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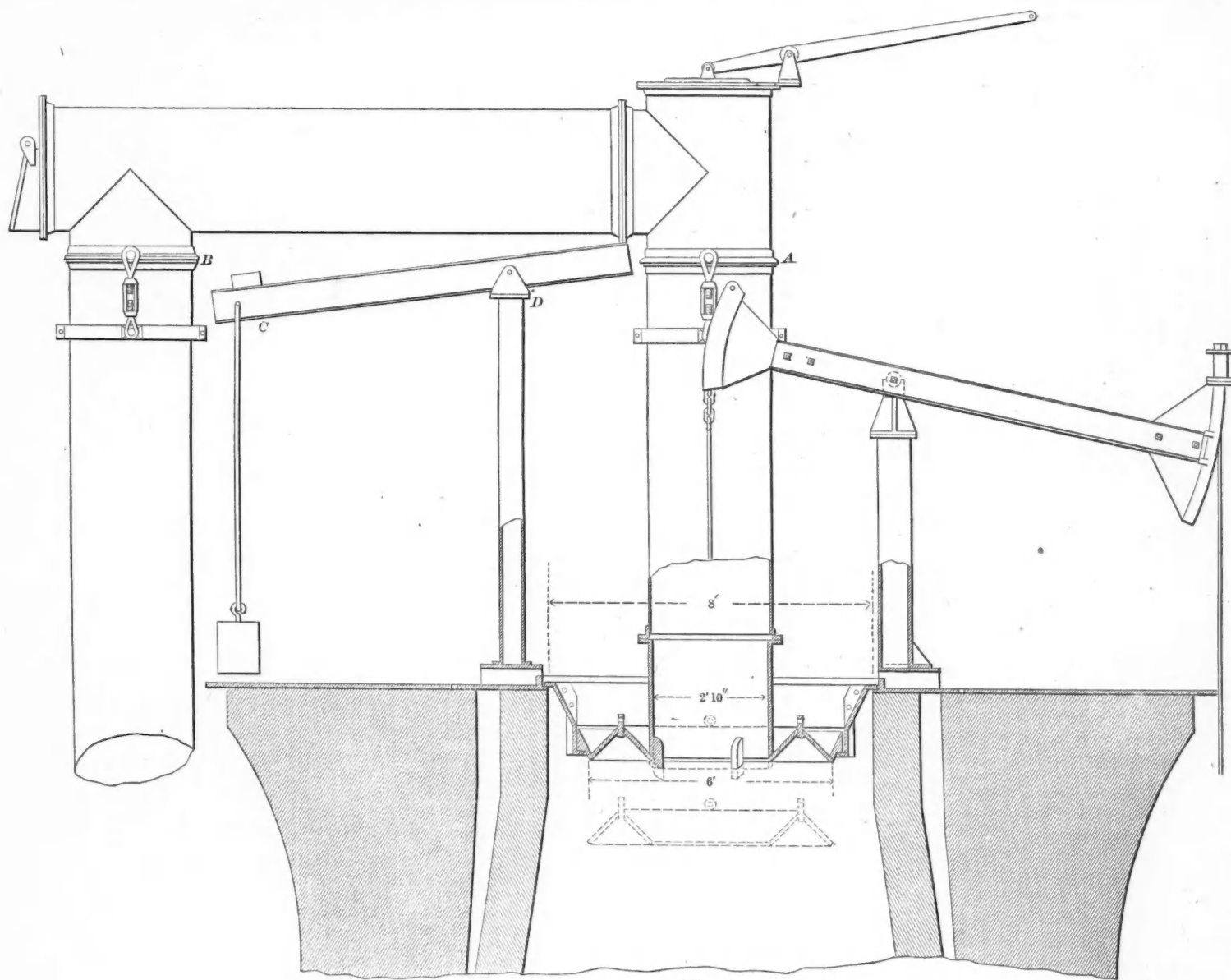
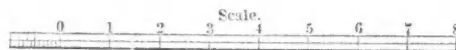


Fig. 1.



On a Modification of Coignet's Charger.

By F. FIRMSTONE.*

In April, 1873, No. 2 Furnace at the Glendon Iron Works, being out of blast, it was decided to alter it from an open to a closed top. The three side flues, through which a part of the gas was formerly taken off, were 15 feet below the top, and as, for various reasons, it was not convenient to cut new flues through the brick work at the top, as is commonly done with closed top furnaces, a modification of COIGNET'S charger was employed.

This apparatus, as figured by DE VATHAIRE,† consists of a cup or hopper, like that used with the cup and cone; a central pipe for taking off the gas, which de-

* A paper read before the American Institute of Mining Engineers, at Easton, Pa., October 22, 1873.

† Etudes sur les Haut Fourneaux, page 108.

scends some distance into the furnace, and has a projection formed around it which makes a seat for a ring of a triangular cross section, which closes the opening between the cup and the central gas pipe. The charge is put into the cup, and by lowering the ring, is thrown into the furnace, a part going outside of the ring toward the walls and a part through the inside toward the gas pipe.

In this form the apparatus was not applicable, for: 1st. With a gas pipe three feet in diameter, in a top eight feet in diameter, the opening left by lowering the ring would not be large enough to let lump coal pass through; 2nd. For the charger to shut tight, the ring must bear equally against the projection made for it on the gas pipe, and against the edge of the cup. This would not be difficult to effect when the apparatus is first put up, but a comparatively small change in the relative position of the parts, such as is almost certain to occur from expansion, would cause the ring to touch the pipe or the cup, whichever happened to

be the lower, first, and leave a leak between it (the ring) and the other. In the plan adopted (Fig. 1), the central opening in the ring is closed by the bottom of the gas pipe, by which more room is left for the passage of the stock when the charger is open, than if the pipe descended into the furnace; and the pipe, instead of being rigidly supported, rests on the ring, when the charger is closed, and follows it for two or three inches as it opens, until stopped by the counter-balance lever C. When the ring is raised to close the furnace top, it comes in contact first with the bottom edge of the gas pipe, then both are raised together, until stopped by the ring coming in contact with the edge of the cup. In this way a good joint is made at both places.

To enable the gas pipe to follow the ring, the joints at A and B are constructed as shown in Fig. 2, being, in fact, cup and ball joints, such as are used for furnace belly pipes. The cast iron flanges being turned, the one to a concave, the other to a convex spherical surface having a common center, it is evident that the pipes may be turned freely through a considerable space in any direction without opening the joint.

The central pipe is suspended from the horizontal pipe by two eyebolts passing

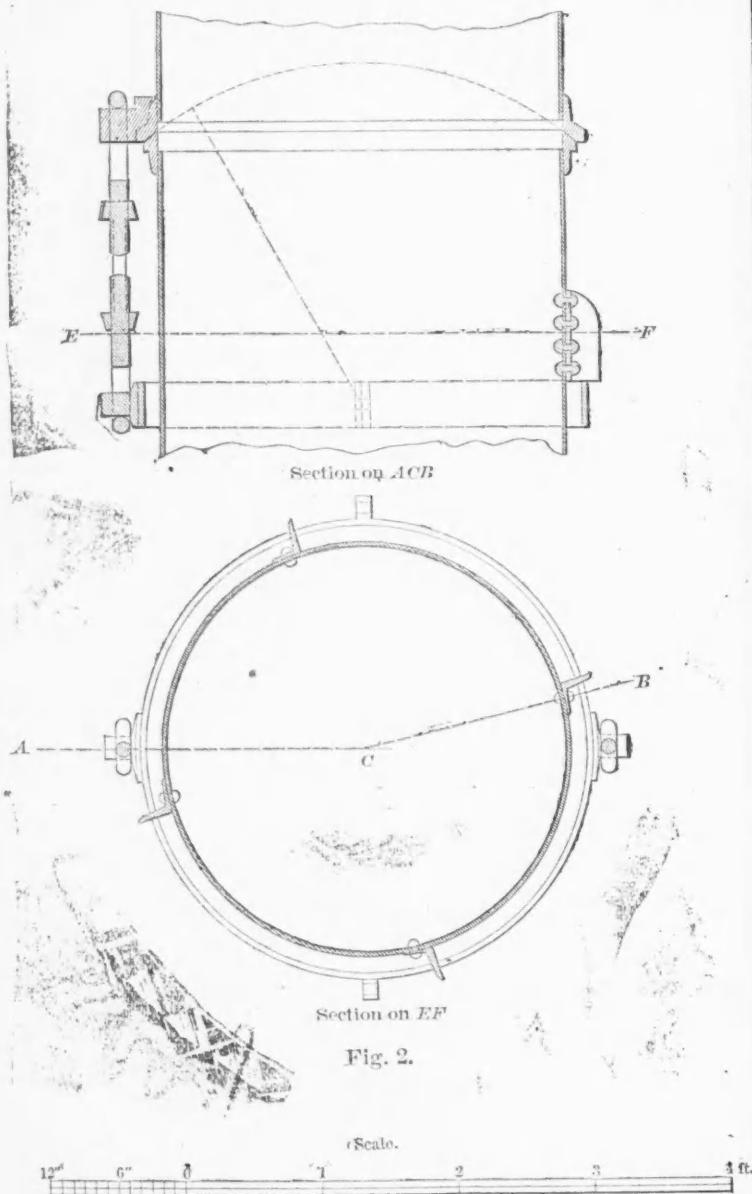


Fig. 2.

(Scale.)

over trunnions, the upper ones cast on the cup flange and the lower ones fastened to a wrought iron ring encircling the pipe, and sustaining it by four angle iron brackets riveted on, as shown in Fig. 2. The point at B is constructed in the same manner. The eyebolts are adjusted by means of turn-buckles, but need not be drawn up very tight; in fact, the bolts at the joint B are only necessary to keep the horizontal pipe from being moved by an explosion or other accident.

The ring is suspended by two opposite rods to the short arm of a forked lever embracing the central pipe, and is raised by a blast cylinder acting on the long arm of the lever.

As the cylinder employed is not large enough to raise the ring and the weight of the movable part of the pipe which rests on it, a part of the weight is taken up by the lever and counterweight C. It would perhaps be better to make the cylinder large enough to raise the whole weight and let the pipe be stopped by a saddle on the top of the column D.

The introduction into the Lehigh Valley of the double cone, or ring charger, and the plan of closing the central opening in it by a hanging stopper is due to Mr. Bowman of the Carbon Iron Company, who invented it, and had it in use

at one of their furnaces at Parryville in January, 1872. He has since taken out a patent for it. As, at Parryville, it replaced a cup and cone, the central opening was closed by an egg-shaped stopper, suspended from a cast iron girder laid across the top of the furnace, and the gas passed off by the flues already existing close to the top.

The cup and half joint used in the Glendon apparatus might be applied to a cup and cone, with the gas taken off at the top of the cone (Hoff's apparatus), and also, although not so readily, instead of the water joint used in Langen's apparatus.

A Utah Dressing Works.

At the Utah Silver Lead Co. (Limited) of Bingham Cañon, Utah, the concentration works are now completed. They consist of six continuous self-feeding and self-discharging jiggers, several buddles, one Blake stone breaker, one pair of Cornish roller crushers, sizing apparatus, etc. They can run through 100 tons of ore per day and produce 25 tons of concentrated ore of 75 to 80 per cent. lead and 20 to 25 ounces of silver. The capacity will be increased to 150 tons per day. Some 2,000 tons of ore are on the dump and about 20,000 in the mine as reserves.

Mercurial Soot.

A Western inventor has devised a new method of treating mercurial soot. This is the flue dust of mercury furnaces, and consists of fine carbonaceous matter mixed with mercury. The usual method of treating it is to rub it with a wood paddle on an inclined plane. The fine particles of mercury then coalesce and run down into an appropriate vessel. In the new method, the soot is placed in an iron or other suitable vessel or tank, to which water, heated to the requisite degree, is added, and the substances intimately mixed. Wood ashes, or other suitable alkali, are then added for the purpose of still further cleansing the quick-silver, which will flow forth in a bright stream from a pipe properly placed in the vessel. The claim granted by the letters patent is, "The process of purifying mercury by treating it, under agitation, with heated water and alkaline matter, substantially as set forth." This process is said to have been used with success at New Almaden."

The Western Mode of Sampling Ores.

The Helena (Montana) Herald describes the method of sampling ore, at the furnace in Montana, Utah and Nevada, as follows: "First, every fifteenth shovelful from a wagon load is kept separate. That pile is well mixed and then divided by means of a box with no bottom—that is, the box is placed on the floor and the ore poured over the side from the point of a shovel. The inside pile is then served in the same way, until by repeated operations it is reduced to the compass of about one shovelful. The ore in the mean time is reduced to sufficient fineness by pounding. The assay from this shovelful generally comes within ten per cent. of working process, and then incidental losses must be subtracted, and those losses are larger than is generally supposed: 1st, interest on money invested in ore and fluxes; 2nd, waste in yard of ores and fluxes; 3d, lost time on stocks and miscalculations generally.

Coal and Iron of Virginia.

By PROFESSOR D. T. ANSTED, M.A., F.R.S.

At the annual meeting of the Society of Arts, on the 28th of January, Sir ANTONIO BRADY in the chair, Professor ANSTED delivered the following lecture:

Almost a year has elapsed since Major HOTCHKISS, in this room, communicated to the Society an admirable account of the resources and statistics of the Virginia States, with which he is probably better acquainted than any one, and his address on that occasion, published in your journal, may be referred to with advantage on every point.

In bringing the subject before you again on this occasion, I do not propose to repeat what he has said, but limit myself to the results of my own experience, obtained recently during a three-months' residence, chiefly among the iron and coal deposits, briefly alluded to by Major HOTCHKISS. These deposits, since his address, have been laid open by the completion of the Chesapeake and Ohio railroad from Richmond, on James' River, below tide-water, to Huntington, on the Ohio, a point below which there is navigation almost all the year. This line was first opened for general traffic in April last, but owing to a delay in the completion of a tunnel under part of the city of Richmond, the opening to tide-water was not available till November last. Practically, therefore, so far as the conveyance of minerals eastward out of the State is concerned, the railway is only now coming into operation, and has not yet had an opportunity of being utilised.

The development of the mineral resources of the two Virginias was impossible until the completion of railway communication from the Atlantic to the Mississippi. The coal could not be carried to the iron ore, and had no free outlet to the west. It was equally impossible to carry the ore to the coal with any possibility of profit. The James' River canal is still separated from the waters of the Kanawha River by a transit of more than 100 miles over roads which, even at their best, would not be thought even passable in this country. Mineral traffic over such roads was out of the question, and was never attempted. I travelled over them myself, twenty years ago, and they were then only fitted for the transport of waggons at a very slow rate. I have been upon them lately, and find them unaltered; and, after all, the James' River canal, in its present state, has not the capacity of doing a large business. It must be enlarged, deepened, extended through the mountain-chain, and completed before there be that water communication between the West and the Atlantic that the mineral treasures of the two Virginias now urgently demand, and the rapidly increasing importance of the Western States as urgently needs.

My business in America was partly to make the requisite arrangements for the proper carrying on the business of a company established to work a tract of coal

and timber lands, and partly to inspect and report on a number of iron properties in Virginia, and coal lands in Western Virginia. It thus became necessary for me to diverge from the line of the railway, and penetrate the creeks opening into the main river valleys. These vary in length from three or four to more than 100 miles, and many of them have numerous forks and branches.

It is one of the peculiarities of the Virginian mineral fields that the principal minerals are generally accessible above the water-level. No borings are needed to prove the presence of the minerals; no shafts required to reach them; no pumping to drain them, and no machinery to open and work them. They are easily and naturally ventilated. The exceptions to this condition are chiefly in the coal-fields near Richmond, the gold districts in and near Buckingham, and the salt in the Kanawha. The magnificent and abundant iron ores, and the boundless wealth of the Appalachian coal-fields, are of enormously greater importance than the comparatively small resources of the Richmond coal-fields, the gold of Virginia, or the miscellaneous minerals, many of them only rendered useful by the coal and iron.

The iron in the east, and the coal in the west, then, must be looked on as the principal minerals to which the two States of Virginia and Western Virginia will owe their future importance. The principal deposits of both are crossed nearly at right angles by the line of the Chesapeake and Ohio railroads. They are thus brought into immediate contact with each other and with the outer world.

The iron country of Virginia occupies two distinct geological positions, and the ores are of two different kinds. East of the Blue Ridge, which is the easternmost mountain chain of North America, there are bands of magnetite, not absolutely continuous at the surface, but visible and traceable by their contents for a considerable distance, ranging northeast and southwest, and crossed by the rail near Charlottesville, about 100 miles from Richmond. At frequent intervals, within a breadth of about twenty miles, are ridges, rising as much as 200 feet above the valleys, having a core of hard, compact iron ore of the finest quality, often yielding much more than 50 per cent. of metallic iron in the furnace. These ores are chiefly peroxides, with a small admixture of protoxide of iron and very small quantities of silica.

I examined several properties between Charlottesville and Lynchburgh. In these there can be no doubt of the presence of enormous quantities of such ores, obtainable at very small cost. They are now being leased under royalties which average about 2s. 6d. per ton of ore, and the leases on these terms are already being sold at high prices. They are well adapted for the manufacture of steel by SIEMENS' process, but at present capital has not yet enabled the ironmaster to avail himself of this source of wealth.

A transverse line of rail between Charlottesville and Lynchburgh, connecting with the main lines of communication, both north and south, now renders all these properties valuable, and I have little doubt that in a few years we shall see steel rails manufactured here on a very large scale and at great profit, both by BESSEMER and SIEMENS' processes. There are already rail mills at and near Lynchburgh, but these are supplied with fuel from the Richmond coal-field. I do not think it necessary to dwell on the features of this deposit, inasmuch as the coal is not of very good quality and must always be very costly to mine. Neither do I think it desirable to occupy your time by reference to the pyrites and gold deposits of Buckingham County, accessible at Tolersville, about fifty six miles from Richmond. These are important minerals, but they cannot bear comparison with those further to the east.

The Blue Ridge forms a natural boundary, beyond which this class of ores do not pass in Virginia. To the west of this chain, however, and in the broad, rich valley that extends in this direction to the Appalachian Mountains, there is a group of Silurian and Devonian rocks squeezed into folds, and containing at intervals, for about fifty miles, an important band of brown hæmatite, and a thinner deposit of rich peroxide of iron. These are repeated in some places three times, and in each repetition containing singularly rich and valuable deposits of ore, the hæmatites sometimes more than forty feet thick, and yielding generally from forty to fifty per cent. of metal. This great bed is found to extend from Pennsylvania through Eastern Ohio and Virginia to Kentucky. From similar ore, found further north, some of the finest iron of Pennsylvania has been made, but in the northern part of its range the use of it has been checked by the cost of fuel. In Kentucky and Tennessee, however, where these ores have come into use, and in the few parts of Virginia where furnaces had also been erected previously to the opening of the Chesapeake and Ohio Railway, charcoal was the only fuel employed. The splint coal of the Kanawha has now been substituted in these same furnaces for charcoal, without lowering the quality of the iron.

So lately as 1864, when the well-known and exhaustive work of Dr. PERCY on iron and steel was published, the magnetites and hæmatites of Virginia were not even alluded to, and had not entered into consideration as among the American ores practically available. We were there told that the principal iron manufacture of the States "must always cling to the Lehigh and Schuylkill and Lower Susquehanna Valleys in Pennsylvania, where the ore is abundant, the coal near at hand, and the flux on the spot." (Percy's Metallurgy, p. 382.) Already it is evident that in Virginia iron can be made cheaper and better than in Pennsylvania, where the ore and fuel are both failing, and the wealthy and enterprising Pennsylvania ironmasters are gradually removing southwards, and acquiring the ironfields between Charlottesville and Staunton, where the ore is equally good, the coal nearer, the available quantity of both minerals greater, and where both coal and iron can be mined on much more favorable terms.

The hæmatite belt, as we may call this part of Virginia, commences as you leave the valley of Virginia, a little west of Staunton, and the first deposits of ore of importance come in at a distance of about ten miles from that town. The deposit is here of great thickness, and generally of high percentage. The first furnaces are near Siberton Station, at Buffalo Gap, but these are not at present in blast. The furnaces are very well situated for mixing ores, as very valuable deposits of magnetite are about fifty miles distance, the hæmatite and fossil ore near at hand, and the best varieties of coal capable of being used raw in making first class iron are about 150 miles distance by rail. The cost of the rich 70 per cent. ore at this spot would not exceed 10s. per ton, the cost of the local hæmatites of 40 per cent. 3s., and the raw splint coal, 12s. Limestone is close at hand at a very small price. From Siberton (Buffalo Gap Station), nearly as far as Corington, a distance of fifty miles, there are very numerous localities, at any of which works might be established, with a certainty of obtaining average 50 per cent. ores for little more than 6s. or 7s. per ton, and the splint coal of the Kanawha at an average price of 10s. per ton. I do not hesitate to say that throughout this district iron may be made at a cost not exceeding 15 dollars, or 60s. per ton, and this iron would be of very fine quality, and equal to charcoal iron. A considerable number of properties within this belt and near the rail, have been purchased by Pennsylvanian and New York capitalists, some for actual work, others for speculative purposes.

TO BE CONTINUED.

Heavy Work with a Bessemer Plant.

We published last week two items which showed the extraordinary capabilities of the ordinary Bessemer plant when called upon in an emergency. One of them described a feat achieved in an English establishment, which, with a 5-ton plant of two cupolas, made 48 blows, and about 270 tons. The other was the very remarkable weeks' run at the Cambria works. Below we print another achievement, made at the Troy establishment, and which is the leader of them all, so far as we know. Fifty blows in 24 hours is the greatest run yet. Figures like these are something more than boasts. They demonstrate the capacities of the Bessemer apparatus in a way that may be made to tell seriously upon calculations for new plant.

The largest product ever attained by any 5 ton-plant Bessemer Steel Works in twenty-four hours was made at the Works of JOHN A. GRISWOLD & Co., Troy, N. Y., on Friday, February 13, when 50 blows were made, yielding 267 ⁹²⁰/₂₂₄₃ tons of ingots. The work was accomplished under the direction of ROBERT W. HUNT, the superintendent of the Works, and without any previous preparation; neither did it interfere with the usual yield of the establishment, either before or after, as the accustomed Saturday's turn of 10 blows was made on that day. The blast was put on the cupolas at 6-30 A. M., Friday, the first heat blown at 7-30 A. M., and the fifty heats completed by 6-30 A. M., Saturday, so that the result was reached within the legitimate twenty-four hours. The first twenty-five heats were melted in eleven hours and five minutes, which was the fastest time made. Two cupolas were used during most of the time, the blast being furnished by one No. 8 Sturtevant Blower.

The resulting steel was up to the high standard of excellence maintained by these works. X.

Coal Production of California since 1869.

From our special Correspondent.

THE principal region for the production of coal in California is what is known as the Monte Diablo Coal Field. In it there are five mines, the Black Diamond, Pittsburgh, Eureka, Union, and Central, and they were discovered about the same time, namely 1861, but nothing of importance was done until 1869. In that year and until the present time the yield has been as follows in tons:

	Total.	Black Diamond.	Eureka.	Pittsburgh	Union.	Central.
1869.....	145,227	78,361	16,924	27,756	17,455	4,729
1870.....	129,632	69,855	10,246	23,910	20,563	5,055
1871.....	132,978	73,544	18,194	22,339	17,208	
1872.....	167,427	100,071	16,831	26,309	21,493	
1873.....	163,143	104,106	4,098	32,362	22,600	8,578
	738,407	425,937	66,293	132,676	99,319	18,362

The Eureka mine worked out in May, 1873. The principal mine of all, the Black Diamond, has this year been doing a great deal of dead work, going to enormous expense in pit, engines, gangways, etc.; but they anticipate just as soon as the new works are finished, which will be in about three months, lifting at least 1000 tons per day. There is a market for all that they can get out, principally for steam purposes, and from the look of the mine, which I personally examined, they have enough coal in sight on the present gangways, to run them at that rate for the next eight years.

We give in another place some valuable statistics of the California Coal Trade from the *Commercial Herald* of San Francisco.

Engineering and Mechanical Notes.

THE results of the efforts of the Water Commissioners in St. Louis to improve the water of the Mississippi, for the sake of the consumers in that city, are shown in their report for 1873. During the year 1873 the low-service engines pumped from the river into the settling reservoirs, or basins, as they are technically called, 6,081,800,000 gallons of water. During the same time the high-pressure engines pumped from these basins into the reservoir at Compton Hill, and into the city, 5,981,740,000 gallons. The difference, 100,060,000, was used in cleaning the basins. They were cleaned out once a week, and the sediment removed during the year equaled 116,000 cubic yards, or 156,000 tons. The cost of removing this sediment was two and a quarter cents per cubic yard, or \$2,610 total. The cost of clearing the basins amounted to fifty-eight cents for every 1,000,000 gallons, equal to 25,000 barrels, of water pumped into the city. If the sediment had all been deposited in one basin (600 by 270 feet surface) it would have filled it to the depth of 19.3 feet.

THE Wheeling Steel-works, situated at Martin's Ferry, are finished and have made several runs which are reported to be quite successful. The company has a capital of \$100,000. They have five acres of land and contemplate erecting a rolling mill at an early day. There is a vein of good coal on the premises. In the buildings are 12 melting furnaces and two steam hammers, of 700 and 1500 lb., made by MESSRS. MARCHAND & MORGAN, of Alliance. It is said the steel is to be made direct from the muck bar.

THE Gold product of the Australian fields is on the increase. The import of Australian gold into the United Kingdom in 1873 exhibited a large increase as compared with 1872, having amounted to £9,471,601 as compared with £6,014,621 in 1872, and £6,919,480 in 1871. The increase in the imports was still continuing at the close of last year, the receipts of December having been £1,341,672 as compared with £618,996 in 1872, and £433,647 in 1871.

Chimney Stacks in England.

The highest chimney in the Government works is that of the shell foundry in Woolwich Arsenal, and was built in the year 1856. It stands 223 feet, nine inches above the ground-line, and the brickwork is continued down to a depth of sixteen feet, making the total height 239 feet nine inches above the concrete. It was built from the inside. It has a base above the ground-line twenty feet square, and with plinth and cornice twenty-seven feet high, above which the octagonal shaft commences, being externally sixteen feet nine inches in diameter at the bottom, and six feet six inches at the top. The walls are two feet seven and a half inches thick at starting, and reduced four and a half inches at every thirty-one feet six inches; the upper twenty-six feet being only nine inches thick, all built in mortar, excepting the top nine feet, which is bell-shaped, and built in cement, and is surmounted by a Portland stone cap and blocking, weighing by measurement about seventeen tons.

There is another chimney in the gun factory department, with a base eighteen feet nine inches square, and thirty feet high, above which rises an octagon shaft, 140 feet high, having an external diameter of thirteen feet one inch at the springing, and five feet six inches at the top, the greatest thickness of brickwork being one foot ten and a half inches for the first fifty feet, and above that reduced four and a half inches in thickness at every thirty feet; the top nine inches thick, and finished with a bold stone cap and blocking. There are several others varying from 120 to 150 feet high, and in no case were they built more than nine inches thick at the top, and gradually increased downwards; some are octagonal and some square, and no failure has occurred in any of them.

THE COAL TRADE.

NEW YORK, February 20, 1874.

THE course which the ENGINEERING AND MINING JOURNAL has followed in publishing such matters of news as appear to us to be of general interest and value to the industries we represent, and in expressing our honest, independent, and impartial opinion on current topics, is, as we understand it, fulfilling the role of legitimate journalism and serving faithfully the trust reposed in us.

The cordial and flattering endorsement we are receiving on all sides from our coal and iron men, shows that this course is widely approved. Not the least sincere testimony of the great success of this journal as the organ, *par excellence*, of our coal and iron industries, comes in the form of an angry and intemperate article in one of the small trade sheets, which is beginning to learn, from its evidently waning patronage, that our intelligent coal and iron men expect, and will have, something more than the stereotyped platitudes expressed in execrable English, that have long taken the place of useful practical information in its columns.

Though the real cause of this galvanic evidence of vitality is clearly the superiority of the ENGINEERING AND MINING JOURNAL in this field, yet it assumes the guise of virtuous indignation at an imaginary violation of trade etiquette which it accuses us of for having published the "Coal Companies' Confidential Programme," by far the most important piece of information that has been given for many a day to those interested in coal.

The high reputation of this Journal is too well established to require any answer to such charges from such a source. We certainly violated no confidence in publishing the document in question; and the nonsense about trade secrets in this connection, and fawning subserviency so transparent throughout the criticism of this self-constituted, though singularly inappropriate champion of trade virtue, must appear both ridiculous and disgusting to the intelligent minds that control our Anthracite trade.

What must be thought of the honesty of a paper that, with the most charming ingenuousness, informs those that look to it for an impartial statement of matters affecting their business, that it publishes only so much information on questions of the most vital importance to the trade as will suit, "and not be objectionable to" one particular interest in the industry? This is the trade virtue, the honesty, and independence of our indignant critic, *The Coal and Iron Record*.

We have no material change to note in the condition of the coal trade this week, the exceeding mildness of the season and the forced economy of the poorer, we might almost have said of all, classes, from the depressed state of trade in nearly every branch, has very materially lessened the demand for house coals of every description this winter, and the demand for furnace use has been very limited since October last. The recovery of business, so much talked about and so little seen, has not extended in any general manner to the iron trade. A large number of the furnaces are still out of blast, and their resumption is much more gradual than was expected; and till the currency and tariff questions are definitely settled at Washington, there is not much prospect of any great improvement in the iron business; this naturally reacts on a number of other manufacturing interests, and all combine to make the coal trade dull in the extreme, in every part of the country. That this condition of the market is not shown here in Anthracite coal being sold at the (to the mine owner,) ruinous prices which recurred from time to time in previous years, is due solely to the combination of the great coal companies. This arrangement by which permanency and stability is given to the trade, has been a direct and very important advantage to both producers and consumers, as is very evident; manufacturers can now make contracts for their entire season's consumption at fixed and reasonable prices, and thus save the interest on a large amount of capital heretofore locked up in their stock of fuel, and they, in their turn, can extend their business with

the certainty of not having it interrupted by strikes at the mines, and the consequent wild fluctuations in the price of coal.

This new feature of the trade is showing itself in the absence of any large orders for stock. The manufacturers, informed through this journal of the arrangement entered into between the companies, are convinced of the internal cohesion of the combination and its ability to perform its promises.

In markets where the large companies do not compete, we find the trade in a condition so familiar to us here a few years ago. At Pittsburgh, prices (about \$3.25 per ton on the cars), it is claimed, do not more than cover cost, and needy operators are still further depressing the market by forced sales.

In Cincinnati we hear of Youghiogheny coal been offered, *f. o. b.*, at 9 cents, a price that will not pay even Kanawha companies, which can deliver even cheaper than Youghiogheny.

At St. Louis there is a strike among the miners, some 2,000 of whom belong to the union.

We give in another place the receipts of coal at St. Louis, which amounted for the week ending Feb. 7 to 327,991 bushels, or 11,714 tons.

The interruption to the receipts of coal at Port Richmond, Philadelphia, by the alterations being made in the Reading Railroad tracks at that point, will, it is expected, continue till the 5th or 10th of March, as stated in the circular we published last week. The receipts of coal at Port Richmond, for the week ending 14th inst., were 11,000 tons; the shipments were 7,500 tons; leaving 80,500 tons on hand. This, it is expected, will supply the demand till the above mentioned alterations are completed.

During the week ending February 14, the receipts of coal for shipment at South Amboy were:

	WEEK. Tons.	YEAR. Tons.
Wyoming coal.....	6,345	51,990
Lehigh coal.....	5,941	28,906
Total.....	12,286	80,896
Actually shipped.....	10,747	55,134

So that, with even the present small shipments to this point, the stocks are accumulating.

The Bituminous trade, like the Anthracite, is without change; it is always dull at this season, and this year more than usually so. The trade in provincial coals will not open for some weeks yet, and it is expected that less of these will be imported than in former years. Our American coals, such as Kanawha splint and cannel, Straitsville, and some others new to this market, will tend to take the place of the more expensive English Cannels. Quotations for those foreign coals are entirely nominal, no business being done.

The announcement of the usual Scranton sale, offering 60,000 tons of coal, will be found in another column. The price obtained will, of course, be as according to the March rates which we gave last week, and which will be found in our prices at the shipping ports.

The Philadelphia and Reading Coal and Iron Company have to-day issued their circulars, giving prices for coal on board at Port Richmond for the month of March. These prices are given in our quotations for coals at the shipping ports.

The British Coal Trade.

FROM advices to the 31st January, 1874, we learn that the coal trade throughout Great Britain, except in South Wales steam coals and in the North of Ireland collieries, is in a depressed condition, and prices are generally declining, or, where not yet reduced, there is every prospect of a proximate and considerable fall. This will, of course, assist the iron men and other manufacturing interests, and as the coal men have been making enormous profits, they can stand lower markets for a time. The reduction appears to be due in part to the exceedingly mild weather which has prevailed in England, and in part to the increased production from new collieries.

The recent "jump" in the London coal market has been succeeded by a fall of 3s. 6d. per ton, bringing the price of best Wallsend at the ship's side down to 24s. per ton. This "break" has produced its effect on prices at the pits. Formal notices of further reduction have not, at the moment of writing, been received from the Lambton collieries, but a circular has just arrived announcing that South Hutton is reduced to 16s. at the pit's mouth. Further light reductions have taken place in Yorkshire coal, Messrs. COOPER now quoting Wentworth Silkstone at 15s. 6d.; best steam coal, 17s., and bakers' coal at 14s. Further reductions will, in all probability, be forced upon the Midland coal-owners by the low price of Wallsend, against which it is impossible for Silkstone to compete at a difference of 6d. per ton. Throughout the great coal districts of the North, trade has been in a very dull condition during the past fortnight. Especially in household coal has this slackness been conspicuous, the lessening demand for the London market having exercised a depressing influence on the trade of Northumberland and Durham. Screened manufacturing coal may be had for 13s. 6d., and unscreened for 11s. per ton. In Scotland, also, the coal market has been afflicted with depression. Owing to the mildness of the season, the demand for house-coal has so seriously fallen off that more is now poured into Glasgow than is needed. Under these conditions a break in the market is inevitable, and masters have already given their men notice of a reduction in wages, a measure which has excited the most violent opposition on the part of the colliers. A similar tendency in house-coal is noticed in South Wales, where this variety is very weak, while the best steam coal is still kept up to recent quotations. Lancashire coalmasters are opposed to further reductions, but find it impossible to effect sales for forward delivery. The smaller firms are openly underselling recognized quotations, while the large quantities of Yorkshire and Derbyshire coal, off ring at low prices, have a powerful tendency to pull down the market. A drooping tone may be fairly said to characterise the coal markets of the entire country, South Staffordshire even not excepted.

COAL PRODUCTION.

Anthracite.

Mined for the week ending February 14, 1874.

Table with columns: Region, Name, Week, Year. Lists production for Wyoming, Delaware and Hudson Canal, Pennsylvania Coal Co., etc.

Total 260,383 1,415,060

* Year beginning January 1st.

Shipments of Bituminous Coal for the Week Ending Feb. 7.

Table with columns: Name, Week, Year. Lists shipments for Cumberland and Pennsylvania R.R., Philadelphia and Reading R.R., etc.

The St. Louis Coal Trade.

The following table exhibits the quantity of bituminous coal received in East St. Louis by the following routes of transportation, for the weeks ending January 31 and February 7, 1874:

Table with columns: Name, Jan. 31, Feb. 7. Shows coal received in East St. Louis.

Total 1,044 289,070 1,123 327,991

* Including six cars of Big Muddy coal.

MARKET PRICES OF COAL.

Import Duty on Coal.

Anthracite free. Bituminous, per ton of 28 bushels, 80 lb. to the bushel 75c., gold.

WHOLESALE PRICES.

f. o. b. at Shipping Ports.

Large table with columns: Name, Lump, Steamer, Grate, Egg, Stove, Chestnut. Lists prices for Wyoming Coals, Lehigh Coals, Schuylkill Coals, etc.

* f. o. b. in New York Harbor. † Prices for the year, per ton of 2 240 lbs. ‡ Prices for March, as per circular dated Feb. 19, 1874. § Quotations for the month of March, as per circulars dated Feb. 20th.

WHOLESALE PRICES FOR FEBRUARY.

New York.

Table with columns: Name, Lump, Steamer, Grate, Egg, Stove, Chestnut. Lists prices for Wyoming Coals, Lehigh Coals, Schuylkill Coals, etc.

Bituminous.

WHOLESALE PRICES. F. O. B.

Table with columns: Name, Price. Lists prices for Broad Top, Derby, Kittanning, etc.

RETAIL.

Table with columns: Name, Price. Lists prices for Liverpool House Orrel, American and Block, etc.

Atlanta, Ga.—Jan. 19. Bituminous Coal by car load, per bushel, 35c. @ 40c. Georgetown, D. C. and Alexandria, Va. George's Creek and Cumberland f. o. b. \$4 60 @ 4 75, wholesale.

Buffalo, N. Y.

Table with columns: Name, Price. Lists prices for Youghiogheny Gas Coal, Cathish Lump, etc.

Baltimore.

Table with columns: Name, Price. Lists prices for Corrected weekly by E. Stabler, Jr., coal merchant. Wilkesbarre, by cargoes or cars, etc.

Boston, Mass.

The market is well supplied and sales are only made in small lots; Cumberland coal in good supply and no demand; Gas coals are without change. There is a fair retail demand for anthracite, at full quotations, with but few cargo sales.

Chicago, Ill.

REPORTED BY BENO & LITTLE, COAL MERCHANTS. CHICAGO, Feb. 16, 1874. Sales light; stocks ample; no change in prices; anthracite firm.

Cincinnati, O.

The market continues steady, with moderate consumptive trade, but quiet for all kinds. Youghiogheny, afloat, 10 @ 11 c. Ohio River, per bushel, 8 c. Pittsburgh, " 8 c.

Cleveland, O.

Youghiogheny, f. o. b., per ton, \$5 25. Briar Hill, " 4 00. Massillon, " 4 00. Cleveland Lump, " 3 50. Silver Creek, " 4 00. Anthracite, prepared, " 10 00. Anthracite, lump, " 11 00.

Detroit.

The market is steady and in moderate demand. The following are present quotations: Lehigh Lump, per ton, \$11 00. Lehigh nut, " 10 00. Scranton, various sizes, " 9 50. Blossburg, " 9 50. Willow Bank, " 8 00. Briar Hill, " 8 50. Brookfield, " 8 75. Chippewa, " 8 00. Massillon, " 8 00. Straitsville, " 5 50. Nut, " 4 75.

Indianapolis.

Per 2000 lb. WHOLESALE. Brazil Block, " \$5 00. Highland, " 4 40. " steam, " 4 00. Brazil nut, " 3 60. Slack Coke, " 2 50. Virginia Cannel, " 9 00. Indiana Cannel, " 7 20. Steam Nut, " 3 00. Hocking Valley, " 6 00. Gas Coke per bush, " 14 c. Pittsburgh, " 7 00. Sand Creek, " 5 00. Anthracite, " 12 00. Anthracite, per ton, delivered, " \$10 00 @ 10 50 afloat, " 9 00 @ 10 50.

Louisville, Ky.

Pittsburgh, afloat, " per bushel, 11 cents. " retail, " 14 " Kentucky, " 12 @ 14 " Indiana and Peacock Pomroy, " 12 @ 14 " Anthracite, per ton, delivered, " \$10 00 @ 10 50 afloat, " 9 00 @ 10 50.

New Orleans, La.

The coal supply is equal to the demand. Stock at the Willow Grove Landing on 1st inst., 138 boats, 19 barges; the consumption during January, 26 boats and 6 barges, and 2 French creeks; arrived, 4 boats and 13 barges. Mount Carbon coal is in active demand at 80 cents per bbl., retail, and 47 cents wholesale. We quote: Pittsburgh, wholesale, per bbl., 45c. @ 50c. " at retail, " 75c. " per hhd, " \$7 00. " per box to steamboats, " 50c. @ 55c. " to manufacturers, " 60c. @ 65c. Virginia cannel, per bbl., \$1 25. Anthracite, per ton, " \$13 00.

Philadelphia.

The demand has been up to the average, and prices remain the same: ANTHRACITE. Broken, in the yard, " \$5 50. Egg and stove, " 5 75. Chestnut, " 4 75. BITUMINOUS. Pennsylvania and Westmoreland Gas, " 7 50. Broad Top, " 5 25. Pove ton Sierling, " 5 25. Derby, " 5 25. 75 cents per ton additional for delivery.

Pittsburgh, Pa.

The proposed consolidation of the Connellsville coal operators, noticed by us last week, has not resulted in any definite arrangement as yet. There is a moderate demand for coal, and prices are as follows, with no inclination to make contracts for future delivery of coke at these figures: Connellsville coal, " per ton, \$2 00 @ 2 25. Youghiogheny, at Pittsburgh, " 2 25. Youghiogheny, at the mines, " 3 00. Coke on cars, " 3 25. Castle Shannon on Platform, " per bushel, 9 1/2 c. Anthracite, nut, per ton, " 7 25. " broken, " 7 50. " egg, " 7 50. " stove, " 7 50. " broken on cars, " 6 75. " stove " " 7 00.

Coke—Orders are coming a little more freely, at least it so reported by some shippers, but trade continues in a very unsatisfactory condition so far as manufacturers are concerned.

San Francisco.

From Commercial Herald, Feb. 5. Imports from Jan. 1 to Feb. 1: Anthracite, 885 tons. English, 1,005 tons. Australian, 4,735 tons. Vancouver, 5,688 tons. Coos Bay, 4,178 tons. Bellingham Bay, 3,130 tons. Cumberland, 134 tons. Arrivals recently have been inconsiderable, with no important changes to record; in fact no transactions of moment have been brought to our knowledge.

San Francisco.

West Hartley, wholesale, ex ship, " per ton, \$13 00. Walsend, " 12 00. Australian, " 11 00 @ 11 00. Coos Bay, " 11 00. Nanaimo, " 11 50. Bellingham Bay, ex ship, " 8 50. Mt. Diablo, coarse, " 8 25. " fine, " 6 25. Anthracite, " 16 00 @ 17 00.

St. Louis, Mo.

Table of coal prices in St. Louis, Mo. including Illinois coal, Big Muddy, and Anthracite.

Toledo.

Table of coal prices in Toledo.

Hullfax, N. S.

Table of coal prices in Hullfax, N. S.

Toronto.

Table of coal prices in Toronto.

Montreal.

Table of coal prices in Montreal.

Provincial.

The shipments from the Provincial Ports have ceased for the season...

Table of coal prices in Provincial ports including Glasgow, Gowrie, and Sydney.

The following quotations were kindly furnished by M. Briggs & Co. No 90 Wall street, under date of Liverpool, February 15, 1874.

Table of coal prices in Provincial ports including Ince Hall Cannel, Gas, and Newcastle Gas Coal.

FREIGHTS

Large table of freight rates for various ports including Amesbury, Bath, Boston, and New York.

We continue our nominal rates from Philadelphia, it being impossible to fix any figures which may be relied upon.

TOWING.

Table of towing rates for various locations including Elizabethport, Port Johnson, and New Haven.

Owing to want of space we have had to omit our usual tables of transportation rates over the several railroads to local and tide water points this week.

IRON MARKET REVIEW.

Import Duties.

The following are the duties in Gold on Iron: Flat Iron, not less than 1, nor more than six inches wide, nor less than 3-8, nor more than 2 inches thick.

NEW YORK, Feb. 19.

There is but little doing in the iron market, prices being nominally maintained while business is suspended on account of the discussion of the currency question in Washington.

AMERICAN PIG.

Table of American pig iron prices including Foundry Anthracite, Gray Forge, and White and Mottled.

SCOTCH PIG.

Table of Scotch pig iron prices including Glengarnock, Coltness, and Eglington.

Boston, February 14.

The pig iron market is steady, with a fair demand for both Scotch and American. Eglington and Coltness are selling at \$46@50 per ton.

Following are quotations in this market:

Table of pig iron prices in Boston including Gartscherre and Coltness, American No. 1, and Wrought scrap iron.

CINCINNATI, Ohio, February 10, 1874.

We have to report a quiet market for the past week, with less firmness, but no change in prices. We quote:

HOT BLAST CHARCOAL.

Table of hot blast charcoal prices including Hanging Rock, Tennessee, and Alabama.

HOT BLAST STONE COAL.

Table of hot blast stone coal prices including Missouri, Ohio No. 1, and Ohio Forge.

COLD BLAST CHARCOAL.

Table of cold blast charcoal prices including Hanging Rock Car Wheel, Missouri, and Tennessee.

CLEVELAND, Ohio, February 17, 1874.

C. E. BINGHAM & Co., dealers in pig iron and iron ores, report the market as follows: There has been but little change in the iron market at this point during the past week.

Table of iron and iron ore prices in Cleveland including Anthracite Forge, Bituminous, and Lake Superior Charcoal.

LOUISVILLE, KY., February 11, 1874. The demand for forge iron has again fallen off, there being no immediate prospect of the mills resuming work.

Table of iron prices in Louisville including Hot Blast Charcoal and Car Wheel from Hanging Rock ores.

Table of iron prices in Philadelphia including Hot Blast Stone Coal and Cold Blast Charcoal.

PHILADELPHIA, February 17, 1874. From the Iron World.

But little can be said of the iron market this week. Sales have been fair, and no change in prices worthy of note, except a decline in forge pig of one dollar per ton.

Table of iron prices in Philadelphia including American No. 1, American No. 2, and American No. 3.

PITTSBURGH, February 18.

A. H. Childs, commission merchant, under the above date, writes as follows: "The market for pig iron is very quiet and the price of mill irons has receded about 5c. @ \$1 per ton."

From the American Manufacturer of Feb. 11.

Pig Iron—Trade continues quiet and during the past week the feeling was scarcely as it was the one preceding, although the market is steady and prices are sustained.

Table of pig iron prices in Philadelphia including No. 1, Foundry, No. 2, White and mottled, and Charcoal hot blast foundry.

ST. LOUIS.

Table of iron prices in St. Louis including Missouri Iron Ores and Iron Mountain per ton.

Table of iron prices in St. Louis including Benton Creek, Surface ores, and Pilot Knob.

Copper and Tin Markets.

CORNISH TICKETINGS—At Truro 29th Jan. 3347 tons of copper ore realised £15,335 7s 6d, being an average of £4 1s. per ton.

THE BRITISH IRON MARKET.

JANUARY 31, 1874.

A slight dullness has pervaded the iron market during the last few days. The downward tendency of Glasgow warrants infected the Cleveland market, and aroused apprehensions of a fall. A like tone prevails in Durham, where 85s. for No. 3, and 80s. for No. 4, are barely obtained. Present quotations at Newcastle, No. 1, 97s. 6d.; No. 3, 90s. f.o.b.; No. 4, foundry, 82@83s. per ton in trucks at the works. At Middlesbrough-on-Tees, No. 3, 84s. to 86s. Rails are quoted £10 10s., f.o.b. No better news arrive from Lancashire, where hardly any business has been done in pig iron for the last week. No improvement has taken place on the West Coast, where, although stocks are getting lower, a reduction in price is insisted on, as the condition of effecting sales. Many furnaces in West Cumberland are out of blast, and at the present moment there is little probability of their being blown in again. In South Wales the iron trade is very dull; and, foreign orders being almost entirely absent, the district is depending absolutely upon home consumption.

The pig-iron manufacturers of Staffordshire are doing a steady trade, and prices remain at the standard of £7 to £7 10s. for all-mine (hot-air); £5 10s. to £6 for part-mine; and £4 10s. to £5 for cinder. Cold-blast (Shropshire) iron is firm at £8 10s. delivered in South Staffordshire. The demand is steady for the better class of North Country hematite pig iron, and satisfactory prices are being realized.

In vivid contrast with the dullness shown in other quarters is the activity displayed in the iron industries of the West Riding. Prices are well sustained, and only those manufacturers whose necessities press upon them submit to the slightest reduction. An exception, however, must be made in the case of the steel trade, which is going on from bad to worse. A large number of converting-furnaces are standing still in Sheffield, and the prospect of improvement is not very great. On the other hand, Bessemer steel is still in good demand, although even this branch of the steel trade appears to have seen its best days. Large quantities of hematite pig are exported to Germany and Belgium, foreign manufacturers having taken very rapidly to converting this material into Bessemer steel. Nevertheless, cheaper fuel has helped our makers to a certain extent. The cost of production being very materially diminished, there is considerable inclination to push the trade vigorously. The present price of coke (now quoted at 30s. delivered) is encouraging all classes of steel-makers to hope for the further reductions, which will enable them once more to laugh at foreign competition.

The rail trade of the North of England is exhibiting renewed symptoms of vitality. Inquiries have been made for very large quantities of rails, and several important contracts have already been secured. Plates are also in good request, and bar makers are doing pretty well, although it can hardly be said that the mills and forges are working full time. Bolt and nut makers are full of orders, and engineering works are fully occupied.

The Cleveland Slag Working Company—formed to utilize the slags by means of Captain Bodmer's and Mr. Charles Wood's patents—have made an excellent start, having undertaken to supply all the cement and mortar to be employed in building the new railway station at Middlesbrough.

The Barnsley and South Yorkshire district appears to be enjoying a period of settled prosperity. All the furnaces are in full blast, and the output of pig-iron continues large. The production of bars, rails, sheets, and plates is said to be quite up to the average, although no excessive pressure of orders is reported. Boiler-makers are busy, and the manufacturers of patent metallic pistons are doing as good a trade as ever, while the Bessemer steel-converters of this district are fully employed.

Perhaps the only description of manufactured iron in which an advance may be expected is galvanized roofing, for which the demand has increased very greatly of late, appearing to be rather stimulated than checked by the recent advance of 10s.

LONDON, JAN. 30, 1874.

IRON.	per ton	£.	s.	d.	£.	s.	d.
Pig No. 1, in Wales.....		5	0	0	0	10	0
Refined metal, do.....		7	0	0	8	0	0
Bars common, do.....		10	15	0	11	0	0
Railway, in Wales.....		9	15	0	10	10	0
Pig, No. 1, in Clyde.....		5	5	0	5	15	0
Do., f. o. b., Tyne or Tees.....		4	10	0	5	10	0

Scotland.

The warrant market continued very dull till the close of last week, and during the present week only a limited amount of business has been done. On Friday the tone was sluggish and the prices receded from 105s. 4d. to 104s. 9d., cash, closing at the latter. At the opening, on Monday, the market was flat, with very little doing at 103s. 6d., but it improved a little in the course of the afternoon, and closed at 104s. 3d. The improvement continued on Tuesday, and on Wednesday the market was steady at 103s. 9d., cash, to 104s. 6d., ten days, closing with sellers at 104s. 6d. and buyers offering 104s. 3d. The demand, both home and foreign, is small, and the prices of makers' iron are still tending downward. The following are the quotations—Gartsherrie, No. 1, 111s.; No. 3, 104s. 6d.; Coltness, 115s. and 105s. 6d.; Summerlee, 108s. and 105s.; Carbroe, 109s. and 105s.; Mo k laud, 106s. 6d. and 104s.; Clyde, 106s. 6d. and 104s. 6d.; Govau, 106s. 6d. and 104s.; La glova, 112s. 6d. and 105s.; Calder, 111s. and 105s. 6d.; Glangarnock, 110s. and 105s.; Eglinton, 105s. and 103s.; Dalmeilgton, 105s. and 104s.; Carron, 10s.; Shotts, 112s. 6d. and 108s.; Kinneil, 107s. 6d. and 103s. 6d. There is no material change in the state of the malleable trade, except that some sorts are to be had on slightly easier terms.

The French Iron Market.

The intelligence received as to the French iron trade is not altogether favorable, business being limited to the strict requirements of the moment. Pig, iron, minerals—in a word, all branches of metallurgical industry—remain in a languishing state. The stagnation has, indeed, been carried to such a point, that there has been a serious discussion as to the propriety of blowing out certain blast furnaces, while a considerable number of workmen have been dismissed. Under such circumstances as these, prices are too nominal to be reproduced with any utility. An amalgamation has taken place between the Acoz and Chatelineau Forges Company, in Belgium, and the Northern and Eastern of France Mines and Ironworks Company. When we say that this amalgamation has taken place, we ought more correctly, perhaps, to say that such an amalgamation has been agreed on in principle, and that it is expected to take effect about July 1. A new company is announced as having been formed, under the direction of M. AUGUSTIN DELAEBRE, civil engineer, at Maubeuge for the manufacture of steam-engines, and for the erection and equipment of industrial establishments. It is expected that the construction workshops and foundries of MM. DUMONT & Co., at Ferriere-la-Grande, will be included in this combination.

The Belgian Iron Market.

Notwithstanding the at any rate temporary inactivity of the Belgian iron trade, and notwithstanding the want of orders of any importance, of which the proprietors of most establishments complain, the hope of a better future continues to show itself in various ways. Pig maintains its firmness, and at the last adjudication for the Belgian State lines the prices offered for old rails for re-rolling presented an advance; a similar observation may be made with regard to the new rails required. Information collected from various sources leads to the impression that the requirements of the season which is now about to commence will be considerable, and that they will much exceed the productive resources of countries adjoining Belgium; hence the firm tone which the Belgian markets have recently exhibited. Thus it is calculated that the production of the works of Westphalia, as well as those of Alsace and Lorraine, will be absorbed, to a large extent, in North Germany, while Austria and Hungary will require in a few months at least 250,000 tons of foreign rails. Russia, again, will require from 180,000 to 200,000 tons while the Russian works will not be able to produce more than 65,000 tons to 70,000 tons. The maximum production of rails, as well iron as steel, in the United States will scarcely exceed this year 1,000,000 tons, while the American consumption for the current year cannot be estimated at less than 2,000,000 tons, assuming that 3,000 miles of new American railroad are carried out in 1874. Meanwhile, whatever revival in business the future may have in store, prices remain without any great immediate variation. In Belgium merchants' iron (No. 1) has brought 84. 16s., to 89. 4s. per ton, refining pig has been quoted at 47 and casting do. at about 54. 4s. per ton. Plates have brought 117. 4s. to 111. 12s. per ton. The Belgian Association of Forge-masters has just addressed to the Minister of Public Works a letter, asking that a law should be passed rendering concessible all iron materials the working of which is not effected by open cuttings, but by pits and galleries.

The British Coal Trade.

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further reductions, but find it impossible to effect sales for forward delivery. The smaller firms are openly underselling recognized quotations, while the large quantities of Yorkshire and Derbyshire coal, offering at low prices, have a powerful tendency to pull down the market. A drooping tone may be fairly said to characterize the coal markets of the entire country, South Staffordshire even not excepted.

The French Coal Trade.

The aspect of the French coal trade is one of increasing dullness. M. BURAT, who may be accepted as a competent witness in the matter, has made a rather remarkable deposition before a commission appointed to consider the coal question in France. M. BURAT anticipates a forced, constant, and serious fall in prices, without, at the same time, an absolute return to the level at which quotations stood in 1869. In the basin of the Nord, notwithstanding the exceptional situation of some mines, the reactionary movement is general, and there are almost as many different prices as markets. Upon the Paris market speculators are more and more affected from day to day, and coal merchants find it more and more difficult to relieve themselves of their stocks. Almost every week brings with it fresh reports of disastrous conditions having been accepted by some large holder of coal. The movement of coal by navigation is for the present feeble in France, and the deliveries made by railway also present little activity; trucks are abundant, and there is every probability of a great depreciation in prices as the spring advances.

San Francisco Stock Market.

BY TELEGRAPH.

NEW YORK, Feb. 17, 1874.

We have advices from the San Francisco Stock Board dated the 17th inst.; Kentuck remains unchanged, being the only exception to a slight decline of the list. Annexed is the report:

Savage.....	107	Imperial.....	7
Crown Point.....	88	Raymond & Ely.....	32
Yellow Jacket.....	69	Meadow Valley.....	11
Kentuck.....	22	Eureka V. G.....	10 1/2
Chollar Potosi.....	69	Ophir.....	—
Gould & Curry.....	21	Hale & Norcross.....	—
Belcher.....	85		

Boston Stock Market.

BOSTON, Feb. 18, 1874.

We annex the prices bid for copper stocks at this morning's session of the Boston stock board.

Calumet and Hecla Co.....	141	Edge.....	8
Copper Falls.....	26	Rockland.....	2 1/2
Central.....	28	Phoenix.....	12 1/2
Quincy.....	36	St. Clair.....	2 1/2

Statement of Coal Tonnage Forwarded to All Points, by Pennsylvania Railroad, During 1873.

FROM.	Anthracite.	Bituminous.
Tons.	Tons.	Tons.
West Philadelphia.....	28,772	.....
Columbia (received by canal).....	29,570	.....
Rockville.....	427,348	.....
Marysville.....	381,519	.....
Aqueduct (received by canal).....	15,242	.....
Sunbury.....	177,669	.....
Other points.....	113,840	.....
Huntingdon and Broad Top.....	257,010	.....
Cumberland.....	124,307	.....
Bald Eagle Valley.....	3,514	.....
Snow Shoe.....	76,042	.....
Tyrone and Clearfield.....	592,860	.....
Allegheny.....	220,409	.....
West Penn.....	259,340	.....
Southwest Penn.....	255,355	.....
Gas Coal.....	878,944	.....
Pittsburgh coal.....	685,611	.....
Other points.....	149	.....
Total.....	1,173,960	3,353,541

HOW TO HARDEN STEEL DRILLS.—It is not generally known that steel can be made so hard that it will pierce any known substance but a diamond. Many jewellers and laundries have great trouble in getting the points of their drills hard enough to pierce an amethyst. For the benefit of miners and others using drills that require a hard point we recommend the following manner of manipulation. The drills should be held, if small, by hot pincers or tongs while tempering. First heat the tool to a white heat, and then press it into a stick of sealing-wax; leave it but a second there and then stick it into the wax in another place. This operation is rapidly repeated until the graver is too cool to enter the wax. In turning or drilling, the tool is moistened with oil of turpentine.

AMERICAN HARDWARE AND MACHINERY are being imported largely into Germany. The handy shape, the new contrivances and good workmanship are features in their manufacture which find many friends in this country (Russia); and the Sheffield and Birmingham manufacturers should resist boldly any attempt at strikes if they value their continental business, for the continual changes in prices, and the time it takes to execute orders in England, are a premium to American imports.

AMERICAN MACHINERY IN EUROPE.—It may not be generally known that for some years past wheels have been regularly exported from America to England. In 1871, 2317 wheels crossed the Atlantic; in 1872, 4760; and in 1873, 7515 wheels left America for England. We cannot tell if all these wheels are used in England, or re-exported.

MESSRS. SCHNEIDER & Co., of La Creuzot Iron Works, in France, employ 8500 men in their furnaces, mills, and mines. They have twelve blast furnaces, making ordinary and Bessemer pig iron.

THE ENGINEERING

AND

MINING JOURNAL.

ROSSITER W. RAYMOND, Ph. D. }
 JOHN A. CHURCH, E. M. } Editors.
 RICHARD P. ROTHWELL, C. E.
 Editor of the Coal and Iron Department.

PUBLISHERS' ANNOUNCEMENT.

THE ENGINEERING AND MINING JOURNAL is projected in the intent of furthering the best interests of the Engineering and Mining public, by giving wide circulation to original special contributions from the pens of the ablest men in the professions. The careful illustration of new machinery and engineering structures, together with a summary of mining news and market reports, will form a prominent feature of the publication. It is the Organ of the American Institute of Mining Engineers, and is regularly received and read by all the members and associates of that large and powerful society, the only one of the kind in this country. It is therefore the best medium for advertising all kinds of machinery, tools and materials used by Engineers or their employees.

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MEMBERS of the Institute are requested to take notice that the excursion to Ringwood and Durham will take place on Wednesday, instead of Thursday.

In our advertising column will be found an offer to lease a valuable coal property near Richmond, Virginia. While we are not personally familiar with these lands, we have been informed that they include, in part, the outcrop of the coal, and in part the deep coals. The collieries were formerly worked successfully, and their location is very advantageous, and well-managed works in that district have a good margin for profit. The operation is worth looking into by those desiring that kind of property.

A NUMBER of papers have been presented to the Council of the Institute since our last issue. Mr. BRÜCKNER, who has just returned from Mexico, will present some practical results obtained in chlorinating by the use of his revolving cylinders. Prof. W. P. BLAKE will have something to say on underground transportation by chains, as carried out in the Hazard collieries, Belgium. Mr. HEINRICH will give new information concerning deep boring with the diamond drill. Mr. PECHIN intends to describe the working of the Dunbar furnace, and give an account of the explosion there.

A mistake occurred in our Bulletin last week, which announced that the coming meeting of the Institute would take place Friday instead of Tuesday, as it should have been. The date, however, February 24, was correctly given. The error is corrected this week.

THE School of Mines Association held its annual meeting and dinner on Thursday last at Delmonico's. The meeting was presided over by the first graduate of the school, Mr. JOHN M. ADAMS, well known to Western mining men, as the superintendent of the Owyhee and other mills in Idaho. His presence was particularly appreciated, as this year finishes the first decade of the school's history, the institution having been established in 1864. Quite a number of the early students were present, and the evening passed in the usual pleasant manner. The officers for the current year are: President, JOHN M. ADAMS; Vice-Presidents, HALE, HARDING, PENNINGTON, GEAR, DRESSER and CHURCH; Treasurer, CHAS. S. PLATT, 4, Liberty Place, New York; Secretary, GEO. H. PARSONS, Flushing, L. I.

At the weekly meeting of the Lyceum of Natural History, on Monday last, Prof. WURTZ read a paper on the interesting subject of "Sub-aerial Oxidation." The author is well known to have been engaged for some time in the study of

the problems connected with the water supply of cities, acting as chemical adviser to the city of Newark. Among these problems the question of what becomes of the nitrogenous compounds contained in sewage, when poured into a running stream, is one of the most important. Oxidation goes on by the action of oxygen dissolved in the water, and the Professor has long been engaged in efforts to obtain a means of ascertaining the presence of oxygen in a given water, and of measuring its quantity. To do this he uses a colorimetric test, employing for that purpose pyrogallene, more commonly called "pyrogallic acid," which turns brown under the action of even infinitesimal quantities of oxygen. A sample of water is first made alkaline, and then a drop or two of a concentrated solution of pyrogallene in alcohol is added. If oxygen is present, the result is a brown tint, but if an aqueous solution of pyrogallene is used, a beautiful pink is sometimes produced. With liquids containing infinitesimal quantities of oxygen, the aqueous solution of the re-agent gives a pink color, which gradually passes to purple and finally to brown. The depth of the color, therefore, varies with the amount of oxygen present, and permits the estimation of the quantity present by the use of graduated standards. The above is only a hint of what was a very instructive description of a mode of analysis which presents extraordinary capabilities. Sanitary chemistry is by no means the only field of usefulness presented to this mode of operation. Oxygen occupies the first position among the elements, both in abundance in nature and in chemical energy. It is almost universally present in experiments, and its determination may frequently be a matter of great importance. Some interesting discoveries in relation to the persistency of its presence in fluids, and other details developed by the use of pyrogallene, were mentioned by the lecturer, but we hesitate to transcribe them from hurried notes. Prof. WURTZ will, no doubt, before long make public his completed results.

Duration of Foreign Mines.

SOME time ago we were sharply taken to task for not believing in the immediate exhaustion of the silver and copper mines of northern Prussia and Saxony. The fact of this exhaustion was loudly asserted, though it seemed to have no basis except what might be found in the eagerness of three great smelting establishments in those countries to purchase foreign ores. We did not believe this to be any reason for anticipating the immediate collapse of the great mines of the Hartz, Mansfield, and Freiberg, which were the districts called in question; but not having any facts in our possession, we contented ourselves with a bare expression of continued confidence in those mines. Since then we have been able to obtain some data, which our readers will probably find instructive, and we will discuss them in the order of the districts, given above.

The Hartz mines, formerly a state property of Hanover, came into the hands of the Prussian government in 1866, and an account of stock was taken which has been renewed every year since. The amount of ore in sight in the various mines is calculated, the length of time the reserves will last is therefore known, and great care is taken to carry out works of exploration on such a scale, that the amount of ore removed from the mines each year shall be covered by the development of new bodies. The amount of ore in sight, in the four vein systems of Clausthal, Zellerfeld, Lautenthal, and Silbernaal (Andreasberg being omitted on account of the pockety nature of the mines) was at the end of 1868, 58,840,593 centners of 110 lb. each. Accepting these as hundredweights, instead of the usual 112 lb., the above amount of ore corresponds to 2,942,000 tons ready for extraction. The following table shows the operations of each year, given in centners, the account of stock being supposed to date from December 31 of each year:

	Ore extracted. cwt.	Ore discovered by exploration. cwt.
1869.....	2,886,394	3,675,578
1870.....	3,204,154	5,740,631
1871.....	2,887,388	4,525,388
	8,977,936	13,941,597
Increase during three years.....		4,963,661
Reserves at end of 1868.....		58,840,593
Cwt.....		63,804,254
Or tons.....		3,190,212

Taking 150,000 tons as the average yearly output of the mines, the reserves already in hand will last more than 21 years; and during the three years above-given, the discoveries of ore have been so much in excess of the extraction that for every ton removed three-fifths of a ton was added to the reserve. The year 1870 was especially fortunate in its "finds" of ore, several large and rich masses having been struck. The veins of the Hartz ore are of very great width, and one of the discoveries of that year included a body of ore 7 metres, or 23 feet, wide.

Next we have the copper mines of Mansfield. The ore occurs in a bed of bituminous schist, nearly horizontal, the dip being only 5 to 10 degrees, and mined like bituminous coal. The exact area of the bed is not known, and in one direction its limit for mining purposes will probably be determined only by the cost of working at great depths below the water level. Without being able to ascertain the exact boundaries of the ore bed, we may nevertheless place confidence in surveys which have been made to ascertain what quantities of ore could be depended upon. The government concession, granted in 1854, assumed the ground

in the Eisleben-Hettstaedt district, which forms the greater part of the field, to contain the following :

Containing ore.....	9,855,000 square lachter.
Not containing ore.....	1,356,000 " "
Total.....	11,211,000

If the "lachter" is taken at 2 metres in length, the total area of ore ground in this district is 15 square miles. As to the amount of ore which may be extracted from it, we have the following calculations: In three years, 1868-'70, there was extracted 9,128,317 cwt. of ore, and 330,626 square lachter were worked out, or an average of 28 cwt. of ore to each square lachter of ground. At this proportion, the above amount of ore ground would yield 275,940,000 cwt., or 13,797,000 tons of ore, and at the rate of extraction in 1873, which was 3,125,000 cwt., or 156,250 tons, the reserves will last 88 years. This, as we have said before, does not cover the whole Mansfield region, but it does include the greater part of it, and is sufficient for our purpose. We ought to say that the amounts here given do not refer to ore *in sight*, as do those for the Hartz mines. The occurrence of the Mansfield ore in a regular bed does not demand the precautions in forming estimates which vein mining requires. Like coal, the contents of the bed may be calculated by ascertaining its area and making allowances for barren ground, though the amount of reserves in sight is very small. Reserves for one or two years' work are amply sufficient, and the mining is a work of great regularity, which can be, and is, pre-determined without difficulty.

We have seen that the Hartz mines are good for 21 years work, and that the Mansfield deposit will certainly last 80-90 years at the present rate of extraction. Unfortunately we cannot present similar facts in regard to the Freiberg mines. No estimate of the ore in sight is known to us, and we can only present a few points which show how unlikely the supposition is that the mines near that town are failing.

The Freiberg smelting works receive the greater part of their ore from the three districts of Freiberg, Schwarzenberg and Marienberg. In the first of these districts, only, the amount mined in eight years, 1860-67, was 229,222 tons of dressed ore, an average of 28,653 tons a year. In 1869, 70, and 71, notwithstanding the great disturbance caused in the demand for metals and the number of workmen obtainable, by the war with France, the production averaged 27,320 tons yearly, showing a very uniform output. In this district alone there are 96 mines, some of them being of very large proportions. In all the districts around Freiberg the mines and mining works number 307, and they sold, in 1871, 45,704 tons of dressed ore representing, probably, ten times as much undressed ore. This, certainly, does not look like exhaustion.

There is one thing about these mines which may possibly have misled casual observers into the belief that they were on their last legs. It is, that the pumping machinery, which in some of the mines is fully loaded with work, is allowed to remain without such additions as are apparently necessary to permit the vigorous prosecution of deeper mining. In the largest mine in all that region, and which supplies just one-third of all the ore obtained, no sinking of shafts is carried on, and the work of the mine is confined to cutting out ore which remains above the galleries already established. But the reason for this is not that the mine is to be abandoned, but that a new draining tunnel is nearly completed. This will cut the mine about 400 feet below the present point of lowest discharge, and then the pumping machinery, which is now overworked, will be more than sufficient to permit the prosecution of new works at greater depths. That mine is the Ascension Discovery Mine, which was formed by the union of more than 300 older mines, and whose works cover an area of six square miles of territory. This is the source from which, as mentioned above, one-third of the ore smelted is obtained, and the fact that this, in common with the other mines, is to be deepened 400 feet with every prospect of future success as great as that it has had in the past, is a sufficient proof that the Freiberg mines have a long lease of prosperity before them.

We have given above exact data, showing that the three mining districts whose prospects were called in question, really have before them an assured existence for a length of time varying from 21 to 88 years. We would now like to ask what mine in this country, from the least to the greatest, can present a showing that will compare with this? Insurance tables show that when a certain period in life is past, the mature man has a better chance of living out a fixed number of years, say five or ten, than the lustiest infant. In like manner we may rest assured that many a still undeveloped "show" in the West will be put on the London market at a rousing price and yet be a dead concern long before these old mines, which date from the dark ages, begin to look toward their end.

The reason why these enterprises succeed so well in maintaining themselves is not hard to find. They have had a history which is amazingly like that of our own Western districts, in spite of the distinctive difference between our circumstances and theirs. They began with scattered and independent works. The owners had quarrels and suits. Money was sunk in supplying machinery to many shafts which ought to have been concentrated in one. Sooner or later one mine after another gave out, unable to support the costs of mining from its narrow field. Then came consolidation, and with it success. In a history like this we may read lessons by which our own mining enterprises may profit. Our law formerly strove to divide the public property in minerals into as small lots as it could, in order to "give every man a chance," and while this, on its face, may seem very fair, and just the plan to give every one a slice of some good thing, it is decidedly not the best method of securing permanent and profitable mining

works. The country would have benefited more largely by its minerals if monopolies had been less jealously guarded against, for it is nothing to the nation at large whether three men or one own a ledge of ore, but the mine may profit very greatly by the concentration of the management in one hand.

It is not our intention, however, to make a discussion of mining law a part of this article. We only mean to point out that the low cost of mining and smelting in Europe is largely due to co-operation. The mines there are by no means in the sole possession of the crown. On the contrary, by far the larger number of works around Freiberg are concessions under the control of companies. The law forces them to co-operate, and the consequence is the economy and steady progress manifest in their undertakings. In this country the law does not go so far, but owners of mines will find it greatly to their advantage to combine for the management of their property. Many a fine and promising mine is now in ruins solely for lack of the aid which its owners could easily have given each other.

A Remarkable Pumping Engine.

THE last number of the *Journal of the Franklin Institute* contains the report of the trial of the new Worthington duplex pumping engine, at Phoenixville, Pa. This is a compound duplex engine of a new type, having but one high-pressure and one low-pressure cylinder, instead of two of each kind. Of the two pumps, one is worked by a high-pressure cylinder, exhausting into a tank, and the other by a low-pressure cylinder, receiving steam from the tank. There is no expansion in either cylinder. The high-pressure pump-plunger is 12 inches, with a piston-rod $2\frac{1}{2}$ inches in diameter; the low-pressure plunger is 14 inches, with a piston-rod 3 inches in diameter; the stroke is two feet, and the capacity 54.24 galls. per revolution of both pumps—the term revolution being employed to signify a complete double stroke, or what would require a revolution if the engine had a crank. It will be seen that the dimensions given are so small as not to be ordinarily associated in practice with the highest degree of economy. The contract made with Mr. WORTHINGTON demanded a capacity of 1,000,000 galls., lifted 182.79 feet in 24 hours, and a duty of 45,000,000 foot-pounds per 100 lb. of coal. On the trial the pumps actually raised in six hours an amount of water representing 1,626,436 gallons in 24 hours, and achieved the duty of 68,620,360 foot-pounds, without any allowance for friction in the pipes. The committee adds in its report that Mr. WORTHINGTON is fairly entitled to add two feet to the actual height pumped, which will give him an actual duty of 70,422,306 foot-pounds. This extraordinary performance will attract much attention from engineers. We need only say, with regard to it, that the trial-report shows no evidences of forcing the figures to obtain this result, and that the little pump which thus challenges the Cornish engine itself, is compact and cheap, as well as efficient.

Coal and Iron in the Virginias.

WE publish this week the first part of an interesting paper on Virginia Coal and Iron, by Prof. D. T. ANSTED, the English geologist.

So far as the Professor's admiration for the wondrous deposits of coal and iron along the line of the Chesapeake and Ohio go, we can fully endorse his statements. The Kanawha Valley certainly furnishes as fine a fuel as could be desired, and the seams are both large and very easily worked. We have an almost unbroken line of these great deposits of fossil and limonite ores from New York to Alabama, with unlimited amounts, easily accessible at a great number of points, and our familiarity with these actual "mountains of ore" makes our admiration more general. Virginia has a great advantage in the excellent quality of her Kanawha coals, and at the present actual market value—not the speculators' or promoters' prices—there can be no safer or more profitable investment than judiciously selected lands on the line of the Chesapeake and Ohio Railroad. Iron can doubtless be made there, at well managed works, at a cost of \$15 per ton, as Professor ANSTED states. Yet even this figure can be reduced by two or three dollars in Alabama where the ore and coal are in immediate proximity. It is also true that the cost of making iron in Pennsylvania will considerably exceed this figure; in the anthracite furnaces it will not be less than \$26 or \$27; but it will be news to our readers to learn from Prof. ANSTED that "both ore and fuel are failing in Pennsylvania," and that our anthracite is "being worked down."

The Professor is mistaken in his geology of the Kanawha region when he places the Mahoning sandstone at the Falls of Gauley, and below the great series of Kanawha coals. The fact is, the Mahoning sandstone lies at the top of the Kanawha series of beds, and immediately below the "Redbands" that cap the hills near Charleston, on the Elk River. At Clay Court House, this characteristic deposit of coarse sandstone and conglomerate is very well marked and is easily recognized as the Mahoning bed, as described by LESLEY in his admirable little book on "Coal and its Topography." We are also inclined to make some allowance on Professor ANSTED's remarks on the ease of making the Gauley or New River navigable, and we doubt if actual workings will prove 60 feet of workable coal on the Professor's Gauley lands.

The fossil and limonite iron ores of Virginia, like those of nearly every part of the country, contain a certain amount of phosphorus, in general too large an amount to admit of their being used alone for the Bessemer process. Still they make excellent irons for other purposes, and as the manufacture of iron cannot fail to be exceedingly remunerative in Virginia as in Tennessee, Georgia, and Alabama, we have no hesitation in endorsing the favorable opinion expressed by Professor ANSTED on this point, though, in some other respects, this as well as several recent reports from the same pen appear to savor rather too much of the "Promotor" to be entirely disinterested.

Clayton Valley, Nevada.

[A Paper, read before the Thayer Club, at West Point, by Lieut. DAVID A. LYLE, Second U. S. Artillery.]

[CONTINUED FROM PAGE 99.]

LET US NOW turn to the metallic elements of our little world. Nature has not been parsimonious in bestowing the noble metals upon this interesting region. The mines are scattered over the main range, the lenticular spurs and the foot-hills.

First in order comes the Pocotillo mine. This is situated on the south-eastern slope of the main range upon one of the undulations of the ridge. The strike of the veins is north-east and south-west, with a dip of 35° to the south-east. There are seven veins, preserving a remarkable parallelism, forming a mineral belt cropping out for 800 feet of their length, and extending latitudinally about 200 feet. The width of the veins varies from two to four feet, with granite foot-walls, and hanging-walls of slate, capped with granular limestone. The mineral veins are interstratified with greenstone trap, while the vein-matter or matrix is quartz. The ores are gold and silver. The former is free gold, finely disseminated through the auro-argentiferous quartz; but it is very noticeable, that in the lower part of the vein, near the granite foot-walls, the quartz becomes more auriferous while but little gold is seen in the upper part, where silver predominated. The argentiferous ores are principally chlorides and sulphurets. The assay value of this mixed ore is about \$200 per ton.

North-west of the Pocotillo lies a mine called the Grandmother, of which the ores are also chlorides and sulphurets, having about the same general characteristics as the former. Still farther to the north-west lies the Venezuela, imbedded in a mountain of quartz. The ores are sulphurets of silver and lead, with matrix, hanging-walls and foot-wall, all of quartz. Next comes the Vanderbilt mine, lying in the eastern slope of a very sharp spur, jutting out from the south-eastern slope of the main range. This spur is divided into two parts by a cañon some 1,600 feet in length and several hundred feet in depth, which cuts through the geological formations, exposing the vein of metalliferous quartz for over a thousand feet along the eastern side of the ridge. The trend of this lode is north-east and south-west, and it pitches longitudinally to the south-west. The vein is from two to twelve feet thick, and for 800 feet of its length is six feet thick, with matrix of quartz, foot-wall of granite, hanging-walls of slate, capped with impure, compact limestone of a reddish and yellowish tinge. The spur terminates abruptly in a sharp peak, surmounted by the same colored limestone. The ores are free gold, sulphurets and chlorides of silver, and argentiferous galena with traces of copper and antimony. The granite in the vicinity of this mine is characterized by the size of its crystals. The feldspar occurs in coarse crystals of a beautiful flesh-color, while the mica appears as thinly foliated plates or scales, ranging in color from white through dark brown to black.

Crossing over to the north-east slope of the range we come upon the Drinking Water mine, so named, I know not why, unless it is, that not a drop of water is found within eight miles. It is quite similar to the Crowning Glory mine which lies near it, and the name of which also attests the fantastic use of the imagination by miners in selecting appellations for their golden claims. The strike of the Crowning Glory lode is north-west and south-east, while the dip is north-east. The country-rock is granite, also the foot-wall, while the hanging-wall is slate. The gangue is quartz, sometimes compact but generally cellular, from the decomposition of iron pyrites to iron oxides.

This matrix is interstratified with seams of variegated clay, the discoloration of which is also due to the oxidation of iron. Free gold is the only precious metal found in this mine, occurring as finely disseminated grains through the vein-stone, though sometimes filiform and reticulated. This is the only mine that has been worked to any extent. The ore had to be hauled to a 30-stamp gold-mill, eight miles distant, at a little mining camp near Saturn spring, called Silver Peak. The ore was "sorted" at the mine, and none assaying under \$40 per ton was milled. There were about 75,000 tons of ore, assaying from \$8 to \$20 per ton, lying on the slope below the "drift," which had been assorted from the pay-ore. This ore has not been worked to advantage on account of the difficulty of crushing the refractory quartz sufficiently fine to free enough gold that the amalgamator can collect, to render it profitable.

Passing down into the foothills skirting the base of the northeastern slope, we come upon the Black Warrior group of mines. Here, the lodes run north and south. The general country rock is quartz and granite, while both the foot and hanging walls are of dolomite. The veins are interstratified with greenstone trap, similarly disposed to those in the Pocotillo.

Directly south of this group which consisted chiefly of silver ores, was an immense ledge of ferruginous quartz, highly discolored by the oxidation of the iron it contained. On this slope, besides gold and silver, were found several varieties of quartz, magnesian limestone—in color varying from white, through yellowish to shades of blue—granite, slate, mica schist, greenstone trap, besides several varieties of schistose rocks. These latter bore undeniably the evidences of an almost overwhelming power which had, during the period of their plastic state, molded and twisted the lamellated structure of the ponderous masses into such rare and remarkable convolutions. Such doubling and folding we had never before beheld; the laminae were contorted into every possible shape and position, some regular, others irregular; some inverted, some zig-zag; others vertical, and still others horizontal, inclined or overlapping.

Weaving our way down toward the valley and passing around one of the most

easterly spurs of the Red Mountains, we pause a moment to view a magnificent greenstone trap dike, which, lying between two almost vertical planes, cuts the towering ridge in twain. It divides symmetrically the earthy-looking, reddish limestone which composes the summit, and its subjacent beds of granite. The greenstone has suffered considerably from erosion, forming a steeply inclined channel several hundred feet in length, remarkable for the distinct definition of its bounding walls.

Before retiring from the field of mineralogical exploration, it would not be amiss to remark that in the face of a small butte near the stampmill, there are several narrow seams of copper, insignificant in their intrinsic value, yet interesting in themselves. The ores are sulphurets and carbonates in thin layers, varying in thickness from that of a knife blade to several inches. The adjacent country rock was colored a bright azure and green from the decomposition due to exposure.

This concludes a brief review of the principal mineral deposits, the existence of which was demonstrated by ocular investigation. Rumors of galena and iron were heard, but were not substantiated.

Reluctantly leaving Silver Peak, as this little mining camp, situated 160 miles south-east of Wadsworth on the Central Pacific Railroad, is called, we crossed the main range and bivouacked on the western slope near a fine spring of clear, cold limestone water, which was hailed with joy by both men and animals, as we had not tasted pure water for several days.

TO BE CONCLUDED NEXT WEEK.

MORE than a dozen chimneys at Sheffield and other towns, in the midland and northern counties of England, were blown down one day in last November, by a heavy gale.

MINING SUMMARY.

Colorado.

BULLION, ORE AND MATTE PRODUCT FOR 1873.

From the January number of the Georgetown Mining Review.	
Silver from Amalgamating Works	\$647,000
Silver from Separating Works at Black Hawk	192,000
Placer and Gulch Gold	259,000
Lode Gold from Stamps	995,000
Matte shipped to England	1,003,000
Ore shipped (to Valley and out of the Territory)	771,000
Pig Lead shipped	28,000
Bullion bought by Manufacturers	50,000
Bullion shipped by private hands	100,000
All other sources	25,000

Total product—Coin \$4,070,000
Currency, about 4,558,400

Dividing this among the various Counties, the amount belonging to each is about as follows:

Gilpin	\$1,440,240
Clear Creek	1,223,760
Boulder	390,000
Summit	111,000
Lake	225,000
Park	459,000
Conejos	15,000
	\$3,867,000
Pig Lead and other items	203,000
	\$4,070,000
Gold and Silver	\$4,070,000
Value of Coal raised	1,275,000
	\$5,345,000

The treatment of ores from the various active parts of the Territory is carried on in so many places, and often in counties away from that which produced them, that it is a very difficult matter to state exactly the yield of each section. The figures we have placed for each county are, therefore, estimates based upon the most correct data available. Mill-men smelters and bankers do not, as a rule, care to lay open their books to outsiders, and they cannot be blamed if they do not.

In spite of the panic of the fall, the production of the Territory has increased, yet not so much as it would have, by perhaps \$300,000 or more, had not that event occurred. A number of new enterprises were also postponed by the same trouble or entirely killed, and several mines shut down for the year that may not be re-opened till late in the spring.

One of the most valuable accomplishments of the year is the opening of the separating works at Black Hawk. The worth of this new establishment to the country is not so easily expressed in dollars and cents, or in bars of bullion, as it is an evidence of the permanent character of our mines and the success that has been met with in handling the refractory Colorado ores. While we can say with considerable pride that the Boston and Colorado Smelting Works is one of the largest and most complete of its kind in the New World, we can also point to the ore deposits that are to supply it, with considerable satisfaction and large hopes for the future.

The gulch and placer interests of the Territory are growing. We have no ancient channels or bars like those of California and Australia, but the area of ground that can be worked profitably is very large, and if as many new enterprises are inaugurated and carried out in 1874 as there were in 1873, the yield ought to be increased 25 per cent. During the year past, thousands of acres of new ground in the South Park and the valley of the Blue have been re-opened; Four Mile and Left Hand Creeks (Boulder County) have been energetically and successfully worked, and along the course of South Clear Creek from Spanish Bar to Floyd's Hill the ventures of the season have been numerous, and several of them quite successful. We hear also of extensive diggings that have been found in western Colorado, which, when the Ute is no more, may prove of value.

The San Juan excitement promises to add a large and rich district to the old standard list. It has been proved that there are some good mines there, and it only remains now that capitalists should have their attention drawn to the new field as a proper place for the erection of smelting works. Perhaps Conejos County will have to pass through the same ordeal of failure and mismanagement that has been the lot of each section of the country, but we think the lessons of the past will not be entirely forgotten in this instance, and men who know their business will take hold where incompetent ones formerly did. The re-opening of several of the large Gilpin County gold lodes is one of the most encouraging features of the new year, and will probably increase the bullion yield in the future more than any other element. Mines of the class of the Gregory and Bobtail are not to be found in many places of the world.

Coal and Iron Notes.

NAPHTHA AS FUEL FOR LOCOMOTIVES.—The Russian Steamship and Railroad Company announce that they have found naphtha, for steam generation in locomotives, very advantageous. The material employed by the company is the crude oil from the Caucasian and Volga regions, and, compared by weight, the amount consumed was about one-half that of coal.

TRAM CARS WITHOUT HORSES.—I have just seen (says a correspondent of the *Scotsman*) the working models and drawings of an invention by which tram-cars can be propelled by simple mechanical means alone, without horses and without steam. The motive power used is an arrangement of powerful springs, encased in cylinders like watch springs, on a very large scale, the application of which to the existing tram-cars is extremely simple and easy. These springs are wound up by small stationary steam-engines at each terminus of the line, and when so wound up will propel the cars, even with stoppages, for a longer distance than any existing tramway line extends. The models I have seen were on a sixth scale, and worked perfectly, the action being reversible, and the application of the brake-power entirely satisfactory. The springs are now being fitted to full-sized cars, and the new invention, which is patented, will be tried very shortly on a tramway line at Greenwich. Many competent engineers have expressed themselves sanguine as to the results.

The iron mines of New Jersey yielded last year 670,000 tons of ore, of which 150,000 were manufactured in Pig iron. The value of the product is about \$3,000,000. In 1867 the product of the mines was only 300,000 tons.

COLLIERY LEASE.—On Monday a lease was signed conveying to Messrs. MILLS & MORRIS the right to work a colliery at Montana, near Centralia. The colliery is situated on land of the Coal Ridge Improvement & Coal Co. The slope of this colliery is now about 150 yards down and is on the Skidmore vein. The mammoth vein is just being proved there and is found to be thirty feet thick. It is the intention of the lessees to drive a sixty or eighty yards tunnel from the bottom of the present slope south to this vein. The shipments of coal will be entirely by way of the Lehigh Valley Railroad.

Mr. JOHN LUCAS, of Pottsville, has been appointed manager of the colliery, and as his work will require his presence there it is not unlikely he may take up his residence at Centralia. The name of this colliery in the future will be the Lucas colliery.

Coal Trade of San Francisco.

Foreign.	1872.	1873.	Incr.	Decr.
Australian	115,332	96,435	...	18,897
English	29,190	52,616	23,426	...
Vancouver	26,008	31,435	5,427	...
Chile	3,682	400	...	3,282
Japan	...	50	...	...
Eastern.				
Anthracite	19,618	18,295	...	1,323
Cumberland	10,051	8,757	...	1,194
Domestic.				
Mt. Diablo	177,232	171,741	...	5,491
Coos Bay	32,562	38,066	5,504	...
Bellingham Bay	4,100	21,211	17,111	...
Seattle	14,830	13,572	...	1,258
Rocky Mountain	1,862	1,904	42	...
Totals	434,467	454,582	51,560	32,445
Specified on the way from Domestic Atlantic ports, December 31,				
Tons	1870.	1871.	1872.	1873.
Casks	2,464	3,679	3,799	5,694
Totals				
Foreign	1869.	1870.	1871.	1872.
Eastern	109,000	135,168	113,483	174,212
Domestic	38,600	30,820	13,291	29,669
Totals	147,600	166,000	126,774	203,881

Total. 331,700 333,171 315,194 434,467 454,582 1,869,114
The receipts from Bellingham Bay for 1873 were 21,211 tons, against 4100 tons in 1872 and 20,284 tons in 1871. The cause of the great falling-off in 1872 was by reason of a fire in the mine, which stopped operations. The mine is now producing largely, and the quality of the coal for household purposes is superior, not to say cheaper in price, than any other sold in the market suited to the use of families. Price, \$8 50. The arrivals from Coos Bay are 38,066 tons, against 32,562 tons the year previous. This exhibit is greater than ever before. The shipments from the Eastport mine at Coos Bay, in 1873, have averaged about 200 tons per month, and would have been increased, had it not been for the unprecedentedly large quantities of foreign coals on the market, and the consequent low prices prevailing. During the past season, a drain tunnel of 1700 feet has been cut in the mine and many other permanent improvements made, whereby the out-put can at any time be increased to a large amount. The coal has found a ready sale, at prices ranging from \$10 to \$12, during the year. One steamer has been built, and is regularly employed freight-ing coal, and in a few days another new steamer, also built for this trade, will take her place in the line, in connection with the sailing vessels now running. The California Mt. Diablo mines produced in 1873, 171,741 tons as shown in detail in the accompanying table. This Bituminous Coal is very generally used for steam purposes by local factories and inland steamers—even the refuse, fine screenings, preferred by our largest factories and mills. The price of coarse is \$8 25; fine screenings, \$6 25. The Vancouver Island mines—Nanaimo—have shipped us 31,435 tons in 1873, showing an increase of more than 5000 tons over 1872. Chile supplies have nearly ceased. The mines at New South Wales have sent us, in 1873, 96,435 tons, being about 30,000 tons less than 1872. Of English, we received 52,616 tons, being 23,000 tons more than in 1872. Cumberland shows a slight deficiency. Anthracite about the same as the

year previous. The Seattle mines have sent us in all, from three years' working, 33,320 tons, but have for some months past ceased operations. The quality of the Coal is good for household purposes. The Rocky Mountain furnishes liberal supplies to the Central Pacific Railroad, sending us the supplies in three years aggregating 4791 tons. Our total supplies from all quarters, as will be seen by the table annexed, is 454,582 tons—say 20,000 tons more than in 1872, and 130,000 tons more than in any previous year. This shows the steady progress making in the consumption of Coals on the Pacific Slope. The market for coals has been quiet all the year, with low prices for Anthracite, Australian, Scotch, etc. The lowest cargo sales of Australian was, we believe, \$8 75@ \$9; the highest made, \$11 75@12. During the past fortnight, several cargoes of Australian Steam have been placed at or about \$11 25. Wallsend is, however, held at \$11 50@12. The stock of coal in first hands is incon-siderable, and the consumption daily increasing.

YEARS.	Mount Diablo, tons.	Coos Bay, tons.	Bellingham Bay, tons.	Vancouver Isld., tons.	Chile, tons.	Australian, tons.	English, tons.	Cumberland, tons.	Anthracite, tons.	Queen Charlotte, tons.	Sitka, tons.	Seattle, tons.	Rocky Mountain, tons.	Sagha-Hen, tons.	Fuca Straits, tons.	Japan, tons.	Total, tons.
1860	6,620	3,145	5,490	6,655	1,900	7,830	6,640	5,970	39,985	...	...	...	...	...	...	...	77,635
1861	6,300	2,810	10,051	6,475	12,495	8,370	23,370	2,975	26,060	...	...	...	...	...	...	...	116,245
1862	23,400	4,630	10,051	8,870	5,110	12,380	16,055	4,970	38,685	...	...	...	...	...	...	...	120,545
1863	43,200	1,185	7,750	5,745	1,790	16,890	14,660	7,275	39,660	...	...	...	...	...	...	...	159,530
1864	50,700	1,200	11,845	12,785	2,323	21,160	18,330	7,975	41,690	...	...	...	...	...	...	...	167,298
1865	60,530	1,500	14,446	18,181	1,410	17,610	9,635	4,230	22,855	...	...	...	...	...	...	...	150,147
1866	84,020	2,120	11,390	16,832	1,490	53,700	7,400	9,524	12,124	...	...	...	...	...	...	...	192,601
1867	109,490	3,415	8,899	23,348	1,949	26,619	7,302	12,177	48,518	...	...	...	...	...	...	...	248,925
1868	132,597	10,524	13,896	23,348	5,511	31,590	29,561	2,292	29,562	...	...	...	...	...	...	...	282,025
1869	148,722	14,824	20,552	14,830	1,114	31,590	17,386	11,536	24,844	...	...	...	...	...	...	...	320,493
1870	139,761	20,567	14,355	12,640	7,350	31,590	54,197	6,061	21,320	...	...	...	...	...	...	...	315,194
1871	123,485	28,690	20,284	15,621	4,161	38,932	29,197	9,322	19,618	...	...	...	...	...	...	...	434,467
1872	177,232	32,562	4,100	26,008	3,682	115,332	23,616	10,051	18,295	...	...	...	...	...	...	...	454,582
1873	171,741	38,066	21,211	31,435	4,000	96,435	52,616	8,357	13,572	...	...	...	...	...	...	...	454,582

ANNUAL RECEIPTS OF COAL AT SAN FRANCISCO.

Commercial Herald.

Search for Coal Near London, England.

Borings are being made in the south-east of England, Sussex County, with the view of ascertaining if the coal measures exist under the Welden strata, as is the case across the channel in France. The boring is to be carried to a depth of 1000 feet; as yet it has scarcely attained one-third of that depth, and the prospects of finding coal are considered very encouraging. Very valuable beds of gypsum have already been discovered at a moderate depth, so that this expenditure of money, based on purely geological grounds, has resulted in a discovery of great commercial value.

American Institute of Mining Engineers.

OFFICIAL BULLETIN.

Announcements to Members and Associates.

I. The ENGINEERING AND MINING JOURNAL, which is the Organ of the Institute, and contains its proceedings, transactions and notices of meetings, will be sent to each Member and Associate on the payment of his annual dues. Back numbers cannot, as a rule, be sent.

II. Dues are payable in advance at the annual (May) meeting. Remittances should be made, as far as possible, by P. O. Order, payable to the Secretary.

III. The Council earnestly requests members to forward to the Secretary, for preservation, copies of all printed mining and geological reports, particularly pamphlets, which may fall in their way. It is believed that by this means a large amount of valuable fugitive information concerning different regions and properties in this country, may be caught and preserved.

IV. The next meeting of the Institute will be held in New York City, beginning on Tuesday evening, Feb. 24, at the rooms of the Geographical Society, in the Cooper Union. The Council will meet on Tuesday afternoon, Feb. 24, at 2 o'clock, at the office of the ENGINEERING AND MINING JOURNAL, 27 Park Place.

THOMAS M. DROWN, Secretary, 1123 Girard street, Philadelphia, Pa.

Advertisements.

123rd Auction Sale.

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New York, Feb. 18th, 1874.

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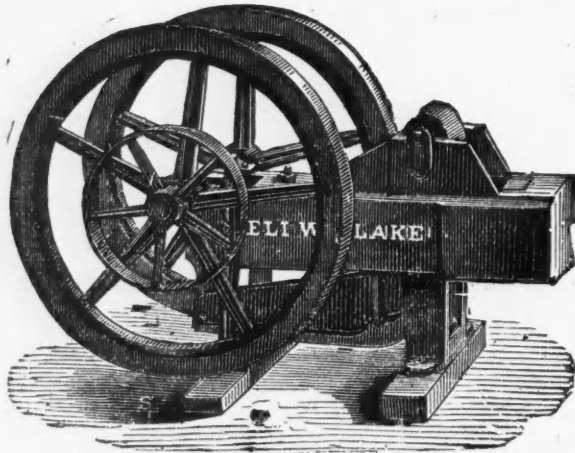
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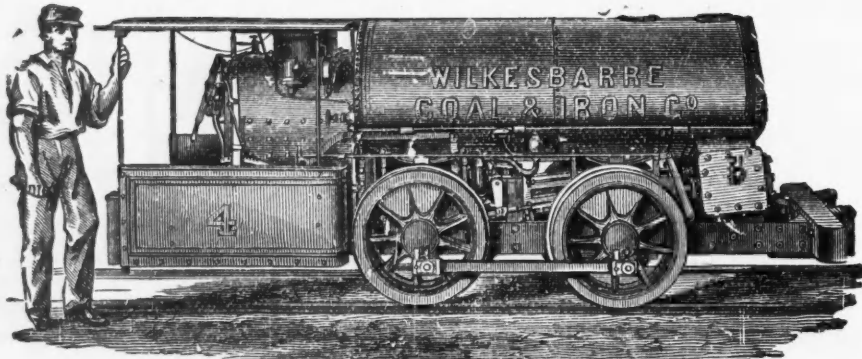
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