways and room necks should be rock dusted. Additional safeguards are: (a) Rock dusting rooms; (b) scattering of dust in vicinity of shots before firing; (c) placing of barriers in the mouths of panels, cross-entries and other key positions.

Redusting becomes necessary whenever the combustible content of the mine dust exceeds the permissible maximum. This should be determined by regular, systematic sampling, followed by a simple analysis of the samples for combustible content. A Bureau of Mines volumeter for measuring the density can be used for the determination of combustible content.

In gaseous mines from 5 to 10 per cent additional non-combustible is required for each per cent of methane present in the air current.

Specifications for size and character of rock dust to be used in coal mines as a means of preventing disastrous explosions have not yet been standardized by the Bureau of Mines, but so many inquiries have been received from mining operators and engineers who are considering adopting rock dusting for their mines that this memorandum has been prepared.

(1) *Size of Dust Particles.*—The finer the size of particles of rock dust, the more easily is the dust raised in the air with the coal dust to prevent the propagation of flame, if enough rock dust is used proportional to the kind of coal dust found in any given mine.

Only such particles of either coal or inert material as will pass through a 20-mesh sieve are considered to be dust. Thus dust—whether coal dust or rock dust—would include particles ranging from 20-mesh (roughly about  $\frac{1}{30}$  in. diameter) to the finest microscopic size. However, mine road dust that passes through a 20-mesh sieve will vary widely in its proportion of the finest dust and correspondingly in its explosibility. From experience in tests at the Experimental Mine, the Bureau of Mines has adopted that percentage of dust by weight that passes through a 200-mesh sieve for the criterion of the most explosive size of any coal dust,

also of the most effective size of inert dust to limit an explosion.

Also, the Bureau's experience is that rock dust should be ground until 50 per cent will pass through a 200-mesh sieve, but a dust having a smaller percentage through 200-mesh may be used provided: (a) That at least 30 per cent passes through 200-mesh, and (b) that a proportionately larger quantity of the dust is used. For example, if the unit of weight of the finer dust required be represented by 1, the quantity of dust having 30 per cent through 200-mesh would be determined by the proportion:

$$30 : 1 :: 50 : x \quad (x \text{ being the quantity required of a dust of which 30 per cent will pass through a 200-mesh screen})$$

$$30x = 50$$

$$x = 50 \div 30 = 1.7 \text{ or } 1.7 \text{ times as much should be used as of a dust of which 50 per cent will pass through a 200-mesh screen.}$$

These specifications are similar to those of the British standards of size as defined in their regulations, except in giving a slightly coarser dust. The British maximum size is 28-mesh, and although the criterion of the finest size is that passing through their standard 200-mesh sieve, this size corresponds to the size through the usual American standard screen of 250-mesh.

(2) *Character of Rock Dust.*—(a) As concerns composition and physical properties of the rock dust, less than 2 per cent combustible material is desirable, and it should not be as much as 10 per cent. If the inert dust contains any combustible material, 1 per cent increase in the quantity of dust should be used for each per cent of combustible material.

(b) Rock dust should be as light in color as possible, both to permit ready observation of freshly distributed coal dust from the regular coal production operations of the mine and to increase the illumination of the passageways which tends to prevent accidents arising from poor illumination.

(c) Rock dust should not contain an appreciable quantity of siliceous particles, and dust from sandstone and dust from sandy shale should not be used. Dust from pure limestone, dolomite, gypsum and anhydrite are preferable. The dust from roof shale free from gritty material is extensively used in Great Britain, but not all roof shales are suitable; often they are too sandy or contain too much combustible matter. The Bureau of Mines is prepared to advise operators as to the suitability of the material or rock that they propose to pulverize for coal mine dusting. Such advice may be obtained by submitting a sample of the material to the Bureau of Mines Experiment Station at Pittsburgh, Pa., where chemical, petrographic and physiological tests will be made.

(3) The quantity of rock dust that must be used for

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NOTE—The British and French methods of rock dusting are described in Bureau of Mines Bulletin 225.



initial dusting for any particular stretch of passageway depends upon: (a) The character of the coal, whether high volatile or low volatile; (b) the size of the particles of coal dust found on the road, ribs and timbers as determined under specifications (1); (c) the percentage of inert matter naturally present, that is, moisture and ash of the coal and ash of dust from the roof, partings and floor that has become mixed with the coal dust; (d) the quantity of road and rib dust in the specified stretch of passageway before rock dusting.

General information on factors (a) and (b) can be obtained by studying results of tests of various coals in Bureau of Mines, Bulletin 167, or by applying directly to the bureau.

Factors (c) and (d) can be determined only by systematically sampling the dust in that part of the mine to be rock-dusted in such a way that the quantity per linear foot of passageway can be estimated approximately. Practically, however, the way to start is to clean up a stretch of passageway and rock dust it, then from time to time sample the resulting mixture analyzing the sample thus taken.

(4) *Redusting.*—After the initial rock dusting, samples should be taken at regular intervals to ascertain how rapidly coal dust is accumulating, and from the analysis to determine whether or not additional rock dusting should be done and whether cleaning up is necessary before redusting.

#### FACTORS INFLUENCING RAPIDITY OF DEPOSITION

The rapidity with which coal dust is made in any mine varies with the friability of the coal, the method of mining, and, most important of all, on the spillage of coal in transportation whether by the coal escaping from leaky cars or by material in the "topping" being jarred onto the roadway. These factors taken with the character of the coal dust and the quantity of natural rock dusting make the quantity needed for the continued dusting of a particular mine or district of a mine difficult to estimate without some trial. Some parts of an entry must be dusted every week; in other parts of a mine redusting will last for several months. In British mines the quantity of rock dust used daily in any one mine varies according to the conditions and size of the mine from 5 in the smaller to 20 tons in the largest mines.

(5) *Maximum Permissible Percentage of Combustible in Road Dust After Rock Dusting.*—It is not possible, as indicated above, to state the maximum permissible percentage of combustible content in road dust applicable to all mines. The amount depends on many factors and ranges from 75 per cent for semi-anthracite to only 25 per cent for certain pulverized high-volatile dusts.

Conversely the minimum percentage of non-combustible content that will prevent explosion propagation varies from about 25 per cent for the least explosive to 75 per cent for the most explosive. If firedamp is present in any part of the mine, a greater percentage of rock dust must be used than in a mine practically free from gas. Therefore, it is not possible to lay down a hard and fast rule that will apply to all the different conditions and characters of coal dusts found in the mines of the United States.

The British law says the dust on floor, roof and sides throughout shall always consist of a mixture containing not more than 50 per cent combustible matter. In other

words, there must be 50 per cent of incombustible matter.

Tests in the Experimental Mine of coal dust from various mines of the United States indicate that although 50 per cent of incombustible material (total ash plus moisture) will prevent ignition of many natural mine-dust mixtures, with no firedamp present, it will not suffice if firedamp is present, and it will not prevent propagation of an explosion when strongly started, as by gas and coal dust at the face. To meet such contingency from 55 to 65 per cent incombustible matter is required to prevent propagation, and if 1 or 2 per cent of firedamp is present in the air current, 5 to 10 per cent additional incombustible must be used.

It must be remembered, however, that the British regulation sets a *maximum* of combustible matter in any part of a mine, and to meet this regulation it is found that the average combustible in the treated road dust of British mines will range from 40 to less than 30 per cent combustible, or conversely have 60 to over 70 per cent non-combustible.

#### ROAD DUSTS CONTAIN MUCH INCOMBUSTIBLE

Further, it must be remembered that the average natural road dusts in American mines, as determined by thousands of samples, contains usually over 20 per cent non-combustible (ash plus moisture) and sometimes 30 to 50 per cent, so that an additional quantity of rock dust equal to the quantity of coal dust present in a passageway (after it has been well cleaned up) may be sufficient ordinarily and sometimes a small quantity may suffice.

Subsequently, the quantity required to keep the roadways safe will depend on the control by the mine management of the production of coal dust. Rib and timber dust is much finer than road dust and contains less incombustible matter, consequently it requires a larger proportion of rock dust to make it safe against the propagation of an explosion; moreover, it is in a position from which it is easily brought into suspension as a dust cloud. In rock dusting effort should be made to supplant the coal dust on timbers and rib projections, then the coal dust which is subsequently made and carried by air currents till it falls on these places will tend to roll off, as the angle of repose of coal dust is less steep than that of rock dust.

(6) *Sampling.*—One of the greatest advantages of the method of rock dusting is that the danger or freedom from danger of explosion propagation through the agency of mine dust can be determined by sampling that part of the mine under suspicion and analyzing the samples. This more or less positive ability to determine the degree of safety during a period of some days or weeks is invaluable to the mine operator and the state inspector, as systematic records of the condition of any part of a mine can be made.

The method of sampling in a roadway requires further development. The Bureau of Mines has heretofore been using a special sampling scoop with screen and brush and has taken a sample of the dust about 8 in. in width across the roadway, on ribs and overhead timbers. All coal passing over a 10-mesh sieve is rejected in the mines. Before analysis the sample is dried, if necessary, and is then screened in the laboratory through a 20-mesh screen and the oversize rejected. This gives a fair sample of the dust at any one cross-section of the passageway. Investigations are now



being conducted to develop for such sampling a portable vacuum-cleaner device not requiring electricity for its operation.

To a certain degree such small samples are grab samples, but if they are taken at regular intervals along the passageway, they give a fairly accurate average for the distance examined. An official test of this was made at the Bentley Colliery, Yorkshire, England, in which a comparison was made of an average of the analyses of many small samples in a given stretch of entry with the analysis of a gross sample obtained from shoveling and sweeping up the entire dust in that same length of roadway. The ash content by the two methods agreed within a few per cent, so the many small samples were regarded as fairly representative of the dust in the passageway.

(7) *Analysis of Road-Dust Samples.*—A comparatively simple fire analysis will determine the total combustible of a mine dust except when limestone is used or other dust that loses carbon dioxide or water of composition. For such dusts these losses must be determined and added to the non-combustible material.

The Taffanel volumeter, modified by Fieldner, of the Bureau of Mines, is a device for quick determination of the combustible content. It is based on density of the non-combustible material. Tests have indicated that it is accurate within a few per cent.

(8) *Extent of Rock-Dusting Necessary in a Mine.*—Questions are repeatedly asked such as: How extensive is it necessary to carry rock dusting through the mine to prevent an explosion? Is it necessary to rock dust rooms? Is it necessary to rock dust entries? In the opinion of the Bureau engineers, it is necessary to rock dust all passageways that contain any coal dust

whatever. It is not enough simply to rock dust the rooms. Many of our most disastrous explosions have started in entry ways and even near the mouth of the mine, through ignition of coal dust by electric shorts from trolley wires or power lines or by explosions of bodies of gas forced into the entry from adjacent workings.

There is always the possibility of ignition of fire-damp from one cause or another. Therefore, it does not suffice to prevent *ignition* of coal dust in a particular locality; the dust must be so generally neutralized that it will prevent *propagation* of an explosion of a body of firedamp or of locally untreated or insufficiently treated coal dust.

The first step should always be to rock dust the haulage roads and dusting should be carried on into the cross entries, subsidiary entries and air courses. The next step is to rock dust the room necks and then gradually extend the rock dusting up into the rooms. Rock dust close to the face, although desirable is not so vital as thoroughly dusting in the entries, because an explosion starting in a room will die away on well rock-dusted entries.

(9) *Rock-Dust Barriers.*—The Bureau of Mines engineers believe that an additional measure of safety is to install rock-dust barriers at the mouths of all panels, cross-entries and other key positions, but the barriers should fulfill the specification suggested by the Bureau in Technical Paper 84 to insure operation. Barriers should not be regarded as sufficient in themselves or as the most important feature. General rock dusting is much more important; the barriers should be considered only as secondary defenses.

## Deep Betteshanger Mine in Kent Shows Present-Day British Practice

AT A NEW MINE, the Betteshanger Colliery, now under construction by Pearson & Dorman Long, Ltd., in east Kent in the South of England, there are twelve seams; one 2 ft. 6 in. thick at 1,208 ft.; one 2 ft. thick at 1,504 ft.; one 4 ft. 5 in. thick at 1,813 ft.; one 2 ft. 10 in. thick at 1,926 ft.; one 5 ft. thick at 1,975 ft.; one 3 ft. 6 in. thick at 2,310 ft.; one 4 ft. 1 in. thick at 2,364 ft.; one 3 ft. thick at 2,403 ft.; one 2 ft. 7 in. thick at 2,513 ft.; one 4 ft. 6 in. thick at 2,562 ft.; one 2 ft. 3 in. thick at 2,592 ft.; one 7 ft. 9 in. thick at 2,632 ft. These seams divide themselves in two series each of six beds with an aggregate thickness in all of 44 ft. 5 in., the average thickness being 3 ft. 8 in.

The coals have a decreasing percentage of volatile hydrocarbons with depth. The six upper seams range in volatile matter from 28.66 to 18.47 per cent and the six lower seams from 16.85 to 14.03 per cent. One of the best analyses, says the *Iron and Coal Trade Review*, is that of the 4 ft. 6 in. seam at 2,562 ft. This is as follows. Volatile matter, 14.03 per cent; fixed carbon, 80.03 per cent; ash, 4.97 per cent; sulphur, 0.97 per cent; calorific power, 14,414 B.t.u., an extremely low-volatile bituminous coal.

The company has mineral rights covering nearly 60 sq. miles, but to Betteshanger colliery is apportioned 4,700 acres. A boring on the site of the shaft shows that at a depth of 875 ft. the greensand will be encountered with water at a pressure of 295 lb. At a depth of 960 ft. water will be found at a pressure of 112 lb. The coal measures will be reached at 975 ft.

From the experience gained in other parts of the field 2,000 gal. of water will flow into the shaft per min. In the upper chalk formations the water will be excluded by the cementation process, below that the water will be closed off by tubbing. The shafts will be sunk to a depth of 2,598 ft. starting operations, however, on a seam 3 ft. 10 in. thick at a higher level. The annual output is expected to be 840,000 short tons per annum.

The headframe is of twin-channel construction and 80 ft. high. It weighs 100 tons and has sheaves of 20 ft. diameter. The permanent plant will be used for sinking. The hoisting engine will have a pair of 36-in. cylinders with a stroke of 84 in. and a cylindro-conical drum increasing from 16 to 28 ft. The maximum speed in the shaft will be 72 ft. per sec. or 49.09 miles per hour, a complete wind taking 58 sec. During the sinking operation a parallel drum is to be employed.

It will be noted with interest that the shafts will be circular and 22 ft. in diameter in the clear. They will be lined with concrete, the pit bottom being so arranged that the whole output, or any part of it, can be hoisted through either shaft. The cages will be double decked with four cars on each deck. The capacity of the cars will be only 1,680 lb., a clear evidence that the British mines even where new and deep are not being provided with large rolling stock from the American point of view. The boilers will be up to the best standards, being of Stirling type with economizers and superheaters. They are designed for a working pressure of 200 lb. with a superheat of 200 deg. F. They will have chain-grate stokers and both forced and induced draft, the fans for that purpose being electrically and steam driven.



# New Methods of Operation Reduce Production Cost

More Details Regarding "V" System of Mining with Conveyors — O'Toole Machine Cuts and Loads 7,000 Tons in a Single Month — Little Shooting Required — European Longwall Problem Not Like Ours

## How Conveyors Have Lowered Cost of Mining

A COMPANY, having coal with a roof that will stand up without support over a span of 30 or 40 ft. expects to put in conveyors and to cut and shoot the coal face two or three times a day, said J. W. Bischoff, general manager, West Virginia Coal & Coke Co., Elkins, W. Va. at the Cincinnati Conference. Mr. Bischoff said that the longwall system or any long face had its advantages where conditions favored its use. It gives the advantage of close supervision and concentration of work with consequent reduction in the cost of haulage, ventilation and drainage.

Mr. Bischoff made his remarks in the absence of J. Dearing Christian, assistant to the president, Imperial Colliery Co., Burnwell, W. Va., and Everett E. Drennan, president, West Virginia Coal & Coke Co., Elkins, W. Va. He was somewhat hampered in making his remarks because as he stated "I don't suppose there is a man in this gathering that has not read the descriptions of our system of mining in *Coal Age*." His statements were therefore merely supplementary.

### LARGE TONNAGES HANDLED

He explained that the coal at the mine operated by conveyors and the "V system" was 6 ft. thick, the bottom coal being 15 or 16 in. thick and the shale parting above it 4 in. to 9 in. thick. A machine is now being constructed for loading. This should be ready about the middle of this month. He said that no machine now on the market could be worked to advantage with the conveyor. All the coal loaded at the mine is conveyor-loaded, there being two installations each carrying 700 to 800 tons per day.

Mr. Bischoff said that the conveyors were kept running continuously, cars being kept at the head of each main conveyor at all times. The haulage locomotive can make a trip to the outside and back again in the time taken to load a trip of cars. These cars are never uncoupled. When the coal was loaded by hand each car carried 3 tons; with conveyor loading the capacity has been reduced to 2½ tons.

The cost of operation for all expenses except investment charges has been reduced 30 to 35 per cent. Before the change from hand to conveyor loading the output per man employed in and around the mine was 5½ to 6 tons; now it runs from 10 to 11 tons. The lower tonnage with hand loading was not due, Mr. Bischoff said, to any inefficiency on the part of the men, as they were all good loaders. The whole credit for the

increase in tonnage per man must be given to the new system.

Mr. Bischoff said also that even with irregular operation there would be no difficulty in maintaining the face. No posts or other timbers are placed between the conveyor and the face of the coal. As soon as the shot is loaded out, the face is cut and the conveyor is advanced 3 or 4 ft. The recovery was about 97 per cent. The life of the conveyor will probably be about five years. It may, outlast, however, the expectations of the company.

## O'Toole Machine Cuts And Loads Fifty-five Tons in Thirty Minutes

A machine that cuts and loads coal from a 45-ft. longwall face and which has been in successful operation for about six months under a cover that has reached 750 ft. was the designation given by H. N. Eavenson in describing the O'Toole machine. The strata above the coal are of sandstone and slate. At first they break with difficulty, but after a fracture has been obtained the roof breaks quite satisfactorily.

Mr. Eavenson, in the absence of Col. Edward O'Toole, then introduced his son. Mr. O'Toole said the machine both cut and loaded coal. As his father was not entirely satisfied with it and as it is not yet on the market, he was not ready to describe its operation in detail. The cutter bar on the machine was 50 ft. long. It cuts the coal without shooting. The coal as it falls, is caught by a conveyor, carried to an entry and dumped into a string of cars hauled past the end of the conveyor.

### DIFFICULTIES ENCOUNTERED

Being the first machine of its kind the machine has not been operated without difficulty. The best performances obtained from it have been 55 tons in 30 min.; 320 tons in 8 hours; 620 tons in 24 hours; 718 tons in 32 hours, 7,000 in a month. The difficulties of cutting, loading and hauling have all been satisfactorily solved, but the control of the roof still presents difficulties. When it is remembered that the space that must be kept open in front of the coal is 6 ft. wide and 45 ft. long and that the roadways increase that width it will be realized that under heavy cover a difficult problem remains to be solved.

Hydraulic jacks 6 ft. apart are used to advance the cutter bar each working on a screw which is 8 ft. long and is operated by the mechanism on the machine. When the cutter bar has progressed as far as the screw will permit, an arrangement enables a new hold to be taken. The jacks have, however, not solved the roof trouble. The coal mined is the No. 3 Pocahontas seam, but Mr.

O'Toole believes the machine would cut and load any other seam satisfactorily. The coal only occasionally has to be shot down, the weight of the roof shearing it as the cutter advances into it.

## Conditions in Europe Much Different from Ours

George S. Rice said that a study of European conditions could not afford us much in the way of suggestion as to the use of longwall. In Europe the coal companies had really little choice. Room-and-pillar workings are well-nigh impossible of operation after the depth exceeds 1,200 ft.

For this reason you find little else than longwall both in England and on the Continent. Careful and close timbering is necessary. In Belgium and France it is found necessary to carry stringers parallel to the face on lines of props 3 ft. apart. Furthermore cross pieces must be laid on those stringers to carry the weight over the coal face, the ends of the stringers being set in the face of the coal. Temporary props are set up which have to be removed after the coal is shot down.

In most places in England the cutting machine works between a row of chocks and the face; the conveyor is placed behind the chocks, and back of this conveyor are the packwalls. With roof such as is found in Great Britain, Mr. Rice believed, it would be impossible to operate a longwall face without backfilling. The face could not be kept open. In fact the British engineers are unable to work on the end of the coal and they have, even with this precaution, to use strong breaker props and keep their packwalls close to the face. Conveyors are not by any means new in Europe. "In 1911," said Mr. Rice, "I saw shaker conveyors in the thin beds of Scotland. They work nicely in a pitching bed."

## State Rys. Consume Two-Thirds Of Rumania's Coal

Coal production in Rumania in 1923, together with the amount of coal reported to have been consumed by the Rumanian State Railroads, according to a report by Acting Commercial Attaché Louis E. Van Norman, Bucharest, was as follows, in metric tons:

	Total Production	Consumed by State Railways
Bituminous coal.....	1,562,423	1,164,917
Lignite, superior.....	236,736	146,276
Lignite, inferior.....	328,923	270,528
Coal produced from the mines at the "Reshitza" Metallurgical Works — grades not specified.....	237,986	.....
Total.....	2,366,068	1,581,721

Practically all of the balance was consumed by industrial enterprises and private users in Rumania.

NOTE — Discussion of "Correlation of Mechanical Loading with Haulage and Mining Systems" at Cincinnati Conference and Exposition, American Mining Congress.





## News Of the Industry



### Wholesalers' Convention Indorses Move For Coal Institute

Wadleigh Proposal Warmly Approved—Covel Says Tide Has Turned  
from Oil Back to Coal—Snider Discusses Freight Problems—  
Correction of Cost and Credit Evils Urged

That the wholesale coal men are ready to co-operate in a movement looking to the organization of a coal institute which would take rank with such institutes in other industries in this country and Great Britain was evidenced by the action taken at the eighth annual convention of the American Wholesale Coal Association, held at White Sulphur Springs, W. Va., June 3 and 4. Following an address by F. R. Wadleigh, vice-president of the Tuttle Coal Corporation, New York, and formerly Federal Fuel Distributor, outlining the activities of the suggested Coal Institute, the convention unanimously approved and indorsed the establishment of the institute and referred the matter to the Trade Relations Committee of the association for action.

#### Tells Need of Coal Institute

Mr. Wadleigh pointed out the value the Institute, or Federated Coal Association, if that name should be chosen, would have in bringing about much needed solidarity, cohesion, co-ordination and co-operation in the industry, "and a realization of the value and importance of each branch of the industry to the whole, a knowledge of its own power, if and when united." Two important lines of work which should be taken up by the industry now, he said, are education of the public and its representatives, and research, economic and technical.

Discussing the research phase, Mr. Wadleigh quoted from an editorial in *Coal Age* bearing upon the necessity for greater information in the coal industry and referred to another article listing about 50 subjects needing particular study to advance methods connected with the production and distribution of coal.

Mr. Wadleigh's address was a feature of the first day's session and was followed by another outstanding speech of the convention, made by Borden Covel, president of the Northern Coal Co., of Boston, on "Oil Competition in the Coal Game." Mr. Covel spoke of the inroads fuel oil had made into the coal business of the New England states, but expressed the opinion that the tide had turned and that most of the former coal customers would return in the next four or five years. Giving many facts and figures on both sides of the ques-

tion as a result of a thorough investigation into the oil and coal situation, Mr. Covel summed up the advantages of coal burning as follows:

- (1) More stability in the price of coal and in production.
- (2) Railroad-car equipment now in



Charles L. Dering

Retiring president of the American Wholesale Coal Association, succeeded by H. K. Cortright, of Philadelphia.

excellent condition and likely to remain so.

- (3) Much less fire risk.
- (4) Storage of coal is more flexible.
- (5) Cost of installation is less in smaller plants.

In the discussion that followed Mr. Covel's talk the feeling that the peak of oil competition had been reached was reflected by most of those who took part. Dr. E. W. Parker, of the Anthracite Bureau of Information, Philadelphia, called attention to the fact that the oil refiners themselves were using coal rather than oil in the refining processes. W. C. Baxter, of Tnoy, N. Y., was one of those at the convention who felt that the impracticability of oil burning for household heating purposes made any prospect of falling off in this trade negligible.

Reports from the association's officers relating to the work done during the

past year occupied the remainder of the first day's program, which closed at noon in order to give the visiting members an opportunity to try out the famous Greenbrier golf courses.

Much of the discussion at the second meeting centered on freight rates, diversion and reconsignment. G. N. Snider, former coal traffic manager of the New York Central R.R. but now general manager of Dickson & Eddy, New York, in his address "Freight Rates—Diversion and Reconsignment," advised that all transportation problems be settled by direct dealings with the railroads as far as possible rather than by seeking relief, of which he felt there was little hope, through government bureaus. He suggested that perhaps the mass of appeals made to the Interstate Commerce Commission had strengthened the feeling that regulation has become a burden and worked toward petrification in the present structure.

#### Cochran Deprecates Squabbling

Ira Cochran, the association's commissioner, urged that as there were varying problems with regard to these transportation matters in the different sections, the coal leaders should stop arguing and study the coal and the railroad situation. E. S. Simpson, of Richmond, president of the West Virginia Coal Co., complained of a lack of commercial mind among railroad men, and said that reconsignment was not now flexible enough, that the railroads should be more liberal, not penalizing operator or wholesaler, but should work back to pre-war conditions. More elasticity was declared to be the present need by E. M. Platt, president of Platt & Brahm Coal Co., of Chicago, who said that he saw no reason for restricting the use of the facilities of the roads.

Mr. Platt was one of the speakers on Wednesday, his subject being "Costs and Credits." Speaking of the evils of excessive competition which have developed and the "extreme general disorganization that unquestionably exists in the coal trade," Mr. Platt said: "Neither operator nor distributor can hope to get on a firm basis of prosperity until these conditions have been corrected. . . . Manifestly if we could move back toward a rational reorganization of the industry, that would re-establish the distributing sales end of the business in its proper place—between the producer and the consumer, where it would naturally regulate production to a fair relationship of legitimate demand and consumption—these problems of cost and credit would solve themselves both for the distributor and the producer, and with



such a sales body functioning efficiently and adequately the producer could apply his energies and his abilities unrestrictedly to the problems of producing coal and getting a price for it that at all times would net him a profit in fair proportion to the hazards of the business.

"The distributor, on the other hand, if relieved of the handicaps of excessive competition should be able to develop an efficiency that would enable him to handle at a profit to himself the product of the operator better and cheaper than the producer could handle it himself."

Another speaker on the program was Owen Meredith Fox, associate editor of the *Black Diamond*, who spoke on "The Wholesaler of the Future."

Presiding during the convention until the election and installation of new officers at the closing session was President Charles F. Dering, of Chicago. After the report of the nominating committee was adopted, he turned over the gavel to H. K. Cortright, of the Cortright Coal Co., of Philadelphia, who will serve as head of the association for the coming year. Other officers elected were H. J. Heywood, of W. A. Gosline & Co., Toledo, vice-president; and G. H. Merryweather (re-elected), of the Waubun Coal Co., Chicago, secretary and treasurer. Ira Cochran, the association's commissioner, with offices in Washington, was reappointed, and he as well as the retiring officers was given a vote of commendation.

#### New Directors Chosen

Directors who will serve for the coming year are: G. H. Snowden, of the G. H. Snowden Co., Pittsburgh; W. H. Weller, Jr., U. S. Fuel Corporation, Birmingham; E. H. Hemingway, W. C. Mason & Co., Inc., Hartford; Benjamin H. Read, Lynah & Read, Baltimore; J. W. Dykstra, of J. W. Dykstra & Co., Detroit; W. B. Vaughan, Ransom Coal & Grain Co., Kansas City; F. S. Martin, of F. S. Martin & Co., Omaha; H. P. Smith, Midland Coal & Steel Co., Cleveland; C. C. Cole, Cole-Basinger Coal Co., Toledo; W. H. Prescott, Memphis Coal Co., Memphis, Tenn.; J. Edgar Long, J. E. Long Coal Co., Clarksburg, W. Va.; W. C. Mass, Galloway Fuel Co., Milwaukee; C. G. McGill, Wm. McGill & Co., Toronto; L. S. Platka, E. S. Adsit Coal Co., Burlington, Vt.; J. F. Irwin, of J. F. Irwin Fuel Co., Latrobe, Pa.; L. S. Leighton, Carbon Coal & Coke Co., Boston; G. N. Snider, Dickson & Eddy, New York; Arthur Kuppinger, Seaboard Fuel Corporation, Philadelphia; F. W. Legg, Logan & Kanawha Coal Co., Cincinnati, and R. J. Buck, Jr., Marcy-Buck Co., Inc., Watertown, N. Y.

The executive committee will be made up of G. N. Snider, L. F. Leighton, G. H. Snowden, J. W. Dykstra, H. P. Smith, Fred Legg and W. H. Weller, Jr.

The association's annual banquet, held on the evening of June 3 in the main dining room of the Greenbrier Hotel, was attended by about 125 members and their wives. Jay Johns, of Pittsburgh, chairman of the Convention Committee, was in charge of the dinner, which was voted an unusually successful affair. No attempt was made to discuss business problems, and

Toastmaster Noah H. Swayne, of Philadelphia, soon disposed of the few serious remarks he felt it incumbent upon him to make. Roe Fulkerson, editor of the *Kiwanis Magazine*, Washington, D. C., was the principal speaker, his subject being "Personality." "The battle of business," he said, "is not that of dollars but of personalities," and then made many amusing applications. Mr. Swayne also introduced Major W. R. Coyle, of Bethlehem, Pa., a charter member and former president of the association and now a candidate for Congress. Major Coyle, in his greeting, caused much laughter when, after referring to the response of the coal men during the war, he spoke of the adjustment in the coal industry to peace and said: "We are now almost at peace with the government."

A large number of the delegates to the wholesalers' convention left White



G. N. Snider

Now general manager, Dickson & Eddy, formerly coal traffic manager, New York Central, urged seeking remedies for coal ills through railroads rather than through the Commerce Commission.

Sulphur Springs Wednesday afternoon for Bluefield, W. Va., to attend the retailers' convention there.

Before adjournment it was unanimously voted to adopt the report of the Resolutions Committee which requested the Interstate Commerce Commission and the individual railroads to restore at as early a date as possible those reconsignment and demurrage practices which through long-established custom had built up proper and necessary trade practices in various parts of the country, and commended the Trade Relations Committee for its continuous good work during the past year, requesting that the committee continue its co-operation with committees of other branch trades to the end that some workable plan of universal inspection at destination, if and when required, may be put into practice. The resolutions also recommended that the association approve and endorse the establishment of a coal institute as presented by F. R. Wadleigh and refer this question to the Trade Relations Committee for action.

The work done by Ira C. Cochran, in the presentation of claims and the preparation of claims for presenta-

### Safety Movement Gains Headway in Utah

It is stated that most of the coal mines of Utah are now using water to keep down dust in the cutting, loading and hauling of coal, according to a report of State Coal Mine Inspector John Crawford. Mr. Crawford said the recent orders of the Industrial Commission in respect to safety devices also were being complied with as rapidly as possible.

tion was highly praised. It is perhaps worthy of note that during the past year there have been over 400 individual claims for freight charge corrections and reimbursements prepared by, and in many cases presented by, Mr. Cochran, for the membership. He is ready to consider and handle an even larger volume of these matters in the future than in the past. The work of Mr. Johns, of Pittsburgh, in planning for the convention received much favorable comment.

The association again indorsed the plan of the Arbitration Society of America and expressed its appreciation of the work done by many of the officers and members during the past year in procuring the amicable settlement of trade disputes. The action taken by the Executive Committee and the officers of the association in relation to the U. S. Coal Commission and its report was approved and the officers of the association came in for high praise for their work for the organization during the past year.

### North American Fuel Co. to Run on Open-Shop Basis

Closely on the heels of a resumption of operations at the Brady mine of the Brady-Warner Coal Corporation in the Monongalia field of West Virginia, comes an announcement by the North American Fuel Co., operating at Maidsville, in the same field, that its mine will resume operations on an open-shop basis and with the 1917 wage scale in effect. Operations will start as soon as the company can obtain possession of houses now occupied by miners identified with the union. The company has served notice on employees that they must either return to work or vacate company property. B. M. Chaplin, president of the company, says that the same course of procedure as employed by the Brady-Warner Corporation will be followed by the North American company and that miners would be evicted from company houses and the houses used by those who would work. The North American company, like the Brady-Warner Coal Corporation, declined to become a party to the Baltimore wage agreement.

Since the outbreak on May 22 at the Brady mine of the Brady-Warner Coal Corporation when 50 shots were fired, there has been no further trouble, inasmuch as the company is proceeding under a sweeping injunction. By May 24 nearly all the miners who had refused to return to work had been moved from company premises.



### Pittsburgh & West Virginia To Segregate Coal

The Pittsburgh & West Virginia Ry. is said to be considering segregation of its coal properties. It owns 15,000 acres of coal lands in Allegheny and Washington counties, Pennsylvania, through ownership of the Pittsburgh Terminal R.R. & Coal Co.'s \$16,000,000 stock. The coal lands are estimated to be worth \$15,000,000.

The Pittsburgh & West Virginia Ry. owns sixty miles of main line in Harrison County, Ohio, easterly through Harrison and Jefferson Counties, Ohio; Brook County, West Virginia, and Washington and Allegheny Counties, Pennsylvania.

Properties of the Pittsburgh Terminal R.R. & Coal Co., the entire capital stock of which is owned by the Pittsburgh & West Virginia Ry., are located along the line of the Pittsburgh & West Virginia and the West Side Belt R.R., also owned by the P. & W. V.

Total coal holdings of the Pittsburgh Terminal R.R. & Coal Co. are estimated at 72,500,000 tons.

### Franklin Coal Co. Charged With Unfair Methods

Unfair methods of competition in the marketing of coal is charged against the Franklin Coal Co., of St. Louis, Mo., in a complaint issued by the Federal Trade Commission.

It is alleged in the complaint that the concern offered for sale certain coal under the trade name of "Mt. Olive coal" and "Mt. Olive district coal." The complaint states that coal mined at Mt. Olive, Ill., or the immediate coal district in the region of Mt. Olive, known as the Mt. Olive section, which lies within the counties of Macoupin and Madison, is known to and designated by a substantial part of the purchasing public as "Mt. Olive coal." The complaint alleges that respondent's coal has a lower market value than Mt. Olive coal, and that the use by respondent of such misleading designation has a tendency to deceive the purchaser into the erroneous belief that its coal is the product of the Mt. Olive district, whereas it is alleged that the respondent's coal is produced in the counties of Clinton and Bond, in the State of Illinois, this district being wholly outside the Mt. Olive district.

### Stone's Attitude Heartens Partisans of Trade Data

Those most concerned as to the trade-association statistical situation are much encouraged by the attitude of the new Attorney General. Mr. Stone has stated publicly that he is hopeful of a satisfactory solution of the matter. There is reason to believe that he recognizes that the policy of the department toward these figures has not been constructive. At the same time the Attorney General is not in a position, it is believed, to discuss his views in detail at this time because of their possible application to pending cases.

It now seems probable that a test case will be brought, although that step will not be taken in the immediate future. In the meantime, consideration is being given to expediting some of the pending cases in which certain important trade-association questions are involved.

### Cleveland & Western Coal Co. Judgment Stands

The Supreme Court has refused to grant a writ of certiorari sought by the Cleveland & Western Coal Co. to review the judgment awarded against it to the Main Island Creek Coal Co., of West Virginia. The decision of the lower courts, awarding judgment of \$404,270 to the Main Island company therefore will stand.

The Main Island company sued the Cleveland & Western to recover \$6 per ton on 60,711 tons of coal delivered to the Cleveland & Western in 1919. The Cleveland & Western alleged that the arrangement was for an exchange of coal. It tendered coal to the Main Island company and upon refusal to receive the fuel sold it and tendered the money to the Main Island company. The Main Island company claimed the original deliveries were in the nature of outright sales and the District Federal Court so held. This decision will prevail through the declination of the Supreme Court to review the case.

### Welsh Coal Seeks Canada's Anthracite Market

British and Canadian coal interests are trying this year to popularize Welsh and Scotch coal in eastern Canada so as to replace some of the American anthracite sold in that region. They claim they can sell the cross-water fuel at prices that will compare favorably with the Pennsylvania product. To companies are preparing to handle this traffic—the Canadian-Welsh Anthracite, Ltd., which is now building a \$200,000 crushing and sizing plant at Vulcan wharf, in Montreal, and the F. P. Weaver Coal Co., Ltd., which also will build a breaker at Montreal, according to the Department of Commerce.

During the year ending Feb. 29, 1924, Canada imported from the United States 4,950,000 tons of anthracite and 15,320,000 tons of soft coal. From the United Kingdom came only 211,300 tons of anthracite and 278,500 tons of bituminous coal. Those now engaged in the Canadian Welsh coal business are prophesying that during the present year they can at least double the import of British coal into Canada.

In parts of eastern Canada a real effort is being made to replace American anthracite with Canadian coke.

### Shipping Board Opens More Bids at New York

The United States Shipping Board at New York opened bids on June 5 for furnishing and delivering alongside vessels in that harbor on June 8, 3,300 gross tons of soft coal of a minimum of 14,500 B.t.u. There were five bidders, as follows: Rhodes Fuel Corporation, 5.18; Seiler Coal Co., \$5.43; Imperial Coal Corporation, \$5.14; Steamship Fuel Co., \$5.04; W. H. B. Haff, \$5.29.

Bids will be received until July 2 by the Quartermaster at West Point for furnishing 17,000 tons of birdseye coal, 1,400 tons No. 1 buckwheat and 1,200 gross tons gas coal.

Bids were opened on June 6 by the Quartermaster's Department at the U. S. Army Supply Base, South Brooklyn, for furnishing and delivering approximately 7,000 tons of soft coal to various forts and army buildings in New York, Pennsylvania, New Jersey and Delaware. More than thirty bids were received, quotations ranging from \$1.26 to \$2.34 per net ton f.o.b. mine, depending upon quality of coal and place of delivery.

## Bituminous Coal Loaded Into Vessels at Lake Erie Ports During Season to End of May

(In Net Tons)

Ports	Railroads	1924			1923			1922		
		Cargo	Fuel	Total	Cargo	Fuel	Total	Cargo	Fuel	Total
Toledo	Hocking Valley	1,422,987	40,881	1,463,868	760,562	21,622	782,184	617,287	16,103	633,390
	N. Y. C.-Ohio Central Lines	4,505	227	4,732	304,405	9,456	313,861			
	Baltimore & Ohio	234,923	7,975	242,898	305,272	9,561	314,833	823,958	17,125	841,083
Sandusky	Pennsylvania	276,743	7,832	284,575	387,362	10,244	397,606	488,143	11,655	499,798
	Wheeling & Lake Erie	179,392	8,426	187,818	272,491	9,261	281,752	7,612	334	7,946
Lorain	Baltimore & Ohio	252,415	24,885	277,300	474,584	30,316	504,900	17,820	3,353	21,173
	Pennsylvania	158,254	29,146	187,400	323,427	22,443	345,870	43,358	6,704	50,062
Cleveland	Erie	56,556	1,917	58,473	266,874	10,458	277,332			
	Baltimore & Ohio	53,407	20,234	73,641	92,771	8,503	101,274			
Fairport	New York Central	191,531	22,488	214,019	844,358	40,764	885,122	31,083	5,757	36,840
	Pennsylvania	131,412	14,398	145,810	277,094	11,102	288,196	28,342	2,113	30,455
Ashtabula	Bessemer & Lake Erie	294,959	43,446	338,405	524,636	26,974	551,610	24,744	194	24,938
	Erie	66,026	14,089	80,115	101,209	11,801	113,010	23,575	6,685	30,260
Total		3,323,110	235,944	3,559,054	4,935,045	222,505	5,157,550	2,105,922	70,023	2,175,945
*1923 Storage Loading		182,060	4,940	187,000						

\* Coal loaded into vessels in December, 1923, after close of navigation. Compiled by Ore & Coal Exchange, Cleveland, Ohio; H. M. Griggs, manager.



## Retailers, in Annual Convention, Decry Government Interference with Coal

Strong Resolution Deprecates Attempts at Bureaucratic Control—Senator King Deplores Burdensome Taxation That Handicaps Business—Association Officers All Re-elected

The business sessions of the seventh annual convention of the National Retail Coal Merchants' Association were brought to a close at the Hotel West Virginian, Bluefield, W. Va., late Thursday afternoon, June 5, with the election of officers and the adoption of three important resolutions outstanding among a dozen or more which the convention indorsed.

Regarding governmental interference with the coal industry a resolution was adopted calling upon the executive officers of the association to oppose by all legitimate means legislation tending to place the coal industry under governmental or bureaucratic control, and urging upon members of all branches of the coal industry the practice of such business ethics in their relations with one another that government regulation of the industry will be unnecessary.

### Want Fewer Government Workers

Offered by Roderick Stephens, of New York, and adopted by the convention was a resolution urging members of the association to use their influence upon all citizens and other civic and commercial organizations throughout the nation to voice an insistent demand for immediate and continuous reduction in the number of government employees, both of the state and nation; and further, urging support of the movement by the discouragement of the assumption of additional governmental functions and responsibilities, and by encouragement of a heightened sense of responsibility by individual citizens as the only sound and permanent basis for the preservation of our liberty and for the growth and prosperity of the country as a whole.

A resolution calling for the rescinding of the ten percentum overload rule and the substitution therefor of a rule which will provide for a minimum of ten percentum less than marked capacity and a maximum of the marked capacity with the peak of the load not to exceed 12 in. above the side of the car was unanimously adopted.

The convention opened Wednesday morning, June 4, with more than 450 delegates and visitors in attendance. Two special trains, one from the East and one from the West, brought the delegation to the convention city. The convention was formally opened at 11 a.m., by Samuel B. Crowell, president of the association. The morning session was devoted to the appointment of committees and the hearing of reports by the officers. The outstanding feature in these reports was the splendid condition reported by the retailers considering recent reports of the state of the industry.

At the noonday luncheon, Clarence E. Ridley, City Manager, welcomed the delegates and visitors on behalf of the city of Bluefield, and H. I. Shott, editor of the *Bluefield Daily Telegraph*, ex-

tended the welcome on behalf of the people of southern West Virginia.

On Wednesday afternoon reports on trade relations were heard, President Samuel B. Crowell speaking on anthracite, and in the absence of Marshall Keig his paper on the bituminous situation was read by the resident vice-president, Joseph E. O'Toole.

A brisk and interesting report of the governmental relations committee was



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Samuel B. Crowell

President of the National Retail Coal Merchants Association. Mr. Crowell has been 38 years in the coal business, as an operator, wholesaler and retailer. He is now at the head of one of the largest retail coal companies in Philadelphia.

made by Roderick Stephens. Pointing out that since the last convention the committee had been working along familiar lines, except that there had been little to do of late in connection with general legislation, on account of the congressional oil deluge, complicated by a mud-slinging campaign of certain groups in the upper and lower houses of Congress, Mr. Stephens said much legislation aimed at the coal trade had been introduced, but no hearings had been held on bills of direct interest to the retail coal trade and no such legislation had advanced far enough to cause any concern. Mr. Stephens reviewed matters which had received the attention of the committee during the past year, among which were the U. S. Coal Commission, governmental activity in connection with the anthracite strike, the Federal Trade Commission, the Department of Commerce and the Government Fuel Yard.

Addresses by E. L. Greever, general counsel of the Pocahontas Operators Association, and George H. Cushing, editor of *Cushing's Survey*, brought the afternoon of the first day of the convention to a close. Mr. Greever spoke with reference to the Pocahontas coal

field and Mr. Cushing on "Ethics for Coal Men."

The annual banquet of the association Wednesday evening was featured by an address of Senator William H. King, of Utah. Senator King spoke on "What Policy Is Necessary for Business Revival." He opened with a recital of the burdensome taxation imposed by national, state and local governments, declaring a tax-ridden people cannot have prosperity, and said: "We want a government that lays its hand as lightly as possible upon the body of the individual, upon the liberty of the individual, and upon the purse of the individual." The speaker pointed out that among the things essential to the revival of prosperity was foreign trade and commerce. He urged a modification of the tariff law, denounced the child labor law and concluded with the statement that he applauded President Coolidge when he said we must enter the World Court and take part in the problems of the world.

### Urges "Fight for Life"

Harry L. Gandy, executive secretary of the National Coal Association, and Francis R. Wadleigh, vice-president of the Tuttle Coal Corporation and former U. S. Fuel Administrator, were the principal speakers on Thursday. "These days are uncertain ones politically," stated Mr. Gandy, "in that there is an effort to increase the burdens of the government. On every hand there are schemes to broaden governmental activities and increase expenditures. This race of ours through centuries of effort, finally shook off the bondage of the state and made possible individual initiative and the private ownership and control of profits. Indeed if ever there was a time when American citizens should read their histories, this is the time." The speaker urged everyone engaged in the coal industry to exert his best efforts not only for the success of the industry but also in order that the industry may hold respect and confidence and continue its usefulness. "The fight for life," he said, "makes this necessary."

Mr. Wadleigh spoke on "The Coal Institute," making a strong appeal for the formation of the coal institute or some similar organization through which all branches of the industry could work in harmony.

On Thursday night the Pocahontas Operators Association, host to the 1924 convention, tendered a banquet to the delegates and visitors. Colonel W. S. Battle, of the Norfolk & Western Ry., presided as toastmaster and delivered a fine address, setting forth some truths affecting the problems of the railroad as related to those of the coal shippers. A cabaret entertainment was given in connection with the banquet.

On Friday, June 6, members of the National Retail Coal Merchants Association visited the Pocahontas coal fields in southern West Virginia. The party made the trip by automobile. Among the plants visited were those of the American Coal Co. and the Pocahontas Fuel Co.

The officers of the association, who were re-elected without a change, follow: President, Samuel B. Crowell, of Philadelphia; Resident Vice-President,





Joseph E. O'Toole

Resident vice-president, National Retail Coal Merchants Association, succeeds himself. Mr. O'Toole reports that during the year ten local associations affiliated with the national society, including the Baltimore Coal Exchange.

Joseph E. O'Toole, of Washington; Vice Presidents, Marshall E. Keig, Chicago; J. Maury Dove, Jr., of Washington; W. A. Clark, of Boston; W. L. Vail, of Toledo; Chas. B. Staats, of Albany; F. W. Schermes, of Kansas City. R. J. Wulff, of Brooklyn, N. Y., was re-elected treasurer of the association.

Board of Directors: Homer D. Jones, chairman, of Chicago; Elijah J. Barkume, of Detroit; Jos. H. Lucking, of Newark, N. J.; John S. McEwan, of Albany; Chas. B. Bodwell, of Manchester, N. H.; W. R. Fouguay, of St. Joseph, Mo.; J. Harry West, of Baltimore; A. Ashley Miller, of Chicago; John J. O'Connor, of Milwaukee; Wellington M. Bertolet, of Reading, Pa.; J. L. Browne, of Sioux City, Ia.; H. E. Davis, Woonsocket, R. I.; C. A. Elwood, Rochester; W. L. Montgomery, Harrisburg, Pa.; C. D. Taylor, of Kalamazoo, Mich.; James T. Tattersall, of Trenton, N. J.; John E. Loyd, of Philadelphia; C. Solon Kellogg, of Rochester; Roderrick Stephens, of New York city; F. S. Sager, of Norfolk; Ray Macy, of Indianapolis; Russell H. Jones, of Kenosha, Wis.; Robert S. Hayes, of Newport, R. I.; L. W. Ferguson, of Chicago; Luke D. Drury, of Richmond; G. F. Rogers, of St. Catherines, Ont., Canada.

President Crowell was retained by the association as chief counsel in the United States Chamber of Commerce, and after his election he urged that more men be appointed to this important duty. It was then on motion ordered it be left to the president to name whom he might on this committee.

Following the re-election of President Crowell delegates and members of the association gave him a big demonstration of their appreciation for his work during the past year. In accepting the presidency Mr. Crowell made an eloquent address. He spoke of the splendid success of the association, the fine spirit of co-operation extended him during his administration and then requested there be more effort put forth along this line during the coming year.

## Says Railroads and Coal Men Should Bury the Ax

In his appeal for less antagonism between railroads and the coal industry, at the International Railway Fuel Association convention, in Chicago, May 29, F. R. Wadleigh, former Federal Fuel Distributor, pointed out some of the penalties that are paid for such mutual feeling, and indicated ways of removing those penalties.

"It seems to me," said he, "that railroad purchasing agents would obtain better results for their roads if they studied more closely the interests of the coal industry and made themselves better acquainted with its problems and relationship toward transportation. The coal industry should not feel antagonistic toward railroad-coal purchasers, but such a condition unfortunately exists.

"The practice consistently followed by some railroad-fuel purchasing officials of 'beating down' the coal sellers to the very lowest price in times of plentiful supply is not economic from a business standpoint, nor is it best for the railroads in the end. It, of course, antagonizes the coal seller and encourages him to 'put one over' on the railroads in any way possible; it makes for poor preparation and poor results. When there is a scarcity of coal the railroads are apt to suffer and be given the least consideration, not only in price but in quality of coal.

### Coal Man Partly at Fault

"It is freely admitted that the coal man is partly at blame. His attitude toward the purchasing officer and his inspectors is not always calculated to bring about friendly feelings. He sometimes—too often indeed—looks upon the railroads as a dumping ground for his coal, a place where badly prepared or lower grade coal can get by, not perhaps realizing that we are all, producer and consumer alike, bound up in railroad transportation; that poor coal slows up train movement and thus hampers every industry, including his own.

"The American Railway Association has recently appointed a fuel committee; could it not study the subject of coal purchases and formulate purchase methods, with benefit to its members?

"I might suggest here the possibility of that association's formulating a standard contract form and general specifications for coal. Although some of our friends in the coal industry would object to such a move, I believe that it would, if properly carried out, inure to the benefit of both buyer and seller.

"Undoubtedly, the International Railway Fuel Association could do a great deal to remedy the existing conditions.



George H. Cushing

Philosopher of the coal trade. Mr. Cushing is "shocked by the hypocrisy of public men who preach ethics to coal men yet seek to plunder the industry for their own advancement."

It could at least appoint a strong committee, in which might be included representatives of the coal operators who are members of the association, to study the matter and make recommendations to the railroads and to the coal industry. There is no group more interested in the coal purchases of the railroads than the members of this association; their wide knowledge regarding both purchases and the use of the coal purchased should make their recommendations carry great weight. The coal industry would, I am sure, co-operate with them and give careful consideration to their recommendations.

"In this connection, it will interest all of you, I believe, to learn that there is a movement on foot to organize a Coal Institute (tentatively so named) which shall actually represent all branches of the coal industry, operators, wholesalers and retail dealers. With such a body this association might well co-operate on the subject of railroad-fuel purchases, as well as in other ways, to mutual advantage.

"Needed and effective co-operation between the railroads, their transportation, traffic, coal-purchasing officials, inspectors and the coal industry generally has been difficult owing to the lack of unity on the part of the latter. Had the coal industry a truly national and representative body, as well organized and operated, with the comprehensive functions of the American Railway Association, the interests of both could be signally advanced. It is hoped that the Coal Institute, if created, will be of great help in that connection."

## New York Anthracite Circular Prices for June, 1924

(Gross ton f.o.b. mines)

	Broken	Egg	Stove	Chestnut	Pea
Philadelphia & Reading	\$8.85	\$8.85	\$9.00	\$8.85	\$6.00
Lehigh Valley	8.50	8.65	8.85	8.85	5.75
Lehigh Coal & Navigation	8.85	8.85	9.10	8.95	6.00
Pattison & Bowns	8.60	8.60	8.70	8.50	5.50
Hudson Coal Co.	8.70	8.70	8.70	8.70	
Lehigh & Wilkes-Barre	8.00	8.45	8.45	8.45	5.75
Lackawanna	8.00	8.45	8.45	8.45	5.75

No. 1 Buckwheat, \$3-\$3.15; rice, \$2-\$2.25; barley, \$1.50



## Transfer of Mineral Resources Division To Census Bureau Meets Opposition

Reorganization of Federal Executive Departments Would Take Compilation of Coal Statistics from Geological Survey—Industry Has Six Months to Study and Acquaint Legislators with Its Views

BY PAUL WOOTON  
Washington Correspondent of *Coal Age*

The scheme for the reorganization of the executive departments of the federal government, which was submitted to Congress just before adjournment, meets with disapproval in coal circles, at least in so far as it proposes to transfer the Division of Mineral Resources from the Geological Survey to the Bureau of the Census. One of the major sections of the Division of Mineral Resources is devoted to coal statistics.

Under the reorganization plan the name of the Bureau of the Census is to be changed to the Bureau of Federal Statistics. In this bureau are to be grouped practically all of the statistical activities in Washington. Coal statistics are so dependent upon close association with the technical staff of the Geological Survey that to attempt to place them in the hands of isolated statisticians instead of geologists who have had statistical training has brought forth a determined protest. It would be just as sensible, it is contended, to set up a bureau of type-writing and have the typing for all of the government departments done in a single building.

### Change Would Be Scientific Loss

The reorganization proposal may never be written into law, but the plan is now on the calendar of both the Senate and the House and can be called up for action soon after the convening of Congress in December. This has the advantage of giving industry six months to study the plan and to acquaint the legislators with its views.

The removal of the mineral resources work from the Geological Survey would mean a serious loss to the scientific work of the bureau through dissipation with current statistics. The two are held to go hand in hand and have been handled with entire satisfaction to industry during the thirty years that the work has been conducted by the U. S. Geological Survey. The Bureau of the Census has made a great success in the handling of many types of statistics, but in the case of coal and mineral statistics generally it has been found that they are compiled best by those who have to use them.

Every ten years the Bureau of the Census publishes as a volume of the decennial census an extensive report dealing with statistics of mines and quarries. This is a pretentious work. The volume dealing with mines and quarries in 1919 contained 443 compactly printed pages. It happens that because of the detail to the Bureau of the Census of Frank J. Katz, a geologist who has had long experience with the mineral resources work of the Geo-

logical Survey, these data were brought to a new plane of merit. Even then, however, the work is regarded as being far from satisfactory and it was only with great difficulty that Mr. Katz was able to bring the statisticians of the Bureau of the Census to accept even a portion of his program for handling these figures.

One of the leading economists of the country is on record to the effect that the 1909 Mines and Quarries report was worse than useless. He finally threw his copy in the waste basket so that his staff might not make use of figures likely to mislead them.

The point also is made that the creation of the Bureau of Federal Statistics will reduce greatly the amount of money which will be made available for statistical work. When most of the statistical activities are grouped together, the aggregate of their present expenditures will look large to the appropriations committees. The lump sum which would be made available for all of this work in all probability would be reduced. The coal statistics would be a small activity in a very large Bureau. Its proportion of the total made available to the Bureau almost certainly would be much less than is now expended in this connection.

Most of the arguments advanced against the transfer of coal statistics to the Department of Commerce apply equally well to those of other minerals. Long experience has demonstrated the advisability of having these statistics prepared by those who must use them in their daily work dealing with the technical and scientific phases of those industries.

### OIL VERSUS COAL

All is not "pie" for the railroad that burns oil instead of coal, as was brought out often in the coal and oil symposium at the International Railway Fuel Association meeting in Chicago. It was shown that nearly every oil field is declining in production and price increases are expected. The steady increase in the "crackling" process to make more gasoline reduces the free burning quality of fuel oil and makes more carbon troubles. Among the disadvantages of oil firing not commonly considered, J. M. Nicholson, of the Santa Fe, pointed out that the average life of fireboxes is reduced 25 per cent by oil. The 1923 decline in steam-coal prices and the uncertainty of oil supply make the railroad oil market weaker than that for coal, it was said. Last year American roads burned 146,000,000 tons of coal and 54,000,000 barrels of oil, equivalent to about 15,000,000 tons of coal.

## Two Investigations Into Cause of Glen Alden Mine Explosion Now Under Way

(Special Dispatch to *Coal Age*)

Scranton, Pa., June 9.—Two official investigations are now under way into the cause of the gas explosion at the Loomis Mine of the Glen Alden Coal Co., in Hanover township, last Friday, causing the deaths of fourteen men and injuries to seven others. The Department of Mines is conducting one of the probes under the direct supervision of its chief, James J. Walsh, and the Glen Alden company is conducting a separate inquiry.

It is probable that the direct cause of the gas explosions will never be known because of the fact that the men who were on the scene of the first explosion were killed instantly. The mine is known throughout the region for its gaseous condition and Mr. Walsh, the Secretary of Mines, is quoted as having described the operation as "the most gaseous mine in the world." Very little water is found in the workings.

The explosions occurred in the Mills vein of No. 1 shaft, which is 760 ft. below the surface. It is believed that the first blast occurred in the second south gangway, and that the second, a result of the first, occurred in an opposite gangway, known as fourth east.

After traveling from the fourth east gangway, the explosive gases struck an air bridge and when the two currents were mixed it was stopped. The air bridge, which is of concrete and used to carry the air traveling on one road over the air circulation on a road in an opposite direction, was demolished by the force of the explosion.

Damage to the shaft was slight, but it was reported that brattice work was torn down, timber and props blown to pieces and numerous rock falls and caves followed in the wake of the explosions. There was no fire following the explosions. The shaft and mines were closed the day following the accident, but the breaker operated preparing the coal produced by several other mines owned by the company. About an hour after the explosion the first body was brought to the surface. It was that of William Welch, a brattice man, of Hanover Green. Between 1 and 6 o'clock six other bodies were taken from the workings.

Shortly after six o'clock all members of the rescue squads were ordered to the surface and the air currents were changed. At 9 o'clock a rescue party of forty men under the direct supervision of H. D. Dimmick, vice-president and general manager of the Glen Alden company, entered the mine and remained until the bodies of the other seven victims had been recovered. After entering the mine the rescue party spent several hours in erecting brattice work to keep back the gases and to handle the air currents. It was almost 4 o'clock on Saturday morning before the last of the bodies had been recovered.

W. W. Inglis, president of the Glen Alden Coal Co., was on the scene of the disaster until all of the dead had been removed from the workings.



## To Resume Safety Hearings; Bill Embodies Bain's Plan

Further hearings on mine safety will be held by the House Committee on Mines and Mining when Congress reconvenes next December, as the committee was unable to conclude its inquiry into this subject before adjournment of the spring session, June 7.

It is evident that the members of the committee have been deeply impressed with the advisability of strengthening the Bureau of Mines, both as to extending the authority of that agency and as to supplying it with an increased appropriation for research, field work and added personnel.

### Tells Needs of Bureau of Mines

In a statement sent the committee to be included in the printed record of the hearings, in order to supplement his personal testimony, H. Foster Bain, Director of the Bureau of Mines, suggested four outstanding needs of the Bureau according to his views. These are: (1) Legislative authority to carry the Bureau's safety messages and field demonstrations direct to those most vitally concerned; (2) authority for the publication of a brief annual specifically on safety to be sent to the miners themselves; (3) authority whereby the Bureau may investigate the manufacture, transportation and storage of explosives as relating to safety; (4) such authorization for additional mine rescue cars and stations and mine safety instruction cars as Congress may appropriate for.

Director Bain emphasized the fact that the Bureau now has a small staff for testing apparatus and equipment and that it lacks a sufficient field force for demonstration. The gap in its work in explosives, his statement showed, is that the Bureau now can take into account explosives only after they reach the mine. He called attention to the fact that the manufacture, transportation and storage of explosives are not now regulated. The Bureau is now so behind in its research and tests, owing to lack of personnel, that it is not in a position to frame a code for underground electricity, the director reports.

### Stresses Need of Education

Special emphasis was laid by the director on the necessity for carrying on a campaign of education among both operators and miners by personal contact. The Department of Agriculture, Dr. Bain pointed out, sends to the individual farm its message, and something of the same nature should be done with the results of the safety work of the Bureau of Mines, he suggested. "If our mines are to be made safe, the scientific and technical data available to the federal government must be brought home in understandable form to the ones who alone can make it effective," said Dr. Bain.

A model law on mining to serve as the basis for state laws, as had been suggested by several witnesses before the committee, does not meet the ap-

## All Indiana Talks Merger

The air is full of merger stories, the latest being that broadcast about a possible consolidation of practically the entire State of Indiana. This movement, urged by the Miami Coal Co. and other important Indiana companies, has not taken any definite form yet, but feelers have been sent out from an engineering office to collect general information about the properties and their probable valuations and at least one general meeting has been held of the principals in the case. Financial backing has been tentatively promised, but such a consolidation is a long way from completion and offers at present only a basis for interested discussion. Meantime, most of Indiana is shut down and there is nothing bright in the outlook for the state. By autumn, when coal demand picks up, the hope of certain backers of the Indiana merger is that enough properties will be under single control so that a great many that have no business operating can be prevented from muddling the market for the others.

proval of Dr. Bain, who, in his statement, suggests rather that there be an agreement on the general principles and standards of safety with a flexible system of regulation and orders to be issued as the need arises. The suggestion offered by Chairman Robsion, of the committee, that a conference of governors of states in which coal mining is conducted be held, in order to agree on certain principles of safety and the removal of certain competitive conditions which now hamper advancement of certain phases of safety work, is indorsed strongly in the statement of Director Bain.

### Wants Voluntary Co-operation

In view of the limitations of federal authority over state mine inspection and regulations, Dr. Bain suggests legislation providing for a voluntary co-operative system by which the Bureau of Mines, on invitation of a state, might send trained personnel to assist the state department, the expense of work of this character to be divided between the state and the federal governments.

The Bureau of Mines is limited by law to ten mine rescue cars at present, the statement shows, and in the near future will be able to use to advantage twelve cars. Three of the old cars are unsafe for rapid travel and should be replaced, it is stated. Provision for one new steel car to replace one of these wooden cars is made in the appropriation available July 1.

A further suggestion is that a third instructor be added to each instruction car. The Bureau next year will ask \$325,000 for safety work, an increase of \$63,000.

In line with the director's suggestions, the Bureau of Mines has submitted to the committee a bill embodying Dr. Bain's ideas.

## Rumbles of Protest Rise Against Northwest Rates

Now that the long awaited decisions have been made by the Interstate Commerce Commission on rail rates into the Northwest, the expected protests are being heard from the losers—the rail shippers. Furthermore many Northwest consumers are beginning to raise their voices also because the decisions, ordering higher rail rates from southern Illinois and eastern Kentucky into effect Aug. 21, may logically cause higher prices of both dock and rail coal immediately after that. Certain dock spokesmen already deny publicly that there will be any increase in the price of dock coal by reason of the rate advantage the commission gives them, but the consumers are fearful.

The peculiar features of the decision against rail shippers have aroused much comment. Although the rate into the Twin Cities themselves has not been ordered up, the new zone lines arbitrarily drawn south of the Twin Cities make it impossible for rail coal to retain the present Twin City rate. Instead of drawing the usual rate line from Stillwater, Minn., westward, thus in effect defining the rail territory from the dock territory, the commission drew two such lines. One is the curve of the C. M. & St. P. Ry. from Stillwater south and west of the Twin Cities. All rail coal reaching this line or crossing it bound north or west must pay \$3.75 instead of \$3.47. The second zone line south of this is the line of the Chicago & Northwestern through Winona, Rochester and Mankato. Coal into this zone must pay \$3.55 instead of \$3.47 and coal reaching but not crossing this line is boosted from \$3.22 to \$3.35.

The effect of the decision in the case of eastward coal traveling all-rail to the Northwest is to raise its rate 53c.

"What can we do?" is the wail among the parties affected by the increases. A definite protest to the commission by interests not previously heard may soon be made. But a more potent solution lies in the possibility of Midwestern lines declining to take advantage of the increases they can make under the decision. There are many other possibilities through rail action that are being discussed heatedly. No general policy by railroads has yet been determined.

## Coal Consumption and Power Output by Utilities Drop

Electric public-utility plants consumed 2,936,727 tons of coal during April, according to a report by the Geological Survey. This compares with 3,241,631 tons consumed in March and 3,326,631 tons in February. Fuel oil consumed by utility plants in April totaled 1,208,735 barrels, compared with 1,540,256 barrels in March and 1,543,594 barrels in January.

The average daily production of electricity by public-utility power plants during April was 158,400,000 kw.-hr., about 1½ per cent less than the daily output in March. The output for February, 168,300,000 kw.-hr., was the highest on record.





# Practical Pointers For Electrical And Mechanical Men



## How Flashing of Substation Generator Was Stopped by a Choke Coil

Feeder System Was Unusually Good — Short-Circuited Resistance Was Small — Choke Coil Modified the Steep Wave Front — Quick-Acting Breaker Also Necessary

N EARLY everyone working in the electrical department of a coal company has at some time or other been confronted with a report of electrical trouble concerning which everything seemed to be correct but the apparatus wouldn't function properly. Many a mine electrician probably at some time or other has been told, by an inside workman, about a piece of equipment which was properly connected and installed but still refused to operate satisfactorily.

It is sometimes interesting to hear a member of the electrical engineering department try to determine the cause of an electrical failure by conversation, over the telephone. Many times I have heard these engineers say, after such a conversation, "Everything is all right but it won't work." The usual result is a trip to the mine to get at the source of the trouble.

There are occasions, however, where the cause of an electrical breakdown is very illusive. I have in mind a particular case where difficulties were experienced rather frequently but it was a long time before a real cause was assigned to the troubles.

The direct-current generator of a standard type motor-generator set, manufactured by a reputable company, would occasionally flash over and seriously burn the commutator and brush rigging. This generator delivered 550-volt direct-current energy to a mine load consisting of locomotives, hoists and pumps. The motor was of the synchronous type and received its energy from a 4,000-volt, three-phase, 60-cycle circuit.

When the generator flashed over no one seemed to know the cause or what led up to the trouble. Frequently when the damaged parts were examined the commutator would be found to be badly pitted, the brush rigging burned and an insulator on one of the brush studs would be charred.

Just as soon as these parts were repaired the machine would be started and no other damage could be found. Later the equipment would be put in service on the same load as previous to the delay and everything would go fine until perhaps a month or possibly a

year, when the same trouble would be experienced again.

After each breakdown exhaustive tests were made for grounds, short-circuits and open-circuits. The field coils were checked, the wiring to the circuit-breaker and into the mines was traced. Insulation tests were made, yet nothing unusual was detected.

Conversation with some of the men in the mines disclosed the fact that the generator flashed over whenever a sudden overload was placed on the trolley lines. Whenever a short-circuit or ground occurred the most serious trouble was experienced.

Following this clue a survey of the whole direct-current system was made and some interesting conclusions were

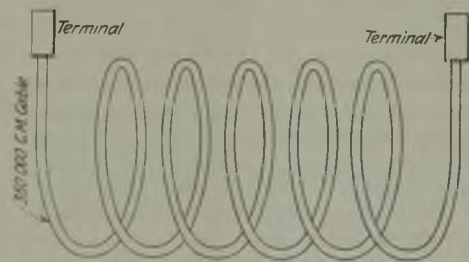


Fig. 1—Current-Limiting Reactance

Several turns of cable wound into the shape of a large choke coil caused the current to increase in value at a slow rate. This arrangement permitted the circuit-breaker to open when the current in the line was relatively small.

reached This particular mine is only one of many operated by the same company, however, it is the only one using 550-volt direct-current for inside service. The feeder wires and return circuits were in unusually good condition. All through the mine a very good voltage was always maintained. This was probably due to a fortunate circumstance. By error or intent the feeder system consisted of cables much larger than usually found around mines. The reason why I say there might have been an error on the part of some one laying out these distributing lines is that the cables looked as if they had been calculated for the usual 250-volt mine power supply.

Consequently, when an abnormal

overload occurred, due to a ground or short-circuit, a heavy current flowed through the system. The generator characteristic curves showed that the voltage compounded to a high value very quickly whenever the current in the line wires became excessive.

Obviously when a heavy load was suddenly applied the current tended to increase until it reached its short-circuit limiting value. It must be remembered that the cables were large and the short-circuit limiting resistance was therefore low. This fact, together with the rapid compounding characteristics of the generator caused the voltage and current to increase to very large values.

If we suppose that a short-circuit occurred at a point 1,500 ft. from the generator, even neglecting the compounding of the generator voltage, we can estimate the short-circuit current of the line. The resistance of 3,000 ft.—feeder and return—of 350,000 c.m. cable is approximately 0.09 ohms:

$$\frac{E}{R} = I \text{ or } \frac{550}{0.09} = 6,100 + \text{ amps.}$$

When we consider the fact that the instantaneous compounded voltage is much larger than 550 volts we can see that the current rises to a very great value.

Further inspection revealed that the direct-current circuit-breaker operated sluggishly, in fact, it seems quite possible that although it was set to open at 600 amps. the current probably could rise to 6,000 amps. before the circuit was actually opened. On 550-volt systems there is a tendency for the arc to hold to the breaker tips for a considerable period.

When the circuit is finally ruptured the current has increased to such a high value and the generator voltage is so high that the sudden collapse of the magnetic fields in the machine gives rise to a counter-voltage which causes a flash on the commutator.

The cause of these flashes is therefore due to several conditions. First, the short-circuit occurs near the machine; second, the generator compounds its voltage quickly, third, the circuit-breaker is slow in operating.

To correct these conditions it was not advisable to increase the circuit resistance, because of the greater power loss under normal operation, but a large choke coil was put in the line to cause the short-circuit current to build up slowly. A new quick-acting circuit-breaker was put on the substation control panel.

Since these changes were made there have been no further troubles. Fig. 1 shows the large choke coil which was



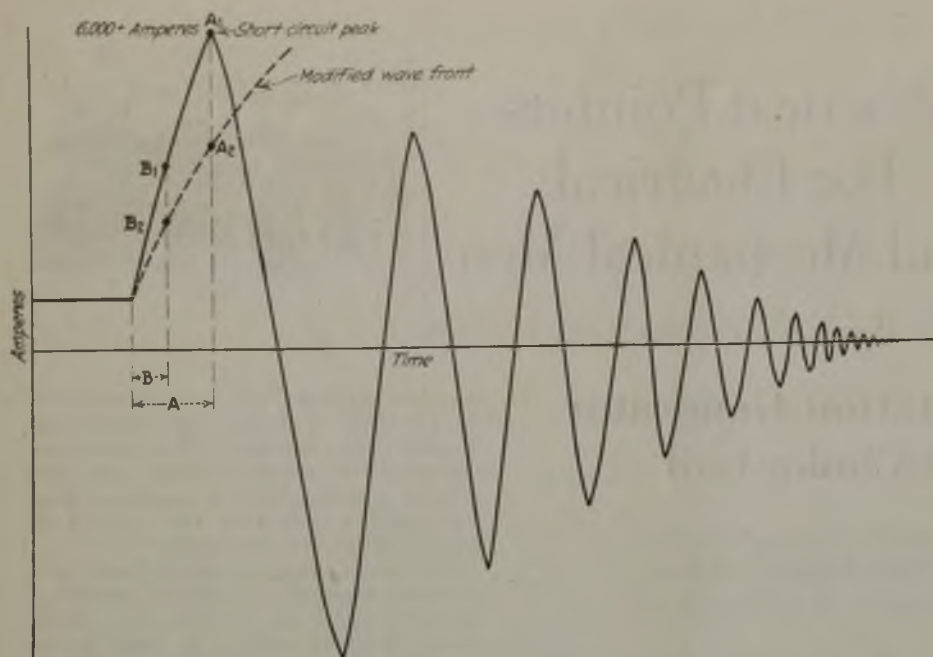


Fig. 2—How the Generator Flashes Were Stopped by a Choke Coil

The damped wave represents the current surge before a choke coil was placed in the line. The modified wave front shows the effect of the choke coil.  $A_1$  indicates when the slow-acting breaker opens and  $B_1$  when the quick-acting breaker opens the circuit without a choke coil.  $A_2$  and  $B_2$

respectively represent the points where the breakers open the circuit when a choke coil is in the line. The coil therefore gives a time lag which delays the current and permits the circuit-breaker to open the line while the current value is low. In this way high currents are prevented.

made of several turns of 350,000 c.m. cable placed just outside the substation.

Fig. 2 shows what happened in the circuit before and after the changes were made. The slowly damped wave represents the current curve and the counter current established in the system when the circuit is opened. If the time  $A$  represents the interval required for the current to reach its short-circuit value and if the sluggishly operated breaker takes this same amount of time to operate, then the conditions are very bad. The breaker

must then open the circuit when there are over 6,000 amps. flowing. Should the breaker open the circuit at the point  $B$  then the conditions are not so bad, because the circuit is opened when a much smaller current is flowing.

The dotted line shows the modified current wave front. Apparently even the same sluggishly operated circuit-breaker would now relieve the load on the circuit much better than before. A quick-acting breaker, which would function in time  $B$ , would relieve the machine of its load with little or no surge.

E. B. CAMERON.

### Welded Mine Indicator Made of Steel

The introduction and application of welding to mine repair service has rapidly spread. Those who at one time thought they had no particular use for welding equipment now find that they can no longer do without some form of welding device.

In the mine, where conditions at best are very bad, welded material effects great savings. One instance is the construction of road signs. Painted signs usually become black and dirty with dust, so at one of our mines we are building signs as shown in the illustration. The material used consists of sheet iron and the necessary hinges, all of which are welded to make the complete box.

Usually two or three electric lamps are installed inside the box and the word or words cut into the cover are always visible even at great distances. These lamps are frequently mounted in porcelain sockets which can be fastened to the base and made secure.

Depending upon the purpose of the box, letters are cut on the front. To guard against breakage and other loss a circuit is run to lamps which are located inside the box and the cover is locked on by a padlock.

The advantages of this arrangement are that the visibility of the sign does not depend upon the color of paint, lamps cannot be stolen, the sign cannot be broken and no unauthorized tamping is possible.

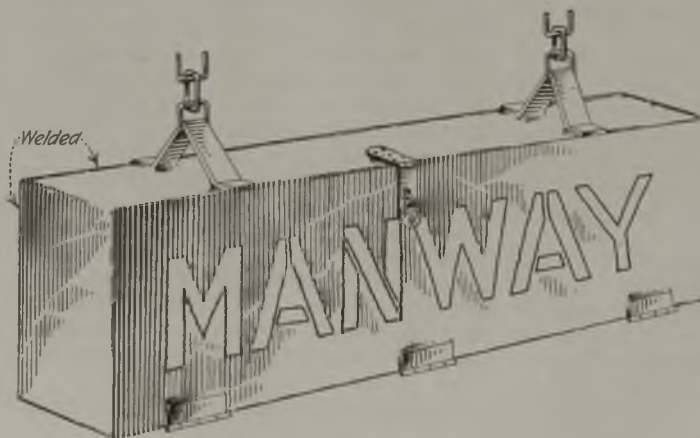
At another of our mines I have seen some interesting tool boxes made in this same manner. We also use similar boxes to carry materials which would ordinarily leak out of wooden boxes. Loose materials which must be transported about the mines in cars can be placed in the boxes and kept secure against pilfering and leakage.

Olyphant, Pa.

J. K. W.

### Copper-Plated Carbon Brushes Usually Not Necessary

When pigtails were used on motor brushes it was considered necessary to copper plate the carbon to provide a good electrical contact for the shunt connection. With the present design of locomotive motor brush holder having a heavy braided copper shunt from contact tip to the box, shunted carbons have been discontinued, so that plating is unnecessary; in fact, it is objectionable on the better grades of carbon, as it tends to peel off in service and bind the carbon in the box.



Welded Sign Box  
for Mine

This sign is made by welding sheet-iron panels together and cutting the letters on the front or rear. Lamps placed inside the box cannot be stolen when a padlock is snapped on the cover.



# Production And the Market



## Dwindling Stockpiles Presage Renewed Activity In Bituminous-Coal Market

Customers long absent from the soft-coal marts are due to reappear soon. Those consumers who accumulated swollen reserves of coal in anticipation of a strike when the old union agreement expired and who have been relying on their stocks most of the time since are at last nearing the bottom of their coal piles. As a result, while the coal producer's face is not exactly wreathed in smiles, he is beginning to perk up and take a renewed interest. The long-awaited decision on rail rates to the Northwest has helped to clarify the atmosphere somewhat, though the usual howl of protest is coming from the interests on the losing side.

### Sound Basis for Industrial Revival

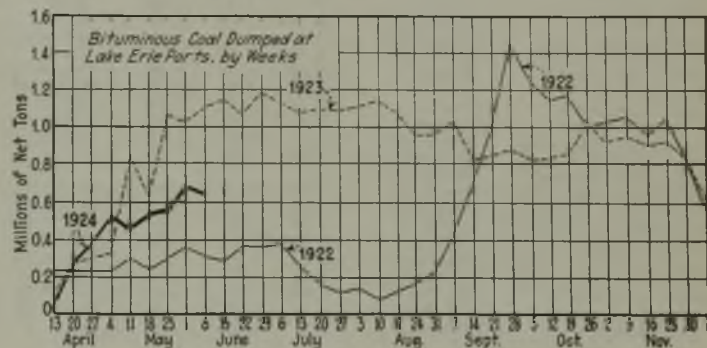
While there is as yet no noticeable recession from the policy of curtailment that has prevailed for some time in most industrial lines, due in some cases to overproduction in the latter part of last year and the early part of this year, with consequent heavy carry-over, basic conditions are pronounced as sound by industrial leaders, who give assurances that an industrial revival may be expected by autumn. The usual cautious policy of business during a presidential election year has hit the coal industry particularly hard, but the passage and signing of the tax-reduction bill, as well as the adjournment of Congress, undoubtedly will prove of benefit in hastening the expected upturn. Meanwhile the clearing out of surplus stocks in all lines will insure the basis for a lasting revival of industry.

Coal Age Index of spot prices of bituminous coal advanced 1 point during the last week, standing at 170 on June 9, the corresponding price being \$2.06. This compares with \$2.04 on June 2.

Activity has fallen off at Hampton Roads, dumpings of coal for all accounts during the week ended amounting to 318,918 net tons, compared with 371,564 tons

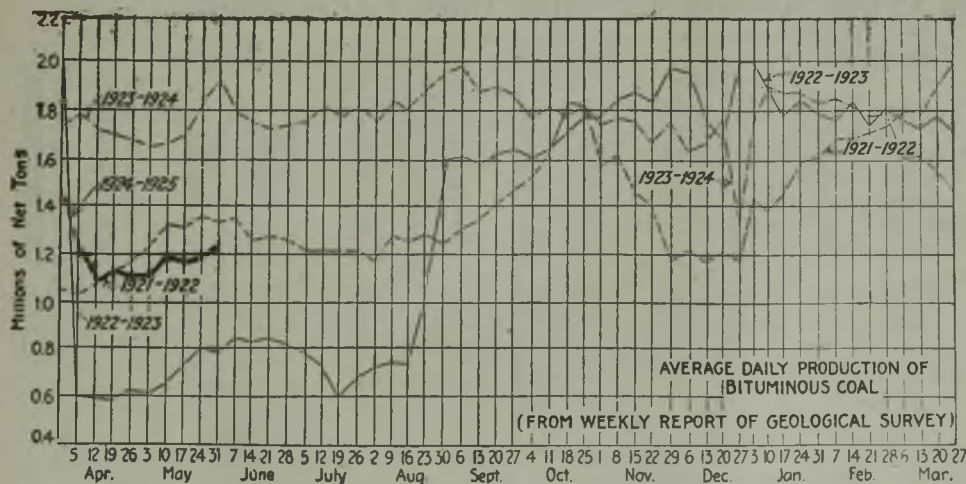
during the preceding week. Coal dumped at Lake Erie ports during the week ended June 7, according to the Ore & Coal Exchange, was as follows: Cargo, 619,115 net tons; fuel, 37,198 tons. The totals for the previous week were 625,440 tons of cargo coal and 39,640 tons of fuel coal.

Bituminous-coal production took a tumble by reason of the holiday during the week ended May 31, when according to the Geological Survey, 6,699,000 net tons was produced, a falling off of 464,000 tons from the output of the week ended May 24. Anthracite output



likewise declined sharply, for the same reasons, to 1,294,000 net tons, compared with 1,850,000 tons during the week before.

The lull foreshadowed in the anthracite market is now an actuality, demand having slackened and movement tapering off correspondingly. Circular prices were advanced June 1 by the companies and most of the large independents, the increases, which were not uniform, ranging from 10c. to 20c. on the sizes above pea, 10c. being the predominant rate of advance. Advance bookings by the large companies are taken to indicate a marked renewal of activity in the autumn.



### Estimates of Production

(In Net Tons)

#### BITUMINOUS

	1923	1924
May 17 .....	10,270,000	7,031,000
May 24 (a) .....	11,049,000	7,163,000
May 31 (b) .....	10,091,000	6,699,000
Daily average .....	1,904,000	1,241,000
Cal. yr. to date (c) .....	228,682,000	197,179,000
Daily av. to date .....	1,773,000	1,530,000

#### ANTHRACITE

May 17 .....	2,045,000	1,898,000
May 24 .....	1,956,000	1,850,000
May 31 .....	1,606,000	1,294,000
Cal. yr. to date .....	43,146,000	38,215,000

#### COKE

May 24 (a) .....	415,000	157,000
May 31 (b) .....	395,000	137,000
Cal. yr. to date (c) .....	8,394,000	5,549,000

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



Midwest Disappointed

June 1 came and went without stirring up the least bit of coal business. This disappointed a number of coal gentry in the Chicago region who had been looking forward to a slight improvement of industrial business even if there was no domestic demand—as there is not. Stagnation is so great that even Illinois and Indiana screenings have receded a trifle from the \$2 price, in spite of the small supply. A scattering few industrial and utility contracts were made after June 1, but practically every plant is either living on its storage or buying day-to-day coal at the abnormally low market. Railroad deliveries are about all there is. Few if any new railroad contracts have been made, but price agreements have been made by most midwestern lines and coal is being ordered on that basis.

Good smokeless mine run continues to reach the Chicago territory in a thin stream at a quoted price of \$2 with shadings here and there. This meets about all the domestic demand there is. Anthracite is slow indeed, in spite of definite assurance that prices are going to be nudged upward the first of every month the rest of the summer.

The southern Illinois field is still quiet, with very little doing and no great demand for any size. Screenings, which were in good demand recently, have eased up and some

mines are carrying no bills on all steam sizes. The strip mines seem to be making considerable headway and strip-mine coal is being sold as low as \$1.75 for mine run and crushed screenings have been sold as low as \$1.45. In the Standard district all sizes are unbilled and running time is light.

St. Louis business continues unusually quiet. The dealers are doing a little business for current needs on account of cold, rainy weather and here and there a little storage is being put in, but it is not a factor.

Price Tendency Higher in Kentucky Fields

Conditions over the week are unchanged from those of the weeks past, with the exception that eastern Kentucky egg is firmer as a result of some demand developing for 2-in. lump. There is a tendency in all state fields toward higher prices, but without much result. Some of the producers of high-grade Harlan byproduct coal in southeastern Kentucky are offering 2-in. nut and slack at \$1 a ton; straight mine run, \$1.50 @ \$1.65, 2 x 4 egg, \$2; and 4-in. block, \$2.10 to the jobbing trade, while some screenings can be had as low as 80 to 90 cents a ton.

Lake movement is beginning to help the Hazard field slightly. However, there are many mines in all fields of

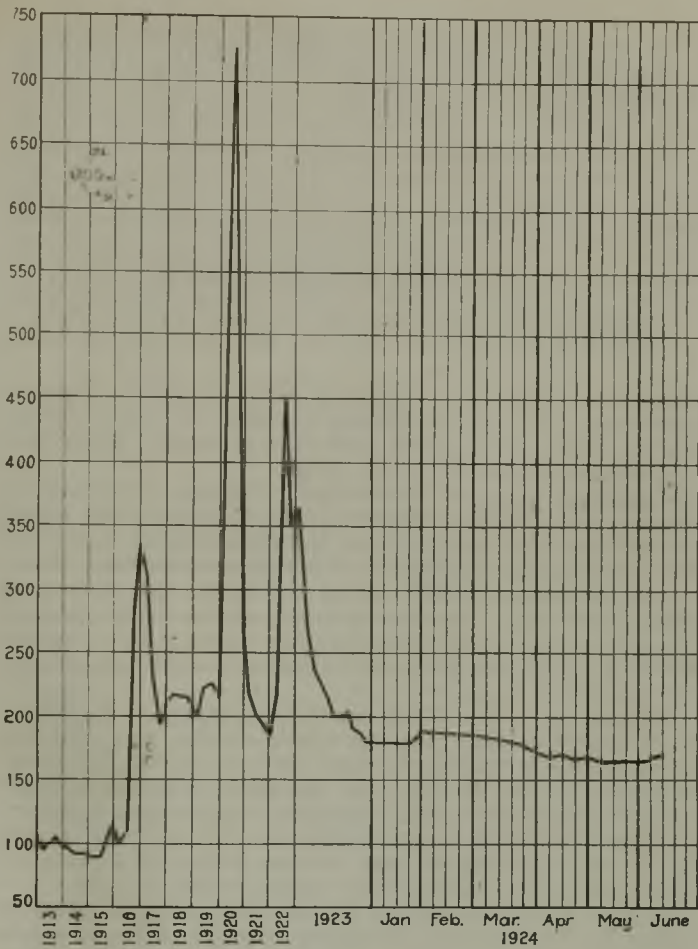
Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Table with multiple columns: Market Quoted, June 11 1923, May 26 1924, June 2 1924, June 9 1924†. Rows include Low-Volatile, Eastern; Midwest; High-Volatile, Eastern; and South and Southwest. Items include Smokeless lump, Franklin, Ill. lump, Big Seam lump, etc.

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

Table with columns: Market Quoted, Freight Rates, June 11, 1923 (Independent, Company), June 2, 1924 (Independent, Company), June 9, 1924† (Independent, Company). Rows include Broken, Egg, Stove, Chestnut, Range, Pea, Buckwheat, Rice, Barley, Birdseye.





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

	1924			1923
	June 9	June 2	May 26	June 11
Index	170	169	167	215
Weighted average price	\$2.06	\$2.04	\$2.02	\$2.60

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.

the state that are either down or badly in need of business. Some western Kentucky mines are offering solid-shot coal on a mine-run basis at \$1.35 a ton to the jobbing trade during the first half of June, and slightly higher prices on machine cut from underground mines. Some stripper coal is offered as low as \$1.25. Quotations of jobbers range from \$1.50 to \$1.90 but can be shaded somewhat. It is reported that some houses that have been quoting 6-in. block at \$2@2.25 are asking \$2.25@2.50, and there is an effort to get 15c. or 20c. a ton on egg and nut sizes, along with lump. Screenings are steady at around \$1.40@1.60, but in small supply. The strike situation in western Kentucky is unchanged.

Production continues to gain a little in the high-volatile fields of southern West Virginia. In the northern part of the state the output is not equal to more than half of the corresponding period of 1923 but in southern West Virginia production is averaging about 50 per cent and in some fields as high as 75 per cent. There has been no further gain in smokeless output.

**Prices Off In Northwest**

Shipments from the docks at Duluth-Superior last month totaled 13,728 cars, of which the majority came from Duluth, owing to the fact that docks were anxious to move Duluth coal because of the assessment on May 1. The shipments are some 2,000 cars less than in April, and it is asserted that the majority of the cars moved were railroad coal, so that little commercial coal went out.

Business is at the lowest ebb. Two price changes have taken place. Youghiogeny and splint run of pile have been cut to \$5, and Youghiogeny and Hocking screenings

are down 25c. to \$3.75. Docks report this an adjustment, but when it is considered that many are reported cutting 50c. to \$1 on contracts it looks very much as if the market is less than the list.

The movement of coal to the Head-of-the-Lakes continues. Twenty-four cargoes were received during the week, of which three were hard coal and the cargoes en route are reported as five with one of hard. Figures of receipts to May 27 show that nearly 1,000,000 tons have been received this year.

The Milwaukee market is still depressed and the prospect is that it will continue so until business in industrial circles picks up. Jobbers are hopeful for better things later in June, however. Prices continue unchanged with the exception of anthracite, which was given the usual 10c. monthly advance as is the rule during the summer period. Egg is now \$16.10, stove \$16.50, nut \$16.35, pea \$14. Receipts of coal by lake at Milwaukee up to and including May 31 were 131,908 tons of anthracite and 301,049 tons of soft coal.

The effect of the new rail rates to the Northwest, which, if they go into effect on schedule time, Aug. 21, will add 8 to 28c. to the cost of shipping in Illinois coal, is yet to be determined. There are many guesses at the situation. However, the docks stand to win, and it is expected that a heavier shipment to the docks will soon begin. It is reported a fight is to be made by rail shippers to get the increase into the Twin Cities to be set at less than 28c. This may delay the effect of the I.C.C. decision all year or longer.

**Western Trade Is Spotty**

Little summer storage is reported by operators of the Southwest. A few mines closed April 1 have been reopened. The Central Coal & Coke Co. recently signed a contract with the Frisco for Kansas coal that opened a couple of its shaft mines. The Missouri Pacific a few weeks earlier had contracted with the Western. Except for a limited stable industrial demand, the only other activity in Kansas mines is the result of a pre-season demand for threshing coal. A few Arkansas mines have been reopened in anticipation of a summer demand inspired by substantial freight reductions, but the demand itself has not yet materialized.

Prices are: Kansas lump, \$4.50; nut, \$4; mine run, \$3.50; screenings, \$2.50. Arkansas semi-anthracite lump, \$5.50 @ \$6; mine run, \$3.50; screenings, \$2. Henrietta (Okla.) lump, \$5.50; nut, \$3.75; mine run, \$3.50; screenings, \$2.50.

Dealers and buyers remain indifferent to Colorado coal despite the fact that operators announced another small advance in prices June 1. Colorado mines worked on an average of 22 hours last week and reports from the operators show 37 per cent time lost because of no market.

Utah operators are moving very little coal. Industries other than smelters are taking next to nothing. Mines are working two days a week with difficulty. Retailers have been doing a little better during the past week as a result of a cold snap, but the trade is not stocking up. Retailers demand price stability.

**Hopeful Signs at Cincinnati**

Lake buyers are still marking time at Cincinnati showing little or no disposition to rush the market with orders. The boost to \$3.75 a ton on smokeless, egg and lump, caught a number of jobbers and retailers unprepared for the change of pace in these lines. There has not been quite enough to go around and June orders have been enough to put the books ahead for a while so that local wholesalers have not been able to "pass on" the usual tonnage that boasted of being free. Nut too has maintained its strength and while \$2.50 is the circular in more cases than one it takes \$3 to get the standard Pocahontas. In the bituminous market a steady and better undertone is noted, prices holding their own. Operators in southeastern Kentucky are holding their prepared coals at 25c. a ton higher than the West Virginians, asserting that they want to make at least the cost of production.

A slightly better demand for steam grades is reported in Columbus. Buying by large consumers is more brisk, as a result of the depletion of reserves. Public Utilities and railroads are taking the larger part of the tonnage, but there is a fair business with iron and steel plants. Price for screenings are slightly stronger while mine-run quotations are unchanged from the previous week. There is not as much free coal available, as many of the larger operations have been closed. Domestic trade shows signs o



revival, though the volume is still low. Pocahontas smokeless grades and splints are the principal varieties desired. Kentucky grades also are in good demand. A large part of the tonnage being loaded at lower lake ports is from West Virginia and Kentucky mines. Little lake contracting is reported.

Extreme pessimism is the keynote of the Cleveland market. Industrial activity has slackened considerably and there is a dearth of inquiries for fuel. The only change in the market situation is a slight stiffening in slack and nut and slack of 5 to 10c. per ton, and this is explained as being simply a fluctuation arising from a rather transitory condition when demand for a particular grade strengthens for a day or so. It is estimated that the stocks laid by prior to April 1 will not be depleted until after the end of the month, and this offers some ray of hope.

The coal situation at Buffalo has not changed much. Consumption is pretty good, but a slowing up of industries of late and too many shippers and salesmen have made rough sledding.

**General Depression Grips New England**

In New England the market now is much the same as during mid-summer in the old days, except that buyers today have no prospect of any spurt in business in September and that even on contracts deliveries are not being accepted with usual regularity. While stocks are not unduly large, the curtailment in manufacturing is so general that reserves are not depleted as in normal times. Railroad traffic is much lighter, and all the public-service companies are felling the depression in all the industries.

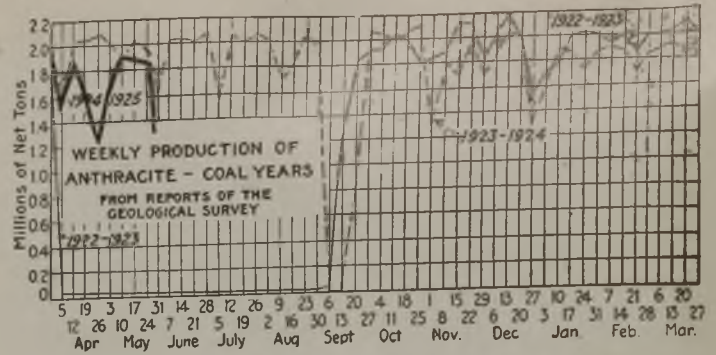
At Hampton Roads the accumulations of a fortnight ago have been somewhat reduced, the tonnage on hand at the three ports amounting now to little more than 100,000. Output is again being restricted rather rigidly, but it will take several weeks more of the same close-hauled policy to warrant any material increase in price. Reports show that small tonnages are changing hands on about the same price level that has prevailed for several weeks, namely, \$4.35@4.50 per gross ton f.o.b. vessel for No. 1 Navy Standard grade. No. 2 coals are to be had at prices down to \$4.10, and in some cases as low as \$4. The net return to some of the higher cost operations must be discouraging.

For distribution inland there is also only scattering inquiry. The nominal quotation for highest grade Pocahontas and New River still is \$5.50 per gross ton on cars, but occasionally there are signs of lower prices when buyers have the appearance of being interested.

All-rail from central Pennsylvania there is practically no change. A few cars of special sizes filtered through to tidewater territory, but a large proportion of the coal passing the Hudson River gateways is confined to destinations not much east of the Connecticut River.

**Trade at Low Level in Eastern Markets**

Demand continues slow at New York notwithstanding the efforts of various agencies to induce stocking. The feeling is growing, however, that business will be better soon. Stockpiles are shrinking and indications point to a restocking program soon. That coal continues to move at low prices is indicated in tenders received by the U. S. Shipping Board at New York on June 5 for furnishing and delivering alongside vessels that harbor on June 8, 3,300 gross tons of soft coal of a minimum of 14,500 B.t.u., the quotations ranging from \$5.04 to \$5.43 per ton. In some quarters a better inquiry is reported, but no immediate betterment is



expected until an improvement is noted in general business conditions. Receipts at tidewater during the week showed a wide range, going above 1,800 cars at times. There was no tendency, however, to cut prices.

Dullness persists at Philadelphia, though a number of shippers note a slight betterment in business. The hoped for improvement depends upon the industrial situation and there is no sign of betterment. The railroads show the effects of the slump in that the sidings hereabouts are choked up with empty cars. The fuel demands of the roads also are considerably lower, although they are taking a fair tonnage for stock. The spot price market shows no change and the tide market is nil.

The uncertain state of the export coal market at Baltimore is shown in the fact that not a ship cleared with coal for foreign delivery during the first week in June. The trade as a whole in fact is flat. The depletion of stocks through present demand exceeding production is now such a patent condition that both large consumers and coal men themselves are beginning to take sharper notice of a state of affairs that must develop before many weeks are past.

No coal is being bought at Birmingham except as actually needed for current use, and there appears to be no signs of any immediate revival. Transportation conditions are such that the railroads are taking minimum deliveries and shipments against commercial contracts likewise are rather light.

**Anthracite Trade Slackens Further**

Demand for independent anthracite has slackened further at New York and buyers hesitate before paying more than the larger company circular for domestic sizes. Egg and chestnut are moving considerably slower than stove, but producers are not experiencing any trouble in keeping down accumulations. Interest last week centered in the change in prices of company coals and of some of the larger independent producers. The increases were not at all uniform, ranging from 10c. to 20c. on broken, egg, stove and chestnut. There were no changes in steam prices. Receipts at tidewater were reduced somewhat by the cut in production due to the holiday of the previous week as well as petty labor troubles, at some of the mines. Notwithstanding the present lull in demand an active fall is looked for, the large companies being well booked up for several weeks ahead.

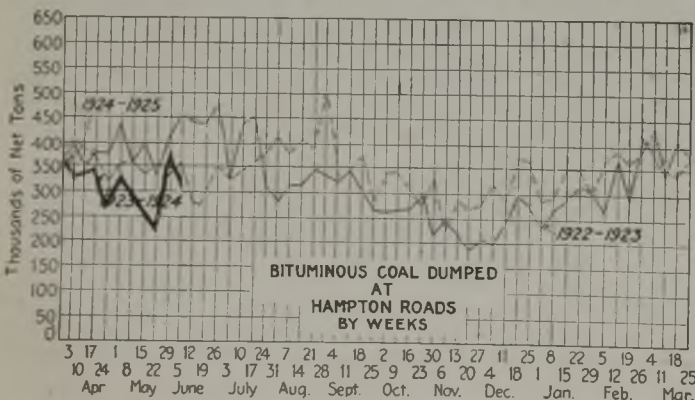
With the arrival of moderately warm weather at Philadelphia the slowing down has become more of an actuality with the retailers. As yet the operators have not felt much of it, as the retail men hesitate to hold orders for fear of embarrassing themselves when coal becomes scarcer. Prices at the mines went up June 1, the company shippers adding the usual 10c. to the sizes above pea, prices remaining the same under that size. Some of the independents made increases of as much as 20c. The leading retailers have added 25c. a ton to the retail prices. The chief demand is for stove, nut is accumulating faster in the yards than it is going out, while pea has shown signs of being a drug with the larger operators and they are putting some of it into storage.

**Car Loadings, Surplusages and Shortages**

Week ended	Cars Loaded	
	All Cars	Coal Cars
May 24	918,213	139,083
Previous week	913,407	135,650
Same week in 1923	1,014,029	192,092

Week ended	Surplus Cars		Car Shortage
	All Cars	Coal Cars	
May 22, 1924	331,012	170,333	
Previous week	319,106	167,102	
Same date in 1923	22,700	2,776	20,585 14,620





## Foreign Market And Export News

### British Coal Market Unsettled; Output Declines Slightly

The Welsh coal market is very unsettled and in a generally unsatisfactory condition. The recent slight improvement has not been maintained, the absence of support having caused the market to relapse. The demand is slightly better though not up to the late winter standard. The operators consider present prices insufficient to meet working costs, so that the closing of more pits is regarded as inevitable. Shipments at the docks are much below normal. The Welsh miners are said to be dissatisfied with the new agreement which has been provisionally accepted by their leaders. Exports have fallen off sharply and prices are in favor of buyers.

The Newcastle market continues to be slack with prices low. In spite of the Ruhr lockout German coal is competing with British in the Baltic and the Mediterranean, especially in Italy. The Swedish state railways are asking tenders for 227,000 tons of steams for shipment from June to September. Operators have cabled tenders for 50,000 tons of steams for the Finnish state railways.

Output of coal at British coal mines during the week ended May 24, a cable to *Coal Age* states, was 5,436,000 tons, according to the official reports. This compares with 5,659,000 tons produced during the week ended May 17.

#### Business Slightly Better and Tone Firmer at Hampton Roads

Business at Hampton Roads shows slight improvement, with demand somewhat increased and supplies at tide-water increasing. Prices are holding firm, with a tendency upward, although no immediate material change is forecast.

Substantial movement to South America on contracts with the Brazilian government has been one of the

features of the trade. Coastwise movement shows a slight increase and bunker trade holds its own, with a lull in general shipping. The trade is resting on the oars, so to speak, and expects continued mild activity during the coming month.

The tone of the market is slightly firmer than the previous week, though the outlook has not materially changed.

#### French Market Reacts Mildly to Ruhr Mine Strike

Very little change is observable in the French coal market except for a slackening of orders for British coals and a diminution of shipments from the Ruhr, due to the rise of sterling on the one hand and the strike in the Ruhr mines on the other. The French collieries note an improvement in the situation as a consequence. Prices, of course, reflect an increasing spread between British and French coals as sterling rises. Belgian coals continue higher than the French, despite the rebates applied.

Deliveries of reparation coal to France by Germany during the first three months of 1924 were as follows in metric tons: January, 282,019 tons of coal and 67,329 tons of lignite; February, 307,754 tons of coal and 74,729 tons of lignite; March, 318,721 tons of coal and 17,847 tons of lignite.

Coke deliveries to the O.R.C.A. during the first three weeks of May averaged 9,250 tons a day. The strike in the Ruhr did not affect shipments to the extent that had been expected.

The O.R.C.A. was definitively constituted on May 16 in the form of a joint stock company with the same statutes as the late S.C.O.F. Mr. de Wendel is president of the organization and Colonel Pineau is the director. There are twenty-eight adherents now, and the Société Normande de Métallurgie is still to be heard from.

#### U. S. Imports of Coal and Coke During April

	(In Gross Tons)	
	1923	1924
Anthracite.....	14,516	669
Bituminous { free.....	67,006	2,116
{ dutiable.....	92,247	20,070
Imported from:		
United Kingdom.....	62,783	2,116
Canada.....	92,247	20,025
Japan.....	13	.....
Australia.....	4,210	.....
Other countries.....	.....	45
Coke.....	5,439	3,742

#### Export Clearances, Week Ended May 14, 1924

FROM HAMPTON ROADS	
	Tons
For Africa:	
Dan. Str. Kina for Dakar.....	7,604
For Brazil:	
Br. Str. Mercedes de Larrinaga for Rio de Janeiro.....	5,666
Br. Str. Tuskar Light for Rio de Janeiro.....	4,970
Br. Str. Wearpool for Rio de Janeiro.....	7,248
Br. Str. Saint Bede for Rio de Janeiro.....	6,112
Br. Str. Clumberhall for Rio de Janeiro.....	4,876
Braz. Str. Lages for Rio de Janeiro.....	6,585
For Canada:	
Amer. Schr. R. R. Govin for Windsor.....	1,210
Br. Str. Mayaro for Georgetown.....	511
For Cuba:	
Br. Str. Berwindmoor for Havana.....	9,266
Nor. Str. Ravnanger for Havana.....	5,026
For Newfoundland:	
Amer. Str. Cumberland Queen for Twillingate.....	567
For Peru:	
Nor. Str. Herakles.....	3,461
For West Indies:	
Nor. Str. Jacob Christensen for Fort de France.....	5,531
Nor. Str. Ida for Port of Spain.....	2,569
For.....	
Br. Str. Baron Kelvin for Quessant.....	4,995
FROM BALTIMORE	
For Italy:	
Ital. Str. Columbia.....	2,168

#### Hampton Roads Pier Situation

N. & W. Piers, Lamberts Pt.:	May 31	June 7
Cars on hand.....	711	930
Tons on hand.....	40,568	56,291
Tons dumped for week.....	141,254	114,356
Tonnage waiting.....	5,000	10,000
Virginian Piers, Sewalls Pt.:		
Cars on hand.....	768	779
Tons on hand.....	56,150	56,100
Tons dumped for week.....	112,826	87,381
Tonnage waiting.....	5,780	10,743
C. & O. Piers, Newport News:		
Cars on hand.....	1,618	1,546
Tons on hand.....	79,345	76,725
Tons dumped for week.....	77,671	83,011
Tonnage waiting.....	.....	3,975

#### Pier and Bunker Prices, Gross Tons

	PIERS	
	May 31	June 7†
Pool 9, New York.....	\$ 4.85@5.00	\$ 4.85@5.00
Pool 10, New York.....	4.60@ 4.75	4.60@ 4.75
Pool 11, New York.....	4.40@ 4.50	4.40@ 4.50
Pool 9, Philadelphia.....	4.70@ 5.05	4.70@ 5.05
Pool 10, Philadelphia.....	4.45@ 4.80	4.45@ 4.80
Pool 11, Philadelphia.....	4.30@ 4.55	4.30@ 4.55
Pool 1, Hamp. Roads.....	4.40@ 4.50	4.30@ 4.40
Pool 2, Hamp. Roads.....	4.20@ 4.25	4.25@ 4.30
Pools 5-6-7 Hamp. Rds.....	4.00@ 4.10	4.20

#### BUNKERS

Pool 9, New York.....	5.15@ 5.30	5.15@ 5.30
Pool 10, New York.....	4.90@ 5.05	4.90@ 5.05
Pool 11, New York.....	4.70@ 4.80	4.70@ 4.80
Pool 9, Philadelphia.....	5.00@ 5.40	5.00@ 5.40
Pool 10, Philadelphia.....	4.75@ 5.00	4.75@ 5.00
Pool 11, Philadelphia.....	4.50@ 4.80	4.50@ 4.80
Pool 1, Hamp. Roads.....	4.50	4.40
Pool 2, Hamp. Roads.....	4.25	4.30
Pools 5-6-7 Hamp. Rds.....	4.10	4.20

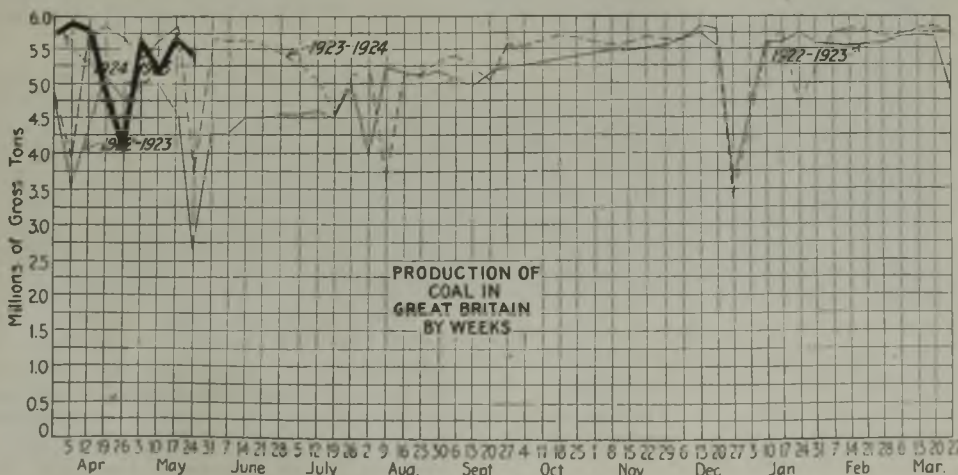
#### Current Quotations British Coal f.o.b.

##### Port, Gross Tons

##### Quotations by Cable to *Coal Age*

Cardiff:	May 31	June 7†
Admiralty, large.....	27s.6d.@28s.	27s.6d.@28s.6d.
Steam smalls.....	18s.6d.	18s.6d.@19s.
Newcastle:		
Best steams.....	26s.6d.	25s.6d.@26s.6d.
Best gas.....	22s.@23s.	23s.@23s.6d.
Best bunkers.....	22s.	22s.

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







## News Items From Field and Trade



### ILLINOIS

Drillers in the vicinity of Fairfield, while drilling for oil and gas, struck a 9-ft. seam of coal at a depth of 1,050 ft. This is deeper than any coal operated in Illinois. Just before striking the seam they drilled through a 5-ft. shell of very hard black lime and rock. The coal is of good quality and similar somewhat to that recently struck by drillers near Wayne City.

Robert M. Medill of Springfield, former State Director of Mines and Minerals of Illinois, and Attorney Lawrence Glenn, of Murphysboro, are operating the Hallidayboro mine of the Jackson Coal Co. as receivers.

### INDIANA

The McDonald Coal Co. of Linton, has filed papers showing the final dissolution of the corporation.

The Big Four R.R. is building a spur from Somerville to Francisco, near Princeton, to connect the new Somerville mines with the main line.

Contracts for coal for county institutions have been awarded at Indianapolis to the Central States Coal Co. for Indiana No. 4 mine run at \$3.25, to the Rader Coal Co. at \$3.23, and the Dudley Coal Co. at \$3.68.

U. S. Lesh, State Attorney General, has submitted an opinion that the state must refund \$5,817 to Sullivan County for taxes on coal land which were paid back to farmers of that county under a Supreme Court decision. Coal was found under the lands, assessed for taxation and the coal companies leasing the land were taxed on the coal. Farmers who leased the land filed claims for refund of taxes, for which they said they had been assessed on the coal deposits.

A petition asking the appointment of a receiver for the Eureka Coal Co., Terre Haute, operating the Dixie B mine, in Vigo County, has been filed by John T. Aitken and Robert Aitken, stockholders, who allege mismanagement of the company by present officials and charge the property is being permitted to depreciate. The petition says William E. Eppert is president of the company and Charles H. McCalla the secretary. The company was incorporated in 1918 with a capital stock of \$500,000 and the petition charges the property now is worth about \$400,000. The mine has a capacity of about 1,000 tons a day.

### KANSAS

The Central Coal and Coke Co. has resumed operations at two of its mines near Pittsburg. Reopening of the mines, closed since April 1, will furnish employment for 725 men and will provide a production of more than 2,000 tons a day.

Kansas miners have voted three to one for a special assessment to provide relief for members who are out of work. Announcement of the results of the referendum election was made at the district offices of the United Mine Workers.

### KENTUCKY

The John P. Gorman Coal & Mine Co., Lexington, has taken over the property of the Elk Creek Coal Co. and will operate it as mine No. 2.

The Elkhorn Gas Coal Co., Pikeville, has changed its name to the Barrowman Coal Corporation and has increased its capital from \$50,000 to \$200,000 in amended articles filed at Frankfort.

A fair amount of coal is coming into Louisville from the Kentucky River mines by water of late. The two boats J. F. Butts and Margaret brought three barges each into the local port last week from mines near Beattyville, on the Kentucky River, picked up empty barges and made return trips.

The Louisville & Nashville R.R. on May 31 issued a statement at Middlesboro, denying rumors to the effect that there had been a disagreement between the Louisville & Nashville and the Southern Ry. and that the Southern was figuring on retiring from handling coal out of the Middlesboro territory because of differences over leased use of a certain section of railroad controlled by the L. & N. The company stated that the rumors were unfounded as the roads are co-operating nicely, and the lease arrangement has been satisfactory to all parties.

The Kentucky Utilities Co., which furnishes most of the mine power used in southeastern Kentucky and on the Virginia border, has bought all of the stock of the Old Dominion Power Co., of Norton, Va., announcement having been made by C. H. Dickey, manager on advice from New York, that the deal had been closed on May 31. The stock was held by the Wise Coal & Coke Co., Norton; New York Mining & Mfg. Co., New York, and J. L. Kimmerer. The property was assessed at \$280,000, but valued at \$1,000,000.

### MICHIGAN

The Ford Motor Co. is shipping soft coal to its plant at Iron Mountain by way of Menomonee. The transfer of the coal from vessel to cars is made over the dock of the West Coal Co. The steamers engaged in the trade belong to the Ford company.

### MINNESOTA

That old-time firm, the Holmes & Hollowell Coal Co., St. Paul and Minneapolis, has been dissolved, the Holmes Coal Co. succeeding to the St. Paul end and the Hollowell Coal Co. to the Minneapolis part. The latter has moved its office from 158th Street South, to 214 Plymouth Building.

The decision of the I.C.C. on the Illinois rate case has seemed like a farce to coal men at Duluth. The rate from Illinois mines to the Winona and Manketo districts was increased 8 to 13c., and 28c. to the Twin Cities. This is farcical when it is considered that the differential which now exists on Twin Cities is \$1.20. On top of this the I.C.C. cut the rate of Illinois coal to Duluth 24c. on soft and 36c. on hard.

### NEW YORK

W. A. Marshall & Co., Inc., New York City, announces the transfer of Edward H. Nicoll to the company's Philadelphia office, where he will be in charge of that territory. Frank R. Stuart has been transferred from the Johnstown office to the New York office in charge of line salesmen.

### OHIO

The Southern Ohio Coal Exchange reported for the week a total production of 60,811 tons out of a full-time capacity of 646,583, from 441 mines reporting.

A called meeting of the Cincinnati Coal Exchange was held on June 6 at which the "Program of Progress" for the city was explained by Monte Goble, of the Fifth-Third National Bank. The coal men promised to aid to boost things along. The exchange is the largest subsidiary of the Chamber of Commerce.

Sealed proposals were received June 4 by the city Board of Purchase of Columbus for approximately 700 tons of 2-in. screened Hocking Valley coal to be delivered in amounts specified by the chief of the fire department to the various engine houses of the city. The



Franklin Builders Supply & Coal Co. was low with a bid of \$4.09. The Lewis & Noon Coal Co. was second low with a bid of \$4.30 and the Homer C. Gill Co. was a close third with a bid of \$4.36.

Heroism of Bernard Donahue, aged 40, of Belmont County, Ohio, at the time of the Benwood disaster in April, when 119 men lost their lives, has won executive clemency for him following conviction upon a charge of manslaughter. At the time of the Benwood disaster, Donahue, having a wide knowledge was called upon to lead a rescue crew. Disregarding the risk, Donahue made many trips into the mine until the rescue work was completed. He was sentenced to the penitentiary for killing an Italian girl while driving in an intoxicated condition. Governor Donahey granted a pardon upon Donahue's promise to abstain forever from the use of intoxicating liquors.

## PENNSYLVANIA

A number of collieries in the Pottsville region will be given more efficient electric power with the completion of the East Penn Electric Co. power house at Pine Grove. The plant cost \$3,000,000.

Modern mining appliances have made possible the reopening of the Silver Brook workings. The workings were abandoned almost half a century ago, but it is possible that the success which has attended the new operation will result in the reopening of many more older workings in the region.

State foresters in the anthracite field express the opinion that the danger of forest fires is about over, due to the severe drenching given the earth by rains during May. More than five inches of rain soaked the trees and bushes and penetrated the fallen leaves during the month.

Dean Holbrook, of the mining engineering school of State College, was

the speaker at the recent graduation exercises of the Hazleton Mining Institute. Arthur Sandrock, a member of the Lehigh Valley engineering corps, took part in the program. Walter Fahringer, of Audenried, superintendent of the Lehigh & Wilkes-Barre Coal Co., presided.

The Bixler Coal & Coke Co., Pittsburgh, has been appointed Western Sales Agents for the Piedmont & George's Creek Coal Co.'s Washington No. 5 Mine and the R. J. Ross Coal Mines, Inc. These mines are located in the George's Creek district, in Maryland, producing a hard structure smokeless coal for domestic purposes.

By the terms of a general settlement of the coal land taxes of the Lehigh Valley Coal Co., reached and approved by Judge Bechtel, May 27, at Pottsville, the company is required to pay taxes on an assessment of \$12,000,000 hereafter instead of on \$5,000,000. This is a compromise, as the assessment originally made two years ago would have required the company to pay taxes on a valuation of \$24,000,000.

The University of Pittsburgh senior class in mining has returned from its underground surveying trip, which was in charge of Robert M. Black, professor of mining. The party spent two weeks at the limestone mine of the American Lime & Stone Co. at Bellefonte, which was selected for the survey because of the large opportunity it offers for problems.

It is reported that the mine fire at the Potts colliery, near Minersville, is raging afresh.

At a meeting of the Luzerne County judges as a court *en banc*, members of the Miners' Examining Board for the First Anthracite District, comprising Luzerne County, were reappointed and two men were named examiners in place of two who had died. George Kolar, of Freeland, was appointed to succeed Patrick McGuire, deceased, of Hazleton and James Owens, of Ed-

wardsville, was appointed in place of John H. Evans, deceased. The following were reappointed: Gustave Ulberich, of Wilkes-Barre; Michael H. Quinnan, of Pittston; Harry Cook, of Nanticoke; James F. Gildea, of Plains; John B. Thomas, of Dorrenceton; Alexander Patterson, of Hazleton, and James McGlynn, of Jeansville.

The following changes among colliery superintendents, effective at once, have been announced by the Pennsylvania Coal Co. George Huntley, superintendent at No. 9 colliery, is transferred to Butler colliery; James Johnson, superintendent at the Butler colliery, is transferred to Central colliery, and P. H. O'Brien, superintendent at the Central colliery, is transferred to the No. 9 colliery.

The Hazleton Machinery & Supply Co. has installed a heating plant in the new steel and concrete breaker of the Hazle Brook Coal Co. at Raven Run. This electrified plant will keep up production during the winter with the same speed as in summer, as the heating plant will prevent all difficulty arising from frozen coal. Another innovation will be the delivery of mine cars direct to the top of the breaker instead of at the base, the builders having taken advantage of the contour of the land.

A sale involving approximately \$140,000 was completed in Uniontown when 70 acres of Connellsville coking coal in German and Georges townships acquired from Samuel Stern by the Crawford Coal & Coke Co., of Connellsville. The property includes the old Break-iron tract in German township and the David tract in Georges township, adjoining the present holdings of the Crawford company. It also adjoins the Shoaf plant of the H. C. Frick Coke Co. J. R. Davidson, of Connellsville, is president; J. Q. Adams, of Uniontown, is vice-president, and Gaetano Corrado, of Connellsville, is treasurer and general manager of the Crawford Coal & Coke Co. F. T. Adams is a director.

## WASHINGTON, D. C.

L. A. Snead Co., shippers of coal and coke announce the removal of their offices to 1117-25 Investment Building.

## WASHINGTON

Examinations will be conducted by the State Mine Examining Board at the State Capitol, Olympia, on Aug. 4 and 5, for first and second class mining certificates. Those desiring to take these examinations may procure application blanks at the mine office in each of the camps. Applications must be filed with Fred J. Dibble, director of licenses, Olympia, at least 10 days before the date of the examination.

## WEST VIRGINIA

The mine of the Kingston Pocahontas Coal Co. on Paint Creek has been reopened and is rapidly increasing production. Once the output reaches nor-



New Unloading Plant on Ohio River at Cincinnati

Island Creek Coal Co.'s steel elevators for the transfer of coal from barges to hoppers. The hoppers are of steel and concrete, equipped with shaker step screens for rescreening and preparing lump and egg coal for domestic use. The plant was constructed by Heyl & Patterson, of Pittsburgh, and can unload 400 tons per hour. The bucket has a capacity of 5 tons. Two belt conveyors carry the coal from the screening house to storage. Wagon or railway-car loading is possible from the chutes and hoppers.



mal, approximately 175 men will be given regular employment.

Since the signing of an agreement between the Bertha-Consumers Co. and the United Mine Workers the Bertha mine at Maiesville has resumed operations. This makes 11 mines operating in Scott's Run territory with an average production of about 900 cars a week.

Operations have been resumed at the Dartmoor mine of the Davis Coal & Coke Co. in the Barbour County field. This is one of the larger mines of the company which has not been in operation for a month or more. As a result of resumption several hundred men will be given employment again.

Walter H. Cunningham, secretary of the West Virginia Coal Association and also a well known mining engineer, has just prepared a map of southern West Virginia, showing the locations of mining districts, plants and creeks and also the separate and aggregate tonnage of the districts. Not only does the map cover southern West Virginia districts but also Tazewell County, Virginia, and the Martin and Pike County, Ky., mines.

The Virginian Ry.'s new electrically operated pier at Sewalls Point when completed will be the largest single coal-dumping pier in the world. It will be approximately 1,074 ft. long, 86 ft. wide and 74½ ft. above mean low water. The pier is to cost approximately \$3,250,000 and will have a dumping capacity of 3,600 tons per hour. The road also is making extensive improvements on the western end by electrification of the 133 miles between Mullens, W. Va., and Roanoke, Va.

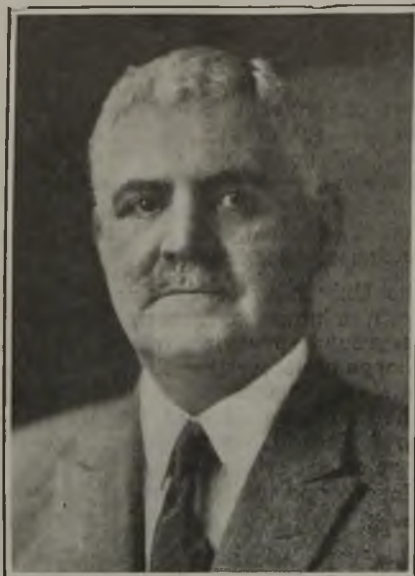
Lyda Davis, aged 27, a coal miner, and Guy Vincent, a farmer of Shinnston, must serve six years in the West Virginia penitentiary for the part they played in burning the tippie of the Ohio-Balkan Coal Co., at Dola on the night of March 17. Davis and Vincent were tried and convicted in the criminal court of Harrison County. Thomas Holt and Harry Leasure are now in the Harrison County jail awaiting trial for complicity for the same offence. It was alleged during the trial of Davis that he helped set fire to the tippie while in an intoxicated condition after meeting Holt and Leasure.

According to an official of subdistrict 4 of District 17, United Mine Workers, three suits have been instituted in the Circuit Court of Monongalia County against the Brady-Warner Coal Corporation, each for \$10,000 damages. The actions have been brought because of forcible entry of the company's agents into the homes of former employees, and forcible eviction of the plaintiffs and their families and removal of the household goods. Under a recent ruling of the West Virginia Supreme Court, coal companies have the right to regain possession of company houses when employment ceases, voluntarily or otherwise, after due notice, and without committing any breach of the peace.

## UTAH

E. F. Taylor, of the state land office, will auction 120 acres of coal lands in Carbon County at an early date. The property includes lots land 2 southeast quarter of the northwest quarter of section 19, township 13 south and range 8 east.

J. J. Bourquin, engineer of the U. S. Bureau of Mines, has been appointed supervisor of operations of the Federal Coal Land Leasing act under the general direction of B. W. Dyer, district engineer of the Bureau of Mines and chief state mine inspector. His services, it is stated, will include the duties



**Michael Gallagher**

General manager of the M. A. Hanna Co., Cleveland, Ohio, and just elected a vice-president of the National Coal Association at the Cincinnati meeting.

of looking after the government's leasing operations and assisting in the work of state mine inspection. Mr. Bourquin comes from Pittsburgh, Pa.

Utah coal-mine operators will join with California retail coal dealers in a newspaper campaign to educate the California public to the advantages of using coal as a fuel in the home. Associated with the Utah operators, it is stated, will be mine owners in New Mexico and Wyoming. It is believed that this campaign will spread until it develops into a national movement. The campaign is the result of a conference held in Salt Lake City.

## CANADA

To increase the available output of domestic coke, the British Empire Steel Corporation will soon erect a coke crusher at its plant at Sydney, N. S., capable of turning out about 20 tons an hour of coke of the proper size for domestic use.

The coal commission to investigate conditions in connection with the coal industry of the Province of Alberta has not yet been appointed. It is stated that it will not be named until definite information is received with regard to the transference of the natural resources of the province from the jurisdiction of the Dominion Government.

The commission is expected to deal with matters such as supplies of coal, mining methods and all questions pertaining to labor conditions.

## Association Activities

The Fayette-Greene Coal Producers Association held a "Shop Talk" dinner meeting at the Summit Hotel, at the Summit, near Uniontown, Pa., at six o'clock Wednesday evening, June 11. The principal talk of the evening was on rockdusting by Captain Edward Steidle, of Carnegie Institute of Technology. Mechanical loading also was discussed. The discussion on rock dusting was under the leadership of Mr. William Z. Price, assistant superintendent of the Buckeye Coal Co. A large number of superintendents and mine foremen were present.

## Recent Patents

**Jig Mechanism;** 1,477,006. R. A. Riley and H. O. Knapp, Pottsville, Pa. Dec. 11, 1923. Filed March 25, 1922; serial No. 546,723.

**Pneumatic Coal Pick;** 1,477,250. C. C. Hansen, Easton, Pa., assignor to Ingersoll-Rand Co., Jersey City, N. J. Dec. 11, 1923. Filed Feb. 1, 1923; serial No. 616,309.

**Miner's Carbide Lamp;** 1,477,431. Henson Davis, Roundup, Mont. Dec. 11, 1923. Filed Dec. 22, 1919; serial No. 346,446.

**Mine Drill;** 1,477,749. George Dobson, Sego, Utah. Dec. 18, 1923. Filed Aug. 19, 1921; serial No. 493,687.

**Powdered Material Firing Apparatus;** 1,477,824. A. J. Grindle, Chicago, Ill., assignor to Grindle Fuel Equipment Co., Harvey, Ill. Dec. 18, 1923. Filed Feb. 4, 1922; serial No. 534,241.

**Spiral Separator and Method of Separating Materials;** 1,477,849. Frank Pardee, Hazleton, Pa., assignor to Anthracite Separator Co. Dec. 18, 1923. Filed March 29, 1922; serial No. 547,451.

## Industrial Notes

The Columbus Mining Co., of Allais, Ky., it is reported, is preparing to spend \$50,000 on improvements.

The Chicago office of the Hazard Mfg. Co., manufacturers of iron, steel and galvanized wire rope, removed May 1 from 552 West Adams St. to 32 South Clinton St.

Colwell & McMullin, New England representatives of the Conveyors Corporation of America, Chicago, will on May 1 locate in their new offices in the Park Square Building, Boston, Mass.

The Newark Wire Cloth Co. is now established in its new plant at 351-365 Verona Ave., Newark, N. J. The new building is 100 x 310 ft., covering approximately three-quarters of an acre in floor area.

The Cleaton Co., (Canada), Ltd., eastern Canadian representative of the Conveyors Corporation of America, Chicago, has moved to its new office at 1070 Bleury Street, Montreal, Quebec. R. E. Cleaton is president and N. Bannatyne, chief engineer of the organization.

W. A. Cather, formerly in charge of advertising and sales promotion for the Worthington Pump & Machinery Corporation, has been made sales manager of the Earrett Haentjens Co., makers of centrifugal pumps. He will be located at the company's plant, in Hazleton, Pa.

The Tompkins Fuel Co., with mines at Cedar Grove, W. Va., on the New York Central Lines, is building a new steel and frame tippie for its No. 5 mine. The tippie will be equipped with shaker screens, loading booms and picking table. The company expects to install at this same mine in the near future a new substation, probably motor-generator set, haulage motors and shortwall mining machines. The directors of the company, recently elected, are Harold P. Tompkins, president; Clyde B. Johnson, secretary; Roger W. Tompkins, general superintendent; Wm. G. Conley and Grant E. Tompkins.



## Traffic News

### Trunk Line Hearings on Proposed Advance in Rates

The Coal and Coke Committee, Trunk Line territory, will hold a hearing at 11 a. m. (daylight saving time), June 26, in room 401, 143 Liberty St., New York City, on a proposal to advance rates on bituminous coal from mines on the Buffalo, Rochester & Pittsburgh Ry. and the New York Central R.R. in the Clearfield district to stations of the Bush Terminal R.R. in Brooklyn, N. Y. The present rates is \$3.44, which it is proposed to increase to \$3.47.

The committee also will hold a hearing at 11.30 a. m. on the same day and at the same place on a proposed advance of 1c. per gross ton on anthracite (pea and smaller sizes) from mines on the Delaware & Hudson Co., Delaware, Lackawanna & Western R.R., Erie R.R., Lehigh & New England R.R., Lehigh Valley R.R. and New York, Ontario & Western Ry. to points on the New York, Chicago & St. Louis R.R.; as follows: Saybrook, Ohio, to Cleveland, Ohio; Swanville, Pa., to Springfield, Pa.; New York Central R.R. (West); Saybrook, Ohio, to West Park, Ohio; Swanville, Pa., to Springfield, Pa.

### Five Cent Cut in Coal Rates on Chesapeake & Ohio

A 5c. reduction in coal freight rates from the fields served by the Chesapeake & Ohio Ry. will become effective on June 28, it has been announced by W. P. Tingley, traffic manager of the Jobbers and Manufacturers Bureau of the Huntington Chamber of Commerce. Mr. Tingley has just received a copy of the new tariff giving the rates affected by the reduction, which is calculated to effect a big annual saving to large consumers of coal in Huntington and Kenova. Agitation for the reduction was first started by Mr. Tingley several months ago when he conducted negotiations with the C. & O. It became assured several weeks ago following a conference with the Norfolk & Western R.R., which sanctioned the proposed reduction.

### To Resume W. Va. Intrastate Rate Hearing June 16

After holding hearings in Fairmont during the latter part of May, the West Virginia Public Service Commission adjourned the intrastate coal hearings to June 16, probably at Charleston. Testimony adduced at the Fairmont hearing was largely of a technical nature dealing with rates, schedules, grades, division of territory and other matters entering into rate making.

A year or more ago the Public Service Commission put into effect new rates on intrastate shipments of coal and other articles but instead of decreasing rates it allowed an increase. The rate question has been reopened at the instance of the Domestic Coke Corporation, which operates a byproduct plant on an extensive scale in

northern West Virginia. A protest has been filed against the increase granted on state coal shipments, which it is claimed places an additional burden on industries, a number of which are located in Fairmont.

## Obituary

James McGregor, formerly chief inspector of mines for British Columbia, died in Victoria, B. C., May 28. When a boy he went to work in the coal mines of Nanaimo, B. C., advancing himself to the position of manager of No. 5 Southfield Mine, Chase River, Vancouver Island. Subsequently he was elected to the provincial legislature and eventually was made inspector of mines for one of the interior districts. He was in the civil service for some twenty-five years holding the position of chief inspector at the time of his superannuation a year ago.

## New Companies

The Old Cato Mining Co. has been incorporated at Henryetta, Okla., with a capital of \$25,000. The incorporators are C. E. Downs and Ben Meyers of Los Angeles and Gus L. Smith of Henryetta.

The Paris Coal Basin Mining Co. has been incorporated in Fort Smith, Ark., with a capital stock of \$25,000, with Ben Stroupe, president, and will develop a 40-acre tract near Paris. It will build six miles of railroad.

State charters have been issued at Harrisburg, Pa., to the following coal companies: Shamokin Colliery Co., Wilkes-Barre; capital, \$250,000; incorporators, Nat D. Stevens, 800 East Main Street, Nanticoke, treasurer; E. M. Chapin, Brookline, Mass., and Bruce F. Payne, Wilkes-Barre. Marwood Coal Co., Coraopolis; capital, \$15,000; incorporators, Fred R. Knight, Coraopolis, treasurer; Amos Gething, Coraopolis, and G. H. Baumann, Imperial. Schenley Fuel & Supply Co.; capital, \$10,000; incorporators, Robert Buka, Oliver Building, Pittsburgh, treasurer; Wilbur O. Nelson, Pittsburgh, and Guy E. Kneeder, Greensburg. Calumet Coal Co., Pittsburgh; capital, \$5,000; incorporators, Oliver Evans, 1047 South Negley Avenue, Pittsburgh, treasurer; Henry O. Evans and J. Garfield Houston, Pittsburgh.

## Coming Meetings

Illinois Mining Institute. Annual meeting, June 12-14 from St. Louis via boat down the river. Secretary, Martin Bolt, Springfield, Ill.

Midwest Retail Coal Association. St. Louis, Mo., June 17-18. Secretary F. A. Parker, St. Louis, Mo.

Colorado and New Mexico Operators' Association. Annual meeting June 18, Denver, Colo. Secretary, F. O. Sandstrom, Denver, Colo.

American Society for Testing Materials; annual meeting, Chalfonte Hotel, Atlantic City, N. J., June 23-27. Secretary, Edgar Marburg, University of Pennsylvania, Philadelphia, Pa.

American Institute of Electrical Engineers, annual convention, June 23-27, Edgewater Beach, Chicago, Ill. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

First International Management Congress, Prague, Czechoslovakia, July 21-24.

World Power Conference, Wembley, London, England, June 30-July 12. O. C. Merrill, Federal Power Commission, Washington, D. C.

Rocky Mountain Coal Mining Institute. Summer meeting, Aug. 7-9, Rock Springs, Wyo. Secretary, Benedict Shubart, 521 Boston Bldg., Denver, Colo.

## New Equipment

### Rerailer That Holds Itself Firmly in Position

Probably few petty mishaps occurring in or about the mines are more exasperating than derailments. While seldom serious in character these "accidents" often tie up the mine or a portion of it for more or less extended periods. When a trolley locomotive jumps the track an adequate ground connection is seldom afforded so that the machine may pull itself back onto the rails.

In order to render mishaps of this kind less serious the I. H. Edelblute Co., of Pittsburgh, Pa., has recently developed and placed on the market the rerailer a top and bottom view of which is shown in the accompanying illustration. These rerailers are built and used in pairs. Each has two broad wings that straddle the rail and guide the wheel onto it.

At its upper or narrow end this device is fitted with a cam that grips



Top and Bottom of Rerailer

Note that the underside of the device where it straddles the rail is curved longitudinally. Consequently as the wheel is guided onto the rail the rerailer rocks forward easing the wheel down with a maximum drop of  $\frac{1}{4}$  inch.

the ball of the rail, and prevents the rerailer from being pushed in the direction of car or locomotive travel. The portion of the rerailer resting upon and supported by the rail is curved longitudinally so that when the weight of the wheel reaches a point above the rail it tilts the rerailer forward and downward easing the wheel down onto the rail with a maximum drop of  $\frac{1}{4}$  in. After a locomotive, car or an entire trip has been retracked by this device a slight bump with a hammer or wooden block on its forward end releases the grip of the cam and allows the rerailer to be lifted from the rail.

This replacer has been designed especially for use in mines. It measures 17 $\frac{1}{2}$  in. long and is 15 in. wide across the board end. It can be placed between the wheels of any car or locomotive without interfering with brake rigging, sand pipes or other parts. It is not necessary to place the low or broad end of these replacers on a tie, neither need they be spiked in place as the cam grips the rail firmly holding the device securely in position. When replacing a locomotive the rerailer may



be set upon the rail in contact with a wheel giving a sufficiently good return circuit to permit the motor to climb the track under its own power.

These replacers are made of high-carbon, manganese-alloy steel and are specially annealed. They are amply strong to resist the rough usage that devices of this kind always receive and are guaranteed against breakage in service.

### Self-Acting Mine Door

Among the interesting pieces of mine equipment shown in model form at the exposition in Cincinnati was the mine door recently placed on the market by the Ventilating Service Co. A photograph of the model there shown is presented in the accompanying illustration.

This door is double and is gravity operated. In its installation two posts are set, one upon either side of the heading or track. On these the doors are hinged, turning on roller bearings in such a manner that as they open they rise. Their own weight thus causes them to close after the trip has passed.

The part of the door extending across the track is hung by rollers from the upper portion of the frame in such manner that it may telescope with that part of the door on the opposite side of the hinge post. It is returned to normal position by the counterweight plainly visible in the illustration. In this model the portion of the door outside the post is shown in skeleton form only. In any actual installation a plate will be fastened to the frame seen in the illustration. This fills up what might be termed the wing and prevents flow of air past the side of the door.

In operation a locomotive or trip traveling at any speed up to 15 miles per hour strikes the buffers on the inner edges of the doors, forcing them open and allowing the trip to pass, after which the doors return to their normal position by gravity. Now suppose that for any reason it is necessary to stop and reverse the travel of the trip before it has entirely passed through the doors. Stopping the trip

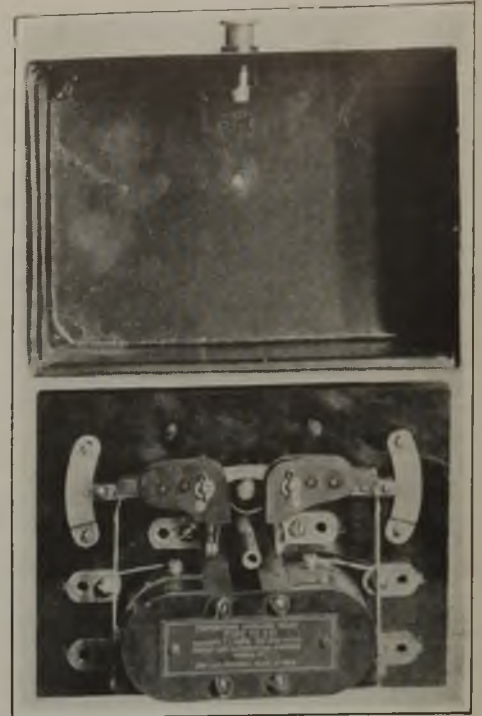
will not interfere with the door in the least. When it starts to back up, however, trouble might be encountered if the door were not built so that it can telescope and slide out of the way. This provision renders the door immune from injury by any movement that the trip can make while passing through in either direction.

This door is normally constructed to close against a water gage of 2 in. It can, however, be built to operate against any air pressure likely to be encountered in mine ventilation. One of these doors has been in successful use for more than six weeks, being subject meanwhile to the action of an eight ton locomotive. It is claimed by the builders that this device is simple, light, efficient, cheap and easy to install, and that its action is positive and sure, obviating the services of a trapper and relieving the locomotive crew from all responsibility for either opening or closing it. This in turn renders it impossible that a door of this kind will ever be left open to short-circuit the ventilating current.

### Temperature Relays Heats in Same Ratio as Motor

A new thermal overload relay, designed to follow more closely the heating curve of the motor, has been developed by the General Electric Co. and will soon be on the market. This device is designed to afford better protection against overheating of the motor. It is made in both single and double pole types.

The relay contains two heating elements, one of which is a thermostatic strip controlling the motor circuit. The other element is enclosed in a metal block which, when heated, tends to increase the temperature of the thermostatic strip by conduction and radiation. The thermostatic strip corresponds to the copper in the motor, carrying the same or a proportional amount of current. The metal block contains the other heating element which corresponds to the iron in the motor, which has relatively high thermal capacity. The heating of both these elements combined thus corre-



Thermal Relay With Heating Characteristics Similar to Motor

This device consists of two elements, one functions to trip the motor circuit when the winding of the motor gets overheated and the other stops the motor when its frame gets too warm due to overload or single-phasing.

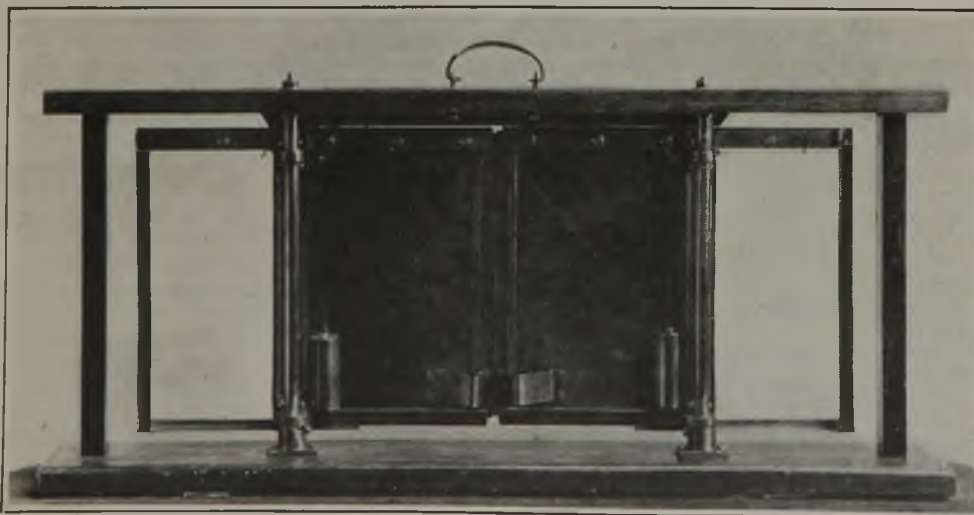
sponds closely to the actual heating in the motor, thus protecting it while in operation.

During conditions of ordinary loads on the motor, the heating of the thermostatic strip, due to the heat generated in itself and the heat absorbed from the metal block, is insufficient to produce enough deflection of the strip to stop the motor. In case of an overload which would damage the motor if permitted to continue, the heat absorbed by the thermostatic strip from the metal block is sufficient, when added to the heat generated in the thermostatic strip itself, to stop the motor. When the motor is subjected to an excessive overload, the heating effect of the thermostatic strip itself predominates and its deflection will effect the opening of the motor circuit within a short time.

Another feature of the relay is that it will inherently take into account the previous heating of the motor, by reason of the fact that the heat stored in the metal block is a measure of the heat stored in the motor.

### Portable Welding Outfit With Many Taps

The Welding Metals Mfg. Co. of Cleveland, Ohio, has just placed on the market a portable electric welder enclosed in a substantial case and intended for production and maintenance work. It is now being made in capacities ranging from 50 to 150 amp. One outfit is made for use on 110-volt circuits, and another for 220-volt circuits. The resistance unit is arranged so that six different current taps can be taken from it. The 110-volt unit weighs 165 lb. and the 220-volt unit weighs 190 lb.



Model of Door That Is Opened by Locomotive and Closed by Gravity

Gravity closes this door when it has been opened by a passing trip. Should the trip stop and reverse its direction of travel before it has passed through the door no harm is done as the door plates may telescope within the frame. They are returned to their normal position by the counter-weights after the trip has gone by.