

COAL AGE

MCGRAW-HILL COMPANY, INC.
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Will There Be a Strike?

EVERY INDICATION seems to favor a suspension in the anthracite region; nothing more clearly than the attitude of John Lewis, the leader of the mine workers. Another element that favors a suspension is the apparent determination of the Administration to keep hands off. It will do so doubtless unless the pressure from the public is too severe as seems likely.

Herbert Hoover has returned from California, and no action has been taken. It is believed that he advocates a policy of silent neutrality knowing well that any effort to bring moral pressure on either party will be construed as making any agreement that may be reached an Administration settlement, for which the executives, if they took any part, would be blamed and held chargeable if they did not provide for its execution.

Mr. Hoover's contention is that he did not outline the Jacksonville agreement in the bituminous field. The operators, however, felt the weight of the Administration's hand and made a settlement, the only one possible under the conditions. They were, they felt, told to buy and they bought—at the market price. As a matter of fact, as the record runs, they were not told to buy, but were merely told to go to market.

Still the fear was there, whether of the Administration, or of the people or of both together, and who shall say the fear of the Administration was not natural? Had not every prior Administration intervened and brought pressure to bear on the operators? Was this Administration to be an exception? Every sign pointed in the opposite direction. So they precipitately signed not for a short period but for three long years, with the unfortunate result that has been recorded again and again in these columns in all its continuous and harrowing detail.

For these reasons or others it appears that the Administration will not act. It is argued that to urge a settlement on the miners, even to advocate arbitration for them might be a source of condemnation later. Swampscott and Washington alike, are mute. Let us hope they will continue so and not weaken. If they know no cause or impediment why the issue should not be joined let them now declare it or be forever silent. For later even an arbitration commission may, like the British Government, not decide on justice and reason but seek any settlement that will tide over an unfortunate situation. It is to be feared that when the time comes and the silence is broken, it will be for an immediate fiat that the operators in the interest of an imperiled nation concede their right to conduct their business without loss.

The operators are advocating arbitration. They don't want a strike, because they don't want public disapprobation, because they have a clear case and because also they question whether a strike might last long and deplete the coal bins so greatly that the public would demand a compromise, with themselves the victims of their own pliancy to politics and popular clamor.

Victory, unfortunately, they must have. The recent freight decision makes that more necessary than ever. The new through freights are menacing even though they are framed for the good of the public and are in accord with a broad ethical policy of not restricting commerce. A strike, however, would give the low-volatile competitor a chance to displace the anthracite producer in the market, an opportunity to train the consumer in the use of a new fuel.

Continuous operation, with a reduction in wages by an arbitral committee would save the market for the anthracite miner and operator. But a compromise at present wages would be unthinkable. The operators have now more to battle for than ever, and it will make them less pliant than they might have been.

It was good of the Interstate Commerce Commission, whether by intention or without, to clear up the issue when it did. It might have delayed its orders till the operators had made an agreement without the decision in view. Coming as it does it removes an uncertainty, and the effect of the decision being delayed till Oct. 15 gives the operators that length of time, at least, to prepare the miners and themselves to act in the light of the decision instead of under its crushing burdens.

Alas! the miners do not weigh the future. They live wholly in the present, and it may take them some months or even years to get a true measure of the Commerce Commission's ruling and when they do it will be too late. The anthracite market will be "shot to pieces." The time to save the situation is now, but the miners cannot see it, and the union leaders do not dare to see anything but what the more aggressive union men in the anthracite region dictate.

Why Not Apologize?

WHY SHOULD the Philadelphia *Public Ledger* in its editorial of Aug. 19 retail with glee the misfortunes of the anthracite operators and prophesy the time when the anthracite industry may be "as vital to the Nation as the toy-balloon business"? Surely it has been by continually increasing wages and imposing the dominion of the union that the anthracite industry has been restricted. It has been the custom of past administrations, politicians and public to impose burdens and then to slide from underneath them by buying coal which has not been so burdened. Some of the business has been lost to union coal it is true, but now it is about to go in large measure to non-union coal regions where wages are lower.

It would seem that the citizenry, and with it the *Public Ledger* should be disposed to apologize for having by unfair decisions, made for political reasons, ruined the anthracite business, but instead of that it yells its triumph. Its unfairness has destroyed the anthracite market, and it is happy.

Now if the anthracite industry is an unnecessary occupation it is surely not needful that it be scolded and

regulated. Was the public right to insist that it sell these "balloons" at minimum profit and pay well for the manufacture of them? Now that the public knows that the burning of anthracite is merely a game at which only the foolish play, why not let the industry alone. Unfortunately we must continue the balloon-smashing business now we have started it, and one must question whether the administration will be able to make the public desist from its time-honored sport.

Ordeal by Combat

A LEADING editorial in a New York daily opposes the immediate submission of the anthracite question to arbitration and says "the public cannot forever be made to bear the burden of the hard-coal mines' peculiar domestic strategy." It continues by suggesting that miners and operators should arrive of themselves at an agreement and that "this continual process of maneuvering what ought to be a technical question is not only inexcusable, it is also just a little tiresome." This same daily in past years has been in favor of arbitration of coal disputes, but that was when the strike or suspension, whichever it should be termed, had been long in destructive operation.

The coal industry has tried out the ordeal by combat with the union. It has had long strikes and the public has objected strenuously. The industry has been told in no equivocal terms that such combats must not occur again. So the operators call for arbitration and they are told now that their willingness to arbitrate is premature and that the public must not be bothered.

Let us take a glance back into history, where our prejudices will not be so strong as about present-day matters. Long ago when every dispute ended in a trial by combat or a personal encounter of a less well regulated character, the kings found themselves humiliated by their enemies and impoverished by the destruction of the nation's substance.

The kings did not like to bother with courts and juries and they tried to make their subjects cease their bickerings by a system of pressure which was based more on a desire for peace than a love of justice. But the fights continued. So long as there was only government interference without justice, there was combat. The ordeals and the hand-to-hand encounters ceased only when kings were willing to be burdened by the quarrels of their subjects. It might be "just a little tiresome" that these underlings sought justice, but kings must tire occasionally or be replaced by others not so negligent. And so they established courts, and more and more was left to the adjudications of the judges.

M. Jourdain, a bourgeois who once on a time desired to be instructed in literature, asked his instructor to acquaint him with a form of expression that was "*ni prose ni vers*," neither prose nor poetry. Now, something like this is what some of the would-be pacificators are seeking, neither strife nor judicial determination. However, it is clear that men who have a quarrel must have one or the other means of settling their dispute. In this case it must be either a suspension (likely to be long and distressing for the issues are real) or an arbitration.

The public believes the courts should be ready to act before anyone is hurt, whether disputants or merely unoffending bystanders. So let us have the arbitration

now, before the supply of coal has dwindled away, when we can act without excitement and without fear of a coal-less winter. Arbitrators are sometimes moved to decide through fear of consequences to the public rather than by the actual implications of justice. We are not sure that a little opportunism might not in times of dire national need rightly temper judgment.

The British Government has just settled its dispute between miners and operators by promising a payment of \$100,000,000. That makes a Coal Commission costing \$600,000 look relatively cheap. The British Ministry does not even try to defend the essential justice of its actions. It admits it is buying peace at the lowest merchantable price. So why should we delay if we want a right decision and not merely one which is obtained like that in Great Britain by buying out both parties?

Rock Tunneling

MORE AND MORE the practice of driving rock tunnels in coal mines is increasing, because the relative cost of roadways of this type is decreasing, and it is found that such construction removed from mine operation is more permanent than a roadway would be if driven in a coal bed in process of extraction.

As for cost, there is a great saving from the use of loading machines which do the hardest of the work—mucking. With such a machine the miner is quite willing to remove yards where he formerly was content to remove only feet. With power drilling equipment he can drill holes with great speed and with minimum labor. By shutting off the tunneling from the rest of the workings the management can often operate the excavation as something apart from the mine and without being subject to laws framed to protect the operation of a going colliery and with better care for the health and safety of the workman.

Thus the operator can provide an air duct and a special fan that will clear away the smoke and waste gases of a shot or shots in a few minutes after they are formed, saving time and providing for their more perfect evacuation. Shots can be fired with delay fuses such as are used in metal-mine and railroad tunnels. Furthermore, the operator can avoid the dangers of a bad drawslate which make driving roadways in the coal hazardous.

Another advantage is that the operation of the mine is not interfered with when the tunnel is being driven. Extensive grading of mine roadways is a source of much annoyance when the mine is being operated, and the transference of rock clutters the mine roadway. It may be added that a tunnel in the rock saves extensive and costly timbering with all the dangers that accompany the use of such construction in coal.

One wonders sometimes that mines continue to be worked under all kinds of disadvantages as to haulage and drainage when a roadway might be driven that would be favorable to both. The idea of driving rock tunnels, however, is unusual enough to be regarded in many places as new. Yet the rock tunnel in many anthracite mines is used quite extensively, being found more permanent than roadways in the coal. Where the seam opens on the hill at an inconvenient level, a rock tunnel can sometimes be driven that will debouch at a level convenient to the top of the tippie. With all the modern equipment genius has invented and developed, the driving of a rock tunnel is not such a fearsomely expensive, slow and difficult job as it used to be.

Examining Engineer's Work Plays Vital Part in Financing of a Coal Mine Property

Earning Value and Not His Appraisal, However, Should Fix Actual Worth—
Excess Rates Should Not Be Put Upon Coal Bonds—Outline
Shows Items to Cover in Appraisal

By John A. Garcia

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CONFUSION EXISTS in many minds concerning sound financing of coal properties. Some of this possibly can be removed by considering the part which good engineering should play in aiding banker and coal operator to arrange properly the affairs of a producing company. They should realize that an engineer's appraisal shows the physical replacement cost, not the selling value, of a property. He should not be expected to overburden a mine with inoperative acreage merely to raise the total value in protection of bonds. The banker might profit by the judgment of the experienced engineer even in fixing other basic terms for mine financing. Everybody concerned ought to understand what an appraisal should cover, but reliance upon the engineer should not cease when that document is filed.

The word "appraise" is defined in the dictionary as—"to make an official valuation of, or to set a price on;" the word "value" means worth, and the word "worth" means, among other things, the market value. In business transactions an appraisal is ordinarily understood as a figure or price for which the property may be sold on the market.

However, since there is no open or regular market for coal acreage or mines an appraisal has necessarily come to mean something other than as specified in the dictionary, though this fact is not generally known and the appraised figure is often mistaken for the engineer's calculated selling price for the property.

An appraisal of the physical assets, as applied to coal mining, is the calculated replacement cost, depreciated for condition, obsolescence and mine life and, therefore, no true relation exists between the appraisal figure and the actual value or worth of the property as a money making business proposition, excepting in cases where the two totals check by coincidence. For example, a mine may appraise on a physical replacement basis at, say, \$500,000, but can earn in normal times only \$10,000 per annum, in which case the true value or worth of the operation on a 20 per cent earning basis is only \$50,000 or one-tenth of the reproduction cost.

Misunderstanding of these facts has led bankers and operators, and especially promoters, into grievous errors in financing coal properties; the banker wants to see the total values high enough to protect his loan several times over but with unit prices low enough to permit of full coverage in event of forced sale under default, and the other side, having a fixed or limited property wants the unit figures high so that the total may reach the banker's requirements.

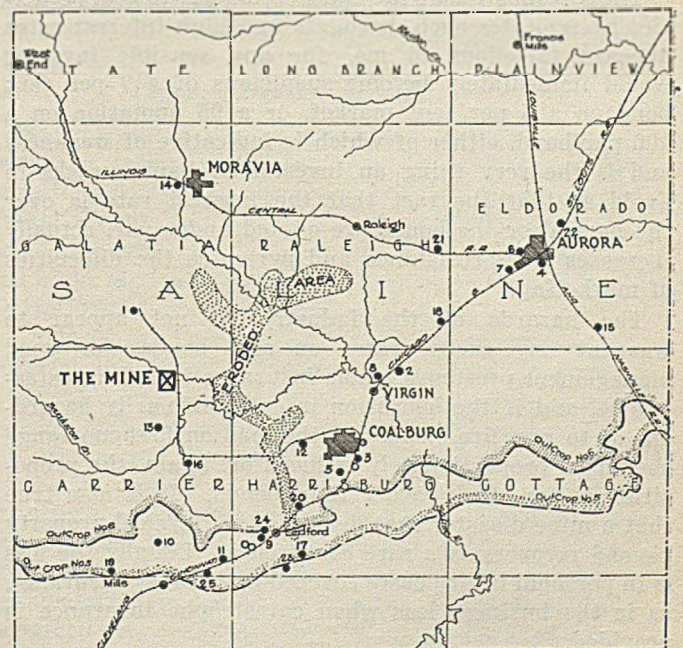
The engineer, striving to be impartial, is bedeviled by the conflicting interests, can satisfy neither side and the ethics of his profession, together with his duty to the investing public, often induces him to take the banker's viewpoint even though he knows full well that

the additional acreage or property added to bring up the physical valuation will form a fixed charge and often a serious burden to the operator.

For example, a mine with an assigned acreage of proper size may appraise at \$500,000 and have an actual annual earning record of 50 per cent on its valuation with assurance of continued performance, but to obtain a bond issue of \$300,000 on such a good business proposition, the operator should own outright enough property to make the total physical replacement valuation approach \$900,000. The carrying charges on the additional \$400,000 is clearly a fixed burden to the operator and may be offset on his books only by a constant increase in the value of the acreage which may or may not accrue.

The banker's insistence on other so-called safeguards in addition to the forced-sale value is probably a wise precaution from his viewpoint while negotiating the loan, but, unfortunately, will ultimately bring about a direct overhead expense that may form a menace to the sinking fund or interest charge.

In most cases the mortgagor requires that approximately half the coal in the property shall remain unmined when the bonds are paid off, which seems quite unfair since the sinking fund applies to all coal hoisted and, therefore, if the output should become unusually large, the fund automatically increases and to the extent of such increase the basic security of coal in the ground



Coal Field Map Is Worth While

The location of the mine to be financed with relation to its neighboring competitors—each other mine numbered and named in the map's caption—together with other surface features such as the location of nearby towns and rail lines all help to make the appraisal complete.

is converted to cash in sinking fund. It is assumed, of course, that the available coal as calculated is, in quantity, sufficient to amortize the investment via the per ton rate.

Again, a mortgage may properly be placed only on fee simple acreage or mineral owned outright in order to be a first lien. Very often, especially in the mid-western field, the royalty rates on leased land are so low that outright purchase would mean a very bad business investment, but, nevertheless, the purchase must be made if the rights of the mortgagor are to be prior to those of the landlord. This matter becomes serious only when a large portion of the acreage or some particularly choice tract is a leasehold and in such cases the proper procedure, in my opinion, is either to acquire title or finance with stock rather than bonds, though it is possible some guarantee may be made by the lessor that will protect the bonds in event of default.

The duty of the engineer making an appraisal may possibly require that he furnish an analysis of the coal but hardly a statement as to its application to furnace requirements or a criticism of the quality, and such questions as personnel of management, contracts and revenue on tonnage, production costs, etc., are clearly outside the province of an appraisal. These items are, among others, of vital importance to any financial set-up so it may readily be understood how utterly valueless an appraisal of physical property is of itself in determining the true worth of a coal mine or its possibilities as a business proposition.

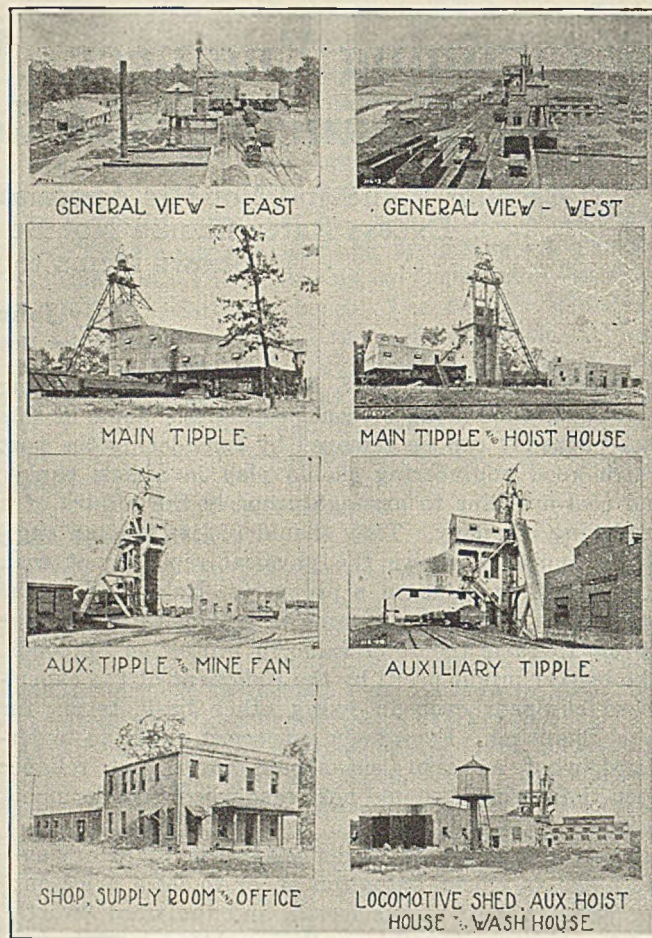
In my opinion the practice of rating coal bonds up one or two points above other industrials for interest and charging fifteen to twenty per cent for flotation is not fair, for either the issue is good and can stand up under microscopic examination with other industrial issues, in which event it should not be penalized, or it is not good and no reputable banker should sponsor it.

DISCOUNTS INDICATE WEAKNESS

The argument that the sales resistance to coal securities necessitates such discounts and high interest rates appears fallacious to me, for any sensible investor would immediately become suspicious of a 7 per cent bond on a 5 per cent market, or a 95 quotation on a 100 par bond, either of which is indicative of weakness and is the very thing an investor or banker seeks to avoid so that the fact that the interest rate is over the normal or the bonds are quoted under par, actually increases sales resistance and pyramids the difficulties of marketing.

The hazards of the industry do not appear to warrant any excess rates on coal bonds, for good management presumes ample insurance including catastrophe, and if the operation is extraordinarily hazardous as to gas, fire, flood, etc. the load on first mortgage should be proportionately reduced or, again, the proposition is for stock rather than bonds. It is also true that a mine disaster that destroys the physical property beyond recovery is a rare occurrence. Usually the loss is in personal injury cases covered by liability insurance, as is the business loss when catastrophe insurance is provided.

Should a report, an appraisal and an audit each reflect a safe and profitable coal operation—and this is the only kind on which a bond issue may properly be placed—the terms and interest rates should be in line



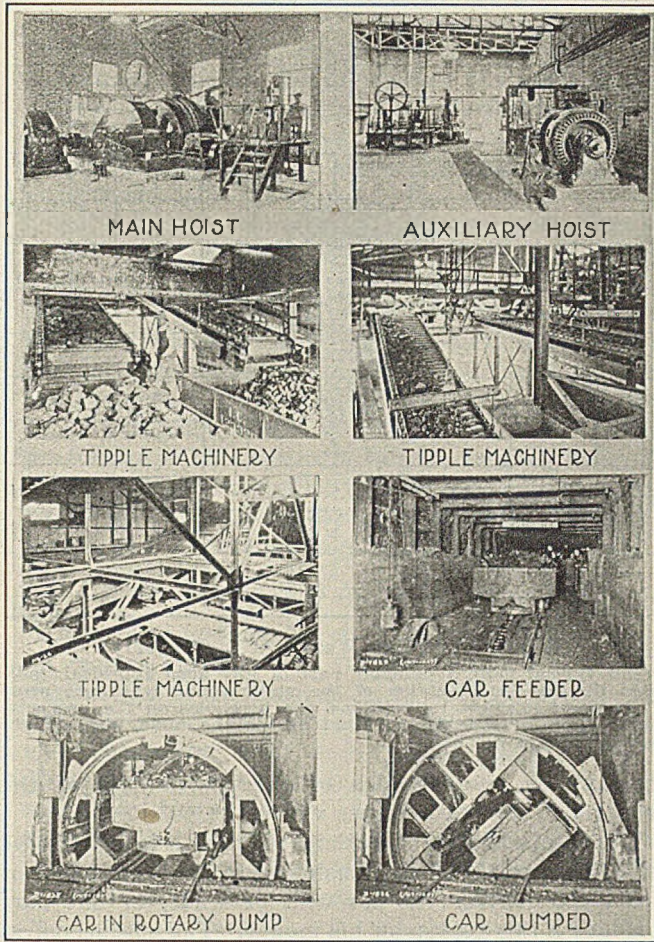
An Important Feature of an Appraisal

Anybody interested in financing a mining property can get a better idea of the character of it with the aid of photographs, properly arranged, than he can from the written report alone.

with those of other industries. Because of seasonable demand and recurrent cycle of peak production every few years, serial bonds are not especially desirable, often proving to be a heavy burden in times of stress and a light load in flush periods during which it would be desirable to retire larger portions of the loan.

Although the history of an operation has a bearing on the set-up, too often this matter is given more consideration and importance than the facts warrant. An old and successful coal mine with a fine record may be much more of a risk than a new and modern mine with no earning record at all. The practice of including old and obsolete operations in a merger because of their earning record—"to sweeten the picture"—can be justified only when their first cost is more or less nominal or their acquisition by merging interests permits of reduced strain in competition for marketing the output, thereby tending toward elimination of suicidal prices and unnecessary production.

The appraisal of the physical property is essentially an inventory with prices and usually there should be two sets of figures for each item: First, the present-day cost and, second, the depreciated replacement cost, though the latter is sufficient if the percentage of depreciation is shown, excepting in cases where the replacement cost new is desired. The field work, though mainly clerical insofar as taking inventory is concerned, calls for expert knowledge of all classes of equipment and structures as used at coal mines to note intelligently the amount of deterioration and, especially, obsolescence. The notes must always give governing dimensions of



How Well Equipped Is This Mine?

This important question, always asked concerning a coal property about to be refinanced, is only partially answered if the appraisal does not contain clear photographs of the machinery and equipment.

buildings, as well as specifications and concise notations that will aid the office in calculating values.

Detailed inventories of all buildings, equipment and miscellaneous improvements are, of course, taken in the field and the mines entered and inspected to determine the thickness and characteristics of the coal seam. The present condition and age of all items is noted to be used in fixing the percentage of depreciation.

All items are figured for replacement cost as of the current date and are depreciated according to the conditions in which they have been maintained, due allowance being made for obsolescence and number of years in service. On the permanent buildings, equipment, shafts, slopes or drifts, the depreciation is further adjusted to give effect to the ratio of acreage depleted to assigned acreage.

In arriving at replacement cost, the market price of labor and material prevailing in the district where the plant is located is used to determine the cost of each item in place. Throughout the appraisal the "Replacement Cost" of the detailed exhibits in the summaries includes all expenses for tools and labor required to furnish each item in place, including contractors' contingencies and profits as of current date. To this cost a percentage varying with the different classes of work is added for expense of organization, engineering and incidentals.

The item of "Organization" includes such cost as general office expense, obtaining bids, awarding contracts, bills of material, purchasing material, salaries of

officers chargeable to construction and legal expense chargeable to construction.

The item of "Engineering" includes cost of preparation of plans, drawings and specifications, together with expense of general supervision and inspection required in carrying out the plans and specifications.

"Incidentals" cover all general expenses that lie outside of contracted cost, such as might be included as extras on the contract price. These may be due to small changes in design, to interference with construction from various causes, such as strikes, uncertain foundations and to insurance against fire and accidents. The aggregate of these percentages vary according to the class of work.

These percentages are added to the subsummaries and the total represents the cost to the company of the property detailed in the exhibits.

Development includes cost of yardage, construction of the shaft bottom, and of room necks in "live" territory (usually between inside partings and working faces), and carrying charges during construction for a period of two to four years while opening the mine, including taxes, interest, and legal expenses.

Mineral rights owned are valued on "going value" of similar blocked-out acreages in the field, and leased acreages on the differential between the value of leases in connection with property and present "going royalties" in the field.

The additional labor involved in making an appraisal equivalent to an accurate inventory is well justified by the uses to which such a record may be put, for it may then be the official record for the purchasing agent in replacing or duplicating parts, for the sales department in the matter of sizes and preparation equipment, for the auditor for adjustment of fixed property value on the books, for the fire, tornado and other insurance policies, and the like. The best evidence of good field work by an engineer is a set of notes that can be readily interpreted by the office force without contact or explanation by the man who took them, but because of the number and variety of items in a coal mine inventory it is best to have the field men at least aid in the office calculations.

INCLUDE PHOTOS OF PROPERTY

Small photos of the buildings and structures should always be taken, as a picture gives at a glance the character and type of the plant and permits of prompt general classification of the property. These photos should be neatly grouped and reduced down to not more than eight pictures to a standard sheet. Clear titles or descriptions should be written on each.

A map of the property should always accompany the appraisal and should be drawn on a scale small enough to permit of ready reference. A large-scale map is unwieldy and sufficient data usually can be incorporated in a neat, small drawing. These maps should show location of buildings and structures with governing dimensions (especially for fire insurance records), the surface owned and leased, the mineral rights owned and leased, worked-out area, etc. and if more than one workable seam is present it is often desirable to have a separate map showing property rights for each seam.

The replacement cost of equipment and development is simply a matter of calculation and reference to data sheets or files for unit prices. For check, the totals should be compared with similar items in other appraisals. If the engineer handling the work has no

accumulated data or cost records on coal-mine equipment, it will be exceedingly difficult to place prices on the innumerable items entered on the inventory sheets, and though it is, of course, possible to obtain the information from the various manufacturers, the time and cost of such a laborious search generally rules out the unequipped engineer from this class of work unless approximate figures will suffice.

The valuation of underground development, entries, headings, etc. is a much disputed question, but in the absence of any standard or fixed formula for determining a fair value for this important item in the appraisal, it is my custom to credit the mine with the reduplication cost of the mine bottom, the partings, the advanced development inside the partings, and any item of construction that fairly and properly can be charged to capital account rather than operation, and then depreciated according to condition and mine life.

The rail, trolley wire, pipe, etc. between mine bottom and parting is given a depreciated replacement value but no credit is allowed for haulage roads or air courses between these two points on the theory that their very existence forms a penalty to the operating costs when considering replacement values for comparison with a new mine in virgin acreage. This method may not be scientific but it gives a fairly accurate figure on the cost of replacing the existing workings with an operation developed for the same output.

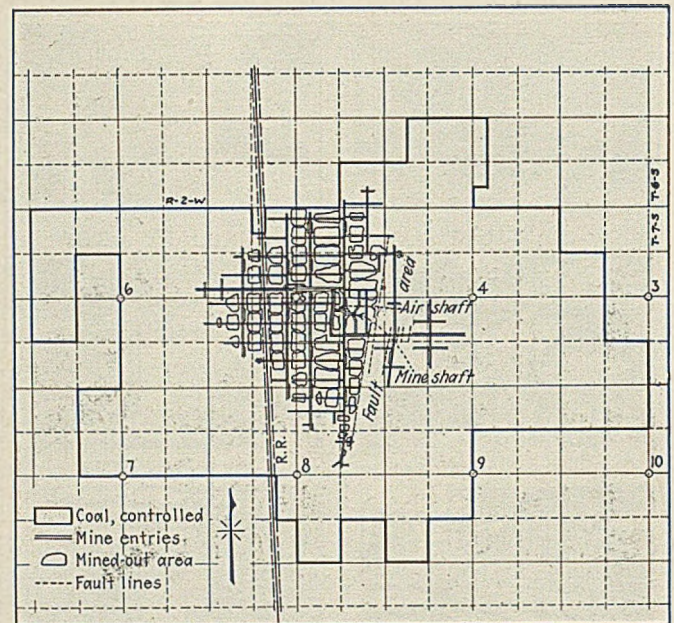
The acreage or mineral valuation is usually the most difficult part of the whole work. The variation of a few dollars per acre or a fraction of a cent per ton of coal in the ground may be sufficient, in a large tract, to wipe out the total replacement cost of the improvement, and there are so many theories of valuation of available mineral that a veritable maze of problems confronts the engineer in his efforts to absorb, consolidate and reduce to definite terms the demands of the conflicting interests and alleged authorities on this question.

SHOULD ESTABLISH REPLACEMENT COST

However, if the engineer will only keep clearly in his mind the fact that his main effort is to set up a statement of replacement cost, the problem is reduced to its simplest terms and his value per acre automatically is placed at the going value of similar coal land in the field, and the price of land as established by recent deals becomes the basis of his calculations which are adjusted arbitrarily for local or special considerations.

On leaseholds it seems fair to base the values on the differential between the going royalty of the field and that specified in the lease, and if there is no differential it is the writer's custom to give no credit to the property for leased coal—always remembering that the appraisal is a replacement proposition and not a statement of value based on earning capacity which is an entirely different thing.

Accompanying every appraisal there should be a valuation as established on a basis of safely anticipated profits, capitalized on about a seven per cent annual dividend and refunding capital by reinvestment of a sinking fund at four per cent. This statement, when conservatively worked up as to days of operation, annual output and profit per ton, either assumed or determined from past records, provides a check on the physical value of the property and gives, under fixed



Relation of Mine Workings to Property

This typical map, a valuable part of any good appraisal, indicates the size and location of the underground workings, some of the local geological conditions, the boreholes on the property, the location of the railroad that serves the mine, the surface boundaries and the like.

assumptions, a good idea of the possibilities of the proposition from a business viewpoint.

The capitalization of anticipated profits is merely the calculated worth of the business as an investment at seven per cent or ten per cent or whatever one may consider a fair return on his money. The engineer first finds the total available tonnage, assumes a fair running time, an annual output, and figures the life of the operation. With this basic data and an assumed profit per ton he may calculate the annual dividend and establish therefrom by reference to tables, if desired, the present worth of such a dividend.

If the assumptions as to output and profit are correct this method determines the true worth of the operation, and the replacement cost is merely a check to find the approximate amount of money necessary to establish a business that would provide similar ultimate financial returns.

The theory of zoning mineral rights available to existing operations and establishing values per ton or per acre on a sliding scale adjusted to time periods of extraction has no place in the scheme of things when replacement cost is considered, but is properly applicable to a set-up on a company's books for the purpose of scientific amortization of property, since the zone of the coal seam being worked at present is apparently of greater value to the operator than the coal in the zone ten years later.

The word "apparently" is inserted above to avoid committing myself to this theory which is provocative of much discussion and many seductive arguments. Space limits the elaboration or analysis of the zone theory as applied to coal land valuations.

The logical answer to the various objections to appraisals forming the basis of a financial set-up is to provide an engineer's report which shall set forth clearly, fearlessly, and conservatively the governing, as well as the smaller factors that have to do with the operating and business phases of the proposition. Also an audit of the books should be prepared by auditors skilled in this special branch of industry. The auditor

should be able to understand and appreciate the effect of war years and of "fat" but short contracts on the record of earnings, and so arrange his report as to reflect, if possible, the conditions of the business in normal periods. The engineer, if qualified for such service, will be governed in his analysis by normal conditions rather than either the subnormal or the exceptional.

Accuracy and knowledge of where to find the pertinent facts in the records, as well as ability to set them out properly in his report is the province of the auditor, for his work is mainly mechanical or clerical, insofar as this part of the job is concerned. He should not be expected to submit constructive criticism on the proposition as a whole as deduced from the figures on his balance sheets, for this requires a detailed knowledge of the operation which he, in all fairness, should not be expected to possess and is, without question, the obligation assumed by the engineer in accepting the commission of making a report.

ENGINEER SHOULD ACCEPT RESPONSIBILITY

A mining engineer's report has to do with any and all factors entering into the problem as a whole. The summation or conclusions in the report are often the only part read by the banker. This section should be clear, clean-cut, brief and free of qualifications. If it is possible, the engineer should say "yes" or "no" and accept responsibility. In other words, the engineer should either accept or reject, for the proposition is either good or not good from the viewpoint of an investor in bonds. There is no middle ground, for the first consideration of a mortgage is security and if any gambling element is introduced into the scheme of things, a bond issue should be automatically ruled out.

Engineers' reports on coal properties, if made in connection with a proposed bond issue or for sale and purchase, must of necessity cover almost every conceivable angle of the operation and, of course, no influence or prejudice of any kind whatsoever should

affect or color either the statistics, recommendations, criticisms or remarks. The report on a mine should read alike for the buyer or seller and should be in its essence simply a statement of facts and conditions as found, together with an honest, unbiased analysis of the proposition in whole and in part, and a definite recommendation as to the main question if that is possible.

There is no reason why the engineer should confine his investigations and remarks to the purely technical or statistical phases of the work; in fact, there is every reason why a competent consulting engineer must not, and it should be both his privilege and his duty to adjudge the operation from the commercial angle, as well as the engineering. Often the physical property rates high in the scale of factors that make up the measure of the true worth of a mine, but because of high freight rate, lack of markets, labor shortage, over-production in the field, or other causes generally considered outside the province of a strictly engineering report, the operation may be hopeless so that any phase of the problem that affects the final answer of "yes" or "no" must be considered and weighed.

Investigations and reports that have to do with operating matters, efficiency, safety, the system of mining, fires, explosions or any of the different phases of mining are problems requiring special treatment and handling in each case. Although there may be some attempt at standardization as to the form of the report, there seems to be no such necessity as obtains in reports for the purpose of making a loan or a purchase. The maximum of pertinent data in the minimum of space should be the aim of the engineer in writing up his report and since it is read, as a rule, by those not versed in technical language, he should express himself clearly and simply so there shall be no ambiguity or possible misunderstanding.

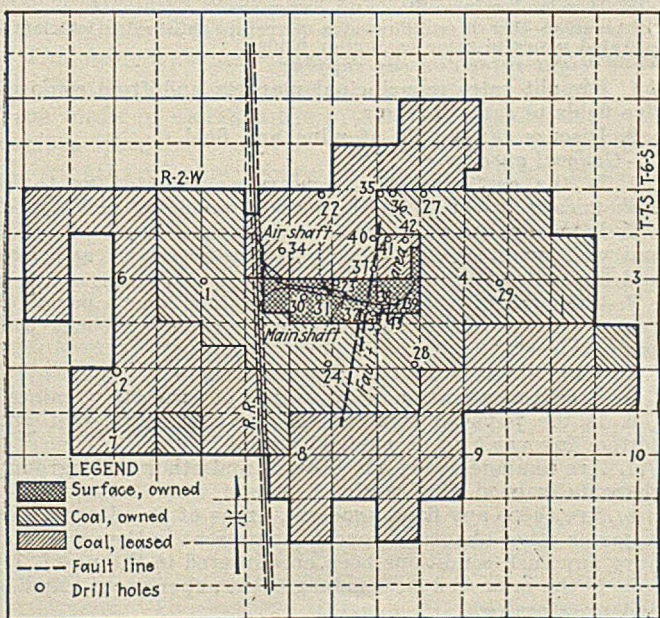
SUMMARY OF REPORT IMPORTANT

The summary or recapitulation of the report is the bead of the assay and should be recorded only after a thorough and careful analysis, for the conclusion reached by the engineer should be the result of conscientious study of the problem at hand joined up with his judgment as obtained from good experience and expressed in definite terms and clear language.

The following structure is suggested as the framework for a report on a coal mining property, and its elaboration "up" or "down" is a matter of the requirements of the individual case and the judgment of the engineer. The schedule is submitted as fairly representative of the data required for what is known as a complete report but, of course, may be condensed or briefed if the client seeks information or advice only on specified items or sections. This entire structure should be completed in cases of purchase or sale, not only for protection of the engineer himself but for information of all concerned:

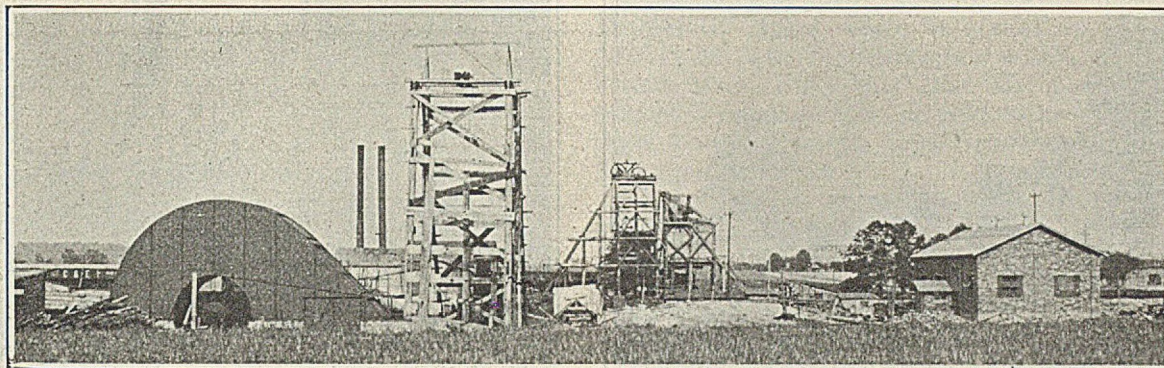
Outline of Report on Coal Property

- A—Location:
 1. (a) Name of company, (b) geographical location, (c) coal field.
 2. (a) Topography, (b) railroads serving property, (c) towns furnishing labor supply.
- B—Financial structure:
 1. When organized and under laws of what state.
 2. Total capitalization: (a) Par value of common stock, (b) par value of preferred stock, (c) amount of each outstanding, (d) amount of each unissued, (e) bonds or other



Typical Property Map

The engineer's appraisal should be accompanied by a good many illustrations like this, to show readily some of the main features of the property. This one, for instance, shows the surface owned, the coal owned and leased, a fault line that crosses the seam, drill holes, etc.



Learning the Bottom Facts in Indiana

By J. H. Edwards

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

KNOWING DEFINITELY, "what is on the bottom," before building the permanent top works is of great advantage to any coal operator. Especially is this true in this period of revolutionary changes in mining methods. An example of "proceeding with caution" is furnished by the development of the new King mine of the Princeton Mining Co., located about three miles south of Princeton, Ind. Although this development is designed for an ultimate capacity of 4,000 to 5,000 tons per day and thus will be one of the largest operations in the state, up to the present it is what might be termed an experimental mine. All loading is being done mechanically, four different makes of shoveling machines being now in use.

The shaft of the King mine is the deepest in Indiana, having a total depth of 439 ft. The coal mined is the No. 5 bed, lying under gray slate, and is of comparatively high quality. The measure worked averages 8 ft. in thickness and is free from partings. These features together with the fact that about 4,000 acres of this coal is available brings the King mine into prominence among the coal-producing enterprises of the state.

This mine was opened in August, 1923, but on account of the market conditions prevailing no attempt has been made to increase the production rapidly, although entries have been driven with rapidity. In the first six months of this mine's operation over six miles of entry was driven, not including breakthroughs. From this length of entry only a few rooms have been turned, or only enough to afford experimental working places for certain of the loading machines. The mine is under the management of Robert J. Smith of Terre Haute who several years ago managed a property of the Deep Vein Coal Co. near Princeton.

The headpiece accompanying this article and also Fig. 1, show recent views of the topworks of this mine. The only buildings of permanent construction are the hoist house, bath house, and fan. It is the intention to replace the present steam hoist with an electric machine when it becomes desirable to increase the production of the mine beyond the capacity of the existing equipment. The present tippie is highly temporary in nature but is fitted with shaker screens, and loads on

The headpiece shows the King mine of the Princeton Mining Co. It is destined to be one of the large producers in Indiana. It is located three miles south of Princeton, and as yet is in the development and experimental stage. The only permanent structures are the hoist house, fan, and wash house. The latter is seen in the extreme right of the picture.

two tracks. Alongside it is an elevated bin for storing that portion of the coal that is retailed direct from the mine.

Visitors are impressed by the fact that the King mine is being developed on the four-entry system, which is a decidedly uncommon plan of development in Indiana. The main entries are being driven along a line upon which test holes indicate that the bed gradually dips. The grades, however will be slight, for, generally speaking, the coal lies in a horizontal plane. The mine is gassy, but not to such an extent that it has been considered necessary to prohibit open lights in all sections, nor to prohibit the use of the ordinary types of electrical equipment.

MACHINE LOADING THROUGHOUT

Four makes of loading machines are used in this mine, and no hand loading is being done. Altogether there are six machines installed, four are on narrow work and two in rooms. An idea of the production attained per machine may be gained from the April tonnage record. During that month only five machines were in use but the average daily output of the mine was 452 tons.

The last machine was installed so recently that no figures covering its performance are available. This machine, an Oldroyd, is shown in Fig. 2. This photograph was made as the loader stood on the supply track

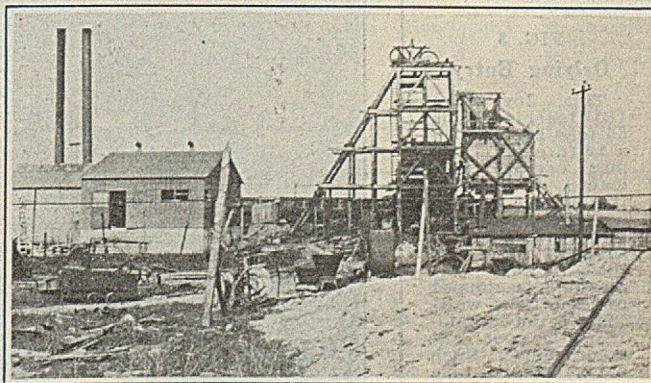


Fig. 1—The Deepest Shaft in Indiana

The officials of the King mine will "know what is on the bottom" before the permanent topworks are built. A steam hoist is now handling the output but it is planned to replace this with an electric hoist when the time comes for installing permanent, high-capacity equipment.

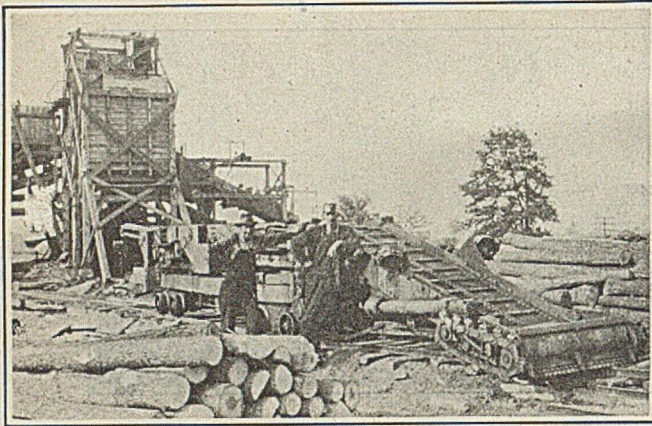


Fig. 2—An Oldroyd Loader Going in for Trial

Bruce Jeffers (left) and Bruce Rogers, superintendents at the King mine, have a few ideas of their own regarding mechanical loading. Their conclusions are based on actual experience with four types of machines.

the day before it was taken apart and lowered into the mine.

An Oldroyd cutting machine is used in connection with this loader. Preparations for lowering the cutting machine into the mine are shown in Fig. 4.

Two Joy, type 4BU machines, were the first mechanical loaders to be put to work in the King mine. Since August, 1924, these machines have been operated two 8-hour shifts per day in entry driving. Fig. 3 shows one of these machines at the face waiting for the locomotive to spot an empty. Two men compose the operating crew: the other two shown in the picture are the inside superintendent and the fireboss.

It has been found that a Joy machine of this type will load an average of 22 cars or 66 tons per 8-hour shift, in an entry 10 ft. wide. About 18 in. of top coal is left to protect the roof in all entries. The production of 66 tons means that the machine must be moved four or five times during each shift. In one instance one of these loaders advanced an entry 35 ft. in a single shift.

Fig. 6 shows one of the two Jeffrey pit car loaders that were installed in October, 1924. Three men make up the crew of this machine. Three men shovel coal from the face onto the conveyor, but a considerable portion of one man's time is required to trim and spot the cars. The tonnage loaded by this machine depends entirely on the energy and initiative of the crew, inas-

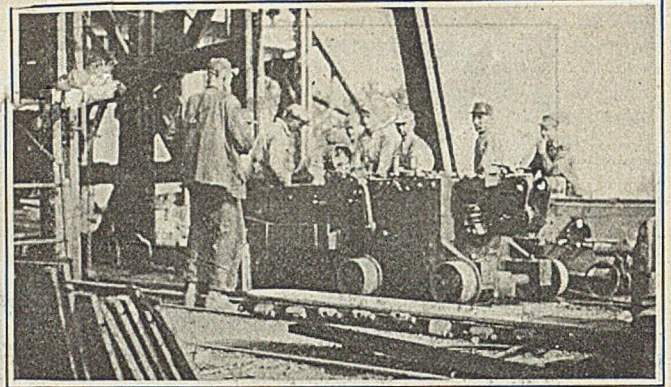


Fig. 4—Moving the Oldroyd Cutter onto the Cage

This machine is now used in conjunction with a loader of the same make. The cutter bar and its supporting goose-neck have been removed in order to get the machine onto the cage. The main body of the machine resembles a locomotive but the trucks are placed at one end in order to balance the goose-neck and cutter bar.

much as the coal must be moved onto it by hand. Contrasted with the Joy machine the operating expense of the Jeffrey is much less, but the labor cost is roughly 50 per cent more.

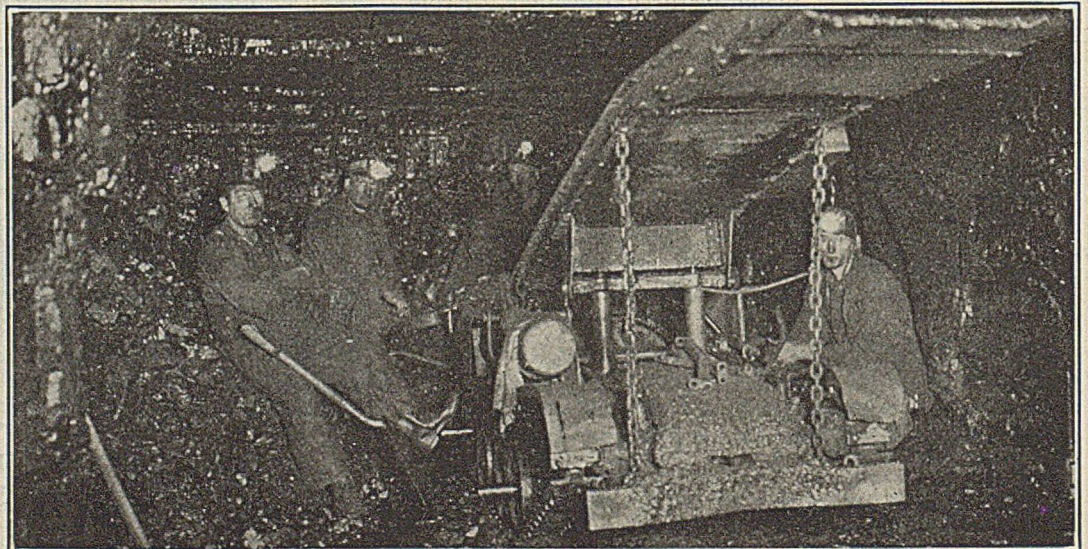
The fourth type of loader used in this mine is the Myers-Whaley. One of these machines was put to work in December, 1924. When the photograph, Fig. 5, was made the machine was working at a narrow point in a room where it crossed under a railroad. Rooms where this machine is regularly employed are 30 ft. wide and are driven 250 ft. long. Such places are double-tracked to facilitate the handling of cars. The full thickness of bed is taken in the rooms, no top coal being left. One cut 6½ ft. deep yields about 60 tons. Two men make up the machine crew. At present only one locomotive tends the loader, which limits its average production to 80 tons per shift. It is estimated that if two locomotives tended the machine, other conditions remaining the same, production could be increased to approximately 140 tons per shift. The conditions under which this Myers-Whaley loading machine is operating are experimental, and its present performance is not truly indicative of its capacity under more favorable circumstances.

One disadvantage of mechanical loading is the decreased efficiency of the mine cars, which results from the smaller loads carried. It has been found at the King mine that cars which, with hand loading,

FIG. 3

Driving Entry

This Joy type 4BU machine loads 66 tons per shift in a 10-ft. entry. Two men operate the loader. The other two in the picture are the inside superintendent and the fire boss. In this picture the machine is stopped and the crew waiting for the locomotive to spot an empty. Such delays limit the production but are inevitable in narrow work where the mine cars are brought to the face.



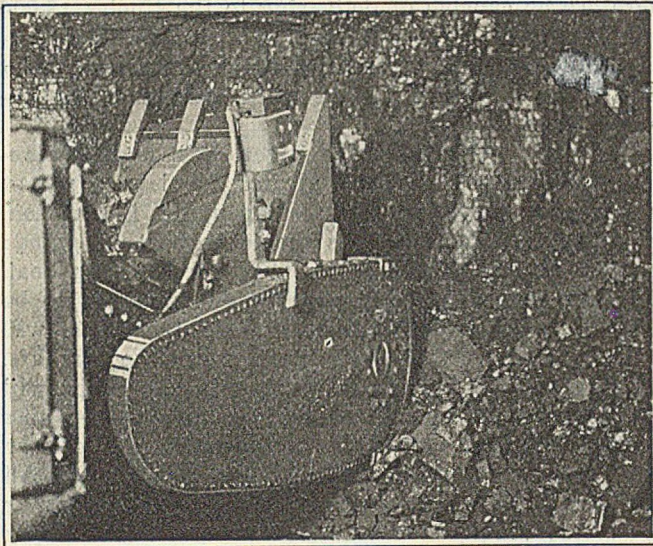


Fig. 5—"Business End" of the Myers-Whaley Loader

This machine is operating in 30-ft., double-tracked rooms. Here all of the 8-ft. bed is taken out. This loader is designed as a high capacity machine but on account of the experimental conditions and because but one locomotive is available for handling its output, the production averages only about 80 tons per shift.

averaged 4½ tons are averaging only about 3 tons when machine loaded. The effect of this decreased loading of the mine car is offset to some extent by the decrease in the length of time that each car remains at the face.

Apparently the officials of the Princeton Mining Co. are making the best of the present period of light demand for coal, to develop territory and to ascertain definitely what type of loading machine and method of mining are best suited to the local conditions encountered. When the time comes for building a permanent tippie and standardizing on loading methods they will have available a wealth of facts for their guidance.

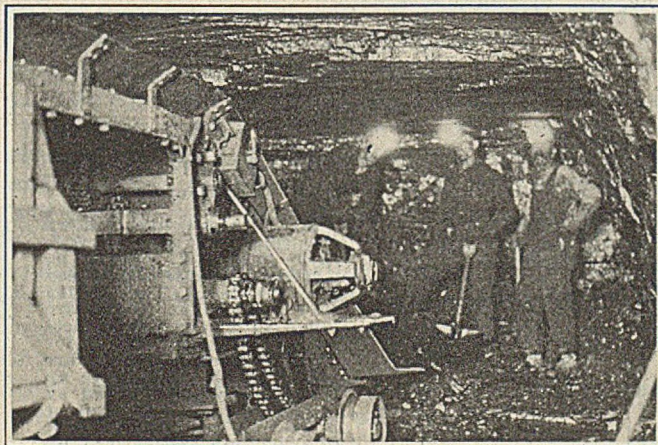


Fig. 6—Jeffrey Pit-Car Loader in Use

The coal averages 8 ft. in thickness and has no parting. Eighteen inches to 2 ft. of top coal is left in the entries to protect the roof. Three men make up the crew of this machine. Ordinarily two of them load coal onto the conveyor while one trims the car.

Nebraska Has a Producing Coal Mine

More than thirty years ago it was known that Richardson County in the extreme southeastern corner of Nebraska, had some coal deposits, but little attention was paid to the deposit. Twenty-eight years ago a man named Cutler opened a mine near Rulo, Neb., but gave up the project when water began to seep in. Another man while digging a well accidentally dug through a bed of coal.

About a year ago when C. Lewis inherited the Thomas G. Broker estate he opened up a mine, thus proving his farm to be underlaid with a strata of marketable coal. Since that time Mr. Lewis has incorporated a company and four miners have been working there since November, 1924. About 500 tons of coal have been taken out.

The mine is one and one-half miles from Kansas and one mile from the Missouri line. An analysis shows that the coal has 12 per cent of ash and 11,222 heat units to the pound.

Rock Dust Now Used in 62 Pennsylvania Mines

The rock-dusting of coal mines to prevent explosions of dust or to limit their intensity has within the past year made a tremendous advance in the country at large and in Pennsylvania particularly. A year ago there were only four mines in Pennsylvania that had been subjected to treatment by this method; now there are sixty-two with others soon to be treated.

The Federal Bureau of Mines at least fifteen years ago made many practical tests of the method at the experimental mine at Bruceton, Pa., and demonstrated its value. A number of rather disastrous explosions in various sections of the country during the last three or four years has brought the subject again into prominence, and the Pennsylvania department of mines took the matter up with the district mine inspectors and began an intensive campaign among the operators. As a result great progress has been made in the last year.

The list of Pennsylvania mines now rock dusted follows:

District	Company	Mine	County
1	Pittsburgh Coal Co.	Montour No. 10	Allegheny
1	Bethlehem Mines Corp.	Mine No. 58	Washington
1	National Mining Co.	National No. 4	Washington
1	Ontario Gas Coal Co.	Ontario	Washington
16	Maryland Coal Co.	Maryland Shaft	Cambria
13	Springfield Coal Mining Co.	Springfield No. 1	Cambria
13	Pennsylvania Coal & Coke Corp.	Ebrenfeld No. 3	Cambria
14	Pittsburgh Plate Glass Co.	Creighton	Allegheny
15	Barnes Coal Co.	Lancashire No. 14	Cambria
15	Pennsylvania Coal & Coke Corp.	Pennsylvania No. 18	Cambria
16	H. C. Frick Coke Co.	Palmer	Fayette
16	Republic Iron & Steel Co.	Republic	Fayette
6	Hecla Coal & Coke Co.	Isabella Nos. 1 and 2	Fayette
6	Eastern Coke Co.	Tower Hill No. 1	Fayette
16	Tower Hill Connellsville Coke Co.	Tower Hill No. 2	Fayette
16	Thompson Connellsville Coke Co.	Thompson No. 2	Fayette
16	Orient Coal & Coke Co.	Orient	Fayette
17	Pittsburgh Terminal Coal Corp.	Pittsburgh Terminal Nos. 3-4-8	Allegheny
17	Pittsburgh Coal Co.	Montour No. 4	Washington
19	Westmoreland Coal Co.	Criterion	Westmoreland
19	Westmoreland Coal Co.	Adams	Westmoreland
19	Westmoreland Coal Co.	Biddle	Westmoreland
19	Westmoreland Coal Co.	McCullough	Westmoreland
19	Westmoreland Coal Co.	Export Nos. 1 and 2	Westmoreland
19	Ocean Coal Co.	Ocean Nos. 1 and 2	Westmoreland
19	Hillman Coal & Coke Co.	Edna Nos. 1 and 2	Westmoreland
19	Keystone Coal & Coke Co.	Keystone Shaft	Westmoreland
21	Vesta Coal Co.	Ncs. 4 and 5	Washington
21	Crucible Fuel Co.	Crucible	Greene
21	Pickands Mather & Co.	Mather Collieries Nos. 1 and 2	Greene
22	Pittsburgh Coal Co.	Banning No. 1	Fayette
22	Pittsburgh Coal Co.	Forest Hill	Allegheny
22	Pittsburgh Coal Co.	Ocean No. 5	Allegheny
22	Pittsburgh Coal Co.	Ocean No. 2	Westmoreland
22	Pittsburgh Coal Co.	Gallatin	Allegheny
23	Buckeye Coal Co.	Nemacolin	Greene
23	H. C. Frick Coke Co.	Lambert	Fayette
26	Line-In Gas Coal Co.	Lincoln No. 1	Washington
26	Pittsburgh Terminal Coal Corp.	No. 9	Washington
26	National Mining Co.	No. 1	Allegheny
26	National Mining Co.	No. 2	Washington
26	National Mining Co.	No. 3	Washington
27	Pittsburgh Coal Co.	Somers No. 4	Westmoreland
27	Pittsburgh Coal Co.	Arnold No. 2	Fayette
29	Allegheny Pittsburgh Coal Co.	Springdale	Allegheny
29	Consumers Mining Co.	Harmar	Allegheny
29	Hillman Coal & Coke Co.	Oakmont No. 1	Allegheny
29	Inland Collieries Co.	Indianola No. 1	Allegheny
29	Republic Iron & Steel Co.	Bessemer No. 2	Allegheny
30	Penelec Coal Corp.	Penelec No. 5	Indiana
30	Bethlehem Mines Corp.	No. 78	Indiana
7	Pittsburgh Coal Co.	Mansfield	Allegheny
7	Langeloth Coal Co.	Langeloth	Washington
7	Pittsburgh & Eastern Coal Co.	Pittsburgh & Eastern No. 2	Washington
7	Carnegie Coal Co.	Atlas	Washington

Shaft Bottom for Mine Designed To Produce 13,000 Tons Daily

Cars May Be Discharged at Either Shaft, Yet Be Returned to the Empty Track Facing in the Right Direction

TWO separate skip hoists, one in the main and one in the airshaft, a ladderway in the latter, a provision on the top of the airshaft skip to carry men and material and an air compartment that is driven only to a point above the coal and then so connected as to eliminate overcasts above the empty track are some of the unusual features of a shaft mine recently opened in West Virginia.

The dimensions of the main shaft, which contains two hoist compartments only, are 12x22 ft. in the clear. The airshaft is 13x33 ft. in the clear and contains two hoist compartments and one compartment for air. Both shafts are 630 ft. deep to the top of the coal, which is here from 6 to 9 ft. in thickness. The bed worked is what is known as the Beckley seam, which is a semi-bituminous smokeless fuel of excellent quality for bunkering, export, steam raising, smithing and domestic purposes.

The shafts are 310 ft. apart and it is proposed to hoist coal from both by means of skips, rotary car dumps and solid-end cars of five tons capacity. The skips at the main shaft will hold 15 tons of coal each and those at the airshaft will have a capacity of five tons each. The hoists will be capable of making two and one-half trips per minute at the airshaft and one and one-half trips per minute at the main shaft.

With these figures in mind and assuming 6½ hours or 390 minutes of actual hoisting time per shift, it will be possible to handle 8,760 tons at the main shaft and 4,300 tons at the airshaft, after deducting 500 tons for a possible slate output. Both hoists combined will

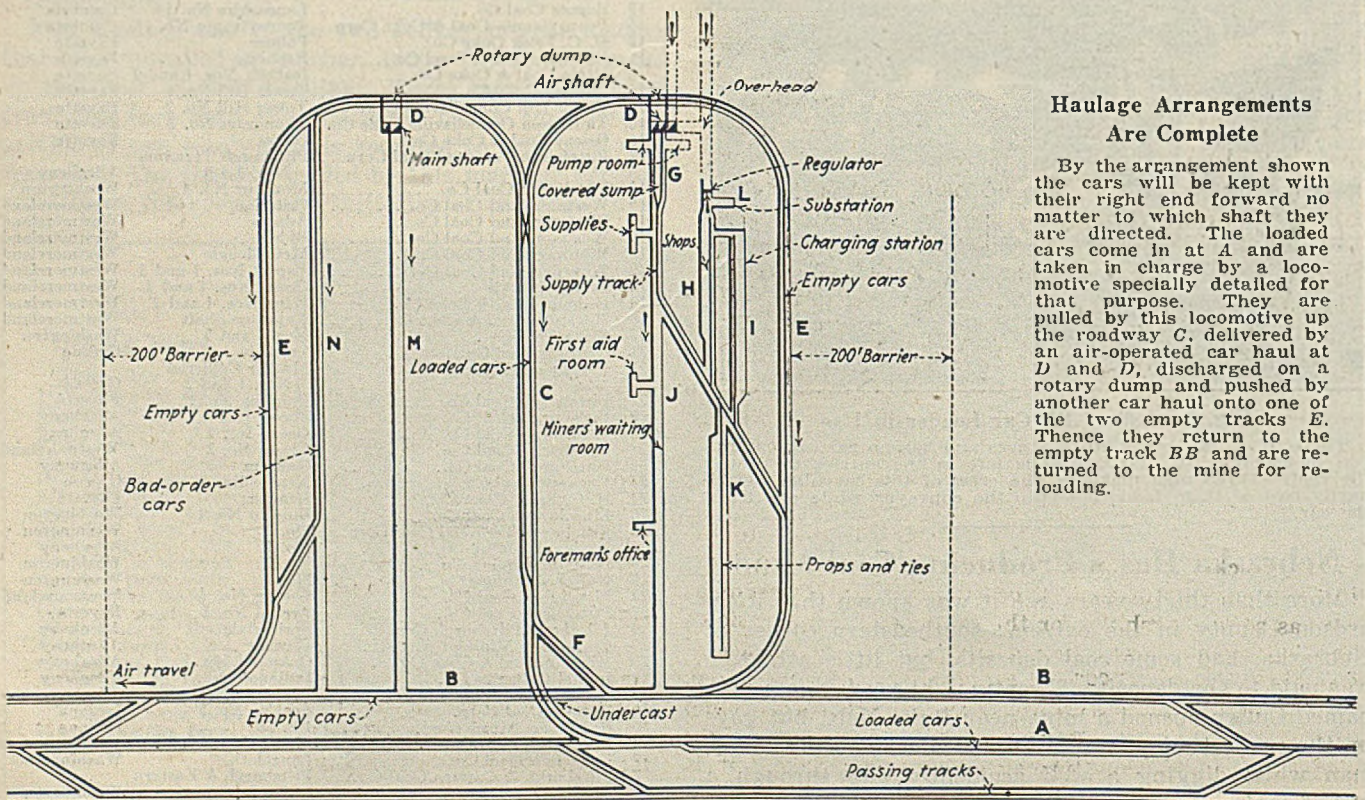
therefore be capable of delivering to the tipples 13,000 tons of coal in an 8-hour day. To produce this enormous tonnage it is apparent that the arrangements at the bottom for handling the mine cars must be unusually complete.

The mine engineers have given this matter careful consideration and have applied for letters patent on the plan shown in the accompanying illustration. The following considerations should be borne in mind:

- (1) Both shafts are to be used for hoisting coal.
- (2) Slate cars from any part of the mine must be directed to the airshaft dump.
- (3) All material will be taken in or out of the mine through the airshaft.
- (4) For this purpose the skips installed in this shaft will be provided with an upper deck, or cage, upon which to carry men and materials. These cages will deliver their loads on the side opposite the dump.
- (5) All loads are to be readily available for dumping at either shaft.
- (6) Empty cars must be delivered to the empty storage tracks ready for the main-line locomotives. For this purpose it is proposed to keep a storage-battery unit in service on the bottom to handle loads from the double tracks to the cage room, and to deliver empty cars from the side wings to the empty tracks. This, however, will not be necessary until the tonnage becomes large.

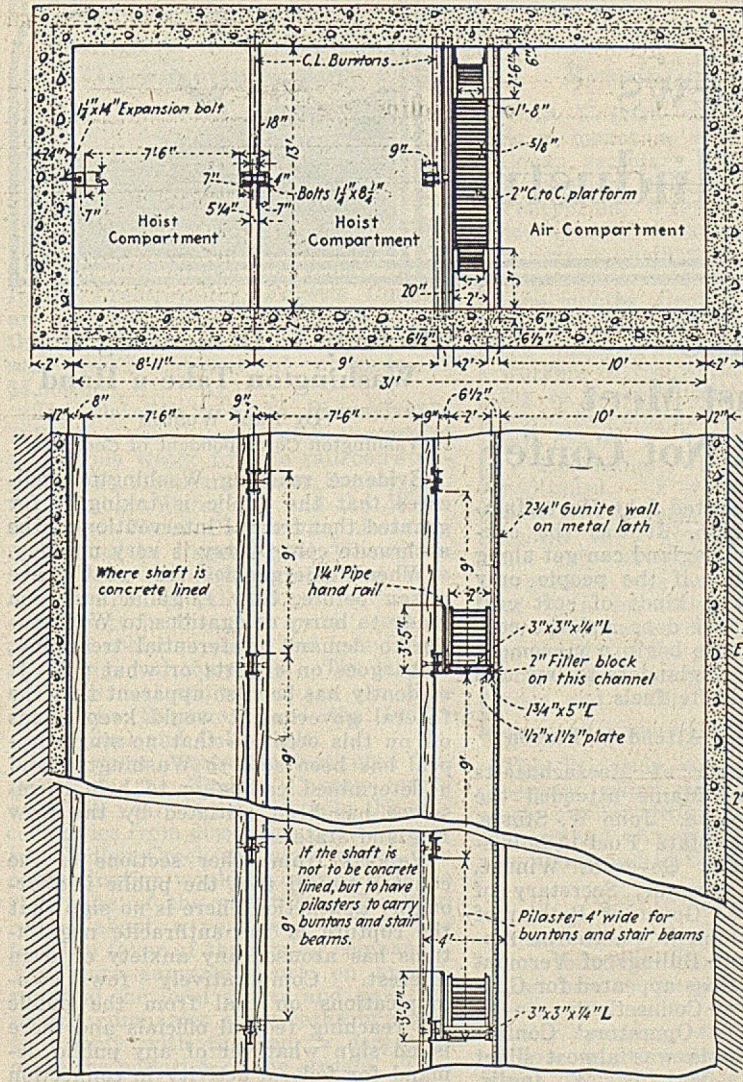
For a better understanding of the basic idea, the following explanation of the drawing will be of assistance: All loaded cars will be brought to the parting *A*. Here the main-line locomotives will cut off and pass through the designated crosscuts to the empty tracks *BB* and there pick up empties for the return trip. The inside, or bottom, locomotive will transfer the loads to the cage room *C*, which will be provided with double tracks and a diamond crossover. These tracks will be laid on a suitable down grade toward the shafts.

At *D* and *D* the cars will be picked up by air-operated car hauls that will pull them forward one car length to the two rotary dumps. Simultaneously similar ma-



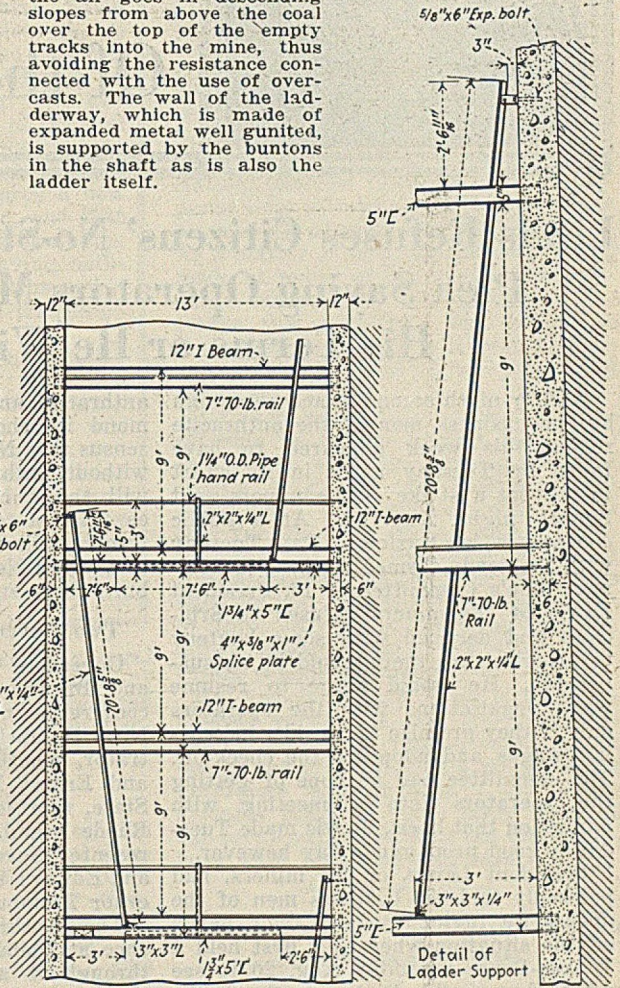
Haulage Arrangements Are Complete

By the arrangement shown the cars will be kept with their right end forward no matter to which shaft they are directed. The loaded cars come in at *A* and are taken in charge by a locomotive specially detailed for that purpose. They are pulled by this locomotive up the roadway *C*, delivered by an air-operated car haul at *D* and *D*, discharged on a rotary dump and pushed by another car haul onto one of the two empty tracks *E*. Thence they return to the empty track *BB* and are returned to the mine for re-loading.



Plan of Airshaft and Ladderway

The air compartment is stopped short of the coal and the air goes in descending slopes from above the coal over the top of the empty tracks into the mine, thus avoiding the resistance connected with the use of overcasts. The wall of the ladderway, which is made of expanded metal well gunited, is supported by the bunions in the shaft as is also the ladder itself.



chines on the opposite sides of the dumps will push the empty cars forward an equal distance. This machinery will pull fifty loaded cars on the level and will push an equal number of empties up a 2½-per cent grade.

Materials coming down the air shaft will be discharged on tracks G. For the purpose of handling men and materials the upper platform of the airshaft skips will be level with the material tracks when the skips are at rest on the bottom. The shops are located at H and a motor-charging station is at I. At J is a rest-room for the men. This will be provided with suitable seats. The room K is for the storage of props and ties intended for inside use. A substation is located at L, 2,300 volts being carried into the mine to this point through an armored, pick-proof cable.

The air compartment of the airshaft will stop before reaching the coal. From its bottom tunnels will be driven through the rock on a down grade to the floor of the coal. This will make it unnecessary to place overcasts above the empty track.

An entry, M, is driven from the main shaft to the empty tracks B, in order to provide an extra outlet for air and dust. Sprays will be installed at this point as well as at the airshaft, for the purpose of keeping down the dust when coal is being dumped. In the space N bad-order cars will be stored until they can be repaired.

It should be noted that cars cannot be turned around either during or after discharge, but always come right end foremost no matter which route they take. It is

this arrangement for which originality is claimed. End-dump and side-dump cars can be handled by this method.

No attempt has been made to show the arrangement of inside entries, as the details of the shaft bottom may be modified to suit local conditions of grades, roof and drainage. Neither has it been attempted to show crosscuts for ventilation. In this particular instance it is proposed, with the consent of the State Mining Department, to drive long entries at the bottom by the aid of electric blowers and flexoid tubing. In some states the mining laws require that crosscuts be driven at certain intervals. In such a case it would be necessary to modify the plan to the extent of introducing parallel headings at proper distances apart.

The locations of the pumprooms, of storage for supplies, of the first-aid room and the mine foreman's office are indicated on the plan.

In the airshaft between the air and hoist compartments a ladderway is placed. This is provided with platforms at 18-ft. intervals. A partition of gunite will separate the ladderway from the air compartment. This gunite will be applied to expanded-metal lath provided with a peculiar V-shaped construction. It will be reinforced with rods laid vertically in V-grooves.

It should be remembered that the ladders and platforms are not supported by this wall, but rest on steel bunions properly placed to carry them. To these the curtain wall itself is affixed. Details of the airshaft and ladderway are shown in Fig. 2.



Lewis Refuses Citizens' No-Strike Plea Saying Operators Must Meet His Terms or He Will Not Confer

A fifty-ninth-second peace campaign by the business men of the anthracite region this week appeared to have failed by Tuesday night in its effort to prevent a strike of the miners next Sunday night, Aug. 31. At a public conference in Hazleton, Pa., Tuesday with the newly-formed Anthracite Business Men's Committee of 16, President Lewis of the miners refused to arbitrate and declined with some hauteur to promise that there would be no suspension. He would agree to resume wage negotiations with the operators only if they promise to consider increasing wages and adopting the check-off. The committee had no hope of getting the operators into a meeting with miners on that basis. Lewis made Tuesday a good propaganda day however.

President Lewis, of the miners, had pointedly told the business men of the anthracite region to keep their hands off the situation when they first held a Wilkes-Barre assembly Aug. 20 to see what they could do to stave off the business collapse they feared for their towns during the impending strike. But they proceeded to form their Committee of 16 anyway. Lewis declared that nothing could avert a strike except surrender by the operators to the miners' demands for wage increases and the check-off. However, when John H. Uhl of Wilkes-Barre, chairman of the no-strike committee, called on him in Philadelphia Monday, Aug. 24, he agreed to take his aides to the Hazleton meeting the next day. But he demanded to know whether the Committee was against an increase in miners' pay. Mr. Uhl declined to commit himself, saying he could not speak for the whole Committee. The 16 was non-partisan, he said.

Prepare for Suspension

Swift preparations for the suspension proceeded day by day. Production is rushing. Prices however, are not skyrocketing. Retailers in the largest anthracite markets are warning their customers against panic. Thus the situation in the anthracite field took on a new interest.

Meantime, in New England, the conference of governors which was called by Governor Fuller of Massachusetts, constituted itself a permanent body to do what it can to protect New England against suffering due to a shortage of

anthracite, and elected John Hays Hammond its chairman. It was the consensus that New England can get along without anthracite if the people only will accept certain kinds of soft coal as other states have done and the conference will at once begin a movement to educate New Englanders to buy and burn these substitute fuels.

Two Governors Attend in Person

Governors Fuller of Massachusetts and Brewster of Maine attended the conference in person. John W. Storrs, New Hampshire State Fuel Administrator, represented Governor Winant, and Ernest L. Sprague, Secretary of State, represented Governor Pothier of Rhode Island. John D. Sherburne represented Governor Billings of Vermont and Edward W. Goss appeared for Governor Trumbull of Connecticut.

The Anthracite Operators' Conference at Philadelphia was almost silent through it all. Maj. W. W. Inglis, chairman of the operators' sub-scale committee which served at Atlantic City before the miners broke up wage negotiations, sent a communication to Governor Fuller at Boston, reiterating the operators' entire willingness to have the anthracite dispute arbitrated. He declared once more that a suspension on Sept. 1 or on any other date "will be indefensible."

Hammond Chuckles at Strike Talk

John Hays Hammond doesn't think much of the seriousness of today's strike talk because both operators and miners stand to lose and they both know it. "Two years ago," he said after the Boston conference of New England governors last week, "I told John Lewis, that I would defy him to call an anthracite strike. I said: 'Mr. Lewis, you are an intelligent man. You can call a strike but if you win you lose because you will find there will be no anthracite market left.' I haven't the slightest apprehension as to a strike of union bituminous fields: Competition between union and non-union regions is too keen."

Nobody Is Demanding that Washington Take a Hand

By Paul Wooton

Washington Correspondent of *Coal Age*

Evidence reaching Washington indicates that the public is taking it for granted that federal intervention in the anthracite controversy is very unlikely.

When emergencies in coal have arisen before, New England has been ready to hurry delegations to Washington to demand preferential treatment, embargoes on exports or what not. It evidently has been so apparent that the federal government would keep hands off on this occasion that no single appeal has been sent to Washington and a determined campaign to help themselves has been initiated by the New England states.

Reports from other sections of the country reveal that the public is thoroughly apathetic. There is no sign that the rupture of the anthracite negotiations has aroused any anxiety or even interest. Comparatively few communications on coal from the public are reaching federal officials and there is no sign whatever of any public demand for federal activity in connection with the prospective strike.

Observers in Washington are sitting back wondering what John L. Lewis will do next. It is his move and it is being awaited with keen attention. Whether or not Mr. Lewis will attempt to make good his veiled threat to call out his bituminous men naturally is the feature of the situation on which greatest interest is focused. It is hard to understand how he could disrupt the operations of the mine owners who have faithfully met the scale, but Mr. Lewis is subject to an occasional unreasonable lapse. This adds to the uncertainty and, incidentally, to the interest of the situation. Some think the leader of the Mine Workers is getting desperate and may act on impulse.

Judging by what Mr. Lewis writes in his new book: "*The Miners' Fight for American Standards*," he is entirely capable of calling out the bituminous miners Sept. 1. He fails to grasp the relationship between the high union scale and the highly successful competition of non-union shippers. There is not a hint of the principle long recognized by other unions, notably the clothing workers; that wages cannot exceed the ability of an industry to pay and that the union employer must be kept in business at all cost. The book holds that it is the union's business only to see that the employer pays the scale as long as he operates at all.

Drainage Decision Makes Operation of Mines Hard In Fayette County Field

Litigation arising at Uniontown, Pa., which will have a direct bearing upon coal mining operations all over the United States as well as upon water companies has been decided in the local and state supreme courts of Pennsylvania against the coal companies. As a result coal mining operations in the Indian Creek valley, Fayette County, are virtually sealed and bottled up for the time being, at least. They represent an investment of upwards of \$5,000,000.

The plaintiffs are the Pennsylvania R.R. Co., which maintains reservoirs to provide water for the railroad's engines, the Mountain Water Supply Co., the Dunbar Water Co. and the Westmoreland Water Co., serving domestic consumers in Fayette and Westmoreland Counties, and being affiliated more or less with the railroad company. The defendants in the case are a score or more of coal companies and individuals operating coal companies. The largest of these coal companies are the Melcroft, the Sagamore and the Indian Creek Coal and Coke Co.'s.

The water companies instituted litigation in the Fayette County courts some six years ago to restrain the coal companies from discharging mine waste into Indian Creek at points where this contamination would be carried into the reservoirs of the plaintiffs. The local courts about a year and a half ago found in favor of the mining companies. The state supreme court, on appeal, reversed the local courts and gave the mining companies six months in which to comply with the court's decree to cease the pollution of the stream. That six months' period has expired. The mining companies appealed to the local courts at Uniontown for a further extension of time and a decision last week held that the local courts were without authority to interfere with the findings of the supreme court and the appeal was denied. The effect of this decision is to force the suspension of mining operations on the part of the defendant coal interests.

Try Many Remedies

The coal companies explained in detail a long series of engineering and scientific investigations in an effort to dispose of the mine waste. Chemical treatment of the discharge was discarded. Surface drainage was also held not feasible. Boring of deep wells it was found would not answer the purpose.

The engineers recommended the construction of a long, deep, underground tunnel through a lower coal seam. Into this tunnel manholes would be bored from the higher seams so that the waste would drop into the conduit. Waste from mines on the opposite side of the stream to the conduit would be piped into the tunnel. The local courts did not act upon the suggestion, however, holding that the supreme court decree giving six months in which actually to eliminate the drainage was not subject to change on the part of the lower courts. Further action on the part of the coal companies has not been decided upon.

British Mine Chief Sees Revolution Ahead

An English coal strike would have meant a revolution, A. J. Cook, secretary of the Miners' Federation, told an audience at Pontypridd, Wales, Aug. 17. Encouraged by the success of the coal miners in maintaining the present wage scale for at least another nine months, Cook declared a new era had been established, and that the words of Karl Marx about the workers of the world having nothing to lose but their chains and a world to gain, has been translated into deeds.

"Revolution will come," Cook continued. "I want a revolution that will have a disciplined army behind it—a revolution that will not only have discipline but one organized with an objective ahead of it, a revolution understanding its goal, a revolution where the mentality of the people will be free from the terrible curses of criticism and apathy."

This litigation will establish a legal precedent which may be the basis of much similar litigation all over the country and of new legislation in state assemblies and in Congress.

Held to Precedents

The local court in its original opinion which found in favor of the coal companies held to the previous legal precedents in similar proceedings that, broadly speaking, water had the right to flow to its natural levels by the forces of nature and gravitation. The state supreme court disregarded these precedents and held for the water companies. Being an entirely intra-state litigation and not involving interstate commerce, the U. S. Supreme Court held that the decision of the state supreme court was not subject to review.

The effect of the state supreme court decision is to deny the coal companies any rights whatever in the streams. Its effect further would seem to be that every industrial concern whose operation involves waste discharge of a contaminating nature into streams of a public character or quasi-public character, have no rights whatsoever in those streams.

Minerals resources reports which heretofore have been written by geologists of the U. S. Geological Survey, in the future will be written in the division of mineral technology of the Bureau of Mines. This division is to become the clearing house of the bureau for economics and scientific reports which are to be used in conjunction with the statistics of the Minerals Resources division. Some of the annual chapters will be written in the division of mineral resources, as F. J. Katz, F. G. Tryon, J. M. Hill and Victor Heikes are geologists as well as statisticians. The research work on the non-metallies will continue to form a part of the work of the technological division.

Central Pennsylvania is Ready to Gain Business If Anthracite Men Quit

Talk of a strike in the anthracite field has added a little stimulus to the mining of coal in central Pennsylvania and a few of the mines which have been idle all year are working part time. Central Pennsylvania can, according to Secretary Charles O'Neill of the Central Pennsylvania Coal Producers' Association, produce 1,750,000 tons of prepared sizes of coal each month that can be used as a substitute for anthracite. As a matter of fact, adjustments can be made at many of the central Pennsylvania mines that will materially increase this quantity. This would be low-volatile coal, which is desirable for domestic fuel. Some of it is practically smokeless.

Gains in production in central Pennsylvania up to the present time have been slight, however. During the week ending Aug. 15; the loadings were 13,572 cars as compared with 13,429 cars for the week ending Aug. 8. The loadings for the first two weeks of August totaled 28,229 cars, compared with 24,135 cars the first two weeks of July. All gains are being made in mines working under the 1917 scale. Prices remain the same.

In anticipation of the largely increased volume of coal transportation out of the central Pennsylvania region due to the possibility of a strike in the anthracite field on Sept. 1, the Pennsylvania R.R. has put a large force of car repairmen to work in the Hollidaysburg yard repairing coal cars.

Water Power Development Is Rapid in the East

The Department of the Interior, through the Geological Survey, has just released a report on the developed water power of the United States in 1925. The total 1925 capacity of water wheels installed in plants of 100 hp. or more, was about 10,038,000 hp., an increase of about 951,000 hp., or nearly 10½ per cent, over the total capacity of water-power plants in 1924 (9,087,000 hp.). Of this increase 99 per cent was in electric public-utility plants and 1 per cent in manufacturing plants.

The five leading water-power states in order of their rank and the developed water power for each are as follows: New York, 1,713,551; California, 1,531,480; Washington, 560,693; North Carolina, 534,600; Maine, 476,627. North Carolina has moved from fifth place in 1924 to fourth place in 1925. Based on present practice at fully developed water-power sites the undeveloped water power in the five leading states will permit of the installation of the following additional capacities in water wheels, expressed in horsepower: New York, 4,734,000; California, 7,145,000; Washington, 9,672,000; North Carolina, 526,000; Maine, 920,000.

The report indicates that water power development in the middle Atlantic, south Atlantic, and east-south Central states is progressing more rapidly than in any other sections of the country. New England's relative standing continues to decrease.

First Two Pittsburgh Mines Open On 1917 Wages—District Union Is Forming—Ohio Reopens Two More

A movement to reopen union mines on a union basis but at 1917 wages is making a start in the Pittsburgh and the Ohio fields. The Pittsburgh Coal Co. on Aug. 20 opened Banning No. 2, which is 43 miles from Pittsburgh, and on Monday, Aug. 24, the Boggs mine of the Montour & Lake Erie Coal Co. near Imperial, Pa., started operations. In the Pomeroy Bend field in Ohio two more 1917-basis mines on Aug. 20 were added to the list of those operating.

In every case, the mines were reopened upon petition of the men. Thus the operators take the position that they are not breaking a labor contract. Instead, the contract based on the high-wage Jacksonville agreement is changed by agreement between both parties to it. The reopening of the Pittsburgh field mines represents the first fruits of the Pittsburgh Chamber of Commerce effort to induce union miners of that region to break away from the United Mine Workers, form an independent district union and go to work at 1917 wages. E. S. McCullough, a former international vice-president of the United Mine Workers is directing the campaign.

Almost simultaneously with the opening of Banning No. 2 mine of the Pittsburgh Coal Co., officials of the United Mine Workers at Pittsburgh called out on strike 70 men engaged in construction work at the Warden tippie of the same company, near McKeesport, Pa. The men were not digging coal. They were at work inside, cleaning up in connection with the building of the new tippie which is part of a \$600,000 improvement project at the mine. It had been the policy of the company to give jobs in the repair project to many of its former employees, members of the United Mine Workers, in order to keep them from idleness.

The Banning No. 2 mine is at Whitsett Junction, on the Youghiogheny branch of the Pittsburgh & Lake Erie R.R., 43 miles from Pittsburgh. It normally employs 400 men. The first day operations were begun, 36 men were put to work and on Friday this was increased to 52.

The United Mine Workers had 100 pickets on hand the first day, but quietness was general. On the second day but 88 were on picket duty. The company put the men in the mine at work cleaning up and it is expected coal will be shipped soon. The coal from this mine is largely used for by-product purposes.

The Pittsburgh Coal Co. now has 39 other mines in the Pittsburgh district idle. Officials of the company were unable to predict when another mine would be opened, or where, declaring that it depended entirely upon the desires of the former employees of the company.

The petition signed by each of the men at Banning No. 2 reads:

"I, being an employee of the Pittsburgh Coal Co. at Banning No. 2 mine, realizing

that it is no longer possible to operate the mines under the Jacksonville scale, request that the company afford me employment at the November, 1917, wages.

"It is my hope that the coal company will at once make every effort to procure sufficient business that will make possible my request, which I agree to abide by. It is understood that when a sufficient number of men at this mine have signed similar petitions so that work may be resumed, an opportunity will be afforded the representatives of the local union which we may form, to meet with the officials of the company for the purpose of negotiating wage and working conditions that shall govern."

Operating conditions in the Pittsburgh field under the Jacksonville scale appear to be as difficult as anywhere in the country. Mines reporting to the Pittsburgh Coal Producers' Association for the week ended Aug. 15 showed a total production of 58,057 tons, or 9.2 per cent of capacity. This compared with 9.7 per cent in the previous week and 28.6 per cent in the same period last year. Thirteen out of 80 mines were reported in operation.

The two mines that were opened on the 1917 basis in the Pomeroy Bend field Aug. 20, are the Pittsburgh Coal Co., Mine No. 17, where the tippie and power house were burned on June 17, and the Blackstone mine at Rutland, O., formerly the old Maynard Mine No. 4, where the tippie was destroyed recently. The first reopened with 75 men and the second with 80 men.

"We have all of the men we want to operate the mines," said an official of one of the companies. "And they are not imported from other fields. Neither are they farmers. They are men who formerly belonged to the union and who are willing to come back to work on the 1917 scale. We intend to operate on the 1917 scale and we will continue to operate. As fast as our tipples are burned we will reconstruct them and begin operations anew."

Union Trying to Organize Logan County Now?

The presence of several important United Mine Workers organizers including Van A. Bittner in Logan County, long an open-shop mining region, has stirred up great discussion there. Mr. Bittner is said to have wired President Lewis: "Plans are working fine. Outlook very encouraging" and to have shown the telegram around rather promiscuously. Just what "plans are working fine" operators say they do not know; however, it is generally believed that organizers have been quietly at work for a long time in Logan among non-union men and that loyal unionists have now been planted in most mines. If an organization drive actually makes a strong start there, it will be the first union effort since the miners' armed march on Logan several years ago. The union this time, however, apparently will have discarded the gun for within-the-law methods.

"Liquid Coal" Makes a German Stew

Industrial circles in Germany are agog over a persistent rumor that Professor Bergius, of the Badische Anilin and Soda Factory, has discovered a way to liquify coal and that this is the reason for the Badische purchase of the Hugo Stinnes Riebeck Montan Co. This was one of the property sales by German banks from the former Stinnes holdings which incensed friends of the Stinnes family who say the banks sold too cheaply. It is generally believed by technical men that the secret of turning solid carbons into liquids is now held by the Badische concern though the results of the most recent tests were not published. It has been proved that 1 lb. of liquid fuel can generate the same amount of heat as 3 or 4 lb. of solid. It is pointed out that fluids are easier and cleaner to handle than solids with the advantage of lesser weight when transported.

June Railway Fuel Costs Lower than in May

Figures compiled by the bureau of coal economics of the National Coal Association, from the monthly reports of Class I railroads to the Interstate Commerce Commission, show that the cost of coal, including freight charges paid thereon, used by those railroads in locomotives in transportation train service during the month of June was slightly lower than in May. The averages per net ton for June are as follows: eastern district, \$2.73; southern district, \$2.19; western district, \$3.04; the United States, \$2.70. These averages represent a decrease from May of 6c. per ton in the eastern and southern districts, and a decrease of 3c. per net ton throughout the whole country. Comparison with similar figures for June, 1924, reveals a reduction in average cost of 36c. per ton in the eastern district; 41c. in the southern district; 21c. in the western district, and 32c. for the entire United States.

Twin Cities Want Illinois Coal by River

A conference is to be held in St. Paul, Minn. between Twin Cities business interests and representatives of the Illinois Coal Operators' Association with Brig.-Gen. T. Q. Ashburn, chief in the inland waterways transportation. The subject is the use of the Mississippi River for transporting southern Illinois coal to the Twin Cities by barge. The question of terminals is to be discussed. It is claimed that shipping coal by barge would cut the cost \$2 a ton. If the plan is feasible, it will mean a restoration of a considerable tonnage to the all-rail mines which have been nearly eliminated by the revised freight rates from Franklin County to the Twin Cities.

West Virginia Sees Indications of General Soft-Coal Strike—Panhandle War Seems Definitely Lost by Union

West Virginia is plainly getting ready for another and more general labor conflict. The state is shot through with reports of labor activity leading many observers to the belief that the international officers of the United Mine Workers expect to carry out their threat of a nation-wide soft-coal strike Sept. 1. The actual strike within the state—that of the Panhandle region where the union has failed—is overshadowed by other impending events. In the region, where the strike is still theoretically in effect, the output from non-union mines during the first half of last week was 4,457 cars and that from union mines, 716 cars.

The conference of soft-coal union leaders in the Bellevue-Stratford hotel in Philadelphia last week, when a general survey of the anthracite and bituminous coal fields was made, has been much discussed in West Virginia. Those reported to have attended the conference were: International President John L. Lewis, Van A. Bittner, of Fairmont; Capt. Percy Tetlow, of Charleston, President of District No. 17; John O'Leary, of Pittsburgh, Pa.; Andrew R. Watkins of Yorkville, O.; Edward Dobbins, of Belleville, Ill.; C. C. Webster, of Terre Haute, Ind.; and D. K. Watkins of Albia, Ia., international executive board members, and Attorney Thomas C. Townsend, of Charleston, chief legal representative of the union in West Virginia.

It is believed that the union has done much preliminary work in the non-union fields of southern West Virginia. With hundreds of coal miners leaving the Central Competitive Field and working and intermingling in the non-union fields, it is difficult to ascertain whether they are actually there to remain at work or have been planted there to lead strikes.

The situation in northern West Virginia, formerly the union stronghold, has developed some peculiar aspects. Many of the miners, returned to work on the 1917 wage scale say they are through with the union, but the consensus is that while the union is on the rocks now it is apt to have a quick recovery, if operators do not use judgment. A large number of coal miners returned to work because of the pressure of circumstances and the ideals of the unions are as precious to them as before.

Union Agents Talk to Miners

One of the reasons that non-union operators believe that another strike is apt to develop is the persistent manner in which agents of the union try to penetrate non-union mine properties to talk to the miners. In some cases men supposed to be selling butter, produce, vegetables were found to have no supplies to offer.

Quiet reigns in the Panhandle section of northern West Virginia from last reports. Lee Hall of Columbus, president of the Ohio miners, arrived in

Wheeling, Aug. 19, and made an inspection of the tent colonies in Brooke and Hancock Counties. In commenting on the Panhandle strike, Mr. Hall said: "We are all very well pleased with the progress that is being made and the manner in which the miners are sticking to their colors. The salvation of the mining industry depends on signing the Jacksonville agreement. We expect to win the strike in West Virginia."

For some time there have been rumors in the region about the proposed investigation by the United States Senate of alleged contract-breaking in northern West Virginia. It is understood that certain miners' leaders have written to members of the Senate on that point. The belief is spreading here that International President John L. Lewis hopes to point out alleged contract-breaking in northern West Virginia, if the government authorities become involved in anthracite arbitration. Unquestionably the union miners are retaining this as a trump card.

Cut Wages of Officials

How certain coal companies in northern West Virginia can afford to pay the union scale while others claim they cannot and, accordingly, adopted an open-shop policy is a problem that has been widely discussed in the region recently. It is understood that one company working on a union basis has been able to continue by making a slight cut in officials' wages for a limited period. Charges have been openly made that coal companies are manipulating weights in their favor but no proof has been offered. There are non-union coal operators, however, who are free to admit that their operating costs are high and in a number of instances believe that union mines can almost operate as cheap as they can.

Mineral Resources Division Staff Is Chosen

In connection with the organization of the division of mineral resources and statistics of the Bureau of Mines, Department of Commerce, under the direction of F. J. Katz, engineer in charge, W. W. Adams has been designated as executive assistant to the engineer in charge. Mr. Katz, in addition to his general administrative duties, will supervise the collection of statistics relating to metals and nonmetals (except fuels). F. G. Tryon will be in charge of the coal and coke section. The petroleum and natural gas section will be under the direction of G. R. Hopkins; mine accidents will be under W. W. Adams; and foreign mineral reserves under B. L. Johnson. The Salt Lake City, Utah, field office will be conducted by V. C. Heikes; the Denver, Colo., office by C. W. Henderson; the San Francisco office by J. M. Hill; and the Joplin, Mo., office by J. P. Dunlop.

With the transfer of the division to the Bureau of Mines, effective July 1,

Not Planning Strike Says Illinois Union Head

The more or less loose talk about a general soft coal miners' strike Sept. 1 in sympathy with anthracite men who expect to walk out on that date gives the radical members of the United Mine Workers their opportunity. One of them, in Illinois—William McCreysal—made a speech before a labor organization in Chicago the other day declaring the union miners of Illinois were all ready to join in such a strike and that the state officials had met and arranged it all. This brought a prompt and decisive statement from Frank Farrington, president of the Illinois district. Farrington denied that Illinois union officials had done a thing toward planning a strike. And there you are.

the distribution of the annual volumes, "Mineral Resources of the United States," and of the various separate chapters of these volumes, comprising annual reports on the production and consumption of the different minerals, passed to the Bureau of Mines. This will include the separate chapters already published and still available for free distribution, as well as the chapters and volumes to be published in the future. Announcement of the issuance of these documents will hereafter be given in the postcard notices of new publications of the Bureau of Mines.

Sunlight and Verona Coal Companies Merge

Announcement has been made of the sale of the entire capital stock of the Sunlight Coal Co., with headquarters at Indianapolis, Ind., to Joseph E. Hitt, of Chicago. The announcement marks the consummation of months of negotiation for the merging of the Sunlight Company and the Verona Coal Co., of Chicago, with their Illinois, Indiana and Kentucky strip and shaft mines. The new company will retain the name Sunlight Coal Co. Appraised values of the combined properties of the new corporation are in excess of \$6,000,000. Daily capacity of mines operated by the company total approximately 7,500 tons.

The Indiana office of the new company has been transferred from Indianapolis to Boonville, Ind., where the old Sunlight company owned and operated extensive stripping properties. Mr. Hitt, who is one of the most prominent and successful operators of the middle-western field in addition to being president of the Southwest State Bank of Chicago and director of several other Chicago banks and manufacturing corporations, will be president of the new mining company. Thomas C. Mullins, who was general manager of the old Sunlight company, will become vice-president and general manager of the new company. Samuel Ashby, of Indianapolis, was president of the old company.

Illinois Miners' Engineer Backs "Giant Power" Plan

The report of an engineer employed by the United Mine Workers was made public at Springfield, Ill., Aug. 24. It approves the "giant power plan" of President Frank Farrington, head of the Illinois union miners, as "essentially practicable from an engineering standpoint," and urges that the project "be pushed with energy and enthusiasm."

Revival of prosperity for the coal industry of Illinois, more and steadier work for miners, a 20 per cent increase in the output of the mines, a cure of the smoke nuisance and electricity for every hamlet and farm in Illinois are a few of the benefits to come, if "giant power" plants become a reality, the report reads.

Otto M. Rau, a consulting engineer of Philadelphia, Pa., with a long record of service, was the author of the report. He brings to his support Prof. S. W. Parr, of the University of Illinois, acknowledged as a high authority on coal. Prof. Parr calls the Farrington plan "a step in the right direction."

Last year President Farrington proposed his plan at the Peoria convention of the Illinois mine workers, and won permission to retain Mr. Rau. Scoffers among miners were eloquent. They demanded to know how a plan that would conserve coal, and get more use from it, could help them, whose livelihood depended not on conservation of Illinois coal, but on consumption.

Farrington's plan is as follows:

"1. Create a semi-public corporation in which District 12 (The Illinois Mine Workers), the operators, the consumers, and the state would be represented, so as to safeguard the interests of all these factions.

"2. To establish through this corporation one or more "giant power" plants on the Ohio and Mississippi Rivers for the manufacture of electricity through burning Illinois coal.

"3. To form an integrated network of major and minor power lines to make electricity available to every hamlet and farm house in the state.

"4. To treat coal at the 'giant power' station in order to save and to sell the valuable by-products now wasted.

Economics and Engineering Involved

"There appear to be two factors involved in the present crisis in the Illinois coal industry," says Mr. Rau in his report, "one an economic and the other an engineering factor. First, coal is being delivered into Illinois from foreign fields at a price lower than that charged the consumer for Illinois coal. Second, Illinois coal can not be stored as effectively as bituminous coal from other fields. The creation of a 'giant power' industry in Illinois would eliminate both of these factors.

"Freight rates constitute a large part of the cost to the consumer of delivered coal. By developing a method for the pre-treatment or distillation of raw coal at the mines and burning the poorer grades in 'giant power' plants, distributing the power thus produced over high tension wires, as is contem-

Herrin Strip Pit Is "Snowbirding"

The notorious Herrin strip pit, where a mob led by union men slaughtered 21 non-unionists in 1922, once more bobs into print. This time its cause is plead before the Chicago Federation of Labor by one William McCrysal. In his reported speech he urged all union men of Chicago to band together to buy coal from the Mammoth Coal Co. this winter at \$2.25 a ton. The mine more than a year ago was bought by the Mammoth Coal Co., said to be financed by the Illinois district of United Mine Workers. At once a huge damage suit by the former owners against the union organization was withdrawn. And now Illinois is treated to the spectacle of a union-owned mine indulging in "snowbird" tactics to the detriment of other mines where union men are employed.

plated in the Farrington plan, a permanent and steadily-increasing demand for large quantities is insured, the delivery of this power can be made at less cost than the present wasteful way of distributing raw coal and there is no problem of coal deterioration during transport or storage.

"In addition to stabilizing the demand for coal from Illinois mines, the introduction of approved methods of pretreating raw coal would enable your 'giant power' plant to offer to the big cities of the state a form of semi-anthracite coal that is practically smokeless. When it is considered that not less than 15,000,000 tons of anthracite from Pennsylvania is shipped annually into the area which could be supplied from Illinois mines, the importance of manufacturing semi-anthracite within the boundaries of your state can at once be seen.

"Furthermore, the establishment of 'giant power' plants would open up a hitherto untouched market for power in the southern portion of your state and be of untold benefit to the farmers in that section."

Mr. Rau says that of 237,181 farm families in Illinois only 4 per cent now have electric service and that this market alone would lend considerable basis for 'giant power.'

Coal tonnage from the mines of Utah having direct railroad service is reported as follows by the district office of the United States bureau of mines, in co-operation with the geological survey, for June and the first six months of 1925, with comparisons with former years:

Year	June	First 6 months
1925	280,830	2,019,046
1924	261,975	1,946,766
1923	333,230	1,114,128
1922	337,629	2,100,251
1921	220,941	1,729,456
1920	531,600	2,863,450

Strikers Wives Can Pray at Oklahoma Mines Now

Prayer meetings by striking miners in the Henryetta (Okla.) field were resumed Aug. 20 following a decision by the state criminal court of appeals that religious meetings were a legal form of picketing. Coal operators and a sheriff had held that prayer was masking union terrorism. Union miners and sympathizers opposing the operation of mines under less than the 1924 wage scale, formed a parade at Schülter and marched to the B. & A. mine, where prayers were offered and a resolution was adopted thanking the court, for its decision. The praying is done mainly by strikers wives while the men themselves in as large numbers as possible take up their position a stone's throw distant. While union leaders counsel peaceful picketing, state troops are still stationed there to prevent any disorder.

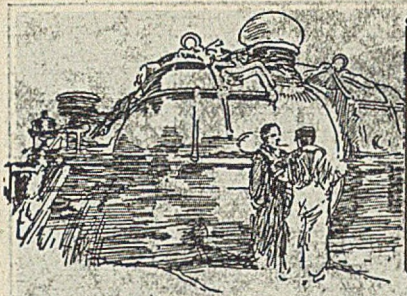
The reopening of Oklahoma mines on the 1917 wage scale brings more plants into operation every week. The most recent opening was at the McGinnis Coal Co.'s mine near Henryetta. The McAlester Fuel Co. on Aug. 10 opened its Bernice mine near Russellville, Ark., on a 1917 basis.

Railroad Equipment Is in Excellent Condition

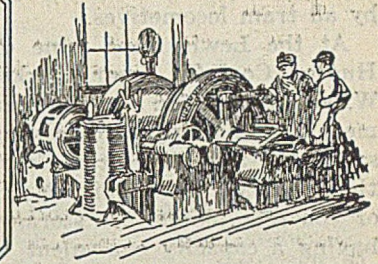
Railroads are in excellent condition to handle traffic of all sorts including coal in case of any sort of coal production difficulty this fall. Fewer locomotives were in need of repair on Aug. 1 this year than at any time since Jan. 1, 1924, according to reports filed by the railroads with the Car Service Division of the American Railway Association. The number in need of repair on that date was 10,658 or 16.7 per cent of the number on line. This was a decrease of 566 under the number in need of repair on July 15, when there were 11,224 or 17.5 per cent. It also was a decrease of 447 compared with the number in need of repair on Aug. 1 last year and a decrease of 897 compared with the number in need of repair on Aug. 1, 1923. Serviceable locomotives in storage on Aug. 1 totaled 6,313, a decrease of 218 compared with the number of such locomotives on July 15.

Freight cars in need of repair on Aug. 1 totaled 197,281 or 8.4 per cent of the number on line. This was a decrease of 2,391 under the number reported on July 15. Freight cars in need of heavy repair on Aug. 1 totaled 153,674 or 6.6 per cent, a decrease of 657 compared with July 15. Freight cars in need of light repair totaled 43,607 or 1.8 per cent, a decrease of 1,734 compared with July 15.

Disturbances which had marked the wildcat strike of coal miners at Zeigler, Ill., last week, resulting in the death of one man, broke out afresh Aug. 18 when gangs stopped the few miners who wanted to go back to work in the Bell & Zoller mines. President Farrington, of the Illinois district of United Mine Workers, says the outbreak is mere sovietism and that he is going to compel the strikers to fulfill their contract or get out of the union.



Practical Pointers For Electrical And Mechanical Men



Home-Made Lathe Now Does Shop Work Which Tied Up Expensive Machine

About many mine shops the wood lathe is a machine that is conspicuous by its absence. Nevertheless, most such shops have enough work that can and should be done in a machine of this type to fully warrant its installation. It, doubtless, is reasoned, "why buy a wood lathe when the work can be done in an engine lathe?" Such reasoning takes no account of the time lost in turning wood by the more expensive machine that might be employed in work on metal.

At the No. 4 shops of the Kingston Coal Co., Kingston, Pa., some years ago the need for a wood lathe was keenly felt. Accordingly the machine shown in the accompanying illustrations was built. The bed of this lathe is made up of channel irons mitred together at the corners and fastened by means of angles and rivets. The headstock is of cast brass and was made in the company foundry, as was also the tail stock. The cone pulleys were originally part of an engine governor, but were salvaged from the scrap heap and put to use on this lathe. The live spindle was turned up in the shop.

Faceplates for both front and rear

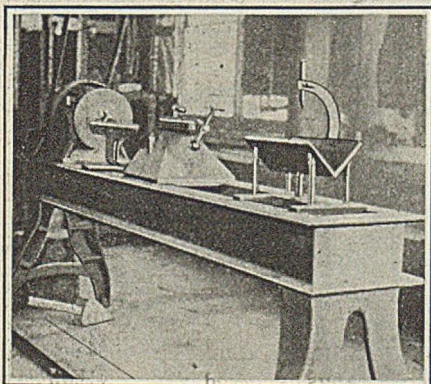


Fig. 1—Front View of Lathe

The bed of this machine is built up of pieces of channel iron mitred together at the corners and fastened by means of angle irons. Head and tailstocks are of brass cast in the shop foundry. The cone pulleys and lathe legs were salvaged from the scrap heap.

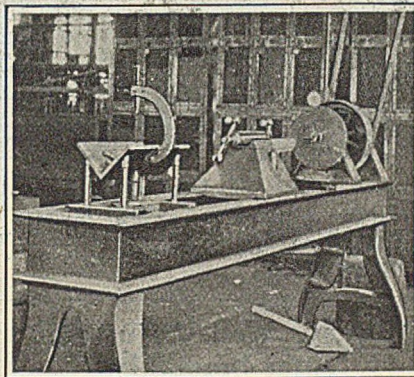


Fig. 2—Rear View of Lathe

This shows the device employed for holding track rollers during the boring process. The V-trough together with the C-shaped arm carrying the holding spike can be raised or lowered until the roller is in proper position. The whole device can then be fed forward against the bit or drill, carried in the headstock, by means of the tailstock spindle. After the gudgeon hole has been bored the tail spindle is backed off and the roller and its support withdrawn by hand.

ends of the headstock were made from flanges. Work that will swing over the ways is, of course, turned on the front or smaller faceplate while larger work is turned on the rear plate overhanging the lathe completely, the tool rest being then supported from the floor. The regular tool rest consists of three pieces of strap iron bent and formed to proper shape and all bound together in the desired position by means of one bolt fitted with a hand-wheel nut.

One of the chief uses to which this lathe is put is the making of track rollers. At this mine props and other timbers are cut to approximate length on the surface. In this process the small ends of the sticks are cut off. These vary in length from a few inches to 4 or 5 ft. They are utilized in making slope rollers.

After they have been turned to uniform diameter on this lathe their ends are bored or drilled for the insertion of the gudgeons upon which they revolve under the action of the cable. To facilitate boring the roller

ends, a special device has been made. This consists of an underframe that can be slid readily along the lathe bed, a V-trough that receives and centers the roller but which can be raised and lowered by means of a screw, and a device that keeps the roller from turning consisting of a movable spike working up or down through the end of a C-shaped arm.

When it is desired to bore gudgeon holes this device is inserted between the head and tailstocks of the lathe in place of the tool rest. A roller is then laid in the V-trough, the holding spike brought firmly against it and clamped in position by means of a set screw. The trough and roller may then be raised or lowered to the proper position, a bit or drill inserted in the live spindle and the roller fed against it by means of the tailstock center screw. When the hole has been drilled to the desired depth the tailstock screw is backed off and the roller withdrawn by hand. It can then be turned end for end and the process repeated.

By the use of this lathe track rollers, patterns for castings and many other pieces of wood work can be turned up quickly and with all necessary accuracy. Use of this machine thus obtains results that are entirely satisfactory and a larger engine lathe is released from doing work to which it is not adapted.

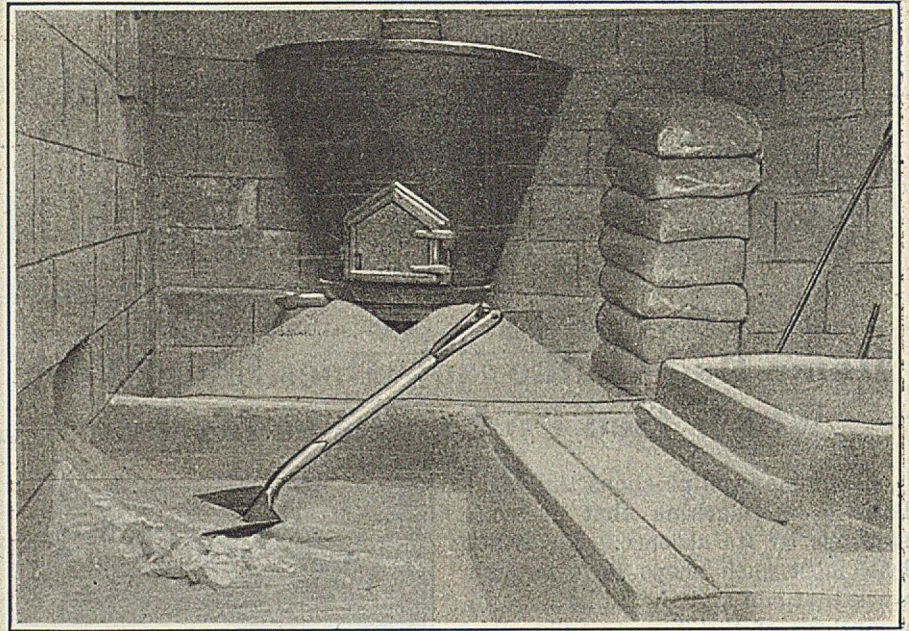
Sand Is Dropped Through Borehole to Mine

The scheme of dropping sand for haulage service through a cased borehole from the drying plant on the surface to a storage bin on a haulway underground is being looked upon with greater and greater favor. Its chief merit lies in the elimination of shoveling of the sand from the dryer into a sand car and the inconvenience and delay in transporting the sand by this means. Its application is limited to slope and snaff mines, of course, where a sand-drying plant may be erected adjacent to other buildings for convenience of attendance and yet be

directly over a haulway frequented by all tram locomotives.

At the Lewis slope mine of the Hudson Coal Co., near Clarksburg, W. Va., is provided a useful arrangement for hauling and drying its sand. In the illustration is shown the drying plant which is constructed of concrete blocks. A storage bin, having a capacity equivalent to one railroad car, is separated from the drying compartment proper by a reinforced wall. In this wall at the floor line is a hole through which the sand is shoveled from the bin to the stove. Near the stove is a concrete well which converges downward to a 3-in. borehole casing. On the collar of this well, which extends about 10 in. above the floor, rests a screen with sides of wood. The screen may be lifted and overturned to dump over-mesh particles.

The borehole pierces the roof of a concrete storage bin in the mine, near the main bottom.

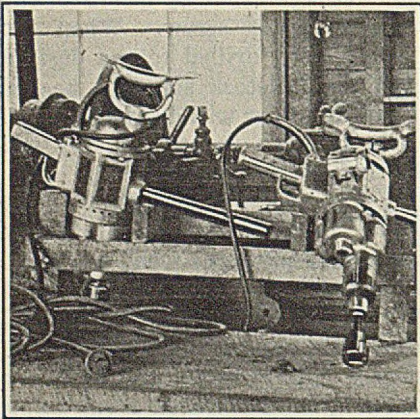


Sand Drying Plant and Top of Borehole

Storage is behind the wall at the left. Sand is shoveled from the inlet at the floor line into the stove. Dried sand is then dumped through the wooden-frame screen at the right into a hopper converging to a 3-in. cased borehole leading to a bin in the mine workings below.

Power Tools Make Shop More Efficient

To assist in the repair and rebuilding of mine cars at the Detmold mine of the Maryland Coal Co.,



Each of These Does Many Jobs

The Maryland Coal Co. does not believe in expecting men to do what machines will do more safely and quickly. Consequently it has installed two machines in the chucks of which may be inserted a drill, a socket wrench or a screwdriver.

power tools are provided. The car shop is equipped with a power saw, a compressed-air chisel hammer and a combination portable power drill, socket wrench and screwdriver that has proved to be of material aid to the repair men. Any one of these three tools fits in the chuck of an electrically-driven machine, two of which are displayed in the accompanying illustration.

ELKINS READ,

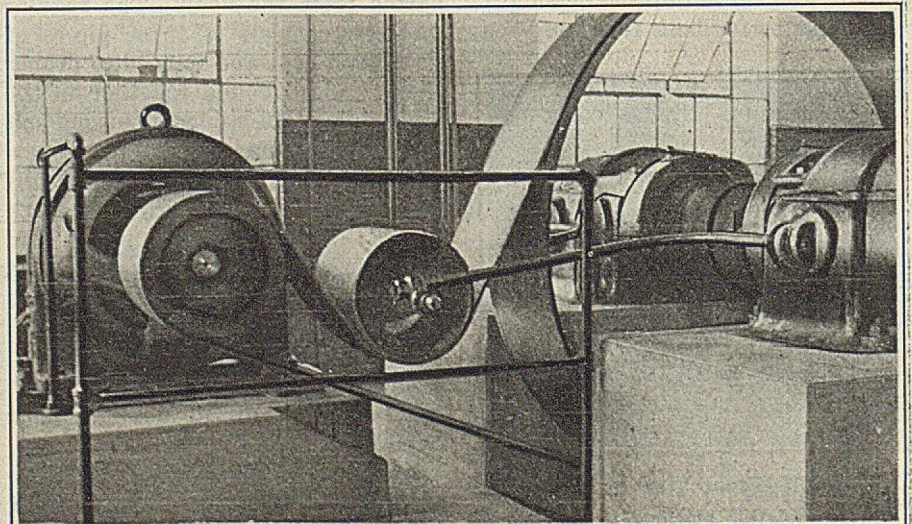
General Supt.,

Maryland Coal Co., Lonaconing, Md.

Pulley, Well Adjusted, Runs Smoothly

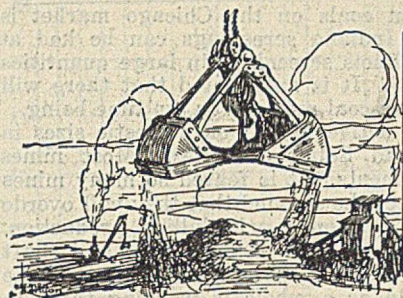
Throughout the mining field are many different types of speed reducers, but rarely do they operate as smoothly or can they be adjusted as easily as one at the Clifford shaft of the Hillside Coal & Iron Co., near Forest City, Pa. Usually each type has some particular application to which it is best suited. The greater use of equipment in modern mining methods has introduced machines of various speeds and such a condition has made necessary many belt drives. Unfortunately, it is not always that these reducers are properly maintained and adjusted.

At the Clifford shaft, an air compressor, which supplies air for drills and a hoist inside the mines, is connected to its motor through a belt. The motor is a 100-hp., 440-volt synchronous unit and is connected to the compressor by a belt with an idler pulley. The illustration shows the complete arrangement. The unusual feature is the smoothness with which the drive runs. The picture was taken when the motor was fully loaded and running at full speed. Note how steadily the idler runs. There is no jumping or flopping of the belt because the idler is mounted between two arms extending from the compressor cylinders. The idler may be adjusted in any direction.

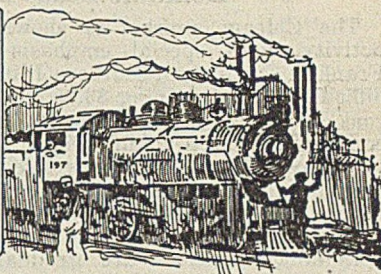


This Belt on a Compressor Drive Doesn't Flop About

The photograph, taken while the machine was operating, shows how smoothly an idler can be made to run by properly adjusting its position on the supporting arms attached to the compressor.



Production And the Market



Shadow of Oncoming Anthracite Strike Strengthens All Markets

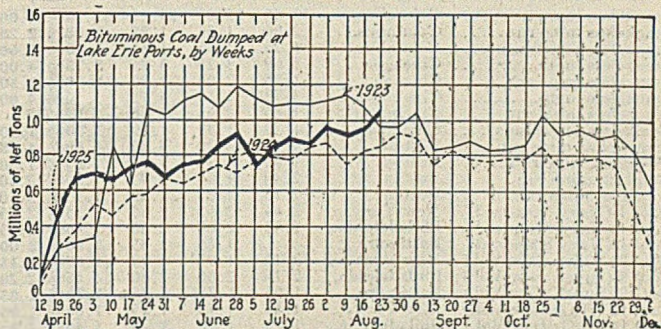
The threat of an anthracite strike Sept. 1 cast a lengthening shadow over the coal markets of the country last week. To the bituminous producers, it was a very friendly shadow indeed, quickening demand both directly and indirectly and adding a firmer undertone to current prices. The influence, of course, was most strongly marked in the movement of soft coals suitable for domestic consumption, where the combination of the strike threat and the seasonal pick-up in that branch of the trade was felt over the entire broad stretch of territory from the Canadian border to Alabama and from Utah and the Continental Divide eastward to the Atlantic Ocean.

Indirectly this demand quickened the steam coal division of the industry, particularly industrial consumers of the higher grades of bituminous. Many of these have been trusting to day-to-day purchases in the open market to keep their plants running. Now, in a number of cases, they have entered the market to build up storage reserves against a draining of their sources of supply by alarmed eastern anthracite consumers. As a result, a number of contracts which have long been hanging fire have been closed. In one or two quarters—notably Baltimore—buyers normally dependent upon union or semi-organized fields have switched to out-and-out non-union mines to guard against interruptions to shipments.

In the face of the complete suspension set for next week, the anthracite market has been exhibiting unwonted calm. The skyrocketing prices which have featured offers of independent coals in past crises are absent. The few attempts made to capitalize unduly on the situation have been effectively discouraged. Such speculative movement as exists seems to be centered in New York harbor where certain shippers are holding

loaded boats for further advances in prices. The old-line companies are confining their domestic shipments to established customers and many of the independents have withdrawn quotations. Heavy drafts are being made on company stock piles of chestnut and pea to take care of orders for those sizes. Steam coals are firm all along the line, with only a limited supply of barley available.

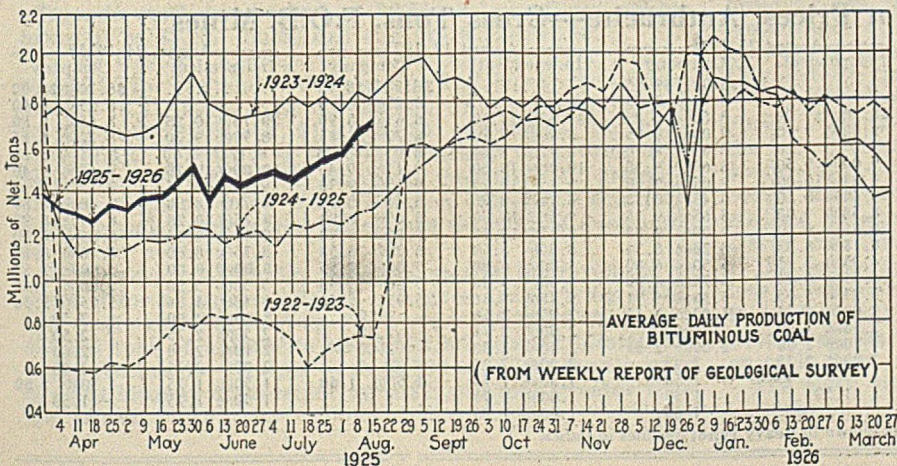
Bituminous output for the week ended Aug. 15 is



estimated at 10,244,000 net tons, as compared with 9,971,000 tons the week preceding. Anthracite production again declined, dropping from 2,061,000 to 1,904,000 net tons.

Coal Age Index of spot bituminous prices for the week ended Aug. 22 stood at 172, an increase of three points over the figure for the week preceding. The corresponding price was \$2.08.

Dumpings at Lake Erie ports the week ended Aug. 23 were: Cargo, 978,457 net tons; steamship fuel, 50,035 tons—a total of 1,028,492 tons, compared with 949,052 tons the week preceding. Hampton Roads dumpings the week ended Aug. 20 totaled 513,780 net tons, compared with 438,456 tons the preceding week.



Estimates of Production

(Net Tons)
BITUMINOUS

	1924	1925
Aug. 1 (a).....	7,723,000	9,457,000
Aug. 9 (a).....	8,036,000	9,971,000
Aug. 15 (b).....	8,167,000	10,244,000
Daily average.....	1,361,000	1,707,000
Cal. yr. to date..... (c)	283,782,000	292,751,000
Daily av. to date.....	1,474,000	1,539,000

ANTHRACITE

Aug. 1.....	1,720,000	2,087,000
Aug. 8 (a).....	1,664,000	2,061,000
Aug. 15.....	1,386,000	1,904,000
Cal. yr. to date..... (c)	56,759,000	57,889,000

BEEHIVE COKE

Aug. 8.....	89,000	123,000
Aug. 15.....	95,000	123,000
Cal. yr. to date..... (c)	6,685,000	6,097,000

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

Domestic Leads in Midwest

The Chicago market is showing signs of considerable activity, with special emphasis on the domestic sizes. Franklin County and southern Illinois generally have had no difficulty in maintaining \$3.25 on 6-in. lump and 6x3-in. egg coal during the last week or so. In fact business has been coming in in such volume that a number of producers have withdrawn all prices on those sizes and are booking business only on the basis of price current at time of shipment. Buyers are willing to pay \$3@3.25 for 3x2-in. egg, and \$2.50@2.75 for 2x1 1/2-in. nut.

Indiana operators are gradually increasing prices on prepared coal, keeping them in line with the advances made by Illinois. Some of the producers of high grade Indiana No. 4, as well as the specialty coals of Indiana, have received as much business as they care to book on the \$3 basis. Less favored coals from Indiana and Illinois are selling around \$2.50 for 6-in. lump and 6x3-in. egg.

It is almost impossible to purchase anthracite. The few sales agencies who have it to offer are reserving their tonnage for old gilt-edged customers only, and even then are selling coal on the basis of price current at time of shipment. Good smokeless coals are moving freely at \$4 for lump and egg, and \$2.25@2.50 for mine-run. Even on this basis few operators will commit themselves, except from day to day. High grade Kentucky coals are selling at \$2.75@3, with the demand very strong.

The position of steam coals on the Chicago market is still depressing. Good Indiana screenings can be had at \$1.40, and high grade Illinois screenings in large quantities are easy at around \$1.75. It is anticipated that there will be no change in the steam-coal market for the time being.

Business ranges from active to fair on domestic sizes in Williamson, Franklin and Saline Counties. Most mines are ahead on lump shipments. It is feared so many mines will start up again to meet the demand that they will overdo the situation and thus bring on a price-killing production. Railroad demand is fairly good from both strip and shaft mines. The fine coal output is more than ample to take care of needs. The field as a whole is working three to five days. Prices on prepared sizes went up 25c. on Tuesday (Aug. 25).

In the Duquoin district three days a week seems to be the average. Nut and screenings drag but lump is well sold up. Prices are unchanged. In the Mt. Olive district increased domestic demand indicates what can be expected in September, but steam sizes are lagging. Working time averages two and three days a week. Idle mines have announced no reopening dates. Coal is still sacrificed in the Standard district, where mines are not averaging better than two or three days. Screenings are below \$1; 2-in. lump is \$2.10. Railroad buying is light.

St. Louis domestic for the better grades of Illinois coal continues good, but there may be an abrupt switch this week

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

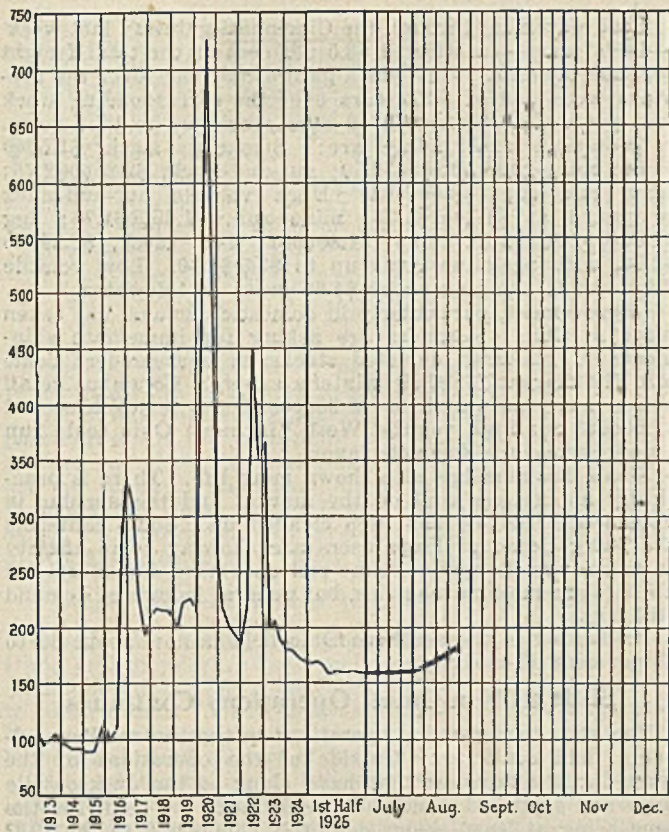
Table with columns for Market Quoted, Aug. 25, 1924, Aug. 10, 1925, Aug. 17, 1925, Aug. 25, 1925†, and Market Quoted, Aug. 25, 1924, Aug. 10, 1925, Aug. 17, 1925, Aug. 24, 1925†. It is divided into Low-Volatile, Eastern; Midwest; High-Volatile, Eastern; South and Southwest.

* Gross tons, f.o.b. vessel, Hampton Roads. † Advances over previous week shown in heavy type; declines in italics. ‡ The term block is used instead of lump in order to conform to local practice, but the same coal is being quoted as heretofore.

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

Table with columns for Market Quoted, Freight Rates, August 25, 1924, August 17, 1925, and August 24, 1925†. It lists various anthracite grades like Broken, Egg, Stove, Chestnut, Pea, Rice, Barley, Birdseye from locations like New York and Philadelphia.

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



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

Index	1925			1924
	Aug. 24	Aug. 17	Aug. 10	Aug. 24
Weighted average price.....	\$2.08	\$2.02	\$2.01	\$2.00

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.

following the advances in southern quotations. If so, Mt. Olive and middle grade coals will probably come in for a larger share of business. Outside of deliveries on apartment and school contracts, Standard coal is in doldrums. Neither carload nor wagon steam trade is active.

Demand for Kentucky Coals Broadens

The Louisville market is humming along at a good pace despite a 50c. advance on all grades. Domestic and gas coal demands are expanding and even the steam trade is more lively.

Eastern Kentucky mine-run has jumped from \$1.25@ \$1.35 to \$1.50@ \$1.75. Screenings are firm at \$1.10@ \$1.25, with little tonnage for sale under the maximum. The general run of 4-in. block is quoted at \$2.75@ \$3; some off grade stuff can be had at \$2.65 or less; fancy grades bring up to \$3.25. Lump and egg are \$2.25@ \$2.50.

Some western Kentucky operators ask \$1.85 for August and \$2.05 for September delivery for 6-in. block; the general market is \$1.75@ \$2. Lump and egg are \$1.60@ \$1.85; nut, \$1.35@ \$1.65; mine-run, \$1.10@ \$1.50; screenings, 70c.@ 85c.

Western Kentucky is showing marked improvement in production, but with the increased movement in prepared sizes screenings have worked lower. Eastern Kentucky, while advancing prepared prices, has maintained quotations on steam coals.

Milwaukee coal circles report a steady improvement in demand for all grades of fuel. Cargoes are arriving steadily. Lake receipts to Aug. 20 aggregated 1,984,537 tons—452,534 tons of anthracite and 1,532,003 tons of bituminous coal. Anthracite receipts were 15,389 tons less than a year ago but bituminous receipts were 372,642 tons greater than last season.

Northwestern Improvement Continues

Retailers at Minnesota and North Dakota points have been ordering on moderate tonnages from the docks at the Head of the Lakes, and industrial companies over the Northwest have also been better buyers. The railroads are still helping out the docks by removing storage coal to their fueling depots over the territory. Northern Minnesota hydro-electric utilities are putting out feelers for bituminous coal to operate auxiliary plants called into play by the dry weather.

The consuming public is showing supreme indifference over an anthracite strike next week. Even the regular users of hard coal have been backward in ordering fill-ups. Retailers throughout the territory have been complaining that until very recently they have not had enough orders to keep their delivery outfits going. The indifference to the strike threat is attributed to the growing use of substitute fuels. The Northwest bought liberally of Pocahontas last season for domestic purposes, and new-won customers are being held. The use of mixtures of coke and buckwheat or pea, and briquets has also been gaining.

The movement of coal from Lake Erie ports is keeping up well but the anthracite run has completely dried up. Thirty-eight cargoes of bituminous coal were unloaded at the docks last week and eleven cargoes including one of anthracite were en route. Prices are firm and unchanged.

While the approach of fall has stimulated buying at the Twin Cities, no wild enthusiasm is displayed. Demand from the interior has been fair for some time. In the cities, there is the usual pick-up to be seen in August. Despite the expectation of a hard coal strike, there is no great attempt at stocking beyond a modest amount.

The figures as to the dock stocks for the season assure the Northwest of a reasonable supply of coal of all kinds. Up to Aug. 1 there had been received 6,611,000 tons of coal, including the carry-over, a gain of 500,000 tons over the preceding year. While the docks may count upon somewhat greater demand this winter than last, yet the greater tonnage and the probabilities that August will also show a gain, means that there will be sufficient for all probable needs.

The price situation holds steady. Prices have not varied during the season. Southern Illinois coal is holding at the new figure of \$3 for the larger size, and \$2.75 for the smaller. Other all-rail prices are the same as they have been. Dock prices are steady, with no change noted.

Southwestern Domestic Demand Expands

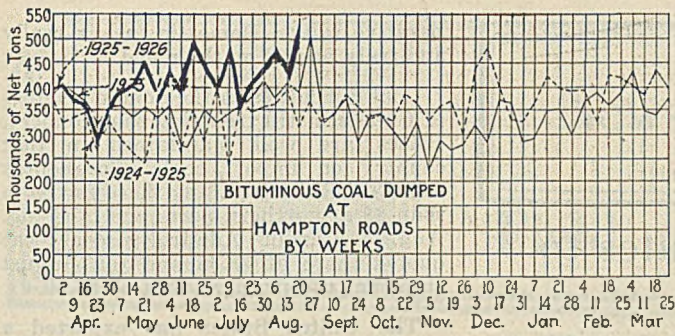
The domestic market in the Southwest is improving as autumn approaches. Dealers are buying more extensively and there is a heavier call from consumers. Some recent price lists quote Kansas shaft lump as high as \$4.50, while none quote it at less than \$4.25. Improvement in the screenings market has been more marked than in the domestic and still necessitates the extensive crushing of shovel mine run.

There has been a substantial improvement in both domestic and steam demand in the Colorado fields, pushing operations up to an 85 per cent basis. Some of the larger producers are booked up through September and the orders are coming in so fast that a further increase in production will be necessary to insure prompt deliveries. Walsenburg domestic lump is now quoted at \$5.25; washed nut, \$4.50; washed pea, \$3. Nos. 1 and 2 Crested Butte anthracite bring \$7 and Nos. 3 and 5 (base burner size), 50c. more. An advance of 25c. is predicted for the first of the month. Outside of some of the smaller fields, such as the Canon City district, the labor situation is quiet.

The Utah coal trade continues draggy, but prices are steady. Winter storage orders are hanging fire in spite of the efforts being made by retail dealers, backed by the operators, to get the public to store coal. The weather is cooler, however, and a little coal is being bought for immediate consumption. There are less no-bill cars on the tracks than there were due to strict policing by the carriers.

The mines served by one big railroad suffered a slight loss of working time last week as a result of car shortage. It is feared that this shortage will become serious and general as the heavy crops begin to move, which will be at an early date.

The slack situation continues fairly easy. A few of the big consumers have been short, but are taken care of now.



Pocahontas and New River are still low enough in price to dominate the large area accessible to tidewater.

The Buffalo bituminous market pays no attention to strike possibilities in the anthracite regions, and neither prices nor demand show any material change. Current quotations are as follows: Fairmont lump, \$1.60@1.75; mine-run, \$1.40@1.50; slack, \$1.25@1.40; Youghiogheny gas lump, \$2.25; Pittsburgh and No. 8 steam lump, \$2@2.25; slack, \$1.30@1.60; Allegheny Valley mine-run, \$1.75@2.

Strike Threat Tones Up New York Market

Increase in demand and prices featured the bituminous trade at New York. Less coal was available at the minimum quotations, and consumers showed greater readiness to place orders. There is every indication that there will be a much stronger market the next few weeks due to fall buying and requirements of industrial plants.

Although most shippers believe it will be at least a month before the effect of an anthracite strike will be felt in the soft coal industry, many consumers are taking advantage of the current prices to increase their reserves.

Measured by increased demand, bituminous trade in the Philadelphia market is on the up-grade. Prices, however, have not kept pace and little improvement is forecast in that direction for some time. The anthracite strike threat is reflected in heavier buying of soft coal, not alone for local industries, but from New England and Canadian consumers.

The tidewater market is still quiet and no signs of a boom are apparent. Hope that there may be a sudden boom in shipments to New England and other northern points, however, is still cherished. No clearances were reported last week.

Bituminous market conditions at Baltimore suffered a reversal of form last week. Demand for home consumption took the lead and export and bunker trade slide towards the nadir in business. Industrial buyers, believed to be influenced by the strike threats in the soft-coal regions, showed a revival of interest in the market and a number of contracts for Cambria County coals were closed. Competition for business, however, is still keen, but quotations have advanced 5 to 15c.

Alabama Movement on Up-Grade

While there has been no rush of orders, the Birmingham market has shown unmistakable improvement the past week. Domestic demand, after weeks of abnormal sluggishness, is picking up. Inquiries and spot orders are more numerous, while the movement of contract is more satisfactory. Retail trade is still slow, as the weather is extremely warm.

Spot bookings of steam coal are improving and there is some increase in shipments against contracts. The cotton gins, ice plants and cement mills are using coal in increasing volume while the dry weather forces heavier power plant consumption. The anticipated anthracite strike is indirectly being felt here in a small way as more coal from Kentucky is going north, leaving a bigger tonnage to Alabama in the Southeast.

Bunker coal business is ahead of last month. There is a small export movement to South America and Cuba.

Quotable prices have shown no change

Would Substitute Welsh Coals

Outside of the rapid advance in demand and a corresponding increase in quotations on independent anthracite, the outstanding feature of the market at New York last week was inquiries as to the possibilities of importing

Welsh coal. Most of these inquiries come from New England and it is likely that considerable Welsh anthracite will find its way to this country soon after Sept. 1 if there is a shut-down in the hard-coal region.

Some individual operators are refusing orders. Some of the larger companies are pro-rating their output.

The demand at tidewater is fully as strong as along the line. Many loaded boats are in the harbor and freights are advancing. Egg is apparently as strong in demand as stove. Chestnut also is more active, while pea is moving easily. Some producers are loading pea and nut out of storage.

Steam sizes are firm, with barley tonnage very limited.

The Philadelphia trade is working on the theory that Sept. 1 will usher in an indefinite suspension in anthracite mining. Solicitation of business ceased a fortnight ago and some of the larger companies now refuse to book anything but steam tonnage, which is increased to such an extent that the producers are drawing upon their storage piles. This demand, however, has not developed premium prices.

The domestic consumer views the situation calmly. Aside from stove there is no great pressure for deliveries by the householder. Retail stocks are not being depleted at a great rate because buying has been fairly active all summer.

Baltimore exhibits no signs of panic at the pendency of an anthracite strike. Retail stocks are fair, with current receipts in excess of deliveries. Cellar reserves, while not as great as in some former periods, are comfortable. At worst the market expects no long suspension or sees no necessity for rationing.

There is a rush for anthracite in the Buffalo market and all the distributors are short of coal. There ought to be a chance to see if the consumer wants coke or smokeless coal. He has been buying a little more of both than is common in summer and he may hesitate now till he needs to start up his furnace. Coke sells at \$4.50@4.75 at the ovens, domestic size, on a \$3.28 freight rate. At the curb the price is \$9@9.50. Smokeless coal, curb price, is \$6.

Anthracite lake shipments were light last week totaling 39,600 tons, of which 10,700 tons cleared for Fort William, 9,700 tons for Duluth, 6,700 tons for Chicago, 6,500 tons for Milwaukee and 6,000 tons for Escanaba.

Freight rates are 55@60c. to Chicago, 50c. to Milwaukee, Escanaba and 40c. to Duluth, Fort William.

Connellsville Coke Advance Halted

The Connellsville coke trade has taken another sudden turn. A fortnight ago there was a spurt of activity after a long period of stagnation, and furnace coke advanced sharply. Last week there was practically no live inquiry of any consequence. The market simply held at \$3.25. Heating coke had advanced nearly if not quite to \$3.25 and it is now relatively dull.

Some members of the trade now have suspicions that eastern consumers have obtained some special information leading them to doubt whether there will be much of a suspension. The important buying had been largely by gas companies in the East, who do not like to switch from anthracite to coke, but who would hardly balk at a 25c. or even a 50c. advance in price, as the price of coke, when so much below that of anthracite is merely a sort of detail.

During the excitement two blast furnace interests concluded to cover for fourth quarter without delay, one paying \$3.50, the other \$3.75. Last June third quarter contracting was done at an average scarcely as high as \$3, some business running over fourth quarter at but a slight advance.

Foundry coke has been unaffected by the stiffening in furnace coke, spot remaining quotable at \$3.75 @ \$4.25, with buying increased but little, if any.

Late production figures show little change.

Car Loadings, Surpluses and Shortages

	Cars Loaded	
	All Cars	Coal Cars
Week ended Aug. 8, 1925.....	1,051,611	189,761
Previous week.....	1,043,063	180,936
Week ended Aug. 9, 1924.....	942,198	149,482

	Surplus Cars		Car Shortage
	All Cars	Coal Cars	
Aug. 7, 1925.....	233,474	72,054
July 31, 1925.....	263,876	80,661
Aug. 7, 1924.....	296,496	146,840

Foreign Market And Export News

August Bank Holiday Contributes to British Market Sag

Much British coal business has been lost through the diversion of orders to Germany and America. It is, perhaps, fortunate that the sudden reversal of the position should have occurred on the eve of the August holidays, during which the pits in any case would have been entirely closed for Monday, Tuesday, and Wednesday. Colliery salesmen realized the futility of maintaining quotations on the basis of those of the last fortnight of July, and in many cases reverted to the figures ruling previously, involving a general drop in values of about 1s. 6d. to 2s. per ton. Whether this will attract business or not remains to be seen. There has not yet been an adequate opportunity of testing conditions since the settlement.

Though the crisis is over in the Newcastle coal, and work at the pits is continued as usual, the coal market conditions are very unsatisfactory. Business for early August shipment is exceedingly scarce. Exporters are offering coal freely and indicating to the clients abroad that prices will now be on a lower basis. When the question of Government subsidies has been settled, it is expected that several of the pits recently closed will reopen.

British production for the first week in August dropped to less than 3,000,000 tons because of the August bank holiday, a cable to *Coal Age* states.

French Coal Market Improves Slightly

The situation of the French collieries has slightly improved recently. This is not a rally but is due to a faintly better consumption in the metallurgical, textile and glass-making industries. Domestic fuel business is quite satisfactory.

In the Sarre, after a week of strike the men took up work again, after accepting the governmental proposals of an increase of 5 per cent in salaries and an improvement of piece-work rates. This is what had been offered by the Minister before the conflict.

During the first twenty-five days of July, German indemnity fuels in France totaled 506,900 tons, including 268,500 tons coal, 216,500 tons coke and 21,900 tons lignite briquets, which make a

daily average of about 20,300 tons. Coke reparations from the Ruhr totaled 232,926 during July.

Hampton Roads Expects Big New England Business

Coal agencies at Hampton Roads are predicting an increase in tonnage of transient prepared coal from West Virginia to New England via Tidewater as a result of the Interstate Commerce Commission's recent rate decision. Already there has been considerable talk of handling methods to transfer the coal from cars to ships without breaking it up. Some are of the opinion that this handicap will be overcome now that the rates are favorable.

Bunker Coal Shipments Rise

United States bunker coal laden on vessels engaged in foreign trade totaled 1,137,997 long tons in the second quarter of 1925 compared with 933,567 tons in the first quarter, an increase of about 214,000 tons or 23 per cent, according to the Coal Division of the Department of Commerce.

The following table shows in long tons the quantity of bunker coal sold in the principal customs districts for the first two quarters of 1925:

Customs Districts	January, March	April, June
New York	269,422	301,869
Philadelphia	75,975	84,828
Maryland	46,647	47,854
Virginia	376,874	468,795
St. Lawrence	927	16,984
Florida	42,825	43,821
Mobile	21,181	26,686
New Orleans	50,734	44,523
Ohio	1,902	36,234
Michigan	35	13,064
Other districts	47,045	63,339
Total	933,567	1,147,997

Belgian Market Strengthens

In spite of the continuance of the metallurgical strike a very slight industrial improvement in the Belgian market is noticeable, with regard to industrial descriptions. The demand for dry smalls and for coking smalls is stronger. Better qualities of briquets have risen by 10 francs, and even industrial beans, have benefited by a com-

parative rally. Domestic fuel is really and truly at last on the mend.

Coal difficulties in the domestic mines of Chile are still troubling that country. Prices are well maintained in that country on import coal. Pocahontas and New River is selling there for more than \$8 at northern ports and is rising. Aug. 1 Cardiff Admiralty coal was quoted there at \$8.38 and for August shipment the price was set at \$8.50.

The United States had exported a total of 1,654,202 tons of anthracite during 1925 to June 30 as compared with 1,752,900 tons during the same period last year. Soft-coal exports totaled 6,398,419 tons this year and 7,131,968 tons for the period in 1924 but coke exports rose from 286,317 tons to 351,895 tons.

Export Clearances, Week Ended Aug. 22, 1925

FROM HAMPTON ROADS		Tons
For Italy:		
Ital. Str. Vallarsa, for Porto Ferraio	7,377	
Jap. Str. Vancouver Maru, for Genoa	7,718	
For Nova Scotia:		
Nor. Str. Speed, for Halifax	1,932	
For St. Lucia:		
Nor. Str. Fram, for Casterus	3,707	
For Brazil:		
Br. Str. Betwa, for Rio de Janeiro	5,049	
Ital. Str. Attualta, for Rio de Janeiro	8,059	
Br. Str. Kingsbury, for Rio de Janeiro	5,404	
Br. Str. Beatus, for Rio de Janeiro	6,889	
Br. Str. H. H. Asquith, for Pernambuco	6,700	
For France:		
Br. Str. Bankdale, for Marseilles	2,716	
For Egypt:		
Br. Str. Rhesus, for Port Said	1,308	
For Cuba:		
Nor. Str. Blaamjra, for Manati	3,004	

Hampton Roads Pier Situation

(Gross Tons)		Aug. 13	Aug. 20
N. & W. Piers, Lamberts Pt.:			
Cars on hand	1,335	1,316	
Tons on hand	80,842	82,776	
Tons dumped for week	140,504	168,183	
Tonnage waiting	15,000	10,000	
Virginian Piers, Sewalls Pt.:			
Cars on hand	618	835	
Tons on hand	49,450	59,750	
Tons dumped for week	98,503	98,435	
Tonnage waiting	22,424	13,118	
C. & O. Piers, Newport News:			
Cars on hand	2,524	2,075	
Tons on hand	122,195	103,775	
Tons dumped for week	152,472	192,114	
Tonnage waiting	12,565	12,825	

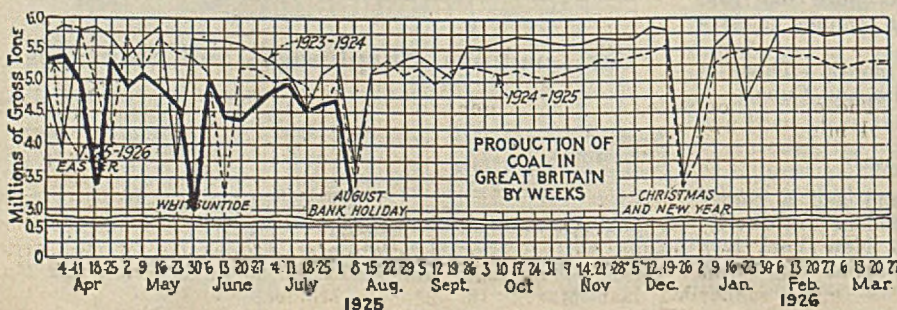
Pier and Bunker Prices, Gross Tons

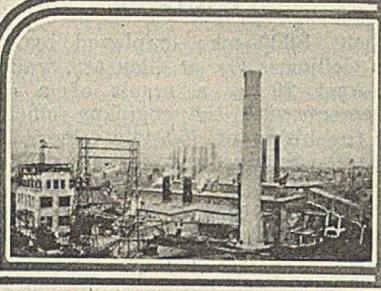
PIERS		Aug. 15	Aug. 22†
Pool 1, New York	\$5.25@5.55	\$5.25@5.55	
Pool 9, New York	4.75@5.00	4.75@5.00	
Pool 10, New York	4.50@4.65	4.50@4.65	
Pool 11, New York	4.25@4.50	4.25@4.50	
Pool 9, Philadelphia	4.65@4.90	4.65@4.90	
Pool 10, Philadelphia	4.35@4.55	4.35@4.55	
Pool 11, Philadelphia	4.25@4.30	4.25@4.30	
Pool 1, Hamp. Roads	4.40	4.40	
Pool 2, Hamp. Roads	4.25	4.25	
Pools 5-6-7, Hamp. Rds.	4.15	4.15	
BUNKERS			
Pool 1, New York	\$5.45@5.75	\$5.50@5.80	
Pool 9, New York	4.95@5.20	5.00@5.25	
Pool 10, New York	4.70@4.85	4.75@4.90	
Pool 11, New York	4.45@4.70	4.50@4.75	
Pool 9, Philadelphia	4.80@5.05	4.80@5.05	
Pool 10, Philadelphia	4.60@4.80	4.60@4.80	
Pool 11, Philadelphia	4.45@4.65	4.45@4.65	
Pool 1, Hamp. Roads	4.50	4.50	
Pool 2, Hamp. Roads	4.35	4.35	
Pools 5-6-7, Hamp. Rds.	4.25	4.25	

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

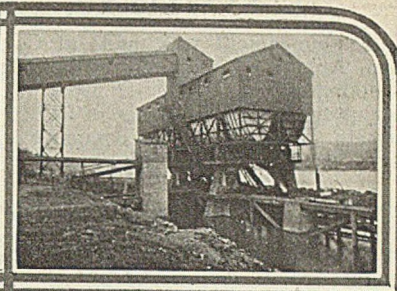
Quotations by Cable to <i>Coal Age</i>		
Cardiff:	Aug. 15	Aug. 22†
Admiralty, large	30s.	25s.
Steam smalls	17s. 6d.	13s. 6d. @ 14s.
Newcastle:		
Best steams	16s. 9d.	16s. 3d.
Best gas	25s.	23s. 9d.
Best bunkers	16s. @ 18s. 6d.	17s. 9d.

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





News Items From Field and Trade



ALABAMA

The Alabama Public Service Commission has ordered a reduction of 10c. per ton from coal mines on the Frisco System in Group No. 1 to Florence, Sheffield and Tusculumbia, and allowed an increase of 5c. per ton to the same points from Group No. 3 mines. The commission also ordered a general reduction in coal rates from all mines on the Frisco System in Alabama to all points on the Memphis division of the Southern Ry. This represented action on complaints filed by the Florence Chamber of Commerce.

COLORADO

Because charges that their daily production had not been up to standard could not be proved against four miners by the Clayton Coal Co., of Weld County, the men, Gus Brock, John K. Davis, W. T. Lambert and T. J. Preecs were ordered reinstated to their old positions at the mine by the state industrial commission, following a hearing on the case Aug. 14.

The total production for Colorado for July is 602,000 tons compared with 616,000 tons a year ago which is a decrease of 14,000 tons. The decrease is due to the production in the lignite fields. The month of August may show a substantial increase over the same period a year ago.

The Colorado Fuel & Iron Co. has filed with the state industrial commission notice of a wage agreement between the company and employees in ten of its coal mines in Las Animas and Huerfano Counties, and the coke ovens at Segundo. Between 3,000 and 4,000 men will be affected by the new scale. The scale agreed on is approximately 11 per cent below present wages, which scale was adopted several months ago on a 20 per cent reduction. The commission announced the new scale will leave the wages of Colorado Fuel & Iron employees slightly higher than other operators in the same counties.

ILLINOIS

Wasson Mine No. 1, Herrin, which had been closed down six weeks, resumed work Aug. 10.

Approximately 2,000 southern Illinois miners in Williamson and Franklin Counties were scheduled to resume work last week. This means there will be more miners working in those counties than at any time during the past two years. Mines that will resume are: Consolidation Coal Co. Mine No. 7 at

Herrin, the Valier mine, at Valier, Old Peabody No. 3 at Marion, the Orient No. 1 mine and one of the Old Ben mines at West Frankfort and another mine of the Old Ben Coal Co. at Christopher. Several smaller mines in that district were also scheduled to begin operations last week.

Much conversation concerning a proposed merger of Standard district and Mt. Olive region mines in Illinois continues to be heard around St. Louis, Mo. The plan involves properties capable of producing about 30,000,000 tons annually. The Consolidated Coal Co. of St. Louis, the Mt. Olive & Staunton Coal Co. and the Rutledge & Taylor Coal Co., holding some of the choice mines of the proposed consolidation have not yet agreed to go in, so that many insurmountable obstacles may yet arise. In this merger the name of H. E. Bell, of Bell & Zoller Coal Co. of Chicago, one of the biggest southern Illinois producers, has been mentioned as a negotiator. This gives rise to the rumor that Franklin County interests are encouraging the plan as one means of lessening the cut-throat competition their own output now meets.

The Wallsend Coal Co., of Delaware, early in August acquired the holdings of the old Wallsend Coal Co. at Wallsend, and plans expenditure of about \$60,000 on improvements, including a coaling station for the L. & N. R.R. Co., miners' homes, etc. The work will be in charge of J. D. Roper.

Electric Mine No. 1, west of the Kistler Hill on the Danville-Champaign road, sustained a slide of about 100 car loads of earth July 30, which cost the lives of two miners. The large 250-ton steam shovel was practically buried. A careful check-up of the mine's payrolls showed that no further casualties were to be expected.

INDIANA

Receivership for the Joan Coal Mining Co., operating a mine near Riley, was asked Aug. 14 in two suits on account filed against the firm by the Bruns Powder Co. and the industrial Supply Co. in superior court in Terre Haute.

The opening of several of the larger coal mines in western Indiana and the possibility of resumption of operations at other mines, indicates a partial return, at least, of prosperity in that section of the state. A mine operated by the Fort Harrison Mining Co. is being cleaned up preparatory to opening. The mine suspended last March 16.

Preliminary operations for reopening the Baker mine in the Sullivan field also are reported. Reports from Terre Haute banks show the volume of payroll money is gaining each semi-monthly period.

A coal bed 16 ft. thick has been struck on the farm of Frank Harter, in Spencer County, one mile north of Newtonville. The coal is said by experienced mine men to be of excellent quality. Most of the beds uncovered in this section range from 4 to 6 ft. thick.

IOWA

Iowa's much-discussed coal mine merger appears to have failed to develop. The original plan was to consolidate most of the producers of Appanoose and Wayne Counties into a group controlling about 25,000 acres of coal. Options were given on forty-nine properties. The Iowa Southern Utilities Co. took a hand and early in August it was said the merger was nearly complete. Since then, however, the usual difficulties involved in determining valuations arose and the effort has been given up.

KANSAS

The Lone Star Coal Co. has leased 400 acres of coal land four miles west of Pittsburg and has ordered a large shovel to put on it. The tract will afford work for twelve or fifteen years. The officers of the company are R. G. Nesch, president; L. G. Schmaltz, vice-president; and J. J. Nesch, secretary-treasurer. The same men own the N. & S. Coal Co., which operates a steam shovel mine at Hume, Mo.

Two Kansas coal mines that have been idle since soon after the World War are swinging back into action. The Hamilton Coal & Mercantile Co. has resumed operation of its mine No. 9 near Cherokee, employing 200 men. The Domestic Coal Co. is electrifying its shaft No. 3 north of Gross, preparatory to having it operated by a lessee.

The Western Coal & Mining Co. has leased its mine No. 21 near Scammon to John Lyons of Pittsburg and Francis Fern of Scammon and has leased its No. 14 at Fleming to Wilbert & Schreeb, who operate a mine west of Pittsburg. While the cream of production has been taken from both mines a large tonnage remains, J. D. Delaney, superintendent of the Western company, says. The Western has let contracts for sinking shafts for two large mines, No. 22 north of Arma and No. 23 near Minden.

KENTUCKY

Announcement was made at Covington, Aug. 8, of a voluntary petition in bankruptcy by the Daisy Coal Co., of Krypton, listing liabilities of \$4,010 and assets of \$3,524. The company operated in Perry County.

The mine of the bankrupt Co-Operative Coal Mining Co., at Nebo, in western Kentucky, near Madisonville, is being dismantled, the equipment sold, and the mine mouth will be sealed. The company at one time produced a fine grade of steam coal, but had a bad roof, and excessive production cost.

Judge Charles I. Dawson in the United States District Court recently issued a restraining order against Sheriff L. R. Ray, of Hopkins County, preventing him from collecting taxes and penalties assessed against the St. Bernard Coal Co. for 1924. The decision was based on a suit brought by the St. Bernard Coal Co. against the county on the grounds that the assessment was made on August 8, 1924, when the State Tax Commission had no power to act as a State Board of Equalization.

Plans are being made by the West Kentucky Coal Co. to drill new oil wells on its property in the Suthards section, where it recently brought in a well at 2,200 ft. The well now is producing oil of 41 per cent specific gravity and of a fine grade. It is still on test.

The Hawley-McIsaac Coal Co. which recently acquired almost 10,000 acres of coal land in the region of Nebo, including 700 acres of stripping land, has already spent \$60,000 remodeling the old top works of the Circle City mine. A conveyor, crusher and fifteen electric motors have been installed. Three dinky engines and cars for hauling the coal to the tippie and a switch engine for use in the yards complete the equipment for one of the finest top plants in that field. In addition a steam shovel has been purchased to remove the overburden and a smaller shovel to load the cars. There will be about 70 men employed in the operation of the stripping plant. It is planned to have a 40-car daily output.

The Dawson Daylight Coal Co., near Dawson Springs, while rebuilding its burned frame tippie, is producing mine run and some sizes over a temporary loading tippie. Following the fire at this plant, which was one of three in western Kentucky field, within a period of a few days, mines posted armed guards and no other fires have been reported.

MINNESOTA

The 350 ft. extension to the Inland Coal & Dock Co.'s plant at Duluth may be completed by Oct. 1, with part of it scheduled to be ready Sept. 1. Officials of that company are looking forward to an active period this fall and winter.

The Berwind Fuel Co. set a record one day during the first week of August by unloading 10,000 net tons of bituminous coal from the steamer Fred G. Hartwell in 7 hrs.

Whitney Bros., contractors of Duluth, have completed a coal dock for F. B. Spear & Sons at Marquette, Mich. It has a storage capacity of 300,000 tons and is to be equipped with a 5-ton 300-ft. unloading bridge. It will be ready to go into commission by Oct. 1. It is of pile and concrete construction.

MISSOURI

Coal has been struck at a depth of 236 ft. a mile east of Pattonsburg, giving that town the thrill of its life. A seam about 4 ft. thick was encountered by drillers working for a company formed by W. G. Cline of Chillicothe. Pattonsburg people are interested in the company and hope they will soon see coal produced there in commercial quantity.

State Labor Commissioner Roye B. Hinkle has started a campaign to urge Missourians to use coal produced in that state. He believes that miners in the state will benefit from the drive. "Missouri's coal ranks with that of other states," Hinkle said, "but there has been little demand for it." "Have you bought your Missouri coal for next winter?" is the question Commissioner Hinkle propounds to all persons he meets or has correspondence with.

OHIO

About 1,000 men employed by the Ohio Collieries Co. at Glouster, walked out Aug. 20 as a result of a disagreement with the company officials over the hiring of 750 idle miners living in the Sugar Creek district nearby. The miners employed by the Ohio Collieries Co. desiring to aid their fellow miners, took them into their local and wanted to split the work with them. The company agreed to hire all but the drivers. As a result the men walked out. Lee Hall, president of the Ohio Mine Workers' organization was on the ground and is trying to make a settlement. Four large mines are effected.

Michael Gallagher, of the M. A. Hanna Co., after visiting with President Coolidge at the "summer White House" in Swampscott, Mass., last week told interviewers that he had not talked about the coal situation with the President.

On bids opened recently the Columbus Purchasing Department has awarded a contract to the Hisylvania Coal Co., for 7,000 tons of nut, pea and slack, to be delivered to the Columbus Water Works. This is to be Ohio coal, as was burned in years past, except when other coal was all that was available. The Hisylvania company's bid was \$1.24 f.o.b. mines, although there is \$1.26 freight rate attached to this. This supply will last until Jan. 1.

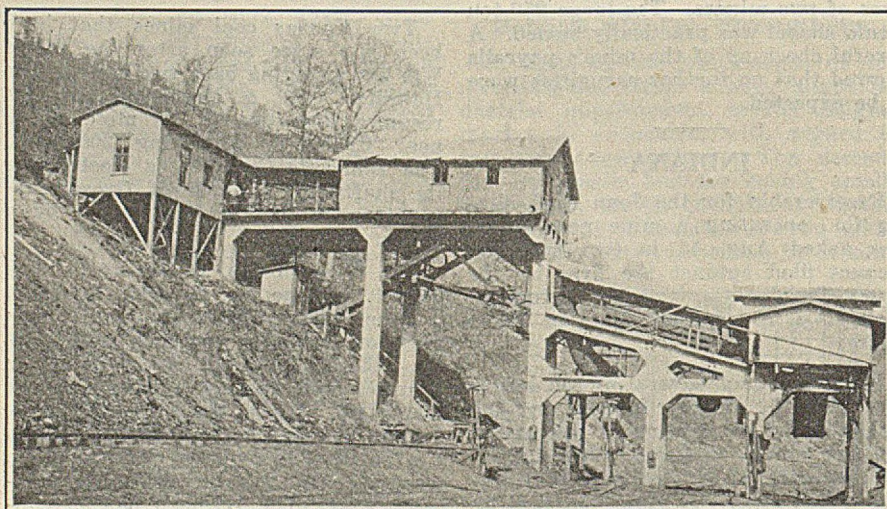
Two mines of the Clarkson Coal Co. near St. Clairsville have resumed operations after being closed a week. These mines employ nearly 800 men and other mines in Belmont County resuming during August will bring the total returning to work up to 2,500. The Taplan mine of the Morgan Coal Co. at Bennock, idle three years, is to resume, and the Diamond mine at Neff, idle several months, will be started during the week.

The work of dismantling the equipment of Tropic mine, near Crooksville, has been completed and about 900 acres of coal land has been abandoned. The mine has not been in active operation for more than two years.

The Ohlinger & Wolfe Coal Co. has opened its mine on Brush Fork, which had been closed down for months. The Powell Creek Coal Co., in the same vicinity, also is arranging to open its mine. The announcement is made that both will be operated on the Jacksonville wage scale.

Papers have been filed with the Secretary of State increasing the capital of the Peerless Elkhorn Coal Co., of Columbus, from \$150,000 to \$200,000 in order to provide capital for the purchase of equipment at the mine located at Betsy Layne, Ky. F. G. Hatton is president and George F. Schwartz is secretary of the company. Both are connected with Hatton, Brown & Co., Inc., of Columbus, and the product is sold through the Hatton-Brown company. The output is about 2,000 tons monthly.

Among the mines in the Crooksville field recently placed in operation are Mine No. 9 of the Sunday Creek Coal Co., at Corning, employing 200 men, and Mine No. 19 of the same company,



Concrete Tippie, No. 10, Mine, Stearns Coal & Lumber Co.

This simple but sturdy and relatively incombustible tippie is located at Yamacraw, Ky.

at Buckingham, employing about 225 men. Mine No. 24 of the Northern Fuel Co., at Jackson, has resumed, giving employment to 100 men, and Mine No. 226 of the George M. Jones Coal Co., at Hollister, employing about 300 men, also has resumed. Mines that are being cleaned up preparatory to operation are: Gosline Coal Co., at New Lexington, to employ 200 men; Mine No. 25 of the Pittsburgh Coal Co., at Chauncey, to employ 250 men, and Mine No. 10 of the Sunday Creek Co., at Mortonville, to employ about 250 men. In addition several small railroad mines between New Lexington and Moxahala have resumed.

OKLAHOMA

Intrastate rates on coal in Oklahoma have been ordered reduced by the state corporation commission. The new rates take effect Sept. 15. Rates of common carriers for the transportation of coal between points in Oklahoma were ruled "unreasonable and unduly prejudicial" by the commission's findings and new rates were prescribed. Mines were re-grouped as to shipping points by the order.

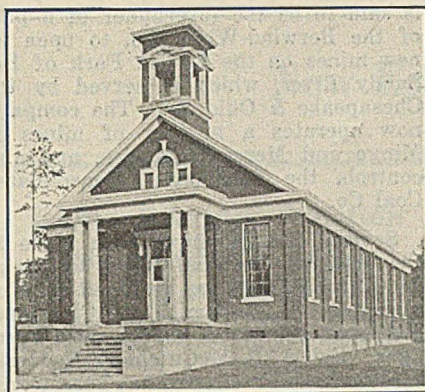
PENNSYLVANIA

When asked about the huge merger of coal companies in Pennsylvania, the story of which appeared in the New York papers, officials of the Pennsylvania Coal & Coke Co., operating large mines in central Pennsylvania, stated that they had received no information about it and had no intention of entering such a combine:

Operators in central Pennsylvania believe that the district has received its worst blow in years in the decision that has been rendered by the Interstate Commerce Commission establishing joint all-rail rates from West Virginia to points in the Middle Atlantic states. They have not yet determined what action will be taken on the decision. The district joined the northern railroads, including the Pennsylvania and the Baltimore & Ohio, and the associations of operators in Somerset and Westmoreland Counties and in Pittsburgh, in opposing the proposal, during the course of the hearings which concluded on April 4, 1924. The effect of this decision, coming just previous to another anticipated suspension, is obvious. It places West Virginia coal in direct competition with central Pennsylvania throughout the region east of Rochester, N. Y., and Harrisburg, Pa., where, heretofore, the same competition was restricted to points on or near the coast.

The gross tonnage of revenue bituminous coal transported by the Reading Co. during the month of June, 1925, was 1,494,346 as compared with 1,196,126 for June, 1924.

Governor Pinchot has not intimated what part he will play in the event of a strike in the anthracite region. It is believed he will offer his services or at least those of the industrial relations board of the Department of Labor and Industry. The Governor of Pennsylvania has refused to discuss the situa-



Guild Hall, Edgewater Mine, Tennessee Coal, Iron & R.R. Co.

Edgewater, Ala., is an attractive town and it is only fitting that a place of assembly such as this should be of neat and inviting appearance. Brick, slate and white trimmings assure an effect that is pleasing to the eye.

tion other than to say he is keeping in touch with it through the State Department of Mines and in other ways. Before leaving the Capitol this week he conferred several times with Joseph J. Walsh, Secretary of Mines, who has been one of his official observers at Atlantic City, although he has not been there for the past two weeks.

The time limit for holders of D., L. & W. Coal Sales Co. stock to deposit their certificates in exchange for equal shares of Glen Alden Co. stock with the financial agents of the latter concern in New York City expired at 3 o'clock Aug. 17. According to reports the required number of shares had been deposited to insure carrying out the provisions of the plan for absorption of the sales company by the producing company.

The Pittsburgh Terminal Coal Corporation reports net income of \$98,646 for the quarter to June 30, equal, after preferred dividends, to 32c. a share earned on the \$12,000,000 common stock outstanding.

Several hundred men and boys who were idle Aug. 12 at the colliery of the Alden Coal Co., Alden Station, returned to their posts the next day. The strike was called when a number of miners refused to enter the mine and work an 8-hr. shift near the scene of the mine fire that has been burning for several months past. The men, it seems, have only been working in short shifts at the scene of the fire but since the fire has been gotten under control the company requested the men to go back to the 8-hr. shift basis.

Flushing of the 8-ft. vein of the Se-Rob Coal Co.'s workings in West Scranton, located in an area which has been devastated by mine caves, was started Aug. 1 by the city in co-operation with the Se-Rob and Glen Alden Coal Companies. The Se-Rob company is doing the inside work which includes the erection of "batteries" in the workings. The Glen Alden company is furnishing machinery and labor for the work on the surface and the city is providing the ashes. The flushing is being supervised by City Mine Cave Engi-

neers Frank Davenport and Frank Gaffney.

Four independent coal and coke companies at Uniontown ordered 600 coke ovens put into blast Aug. 20. They include the Century Coke Co., Puritan Coke Co., Lincoln Coal and Coke Co., and the Rich Hill Coke Co.

It is reported that an additional 1,000 ovens will be ordered in at independent coke operations before Sept. 1. One 6,000-ton order of coke is reported by a large steel company.

UTAH

Otto Herres, assistant to the vice-president and general manager of the United States Fuel Co., of Salt Lake City, has been promoted to the position of assistant manager of the company, a new office in the organization. Mr. Herres, who is a mining engineer, and for sometime was superintendent of the Hiawatha mine of the company, has been with the United States Fuel Co. about nine years.

R. M. Magraw, general superintendent of the United States Fuel Co., of Salt Lake City, has resigned and will be succeeded by J. B. Forrester, chief engineer of the company and acting general superintendent during Mr. Magraw's recent absence in the East where he went because of ill health. Mr. Magraw had been with the company about 10 years.

WASHINGTON

To meet the necessity for a larger output of Bellingham coal important improvements costing upwards of \$50,000 have just been completed at the mines in Bellingham. These mean an increase of 50 per cent in capacity, bringing the daily coal output up to 1,500 tons from this oldest mine in the state of Washington. Announcement of these improvements was made by John C. Eden, president of the Bellingham Coal mines, who commented particularly on the unique feat of mining engineering which was accomplished in driving an 1,800 ft. slope from both ends and meeting at a central point not an inch out of line. The work was carried to completion by James H. Pascoe, mining engineer, under the direction of E. P. Lucas, mine superintendent.

WEST VIRGINIA

Four carpenters retimbering the air-shaft at the Lochgelly mine of the New River Coal Co., near Fayetteville, were killed Aug. 19 in a fall of 200 ft. down the shaft when the scaffolding on which they were working gave way.

The Jamison Coal & Coke Co. has awarded a contract for forty miners' houses, twenty at mine No. 9 and twenty at No. 8 in the Farmington section.

Five barges of the 30 ordered by the Ohio River Coal Co., the river transportation department of the West Virginia Coal & Coke Co., were delivered Aug. 19. The company's boats and barges will be used on the Ohio

River and the Kanawha River, chiefly between Huntington and Cincinnati, although some of the barges will be used to transport coal from points on the Ohio River.

A new daily leading record was attained recently at the Lowville mine of the New England Fuel & Transportation Co., when 800 mine cars were loaded.

In the week ended Aug. 15, the mines of northern West Virginia produced 537,150 net tons, which is the largest weekly coal production since any week early in 1923. The maximum weekly production in northern West Virginia is 763,200 net tons.

The Kay Moor mines, which were acquired a short time ago by the New River & Pocahontas Co., have been breaking records recently. June was the banner month with an output of 23,000 tons.

Thomas DeVenny, superintendent of the Portsmouth By-Products Coke Co., with operations in the Williamson field, recently announced that the company would immediately increase its production schedule from 40,000 tons to 60,000 tons a month because of an increase in the demand for steel products manufactured by the American Rolling Mills Co., at Middletown, Ohio, one of the owners of the company.

Approximately one-half of Mine No. 41 of the Bethlehem Mines Corporation, at Barrackville, is rock-dusted and the remainder will be completed within a month. As soon as the work has been finished in this mine rock-dusting will be started at the Dakota mine of the same company.

Although no definite announcement has been made, indications point to the fact that coal not long ago discovered on the C. & I. branch of the Western Maryland near Elkins in a section where it was not known coal existed in commercial quantities, may be developed. Prospecting has been in progress for some time and the fact that those in charge of such work are seeking permanent quarters is taken to mean that development will be undertaken. Surveys are being made on lands where the coal has been discovered. The coal is said to be in the Sewell seam, though the northern West Virginia section is far removed from the New River and Winding Gulf districts where such coal usually is found.

The Arnetteville mine of Robert Talbott & Co., at Arnetteville, Monongalia County, will resume on an open-shop basis early in September. The slope was recently concreted.

An improvement program requiring expenditures of approximately \$150,000 has been outlined by the Berwind-White Coal Co. to provide facilities at Kenova for handling coal for river shipments from mines of the company in the Norfolk & Western fields. The company has acquired 50 acres of river front property. Improvements contemplated under the program include the erection of coal docks near the foot of Sixteenth Street on the Ohio River. Construction is to begin at once. Improving the river transportation facilities at Kenova

is said to be the forerunner of a plan of the Berwind-White Co. to open up new mines on the Levisa Fork of Big Sandy River, which is served by the Chesapeake & Ohio Ry. The company now operates a number of mines in Mingo and Mercer Counties, and also controls the Pocahontas Consolidated Coal Co.

Several changes have been made in the staff of the Coal River Collieries Co. John Barrett has resigned as sales manager. F. L. Smith, of Cleveland, has been appointed acting sales manager. Col. A. B. McCutcheon, formerly assistant sales manager, has been transferred to the fiscal department, and is working in the St. Louis territory. R. E. Edginton, who has been with the company for some time, is now assistant sales manager.

The Sitnek Coal Mining Co., has awarded a contract to the Fairmont Mining Machinery Co. to install shaker screen and other equipment at the new wooden tippie to be erected by the company at its Katherine mine, at Lumberport.

M. A. Jolliff, Fairmont business man, has purchased 300 acres of undeveloped Pittsburgh coal land in the vicinity of Fairview, from the Kennedy, Price and Yost heirs and from Lon Underwood. The coal land is in the McCurdysville section.

Operations have been resumed at the Raymond City Coal mines in Putnam County, the affairs of the company having been placed in the hands of a receiver. The company has offices in Cincinnati. Approximately 1,500 men are employed at the Raymond City mines.

WYOMING

The Union Pacific Coal Co. is sponsoring a baseball tournament among eight southern Wyoming teams which will be held in Rock Springs, Aug. 28 to 30. E. R. Jefferis, stores manager, has charge of the tournament, assisted by M. F. Roberts, chief operator of that company's power plant at Rock Springs, and A. Reynolds, a newspaper man.

James Morgan, Secretary of United Mine Workers, District No. 22, Wyoming, and George Young, vice-president, spent a few days in the Rock Springs sector recently conferring with several commercial companies upon labor conditions growing out of the introduction of mechanical loading devices.

CANADA

Because of the strike menacing the Pennsylvania fields, the price of American anthracite advanced 50c. a ton in Montreal, Aug. 15. The rise is an annual event at this season, but in years past the advance has been made on Sept. 1. From Aug. 15 on the price of American household sizes was \$16 a ton instead of \$15.50. Careful survey of coal stocks in Montreal leads dealers in American fuels to the opinion that a one-month strike would hardly disturb the local supplies in the fall. Two months' cessation of mining, however, would prove troublesome.

More coal is to be developed on Hat Creek by a company now driving slopes into a hillside tract about 15 miles east of Pavilion on the Pacific Great Eastern Ry. The company, mainly composed of Vancouver men, is drilling the balance of a large acreage, claiming the results indicate one of the biggest deposits in Canada. The two tunnels now driven are 115 ft. and 165 ft. in length.

Welsh anthracite mine owners are anxiously assessing the prospects of a strike on the Pennsylvania coal fields, since they consider it will throw the Canadian market open to them. It was the previous American strike which gave Welsh hard coal its first chance in Canada, and since that time the trade has grown steadily. Senator Lorne Webster, of Montreal, is in London making arrangements for increased supplies of Welsh coal in the event of a United States coal strike. The only fly in the ointment of the Welsh colliery owners is that they have labor troubles of their own. The "red" movement among the hard coal workers has resulted in the last few weeks in great damage to mines by flooding and other causes.

Traffic

Belleville Operators Get Rate To St. Louis Suspended

Belleville district coal operators have succeeded in temporarily blocking a freight reduction of 3¢. a ton on the rate to St. Louis, Mo., from other southern Illinois mines. The Interstate Commerce Commission has suspended the new rates announced by the Missouri Pacific, Illinois Central and Chicago & Eastern Illinois lines until Dec. 17, pending an investigation. The Belleville operators insisted that the 22¢ differential in favor of the inner group of mines established in 1920 be maintained. The Belleville rate to St. Louis is \$1.16 per ton and from other southern Illinois mines \$1.38¢. per ton.

Freight Traffic Is Heavy

Freight traffic during the first six months this year amounted to 212,509,796,000 net ton miles, according to reports for the first half of the year filed today by the carriers with the Bureau of Railway Economics. This was an increase of 7,782,890,000 net ton miles or 3.8 per cent over the corresponding period last year but a decrease of 12,974,000,000 net ton miles or 5.8 per cent under the corresponding period in 1923, when the volume of freight, measured in net ton miles, was the greatest on record for any corresponding period.

Obituary

Charles J. Fischer, secretary and treasurer of the Underhill Coal Co., died Aug. 18, from complications following an attack of influenza. He had been with the company for more than 30 years and was about 55 years old and unmarried. He left no near relatives but his brother, John A. Fischer, with whom he lived.

New Companies

The New North Coal Mining Co., 1700 N. 11th St., Springfield, Ill., has been incorporated with a capital of \$50,000, to mine and sell coal by Bette Scheibner, Chas. H. Sutton and C. I. Scheibner. Correspondent: B. L. Carton, 205½ S. Sixth St., Springfield, Ill.

The Whitelye Creek Coal Co., of Dillner, Pa., has been organized under the laws of West Virginia with a capital stock of \$10,000. Principally interested in the new company are C. H. Burnside, D. W. Lewis, O. C. Hillberry, J. S. Shelton and Charles Jeffries, all of Morgantown, W. Va.

The Southern Illinois Coal Co. was incorporated in St. Louis, Mo., the latter part of July, by John S. Steuber, 5426 Ruskin Street, and others.

The Wickens-Haas Mining Co., Elba, Ohio, has been chartered with an authorized capital of \$50,000 to mine and produce coal. Incorporators are John H. Arnold, E. W. Haas, Way Wickens, J. P. Heldman and P. J. Way.

Industrial Notes

The Kuhlman Electric Co., of Bay City, Mich., has appointed the Stevens Sales Co., of 134 West Second South Street, Salt Lake City, Utah, as district representative for the State of Utah and parts of Idaho and Nevada adjacent to Utah. The Stevens company will handle Kuhlman power, distribution and street-lighting transformers.

The W. A. Jones Foundry & Machine Co., Chicago, has inaugurated a new sales arrangement for Minneapolis territory with an office at 614 Builders Exchange, F. S. Van Bergen, district sales manager. The territory covered includes all of Minnesota, North Dakota and South Dakota, also parts of Iowa and Wisconsin which adjoin Minnesota.

Coming Meetings

American Institute of Mining and Metallurgical Engineers. 132d meeting, at Salt Lake City, Utah, Aug. 31 to Sept. 3. Secretary, H. Foster Bain, 29 West 39th St., New York City.

Oklahoma Coal Operators' Association. Annual meeting, Sept. 10 at McAlester, Okla. Secretary, A. C. Casey, McAlester, Okla.

New York State Coal Merchants' Association. Annual convention, Sept. 10-12, at Richfield Springs, N. Y. Executive Secretary, G. W. F. Woodside, Arkay Bldg., Albany, N. Y.

Association of Iron and Steel Electrical Engineers. Annual meeting at Philadelphia, Pa., Sept. 14-19. Secretary, John F. Kelly, Empire Bldg., Pittsburgh, Pa.

National Safety Council. Annual meeting Sept. 28 to Oct. 2, at Cleveland, Ohio. Managing Director, W. H. Cameron, 168 No. Michigan Ave., Chicago, Ill.

Tenth Exposition of Chemical Industries, Sept. 28 to Oct. 3, at Grand Central Palace, New York City.

Electric Power Club. Fall meeting at Briarcliff Manor, N. Y., Oct. 19-22. Secretary, S. N. Clarkson, B. F. Keith Bldg., Cleveland, Ohio.

American Welding Society. Fall meeting, Oct. 21-23, Massachusetts Institute of Technology, Boston, Mass. Secretary, M. M. Kelly, 33 West 39th St., New York City.

Canadian Institute of Mining and Metallurgy. Annual western meeting Nov. 3-5, Winnipeg, Manitoba, Can. Secretary, George C. Mackenzie, Drummond Bldg., Montreal, Que., Can.

American Society of Mechanical Engineers. Annual meeting at New York City, Nov. 30-Dec. 3. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

Fourth National Exposition of Power and Mechanical Engineering, Nov. 30 to Dec. 5, at Grand Central Palace, New York City.

Coal Mining Institute of America. Annual meeting, Dec. 9-11, Pittsburgh, Pa. Secretary, H. D. Mason, Jr., P. O. Box 604, Ebensburg, Pa.

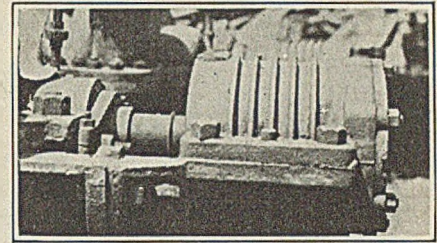
New Equipment

Roller Bearings Function In Centrifugal Pump

One of the main difficulties with the operation of centrifugal pumps has been to obtain successful operation of the bearing on the suction end of the casing. For the first time rollers have been used in this important bearing with good results. In all types of centrifugal pumps, regardless of the type of bearing, an end thrust must be taken care of. Various types of bearings other than rollers have been designed to take this end thrust, and although some have been successful, these types have, under certain conditions, given considerable trouble.

With pumps used for handling acidulous mine water the difficulty is usually magnified. Most of the bearings previously used have been cooled by water usually taken from one stage of the pump and conducted to a jacket around the bearing. With such a bearing an arrangement has to be made in the pipe connection between the pump and water jacket to prevent air from entering the casing, when the pump is being primed ready for operation. A ball check valve is often placed in the water line but soon becomes corroded. Besides, the spillage of water around the water jacket is usually unsightly. Where the water contains much acid the water-feed pipe in time corrodes or becomes blocked, even if the pipe is of brass.

To overcome these difficulties, the Goyne Pump Co., of Ashland, Pa., in developing its new line of centrifugal pumps, has incorporated in its pumping units an end-thrust bearing which has proved to be remarkably successful. It consists of a double Timken roller bear-



Inclosed End-Thrust Bearing

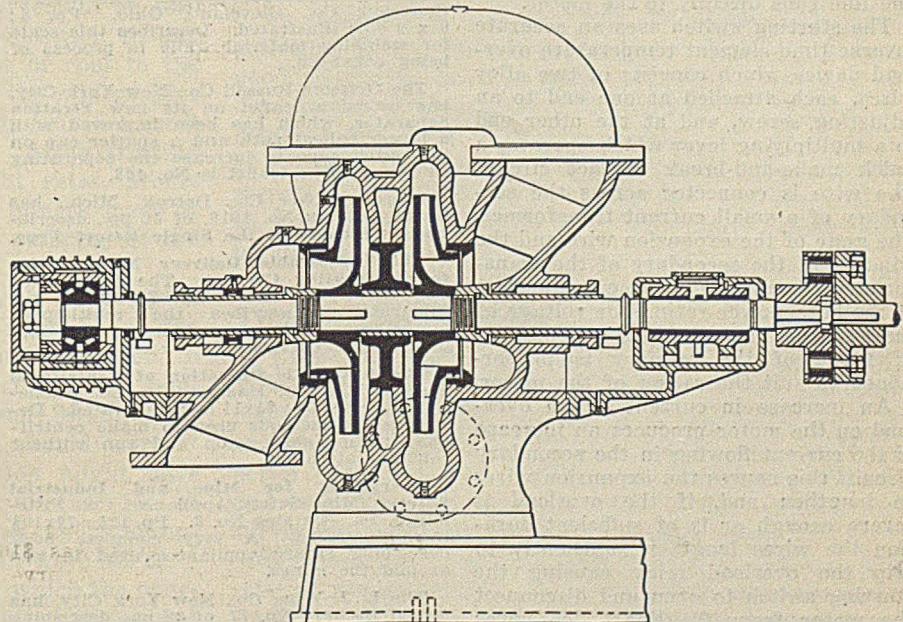
Instead of being lubricated with grease this bearing runs in oil. Fins on the outside of the housing aid in dissipating heat.

ing arranged to take end thrusts in either direction. One of the accompanying figures shows an outline of a pump and how the bearing is mounted. Instead of being lubricated with grease, as is common with most bearings of this type, this bearing is lubricated with oil. The oil jacket is arranged so that there is practically no leakage.

The other illustration shows the housing around the bearing. The ribs or fins were placed on the bearing to aid in dissipating any heat which might be generated. The success obtained by bearings of this type on centrifugal pumps has been such that the bearing is considered one of the most important recent improvements on centrifugal pumping units.

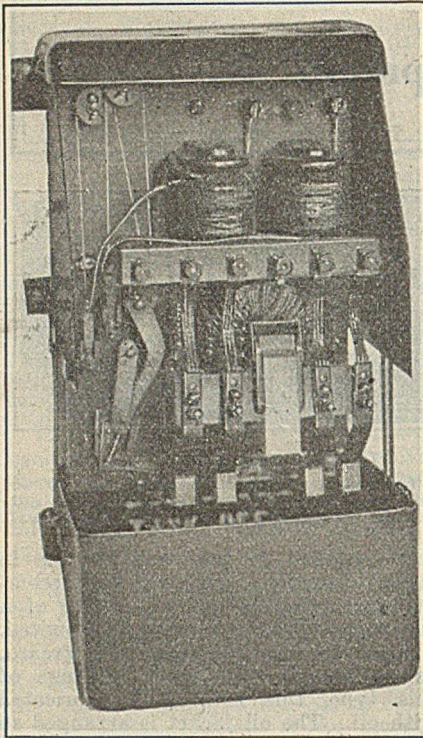
Oil Starting Switch Protects Induction Motors

The Electric Controller & Manufacturing Co. has just announced a new push button operated oil switch for starting squirrel-cage induction motors directly across the line. This device, known as the type ZO starting switch,



Bronze Type Roller Bearing Pump with Back-to-Back Impellers

Although this pump is well balanced, because the impellers are arranged back-to-back, a heavy thrust bearing has been added. This Timken tapered bearing has now been made a standard feature on this type pump.



Switch Gives Automatic Protection

All conditions of overload, phase failure and no voltage are taken care of by this switch.

is controlled from one or more push button stations which may be located at convenient points. The starting switch is provided with four pairs of heavy contact fingers three of which handle the main line in the case of three-phase or two-phase three-wire motors, and the fourth pair handles the control circuit to the push button when the switch is arranged for no-voltage protection. In the case of two-phase four-wire switches all four lines are disconnected in the "off" position when the switch is wired for no-voltage release. When wired for no-voltage protection one line runs directly to the motor.

The starting switch uses an accurate inverse time element temperature overload device which consists of two alloy wires, each attached at one end to an adjusting screw, and at the other end to a multiplying lever which operates a quick make-and-break contact circuit. The wire is connected across the secondary of a small current transformer. The gage of the expansion wire and the winding of the secondary of the transformer remains the same regardless of the horsepower ratings or voltage of the switch. The size wire and number of turns of the primary is proportioned to suit the rating of the motor.

An increase in current or an overload on the motor produces an increase in the current flowing in the secondary circuit, this causes the expansion wires to lengthen and, if the overload is severe enough or is of sufficient duration the wires lengthen sufficiently to trip the overload relay causing the starting switch to open and disconnect the motor from the line. The wires then cool and the overload relay contact automatically resets, if the switch is wired for no-voltage protection. A hand reset of the overload device by

means of a small button projecting through the case is provided on switches arranged for no-voltage release.

The overload device protects the motor against injury due to phase failure. If an attempt is made to start the motor with one phase open, the switch will open in less than five seconds, and the manufacturer states that it is impossible to burn out a motor due to phase failure or overloading when protected by this starting switch.

The oil tank is drawn from a single piece of sheet steel and cannot leak. The tank latches are arranged so that the tank can be lowered and left suspended to catch oil dripping from the contacts while the switch is being inspected.

On account of creepage of oil due to capillary attraction and from splashing when the magnet surfaces engage, all moving parts of the switch are kept lubricated, which protects the switch from corrosion when installed in corrosive atmospheres. The switch is arranged for conduit connection and is compact.

Trade Literature

Classification and Washing. The Dorr Co., New York City. Bulletin 11. Pp. 20; 6 x 9 in.; illustrated. Discusses the general subject of classification and describes its application in many industrial processes.

Zeolite Water Softener. Graver Corporation, East Chicago, Ind. Bulletin 509. Pp. 7; 8½ x 11 in.; illustrated. The advantages claimed for this softener are the rapidity with which the capacity of the zeolite can be utilized and the very short installation period.

The Crouso-Hinds Co., Syracuse, N. Y., has issued a folder illustrating its Screw Cover Junction Conduits.

Conveying and Storage Equipment. The Stearns Conveyor Co., Cleveland, Ohio. Pp. 8; 6 x 9 in.; illustrated. Describes the roller-bearing troughing idler pulley, with high-pressure grease lubrication; roller-bearing return roller; "Holotile" storage bin and self-propelled self-reversing belt-tripper.

Measler Conveyor Scales. The Stearns Conveyor Co., Cleveland, Ohio. Pp. 8; 6 x 9 in.; illustrated. Describes this scale for weighing material while in process of being conveyed.

The Griscom-Russell Co., New York City, has issued a leaflet on its new Stratton Separator, which has been improved with a larger helical path and a spatter cap on the outlet pipe to increase the separating efficiency. The leaflet is No. 408.

Detroit Stoker Co., Detroit, Mich., has issued Bulletin No. 1018, of 32 pp., describing its Stokers of the Single Retort Type.

Allis Adjustable Delivery Motor Drive for Alternating Current. The Louis Allis Co., Milwaukee, Wis. Pp. 7; 8x10½ in.; illustrated. Describes the multi-speed motor, control drum, contactor panels and principle of operation.

The Automatic Operation of Centrifugal Pumps. Barrett, Haentjens & Co., Hazleton, Pa. Pp. 24; 8½x11 in.; illustrated. Describes the methods used to make centrifugal pumps start, stop and run without constant attention.

Everything for Mine and Industrial Safety. Mine Safety Appliances Co., Pittsburgh, Pa. Catalog No. 3. Pp. 126; 7½x10½ in.; illustrated. A very complete book describing safety appliances used in and around the mines.

The L. J. Wing Co., New York City, has issued Bulletin No. 77, of 32 pp., describing its Turbine Blowers. This contains some new information not included in the previous bulletin, including data relative to the application of the blowers to stokers and graphic representation of their use for hand-fired boilers.

Publications Received

Analyses of Utah Coals. Bureau of Mines, Washington, D. C. Technical paper 345. Pp. 90; 6x9 in.; tables. Prepared under a co-operative agreement between the U. S. Bureau of Mines and the Industrial Commission of Utah. Besides the analyses a brief description of the geologic structure of the coal fields, a summary of the mining methods used, uses and markets of the coal and a statement of production by counties as compiled by the U. S. Geological Survey, are included.

Coal Losses in Alabama, by J. J. Forbes, School of Mines, University of Alabama, in co-operation with U. S. Bureau of Mines and U. S. Coal Commission. Bulletin No. 1. Pp. 52; 6x9 in.; illustrated.

Year Book American Engineering Standards Committee, 1925, 29 West 39th St., N. Y. City. Pp. 72; 8x10 in.

Our World Trade, January-March, 1925. Foreign Commerce Department, Chamber of Commerce of the United States, Washington, D. C. Pp. 15; 6x9 in.; tables. Value and volume of principal exports and imports between United States and chief foreign markets are included.

Investigation of Antennae by Means of Models, by J. Tykocinski-Tykociner. Engineering Experiment Station, University of Illinois, Urbana, Ill. Bulletin No. 147. Pp. 60; 6x9 in.; illustrated. Discusses the theoretical considerations involved in the use of such models.

The Coal Resources of New South Wales, by the Staff of the Geological Survey, New South Wales. Pp. 154; 6x9 in.; illustrated. Parts I and II; the former covering geology, and the second part, coal analyses and byproducts.

Thirtieth Annual Report of the Mineral Resources of Tennessee. Department of Labor, Division of Mines, Nashville, Tenn. Pp. 148; 6x9 in.; illustrated.

Home Environment and Employment Opportunities of Women in Coal-Mine Workers' Families. Women's Bureau, U. S. Dept. of Labor, Washington, D. C. Bulletin No. 45. Pp. 61; 6x9 in.; tables.

Small Horse Streams for Fighting Mine Fires, by L. D. Tracy and R. W. Hendricks. Bureau of Mines, Washington, D. C. This paper represents work done under a co-operative agreement between the U. S. Bureau of Mines, the State Geological Survey Division of the State of Illinois and the Engineering Experiment Station of the University of Illinois. Technical paper 330. Pp. 23; 6 x 9 in.; illustrated.

Permissible Explosives, Mining Equipment and Rescue Apparatus Approved Prior to Jan. 1, 1925, by J. E. Crawshaw, L. C. Ilsley, D. J. Parker and A. C. Fieldner. Bureau of Mines, Washington, D. C. Technical paper 376. Pp. 35, 6 x 9 in.; tables.

Cleaning Tests on Central Illinois Coal, by Thomas Fraser and H. F. Yancey. This paper represents work done under a co-operative agreement between the U. S. Bureau of Mines, State Geological Survey Division of the State of Illinois and the Engineering Experiment Station of the University of Illinois. Technical paper 361. Pp. 23; 6 x 9 in.; illustrated. The data reported in this paper indicated what results may reasonably be expected from washing the coal mined in this field, in so far as the samples tested represent average conditions.

Geology of the Foothills Belt Between McLeod and Athabasca Rivers, by Ralph L. Rutherford. Scientific and Industrial Research Council, University of Alberta, Edmonton, Alberta, Canada. Report No. 11. Pp. 82; 6½ x 10 in.; illustrated. This report deals with the geology and physiography of a part of the foothills belt and is a continuation to the northwest of the area discussed in Report No. 9 by the Scientific and Industrial Research Council. It is accompanied by a geological map.

Carbon Ratios and Petroleum in Illinois, by Gail F. Moulton. Department of Registration and Education, Division of the State Geological Survey, Urbana, Ill. Report of Investigations No. 4. Pp. 18; 6½ x 10 in.; maps and tables.