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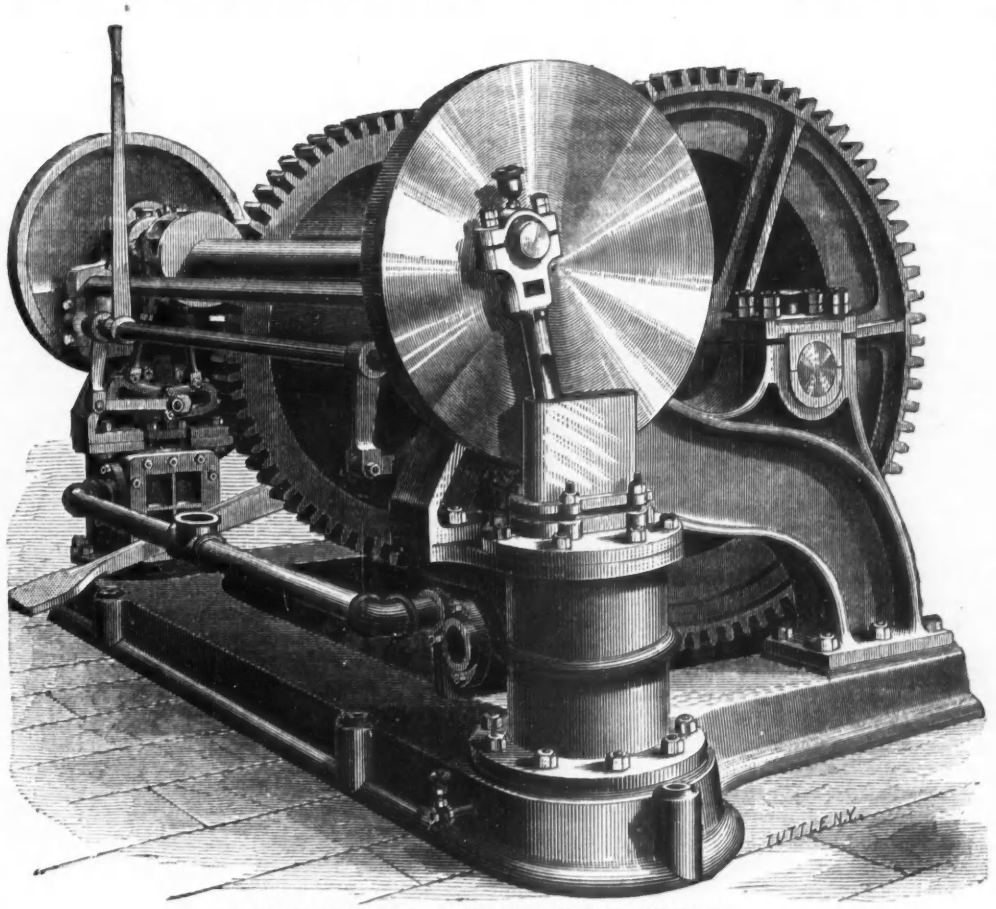
The Bacon Reversible Winding Engine.

ON the 8th of April, 1873, we illustrated an excellent hoisting machine, manufactured by E. C. BACON at the Speedwell Iron Works. He has lately produced a machine which is specially d signed for mine work, and this we illustrate this week. In principle and general arrangement it follows the plan of Mr. BACON'S other hoists, but is made unusually strong, and is intended to run at 200 to 500 revolutions per minute. It is double-acting, has two steam cylinders, the piston rods of which work in two flat trunks. This arrangement permits the use of direct gearing to the drum without sacrificing the compactness of the whole. For wire rope the drum is made large, and its length can be suited to the requirements of the mine. Three sizes are made of 15, 28 and 45 horse-power.

During the last four years Mr. BACON has designed more than twenty different styles of hoisting engines, for all kinds of work, and the number of calls made upon him is sufficient indication that his plans must be satisfactory. Those patterns which are intended for blast-furnaces and mines, are reported to be excellent in use. His office is at 36 Courtlandt street, New York.



THE BACON REVERSIBLE WINDING ENGINE.

A Unique Furnace.

A TRAVELLER in North Carolina gives a description of a furnace built at Buckhorn during the war. This furnace, he says, was a model of its kind, being constructed at a cost of less than $5,000 in gold, and making from four to five tons of iron per day. It was stone to just above the hearth, thence up was merely a frame-work of timber, with a lining of brick, the space between being filled with packed clay. When burned by Gen. SHERMAN, it stood as if one solid brick. It was a success in every respect, and turned out about 300 tons of pig-iron in sixty running days, but it was managed and run by a practical Scotchman named John Colville. Our traveller adds that it "is seriously to the injury of the Deep River region that no such practical mind guides the present operations, in which over $250,000 have been spent, and not a ton of first-class iron yet made." The "present operations" alluded to consist in the building of a new hot blast furnace and the critic says: "As the gas to heat the hot blast is lighted the moment it leaves the furnace, it is evident that the top of the furnace must be very hot, and the bottom disproportionately cold (!)"

THE Philadelphia and Reading Coal and Iron Company have twenty-five retail coal-yards in the city of Philadelphia.

Divisibility of Metals.

THE Virginia City (Nev.) *Enterprise* says:— "The divisibility of quicksilver, and also of silver and gold, as shown by the mining operations conducted in this State, is almost incomprehensibly great, and would seem to be almost illimitable, particularly in the case of the metal first named. A globule of quicksilver may be divided until no longer visible to the naked eye, and indeed, until scarcely visible under a powerful microscope, yet even the most minute subdivision shall be found to contain silver or gold, perhaps both. How infinitesimally small, then, must be the particles of silver or gold contained in one of these invisible and immeasurable globules of mercury! In regard to the astonishing divisibility of the metal mentioned, we have just learned some interesting facts of Dr. BUNCHER, Superintendent of the Rock Point Mill, Dayton. This gentleman informs us that some time since, when working in his mill for a considerable period an ore in which gold largely predominated, he used every precaution to guard against loss. In addition to the usual settling tanks, he caused to be dug in the ground a number of large pits, into which the waste water flowed after leaving the tanks. After leaving these pits, the water passed off in a small flume, and to the eye appeared as clear as the water of the purest mountain stream. For the sak of experiment, Mr. BUNCHER coated a copper bowl with quicksilver and placed it in such a position that the water of the flume should fall into it. He also placed in the flume, below the bowl, some copper riffles, properly coated with quicksilver. Although the water passing through the flume seemed to be perfectly clear, yet at the end of three months the bowl and riffles were cleaned up and over $100 worth of amalgam obtained. His mill is driven by water taken from Carson River, and carried for a considerable distance through a large wooden flume. A month or two since it became necessary to shut off the water and repair a portion of this flume. In making the necessary repairs it was found that in many places the heads of the nails driven into its bottom had been thickly coated with amalgam. Within the distance of about three rods along the bottom of the flume the workmen engaged in making the flume collected over an ounce of amalgam. This was where there were no copper plates or other special facilities for catching the floating particles of quicksilver. The water flowing through the flume was taken from the river below a number of large mills, and, though far from being clear, would never have been suspected of containing floating quicksilver in such quantities as to amalgamate the heads of

iron nails. In order to amalgamate iron it must be scratched or polished while immersed in quicksilver, therefore, it will be seen that much material must have passed by before the occurrence of the accidents required for the commencement of the accumulations found on the nails. As another evidence that quicksilver in considerable quantities floats in the water of flumes and streams below reduction works in a state of invisible division, and yet carries with it the precious metals, Mr. BUNCHER gave us this additional instance: On a certain occasion one of his workmen required a piece of copper. Remembering to have seen some old sheets of that metal lying near the waste gate of the main flume, he went to the spot, and hauled them out of a puddle in which they were lying, and found them heavily coated with amalgam, and so eaten up that they were hardly thicker than writing paper. The water pouring out through the waste-gate had a fall of about fifteen feet. It did not fall directly upon the copper-plates, but in such a manner as to keep them constantly splashed and wet. Mr. BUNCHER thinks the plates had lain in the place four or five years. Over a pound of amalgam was scraped off them. It appears to us that in these several striking instances of the treacherous and unsuspected floating away of the precious metals there is for mill-men food for reflection, and for inventors a field in which to reap both profit and distinction."

Various Notes.

QUITE an extensive spontaneous break lately occurred in the Monson, Mass., granite quarries, extending some fifty feet north and south, and moving the severed stone about two feet west. These breaks are of frequent occurrence, but usually on a much smaller scale, and clearly demonstrate the fact that there is immense pressure in the quarry, and that this pressure is nearly north and south.

THE inhabitants of Nancy, France, lately felt a shaking, which they ascribed to an earthquake, but which is now reported to have been due to a more extraordinary cause. At St. Nicholas, near Nancy, are some very extensive salt mines, worked at a depth of nearly two hundred yards. Through them runs a stream of water, which becomes saturated with the saline matter in its passage and is pumped up to the surface and there utilized. Some little time back the volume of water increased to a considerable extent and then suddenly disappeared. This subterranean current had changed its course. The galleries which had been worked suddenly gave way and an immense mass of the superincumbent soil sank, and that with such violence that its effects reached Nancy, ten miles distant, and there led to the belief that an earthquake had taken place.

THE Geological Survey of Kentucky is to be made under the direction of Prof. N. S. SHALER, Prof. of Geology in Harvard College.

HAYDEN'S report of the "Geological Survey of the Territories, 1872," contains valuable information on the Coal and Lignite formation of the Rocky Mountain territories.

Coal Fields of Austria.

BEGINNING with Bohemia, we find two small basins of anthracite near Brandau, in the Erzgebirge, and near Budweis in Central Bohemia, both of little importance, to be followed by the important coal basin of Kladno-Schlan-Rakonitz, to the west of Prague, which produced in 1871 nearly 1¼ million tons of good black coal. It extends from Kralup, on the Moldau, westward over 32 miles, and makes a turn southward for 10 miles, with an average width of 3 to 4 miles; it stretches probably much further to north-east, where it underlies the strata of the Permian and Cretacean systems. This basin forms again two natural divisions; the lower, resting upon Silurian rocks, contains two principal coal seams, the bottom seam, 9 to 18 ft. thick, and the great seam, which is 30 to 36 ft. thick, and beats the 10-yard coal of Dudley. The principal pits are near Kladno and Brandeisl, and belong to the Emperor Ferdinand, the State Railway Company, and the Prague Iron Company; the deepest is the Kübek shaft of the State Railway Company, with a depth of 184 fathoms. The district employs about 8000 miners underground, and owns over 20 winding engines, and as many pumping engines of from 30 to 450 horse power. The upper division of the measures covers an area of 300 square miles, and contains only one coal bed of 20 to 40 in. in thickness, at an average depth of 30 to 40 fathoms, which in 1871 yielded about 125,000 tons from about 90 small pits. South-west of this is the Pilsen coal basin, forming an oval of about 250 square miles, which, however, is not yet sufficiently explored. On its northern border it contains only one seam of 7 ft., on the south side five from 7 to 64 in., and east three beds, 32, 47, and 20 in. thick, while near Littiz, on the south-east side of the basin, three beds are again known, of 18, 42, and 84 in. in thickness, at a depth of from 80 to 100 fathoms. On the whole the formation is rather irregular, and its yield in 1871 was only about 220,000 tons, raised with 28 winding and 25 pumping engines, with respectively 423 and 1393 horse power. The coal of the southern part makes very good coke, and contains about 6¼ per cent. of ashes on an average. Four other small basins, namely those of Radnitz, Miroschau, Wittuna, and Manetin, are of little importance, and need only be mentioned here.

The Schatzlar-Schwadowitz basin, at last, on the western slope of the Riesengebirge, is the continuation of the Waldenburg basin in Silesia. It contains here over 20 seams, of which number, however, only 15 are profitable, with a very good kind of coal in most of them. Their yield was, near Schwadowitz, 80,000, and near Schatzlar 140,000 tons, which were raised by 2000 men and 20 steam engines.

After reviewing the coal basins of Bohemia, which belong to the real coal formation, we may now cast a glance upon the very important deposits of tertiary brown coals or lignites. They are five in number. The Eger basin contains a seam of from 2 to 6 fathoms in height, being partly worked open-cast, partly underground. The Falkenau-Carlsbad basin stretches nearly 20 miles from S.W. to N.E. with an average width of 4 miles, and contains at the bottom two beds of brown coal 5 fathoms thick, and in some parts a considerable seam of lignite of from 4 to 16 fathoms height. Both are extensively worked, and about 2500 men raise 80,000 tons of lignite and 240,000 tons of brown coal per annum. The greatest, the Saatz-Teplitz basin, employs 6300 men, and produces about two million tons, which are for the greater part exported to Germany. The coal comes from one seam, which is on an average 5 fathoms thick, but varies from 3 to 14 fathoms, as near Dux and Brüx. The quality of the coal varies, as may be expected, according to its amount of moisture and ashes; however, the expenses of raising are very small, only 5 to 8 kreutzers per hundredweight, or about 2s. to 2s. 4d. per ton, and the price is 4s. and 6s. at the pit. The Zittau coal basin in northern Bohemia comprises five smaller secondary basins with several coal beds, which produce about 80,000 tons, and the Budweis basin in the south still less.

If we now look at the coal produce of the provinces of Moravia, Silesia, and Galicia, we find its principal quantity raised in the coal basin of Ostrau-Karwin, on the borders of Moravia and Silesia, which forms the southern outcrop of the extensive coal measures of Upper Silesia, mentioned in our former article. It covers an area of over 160 square miles, and has millstone grit and culm shales as underlying strata; the coal measures proper, however, are known to contain no less than 370 coal seams, from 5 to 12 ft. thick, of which number 117, with an aggregate thickness of 358 ft., are considered profitable. Although coal mining in this district commenced only in the middle of last century, it is now opened up by 61 coal pits, of which the deepest has reached 160 fathoms from surface, and 10,800 workmen raised from these pits, in 1871, 1¼ million tons of excellent bituminous coal, which is largely exported to Vienna and the rest of Austria.

Towards the north-east of that last mentioned, near Krakau, in Galicia, we meet with another outcrop of the great Silesian coal basin, where it again covers an area of over 150 square miles, and contains, near Jaworzno, thirteen coal seams, with 100 ft. thickness, and of which the Jacek seam is 26 ft. in height. This district will gradually become of extreme importance to Austria, but it is not nearly so extensively worked as it ought to be, for in 1871 it only produced about 250,000 tons with 2300 men and 40 steam engines. A third coal basin is that of Rossitz-Oslawan, in Moravia, about 14 miles west of Brüon; it has no connection with the former, and only contains three coal beds of 26 ft. to 30 ft. aggregate thickness. Here, six companies produce about 300,000 tons annually with 2300 men; the coal, however, is very bituminous, and yields 77 to 78 per cent. of coke. We may mention here, as a curiosity, the existence of coal-bearing strata in the chalk formation of Moravia, at Uttigsdorf and Johnsdorf, though the seams are small, and rather impure, and their annual yield is insignificant. Brown coal is also found in this part of Austria, north of Lundenburg, where a basin with one or two seams of lignite covers about 200 square miles, and 100,000 tons are raised for the consumption of some beet sugar manufactories. Another deposit of tertiary coal is met with in Western Galicia, near Grudnadolna, where a bed of 4 fathoms is found with Eocene clay, and in the eastern part of that province, near Zolkiew and Kolomea, where lignite is raised for the use of sugar factories and the town of Lemberg.

Turning next our eyes to the Alpine provinces of Austria, we find coal exhibits from Upper and Lower Austria, Tyrol, Carniola, Styria, Carinthia, Istria, and Dalmatia, of which the joint produce of mineral fuel in 1871 was about 50,000 tons of black coal, and 1¾ million tons of tertiary brown coal and lignite. These figures show at once that the younger species of coal are by far predominant in the Alpine regions, and though they are of excellent quality as an ordinary fuel, they are deficient in coking qualities, and therefore not fit for use in blast furnaces. This is very much to be regretted, as these districts are blessed with enormous riches of first rate iron ores, which now only can be utilized either by using wood charcoal as fuel, or by exporting them to places where mineral coal and coke can be had. This is actually done by the Great Innerberg Company, of Styria, who send their ironstone to Schwechat, near Vienna, where it meets the coke from Moravia.

If we first look at the localities where black coal is raised, we find, stretching along the northern slope of the Norian Alps, from Wiener-Neustadt to Steyer, the strata of the Lias, in which partial basins are filled by younger deposits belonging to the Cretacean period, and embracing particular carboniferous strata of the middle Cretacean or Gosau formation. Such small Cretacean basins are found west of Wiener-Neustadt, near Neunkirchen, Baden, Kirchberg, Lilienfeld, Hainfeld, Gaming, and Amstetten, in Lower Austria, and at Weyer, in Upper Austria. Although their total output of coal is hardly more than 100,000 tons a year, they are still of considerable local importance, as they supply numerous smelting and other works with a very good fuel. The coal from this district cokes well, which the younger tertiary coal does not, and they will yield from 64 to 66 per cent. of good coke, with an amount of 5 to 10 per cent. of ashes. At Grünbach, near Neunkirchen, occur 20 seams of more than 20 in. thickness, some of them even of 60 and 72 in., and in the collieries of Mr. DRASCHE, 3,000,000 tons are prepared for extraction, at Lilienfeld 1,000,000, and smaller quantities at Höllenstein, Pamreit, Lunz, and Pechgraben, near Steyer, on the Enns river. An insignificant deposit of anthracite, belonging to Prince Schwarzenberg, is found near Turrach, in Styria, this belonging to the real coal measures. It is used at the blast furnaces of Turrach.

When we follow the Danube valley upwards from Vienna, we find several ter-

tiary basins containing brown coal and lignite at Hart, near Gloggnitz, at Grillenberg, near Potten-tein, and Thallern, near Krems; their total produce, however, exceeds hardly 60,000 tons per annum, and the chief mine proprietors of the district are Prince LICHTENSTEIN and MR. DRASCHE. Another brown coal district is in the Hausrück Mountains, at Wolfsegg-Traunthal, where over 250,000 tons are annually raised by 1000 men. The coal comes from an upper bed of 13 ft., and a lower one of 7 ft. thickness, and is used by the locomotives of the Empress Elizabeth Western Railway, where every visitor to the Exhibition, coming from Passau, is sure to have smelled it; the rest is used by the Imperial Salt Works and the manufacturers of Upper and Lower Austria. The proprietors are JOSEF WERNDL and Co. A few brown coal beds are also found in the Tyrol at Häring, near Insbruck, Wirtatobel, near Bregenz, and at Strigno and Bretonico in the Trentino. The most important is the first, where a bed, 6 fathoms thick, of excellent black pitch coal is worked for the use of the Imperial Salt Works at Hall, and for some cement works.

Looking now at the southern provinces of the empire, we meet with important collieries in Carinthia, near Völkermarkt, Klagenfurt, Villach, St. Veit, and Wolfsberg. The coal formation is here again Miocene, and contains beds of lignite, 12 to 18 ft. thick, with an amount of ashes varying from 6 to 12 per cent.; it is, however, consumed with advantage at the iron and steel works of Praevali, Streiteben, and some other works, the total output being about 80,000 tons. Next to Bohemia, it is Styria which furnishes the greatest amount of mineral fuel, and it is here that we find in the valleys of the Mur river and its tributaries, the greatest coal deposits. They belong likewise to the Miocene formation, and furnish a most excellent black glance coal near Judenburg, Leoben, and Bruck, and very good lignite at Illach, Wartberg, and Parschlug.

The mines of the Styrian Iron Company at Johnsdorf, near Judenburg, stretch over a distance of 7 miles, and contain one big seam of 15 ft., below which two smaller beds occur occasionally. The coal contains from 1½ to 12 per cent. of ashes, and is consumed at the Zeltweg puddling works. A great basin of tertiary strata stretches north of Leoben to a distance of 2000 fathoms, and 700 fathoms wide; it contains an excellent coal bed, which reaches up to 6 fathoms in thickness, and is worked partly with adit levels, partly with shafts, by the Innerberg Iron Company and Messrs. FRIDAU and DRASCHE. The coal is screened and partly washed, and contains only 3 to 5 per cent. of ashes. The same seam is also worked at Urgenthal and Parschlug, near Leoben, but it is less thick, though of good quality. Another important coal deposit is that of Köflach and Voitsberg, westward of Graz, which covers an area of 16 square miles, and in 1871 yielded about 500,000 tons of a dark lignite, with 1¼ to 10 per cent. of ashes. The height of the coal seam reaches from 16 to 20 fathoms, or from 96 ft. to 120 ft., but in some parts it is only 1½ to 2 fathoms. It is worked opencast at Lankowitz, Pichling, Rosenthal, Mitterdorf, Kainach, and underground towards the center of the basin, the chief owners being the Vordernberg-Köflach Mining Company, Brothers Reiningshaus, the Kainach and Voitsberg Coal Companies, and others. South from this basin, another rather important locality is near Wies and Brunn, where three seams of very good glance coal are worked—these varying from 4 ft. to 16 ft.—and at Eibiswald, where the coal is 12 ft. thick. This latter coal is consumed at the Eibiswald Iron Works. We now come to the coal mines of Lower Styria, which are worked in the Lower Miocene, and contain brown coal, which partly cokes. At Buchberg the seam is 4 fathoms thick, of which, however, only the upper 12 ft. to 14 ft. are profitable for working; at Tüffer it is nearly 6 fathoms, at Hrastnig 12 fathoms, and at Trifail 20 fathoms thick. The seam contains black glance coal, but its lower banks are much mixed up with shale, while the higher parts are clean. About 300,000 tons are raised here collectively by a great number of coal proprietors. Leaving Styria, we find the brown coal basins to continue in Carniola, where, in 1871, about 150,000 tons were produced. The principal mines are at Sagor, where a coal bed, 5 to 20 fathoms thick, is worked after a peculiar method, the bed being inclined from 50 to 70 deg. The coal is black glance coal, with only 6½ per cent. of ashes. The mines next in importance are those of Mr. Kuschel, near Johannesthal, which furnish the fuel for the spelter works of the neighborhood from a seam 2 to 5 fathoms thick. In Istria it is the coal basin of Carpano, with an annual production of 40,000 tons, and in Dalmatia that of Monte Promina, near Siverich, and Dubravizza, near Scardona, which deserve to be mentioned. The Monte Promina seam is only 6 ft. thick, but of very good quality; it yields 60 per cent. of coke, and is consumed by the Austrian navy.—*Engineering.*

The Single Rail Railroad.

EXPERIMENTS have recently been made to determine the advantages of the LARMANJAT system of railway, which the readers of the Journal will recollect, consists of a central rail on which run two flanged wheels, one before the other; these carry the principal part of the load, while two lateral wheels run on the ground, but bear only a part of the load, which rests now on one side, now on the other, as the center of gravity oscillates. These lateral wheels on the locomotive give the principal part of the adhesive or traction power. The coefficient of traction was found to be 0·016 or 1-63 of the load, while that on ordinary railroads is about 1-250; it is however much less than that of a good MCADAM road which is about 1-25, a reduction of about 40 per cent.; this advantage is lessened as the grade becomes steep. The adhesion of the locomotive was 13·35 times the adhering weight, while experiments made with a PORTER and AVELING road steamer on a good ordinary road, gave an adhesion corresponding to the traction of a load of 12 times the adhering weight.

The small saving in this system of road over the ordinary railroad, except in rare cases, and the comparatively poor results obtained, will doubtless prevent he general adoption of this system of road.

Antimony Mining and Smelting in Canada.

ANTIMONY was discovered in York County, New Brunswick, about the year 1863. The ore occurs in the Lower Silurian slates, in a low ridge running nearly southeast and northwest. Two miles east of the mines the slate abuts against the junction of the granite area, and a small and shallow outlier of the Carboniferous system. The granite underlies the slates, which in turn seem to underlie the conglomerates and coarse sandstones of the Carboniferous.

The ore is stibnite, and occurs in segregated veins with distinct clay selvages, conformable with the general stratification of the country; the strike is about N. 55° E. and the dip varies from 30° to 50°. The gangue consists of compact white quartz or a bluish slate highly charged with numerous small crystals of iron pyrites. In addition a comby quartz and white and gray calcite have been found as veinstone in two of the mines.

The walls of the veins are very irregular, yet well defined, the hanging wall often showing signs of slickensides. In width the vein varies considerably, ranging from a few inches to six feet, thus forming a series of pockets, often connected only by barren veinstone. Of three mines opened on different veins, only one is at present in active operation.

Mining is conducted by the system of long wall stoping, the vein having been uncovered, and stoping begun for nearly two hundred feet. The ore, as delivered to the spalling floors, contains an average of ten per cent. of stibnite. Besides the mill ore and sterile material, some No. 1 ore, fit for the smelting works, is obtained in this operation. The mill ore is fed by hand into a Blake's crusher, which delivers the crushed ore to a pair of primitive rolls. Their diameter and width is 15 inches and their surface is formed of three wrought iron bands shrunk on the cast iron core of the rolls. The second roll revolves by friction, and is kept in contact with the first by a weight, acting through a combination of levers. The natural result of this disposition is an unnecessarily large production of fine ore, and since the gangue is harder than the ore, an enrichment of the finely crushed grades at the expense of the coarse ore, and a consequent large proportion of loss.

Concentration was formerly effected by a Krom air jig, but this method has been abandoned as unsatisfactory. As the merits of this machine have lately been the subject of a lively discussion amongst members of the mining profession, it may not be out of place to state some results obtained by its use, and their comparison with wet concentration.

I wish the reader to bear in mind that I was unacquainted with the machine, except by the description given in Mr. KROM'S pamphlet, and that I believe better results could have been obtained if the grading of the ore had been more perfect and the mill a trifle less shaky. The ore was graded by wire-cloth sieves of 8, 25 and 60 meshes to the inch; all material not passing through the coarsest sieve was continually returned to the rolls by an elevator. The grade of ore between 25 and 60 inches gave the best results, and contained by assay 12.15 per cent. of metallic antimony. The ore was passed through the machine three times, and the rich stuff then assayed 30.62 per cent. of antimony. The tailings of the two last concentrations were re-jigged and the product added to the original ore. The total tailings thereupon assayed 3.25 per cent. of antimony. The product of the machine varied from 400 to 600 pounds per day, and required the attendance of one man. This result is certainly not very brilliant, but it was the evident inability of the jig to deal with the fine ore passed through the 60 mesh sieve that finally condemned it in the eyes of the company. A simple form of water concentration was then resorted to. The crushed ore is fed, without previous sizing, into an inclined sluice. At its bottom a rectangular box, the "trunk box," receives the washed ore; the "sludge" and slime is carried off by the water and deposited in a number of large tubs. The washed ore is immediately jigged in a 22 by 36 inch sieve, hung in a large box of water, and supported by a lever, the long arm of which is set in motion by a cam on a lineshaft. The sieves receive 110 strokes per minute. Their bottoms are made of stout parallel wires, on which rest the "bedding" of coarse lumps of stibnite. In 4 or 5 minutes the ore is jigged, the sieve raised out of the water, the tailings scraped off by the workman, and finally 3 or 4 shovels full of fresh ore added. Previous to every third or fourth addition the "chats," a layer of stibnite and gangue in the same pieces, are scraped off, re-rolled and jigged. The superfluous bedding, which is fit for smelting, is also occasionally removed. When the jig box is full of ore the water is drained out and the ore again trunked and jigged. The original ore assayed 7.31 per cent. of antimony, the first concentration enriched it to 21.8 per cent., the second to 29.75, and the third to 66.35 per cent. of metal. The chats assayed 4.57 per cent. and the tailings .99 per cent. The result of 23 days' work of one jig was 2,347 lb. sieve ore (bedding), and 4,220 lb. jigged ore, or at the rate of 285 lb. a day. The ore contains by analysis 12.7 per cent. of moisture, hence one jig produces 250 lb. dry 60 per cent. ore in 10 hours. Since one man can readily tend two jigs, he will produce as much concentrated ore of a higher yield as with a Krom concentrator, and will achieve this end from poorer ore, with a smaller loss and with cheaper machinery.

The results obtained by Mr. KROM'S machine could no doubt be greatly improved, but I do not believe it will ever be able to separate ore and rock as completely or cheaply as a continuous plunger jig, nor do I believe that in any form of dry concentration iron pyrites of 4.9 sp. gr. can be separated from stibnite of 4.7 sp. gr., which result I have obtained on a Rittinger's continuous shaking table. Numerous mines are so situated as to make wet concentration an impossibility; to these the air concentrator will be a boon that can not be too highly

prized, and its inventor and his labors to perfect his machine deserve the warmest approbation.

The smelting is accomplished by the roasting and reduction process, entirely similar to the method adopted by the Septêmes works in France, in 1855. The only novel point is the improvement introduced by the writer in refining and smelting the metal in one operation. The concentrated ore is roasted in a reverberatory 40 feet long and 9 feet wide. The height in the center is 18 inches, the arch having 6 in. spring. The fire-place is 2 ft. wide, and 10 doors are ranged diagonally opposite on the two sides of the furnace.

The fire-bridge is 6 inches high and 12 inches wide, and the flue and stack 12 ×16 inches interior dimension. The furnace holds 5 charges; three of 600 lb. of wet ore being introduced and drawn every 24 hours. The ore, therefore, remains 40 hours in the furnace, and is heated nearly to fusion for two hours previous to drawing. To prevent its agglomeration the ore is rabbled every 5 to 10 minutes. The loss of metal by roasting is 7.5 per cent., which is volatilized as sulphide of antimony, as, with proper working, the heat is not high enough to oxydize the fume. This operation produces a dull grayish-yellow mixture of oxyd, containing a variable amount of oxysulphide of antimony. The consumption of fuel is only ¼ cord of wood in 24 hours.

The smelting furnace is a small reverberatory, connected with a number of dust chambers for collecting the volatilized and oxydized metal. The crucible of the furnace is lined with fire-clay, and is 5 feet diameter and 18 inches deep. The fire-bridge is 16 inches wide, the throat 18 by 24 inches, and the grate 2 feet wide. About ¼ cord of wood is burned to each charge. The flux used in smelting is a crude sulphate of soda in the form of salt cakes and the charge usually employed consists of 500 lb. of roasted ore, 100 lb. salt cake, and 75 lb. hard wood charcoal, all in a coarse powder. The ore is mixed with 75 lb. charcoal and spread evenly in the red hot furnace; it is then covered by a mixture of salt cake and the rest of the charcoal. The fire is immediately urged, and soon a violent re-action between the salt cake and charcoal sets in, carbonate of soda is formed, and sulphurous acid and carbonic oxyd liberated. A fused layer is thus formed which protects the reduced metal and fluxes the silicic acid of the gangue as well as helping in the reduction. In about four hours the furnace is at a bright red heat, approaching whiteness, and the whole mass is in fusion and active ebullition, the carbonic oxide penetrating the layer of slag and burning with a green flame. The charge is now repeatedly well stirred, until it is in quiet fusion, at which point it is kept for half an hour to allow all the metal to settle. The fire is then let down and the doors placed ajar till the surface of the slag is at a dull red heat and has become thick and pasty. It can then be drawn out of the furnace with a pair of prongs, or a rake. Immediately on its removal the refining slag, a mixture of 25 lb. salt cake and 10 lb. charcoal, is thrown on the metal, and the fire again strongly urged. Carbonate and sulphide of soda are produced, which sulphurize and scorify the impurities in the metal. In 1½ hours the slag is in quiet fusion and must be perfectly liquid, running like water. The metal is immediately ladled into iron dishes holding 25 lb., care being taken to dip enough slag to cover it about half an inch thick, and not to let the antimony solidify in the dish until the latter is full. The slag ought to remain soft after the metal has solidified, and must not be broken off till perfectly cold. The metal obtained by this process is nearly chemically pure, and to this it owes its beautiful crystalline structure or "star" and its high price in the market.

The smelting slag has a porphyritic appearance and is mainly silicate of soda holding quartz and slate in suspension. The refining slag seems to be composed principally of a double sulphide of sodium and antimony, dissolved in, or mixed with, carbonate of soda. It contains 15 per ct. of antimony, which is extracted by smelting 500 lb. of slag with 100 lb. of iron. A slag is produced therefrom containing only a trace of antimony. From experiments made with the "smelting slag" I am convinced that the antimony could be profitably extracted by smelting it with iron ore and coal in a low shaft furnace, as it was possible to reduce the metal in the reverberatory, but not to render the slag liquid enough to allow the antimony to settle. The flue dust obtained is a pure oxide of antimony and is smelted exactly like the ore. In conclusion, I may say that this method of smelting antimony is cheaper than any other known method, no crucible breakage has to be charged, nor is the quantity of fuel or labor nearly as large as in the old English crucible process. With well built furnaces the loss of metal need not exceed 12 to 15 per cent., which amount is lost in crucible smelting, and the metal produced is of a much superior quality.

ARTHUR F. WENDT, E. M.

Convict Labor in the Richmond Granite Quarries.

A GENTLEMAN who has visited the famous granite quarries at Richmond, Va., sends to the New York *Times* the following account of the Old Dominion Company's Works, which employ the colored penitentiary convicts under a contract with the State Government. "Their contract calls for 300, but at the time of my visit they had only 290. They pay for them forty cents per day, and furnish food and clothes, and the clothes must be bought from the State. The State pays the doctor's bills. They are shut up at night in strong cabins or cells inside of a stockade. They are guided by twenty men, armed with double-barrel guns, over whom is a captain. These men are paid $40 per month. I asked Mr. O'KEEFE, foreman of the quarries, if they were as cheap labor as ordinary hired hands. He replied that he would not say as to that, 'but one thing was sure, they could always be depended on to be ready for work.' They certainly seemed to be as cheerful as any set of hands I ever saw who were as free as air. The quarters in which they slept were clean, well ventilated, and warmed with steam. The company work about fifty other hands. The works comprise two quarries, and hundreds of acres of granite. They are owned mostly in Philadelphia, and superintended by Mr. ROBERT GRAHAM, a Pennsylvanian. The stone is not quite so dark as Quincy, but equally as durable. This company's quarries turn out about 200 tons of building-stone, curb, block and paving blocks per day. Trains take the stones direct from the quarry to the schooners lying at the Rocketts below Richmond. Freight from the quarry to Philadelphia is about $2 per long ton. Their upper or western quarry is said by judges to be the finest and largest body of granite ever seen in one mass without seams or cracks. It stood out bold, clear, and smooth, forty-five feet high. The mode of blasting off the immense blocks was interesting. Two holes are drilled an inch or an inch and a half apart, both to a depth of five or ten feet; the partition between these holes is then broken out by a chisel, and the broad hole thus made is cleaned out and charged with powder. The blast is then let off, and the rock splits almost as straight as a chalk line, the broad hole acting as a wedge or pry. The large masses thus split off are subdivided by holes in which wedges are inserted and driven tight, thus making neat and accurate cuts. The works use one and a half kegs of powder per day, and prefer it to nitro-glycerine or dualine because it does not crack up the rock, and is thought to be less dangerous.

Iron and Coal in England.

THERE is little probability of any diminution in the demand for iron-making purposes. At the present time the iron trade absorbs more than 40,000,000 of the 120,000,000 tons of coal annually raised in the United Kingdom, and while many attempts are being made to reduce consumption, by the application of more economical appliances, and by greater care in the various processes for which fuel is required, the iron trade is advancing with such rapid strides that any economy thus obtained will be more than counterbalanced by the extra requirements of manufacturers. In the Cleveland district, and on the West Coast, there are more than thirty blast furnaces now in course of construction, or in contemplation. Each blast furnace will consume not less than 500 tons of coal per week, so that within another twelve months, crude-iron makers alone will probably make an additional demand of 15,000 tons per week upon coal producers. The finished-iron trade is much less exacting. Little or no progress is now being made in this direction. On the contrary, there is a prospect of some of the largest works being laid off in consequence of the inability of manufacturers to produce rails and plates, the staple of the finished-iron works of the North, at a reasonable profit. There are still over 100 puddling furnaces temporarily laid off from this cause, out of the 2,100 built in the North of England. The probability is that this proportion of idle furnaces will be increased rather than diminished.—*Colliery Guardian.*

Engineering and Mechanical Notes.

The *Colliery Guardian* reports that in several of the patent puddling furnaces recently introduced into the finished ironworks of the north of England, the consumption of coal has been reduced to 15 to 17 cwt. per ton of puddled bar, but no efficient results have been obtained below this limit of consumption. Our comtemporary seems to think this result rather poor in view of the fact that the highest authorities declare that not more than 9 per cent. of the calorific power of the coal used in the puddling furnace is utilised. In other words, it requires in ordinary furnaces from 23 to 25 cwt. of coal on an average to produce a ton of puddled bar, whereas, theoretically, the consumption of 2½ cwt. of coal should be sufficient for that purpose.

The Danks machinery seems to be giving satisfaction in England. These furnaces are in operation at the Carlton Iron Works, and the Erimus Company, who, it will be recollected, built new works for the express purpose of making iron by the Danks process, have now eight furnaces at work at Middlesbrough. It is their intention to go on for some time working the eight furnaces, after which they will increase the number. They have arranged with a number of workmen for twelve months on the following terms: for the first three months 7s. per day, for the second three months 8s. per day, and for the last six months 10s per day.

In the silver lead mine Meinerzhagener Bleiberg, near Bonn, underground locomotives have been introduced for some time upon the Burgfey adit, instead of the former traction by horses. The engines are made by KRAUSS and Co., of Munich, and are of 20 horse power nominal. The railroad has a gauge of 2 ft. 1¾ in. only, and is 300 fathoms long. The locomotives are 10 ft. 10 in. long, 4 ft. 5½ in. wide, 6 ft. 10 in. high, and have driving wheels of 1 ft. 10⅞ in. in diameter. The boiler is fed with coke, and is worked at 12 atmospheres pressure. The engines run with an average speed of 4 miles per hour, and in trains of 10 to 15 trucks they draw out 400 trucks of 13 cwt. each, or 260 tons of mineral in twelve hours. There is a very good ventilation in the mine, and no fear that the air will be spoiled from the combustion of fuel. It is considered that the working of these underground locomotives is connected with less danger than the working of horse tramways, and that it insures a far greater regularity.

FOR use on railroads a ton of good anthracite or bituminous coal is equal to from 1½ cords of good hard wood, to 2½ cords of some soft wood, that is, one ton of good coal is equal to an an average of about 2½ tons of wood, and occupies from one fourth to one fifth as much space.

A ton of anthracite coal, broken to ordinary sizes, and loose, will occupy from 40 to 43 cubic feet. A ton of bituminous coal 43 to 48 cubic feet. A cubic foot solid averages about 1½ cubic feet, when broken to any market size and loose. ton of Coke occupies from 80 to 97 cubic feet.

THE COAL TRADE

NEW YORK, Dec. 11, 1873.

Business seems to be better than it has been, but does not correspond to the apparently much improved condition of the country generally. There can be no other cause for this than a hesitancy amongst manufacturers to reassume the risks of business, without a more decided change in the disposition of the people. The effects of the panic have very materially lessened, as reports from every branch of commerce and production prove; but the people have an economical fit upon them, and there is an enormous difference in the sum total of small daily purchases between now and the trade of a year ago. Much as we may study the movements and conditions of great companies, this is, after all, the ultimate disposition of goods; and when economy seizes all classes alike the greatest company can only accept the situation. It is true that both mills and furnaces seem to be more generally in operation than a month ago, but the improvement is not yet sufficient to make a demand for coal, sufficiently to recover the trade from its depression.

Under these circumstances it cannot be doubted but, if left to itself, coal would go down, and the power of the so-called "Combination" is much more forcibly shown in its present act of keeping coal up by sheer prohibition of lower prices, than it was in maintaining the monthly advance of last summer. Every one is now looking to see the result of the very "square" fight between the Pennsylvania company and the members of the combination. The disagreement between Mr. HOYT and the managers of other companies has brought the whole subject of prices so fully before the public that we will review the condition of the question.

In former times when rail transportation was less developed than it is now the companies were compelled to stock coal in summer for winter consumption, and the expense of this made coal higher in winter than in summer. Business was very dull in winter; but the fact that no coal, or very little, came over the roads, of course gave the preponderating influence in the market, during the winter, to the producers. This state of things is now completely reversed. Companies fall behind hand in their summer deliveries, on account of press of business, and the deficit is made up in winter when the roads can bring in far more coal than can be marketed. Thus winter has now practically become the time for stocking instead of summer. By the most common rule of business, the over-supply of coal in the winter should produce lower prices. But here the managers of the companies have their difference. Mr. HOYT throws himself upon what he conceives to be the innate necessity of all business, and accommodates his prices to the market as it is in the present season. He still asks 60 cents a ton more for his coal than it sold for a year ago, and his action is certainly not out of accord with the condition of trade throughout the country. His opponents can appeal to only one principle of business. They have sold coal at certain rates and now feel bound to maintain prices at about the same level, in order to protect the middle-men, who are their customers. They merely say that the good of the trade demands the forced maintenance of prices. As we said last week, they will in all probability carry the day. They are powerful enough to do so, and we are very far from saying that their action is not taken in all sincerity. But we doubt if they make a convert of the gentleman who manages the Pennsylvania Company. We shall probably see a double line of prices kept up, either throughout the winter, which is doubtful, or acknowledging the absurdity of such opposite action, one party or the other will give way.

There is a negotiation going on between the Lehigh Coal and Navigation Company for the sale of its coal lands in the Wyoming Valley to the Delaware and Hudson Canal Company, or to the New Jersey Central. The Lehigh Company has a very valuable property in the Wyoming Valley, and, while they would certainly be a very important acquisition to either of the companies named, it appears from their position they would be still more important to the Lehigh Valley Railroad or to the Pennsylvania Railroad (Susquehanna Coal Co.)

Bituminous.

The improvement in manufacturing circles, and especially the resumption of work in so many iron mills, has had some effect upon business, which is looking up. It is not yet good, however, though under the circumstances there is nothing to complain of. The canals are not yet closed by ice, though shippers have mostly withdrawn their coal from those channels, and are now sending it by rail: Prices unchanged.

P. S.—The negotiations above alluded to between the L. C. & N. Co. and the Central of N.J., have, it is understood, been concluded. The price to be paid is stated between four and five millions. Full particulars will be given in our next.

The Middle Coal Field of Pennsylvania.

STRIKE OF THE BRAKEMEN—THE COLLIERIES ALL IDLE—TERRIBLE ACCIDENT—THE SCHUYLKILL REGION.

HAZLETON, PA., December 6, 1873.

TO THE EDITOR:—On the first of December the Lehigh Valley Railroad Company gave notice to their employees that, from that date until further orders, a reduction of 10 per cent. on their wages would be imposed upon them, on account of the stringency in the money market and the increased expense consequent upon it in securing funds for their payment. The brakemen on the Hazleton, Easton, Mahanoy and Beaver Meadow Divisions, deeming the reduction unreasonable, determined to strike, and on Monday afternoon last held a meeting at the Armory Hall, in this place, to determine what action should be taken by them. After the situation of affairs had been discussed for some time by the men, JABEZ ALSOVER, Esq., a lawyer, in whose advice the strikers had great faith, was called to address them. His address was conciliatory in its tone, and was received with rounds of applause by the meeting, though they could not agree with his sentiments. He pointed out the utter folly of a strike at this time, and appealed to the men to resume work. He was followed by Mr. J. C FINCKEN, editor of the *Daily News*, who re-echoed the sentiments of Mr. ALSOVER; and recounting some of his experience in strikes, sought to make it apparent to the men that their course was suicidal, but without effect. At the conclu ion of Mr. FINCKEN'S address a vote of thanks was extended to the two gentlemen, and they left the hall. After their departure, the meeting canvassed the propriety of basing their action upon their suggestions, and considerable discussion ensued, resulting in a decision not to accede to the company's terms, but to adjourn to meet on Tuesday. The hands employed at the Lehigh Valley shops also held a meeting on Monday night, and sensibly decided to go to work on Tuesday morning, which they did.

The brakemen met again on Tuesday, and were addressed by a member of the Brotherhood of Engineers; but as the meeting was held with closed doors, what his advice was, is not known, though the result of the meeting was that they determined to remain on strike until their former pay was given them. The engineers are not engaged in the strike, and are ready to work, but there is no possibility of getting men to man the coal trains. The Passenger and Local Freight trains are running as usual, but the men are determined that no coal trains shall be run until their demands have been complied with.

By this strike twenty-two engines at this place alone are laid up in in idleness. The collieries are all idle, owing to the lack of means of transportation of coal. Mercantile interests are suffering, and the entire community is in a state of uncertainty and fear for the future.

Some idea of the extent of the bad effect of this strike will appear to the reader from a perusal of the annexed list of collieries with their capacities, and approximate number of men and boys employed, which are thrown idle by it

HAZLETON:

Number One, 1 slope, 1 breaker, 150 men and boys.
South Sugarloaf, 1 slope, 1 breaker, 100 men and boys.
East Sugarloaf, 2 slopes, 1 breaker, 150 men and boys.
Laurel Hill, 2 slopes, 1 breaker, 200 men and boys.
Number Three, 1 slope, 1 breaker, 100 men and boys.
Cranberry, 1 slope 1 breaker, 100 men and boys.
Crystal Ridge, 2 slopes, 1 breaker, 100 men and boys.
Milnesville, 3 slopes, 2 breakers, 200 men and boys.
Lattimer, 2 slopes, 2 breakers, 250 men and boys.
Harleigh, 2 slopes, 2 breakers, 250 men and boys.
Ebervale, 3 slopes, 2 breakers, 400 men and boys.

JEDDO:

Pink Ash, Oak Dale, Japan, Highland, 5 slopes, 5 breakers, 600 men and boys.
Drifton, 1 slope, 1 breaker, 300 men and boys.
Woodside, 1 slope, 1 breaker, 100 men and boys.
Upper Lehigh, 500 men and boys.
Eckly, 2 slopes, 2 breakers, 300 men and boys.
Buck Mountain, 3 slopes, 1 breaker, 400 men and boys.
Stockton, 5 slopes, 4 breakers, 400 men and boys.
Mount Pleasant, 1 slope, 1 breaker, 70 men and boys.
Humboldt, 2 slopes, 1 breaker, 100 men and boys.

The number of men set opposite to the names of the collieries in the foregoing list is only approximated, but I believe nearly correct

In addition to the collieries named above, the following are also idle: Jeanesville, Yorktown, Audenried, Honey Brook, Beaver Brook, Tresckow, Beaver Meadow, and Colerain, all of which employ large forces of workmen.

The strike is not general along the line of the road, the men on the Wyoming Division remaining at work in the hope of settling their difficulties amicably.

There are several improvements going on in this region at present, among which I will mention in this letter only the following: A new slope is sinking at Stockton, and a new slope is under way at Pardee & Co.'s colliery at Cranberry, where they have also made arrangements to build a new breaker, the surveys for the track of which have already been made. A new slope has been sunk at Humboldt. A new slope is being sunk and a fine breaker built at Milnesville. The new breaker will have a capacity of about 400 tons a day.

The Black Creek Improvement Company have been boring for coal at Harleigh during the Summer, with only middling success. The Pennsylvania Railroad Company have been boring and shafting along Black Creek during the past year, their work as yet showing no definite results. The extension of the Lehigh Luzerne Railroad along Black Creek, from Harleigh to Tombickon Junction, is being graded. This will open an outlet for the mines at Harleigh, Ebervale, and Jeddo, by the Danville, Hazleton & Wilkesbarre Railroad, by which they can cheaply transport coal to the lakes and the West.

HUGH CURRAN, a youth residing at Jeanesville, but who worked at a colliery at Tresckow, was badly injured at the latter place yesterday. He was caught between a couple of mine cars and had his leg fractured in three places.

A terrible accident occurred at No. 3 slope, Honey Brook, a small mining town four miles from here, today, resulting in the death of two miners and the serious injury of six others. The accident occurred just as the men were commencing work. The first car descending the slope contained twelve men, and was coupled to a timber truck, the truck being ahead. As the cars were shoved over the top the engineer gave too much "slack," and the chain, with a sudden snap, broke, and the cars, with their living freight, were precipitated with lightning speed down the inclined plane and into the slope, a distance of about seventy yards, where they left the track, and striking the timbers, were upset and broken into fragments, killing one man instantly, and, as we before stated, seriously injuring seven others; one of whom died shortly after being taken out. The following is a list of the unfortunate men: Alex. Brown, instantly killed; John Richards, mortally wounded, since dead; James Devees, wounded; John Donnelly, very badly injured; Patrick Dolan, mortally wounded; Luke Whitaker, badly injured; Dennis McMullin, slightly wounded; Thomas Cassels, slightly wounded. There were four others on the car who escaped unhurt. How any of the men escaped is a miracle.

The brakemen on several divisions of the Philadelphia and Reading Railroad are on strike, owing to a reduction of wages, and the collieries in that region are suspending operations in consequence. Several collieries in the Girardville and Ashland regions are standing idle, and great suffering among the families of the workingmen is predicted. The Tunnel Ridge Colliery at Ashland has been idle about a week, the men being on strike against a reduction of their hours of labor, which would place them on three-quarter time.

T. J. O'BRIEN.

Anthracite Coal Trade for 1873 and 1873.

The following table exhibits the quantity of Anthracite Coal passing over the following routes of transportation for the week ending Dec. 6, 1873, compared with the week ending Dec. 7, 1872.

COMPANIES.	1872. WEEK.	1872. TOTAL.	1873. WEEK.	1873. TOTAL.
Phila & Reading R. R†..	68,574	4,369,200	49,905	4,812,464
Schuylkill Canal	6,213	839,156	4,324	748,120
†Lehigh Valley R. R. ..	54,126	3,061,522	10,101	3,149,175
Lehigh & Sus. R. R.....	28,742	1,687,083	33,478	1,900,498
" " Canal	747	767,094	274	756,252
Scranton North.....	13,716	769,985	12,344	820,482
" South	39,200	1,927,056	44,497	2,020,285
Penn. Coal Co., rail.....	23,021	1,148,383	21,954	1,165,960
" " " canal....	.. ..	6,241	....	7,927
Del. Hud C. Co. Canal	..	1,304,041	....	1,358,552
" " East...	9,512	493,645	9,956	507,741
" " West...	9,317	497,276	10,150	554,981
" " South.	6,491	361,534	757	169,022
Shamokin.....	5,420	543,484	11,834	647,230
Trevorton.....	...	....	....	....
Lykens Valley Coal Co....	....	....	....	....
Wyoming North.....	....	....	...	....
Wyoming South.....	...	....	....	....
P. N. Y. C. & R. R. Co..	11,345	592,333	10,235	695,000
Williamstown Col'y.....	....	.....	....	....
Big Lick Col...	....	.....	....	....
Total..	270,634	18,262,265	209,567	19,208,125
1872.....	209,617			18,262,265
Increase.				945,860
Decrease.....	60,917			

These figures are for the week and fiscal period commencing Nov. 30

† From coal transported for Company's use and Bituminous coal.

Bituminous Coal Trade, 1873 and 1873.

The following table exhibits the quantity of Bituminous Coal passing over the following routes of Transportation for the week ending Dec. 6, 1873, compared with week ending Dec. 7, 1872.

COMPANIES.	1872. Week.	1872. Year.	1873. Week.	1873. Year.
C. & O. Canal.....	....	612,169	.....	635,569
B. & O. R. R.	....	1,171,794	.....	1,386,428
Penn. S. Line..... ..	....	10,158	.. ...	101,883
H. & B. T. R. R.....	7,749	292,704	5,649	441,015
*Harrisburg & D.....	5,777	444,615	4,773	316 765
*L. V. R. R....	....	27,060	195	28,241
P. & N.Y.C. & R. Co.....	4,564	341,758	4,627	299,495
Cumberl'd Branch Canal.	....	202,865	.....	130,475
" Railroad....	....	21,890	.....	81,616
Total.....	18,090	3,125,013	15,249	3,427,565
	15,249		.....	3,126,013
Decrease.....	2,841			
Increase	....		.....	302,552

Philadelphia & Reading Railroad and Branches.

COAL TONNAGE

For the Week ending Saturday, Dec. 6, 1873.
BY RAILROAD.—ANTHRACITE.
PASSING OVER MAIN LINE AND LEB. VAL. BRANCH.

	Tons. Cwt.
From St. Clair	12,359 11
" Port Carbon	4,779 19
" Pottsville	3,325 04
" Schuylkill Haven	16,863 09
" Pine Grove	6,147 19
" Tamaqua	4,227 13
" Harrisburg	
" Dauphin	2,211 13
Total	49,905 07

FOR SHIPMENT BY CANAL.

Passing Frackville Scales	1,223 13
" Mill Creek "	81 02
" Schuylkill Valley Scales	... ..
" Mt. Carbon "	298 08
" Oressona "	1,160 04
" Pine Grove "	...
" Tamaqua "	197 17
Total	2,991 02

SHIPPED WESTWARD VIA CATAWISSA AND WILLIAMSPORT BRANCH AND NORTHERN CENTRAL RAILROAD.

Via Catawissa & Williamsport Br.	148 16
" N. C. R. R. passing Locust Gap	70 04
" " Shamokin	2,025 60
" " Herndon	...
Total	2,244 00

SHIPPED WEST OR SOUTH FROM PINE GROVE

Via Schuylkill & Susquehanna R. R.	1,610 02
" Lebanon & Pine Grove Branch	707 11
Total	2,317 13

CONSUMED ON LATERALS.

From Frackville Scales	834 01
" Mill Creek "	479 07
" Sch'ylkill Valley Scales	476 09
" Mt. Carbon "	1,080 03
" Oressona "	721 00
" Pine Grove "	92 08
" Tamaqua "	341 07
Total	4,034 15

LEHIGH AND WYOMING COAL.

Received via Silverbrook Junction, Sent East	8,398 11
Cat. & Wpt. Br. Sent West	10 04
" " Rupert, Cat. & Wpt. Br.	...
" " Allentown R. Penn'a Br.	66 07
" " Alburtis, " "	...
" " Oreland, G. & N. Br.	589 01
" " Willow Street R. R.	400 00
Total	9,454 03

BITUMINOUS.

From Harrisburg	4,768 08
" Connecting R. R., G. & N. Br.	
" Junction R. R.	10 00
Total	4,778 08

COAL FOR COMPANY'S USE.

Anthracite	5,642 01
Bituminous	202 16
Total	5,844 17

RECAPITULATION.

	Total for Week.	Corresp'g week last year.	Increase and Decrease.
Passing over Main Line and Leb. Val. Branch	49,905 07	68,574 08	d 18,669 01
For Shipment by Canal	2,991 02	2,209 49	i 781 13
Shipped Westward via Northern Central R. R.	2,244 00	5,903 01	d 3,659 01
Shipped West or South from Pine Grove	2,317 13	1,659 13	i 658 00
Consumed on Laterals	4,134 15	5,306 04	d 1,171 09
Lehigh and Wyoming Coal	9,454 03	4,296 19	i 5,157 04
Total Anthracite paying freig't	70,947 00	87,849 14	d 16,902 14
Bituminous	4,778 08	5,777 02	d 998 14
Total of all kinds paying freig't	75,725 08	93,626 16	d 17,901 08
Coal for Company's use	5,844 17	6,062 02	d 217 04
Total Tonnage for Week	81,570 05	99,678 17	d 18,108 12
Previously this year			
Total to date	81,570 05	99,678 17	d 18,108 12

SHIPPED BY CANAL.

From Schuylkill Haven	4,099 06	5,681 00	d 1,614 14
" Port Clinton	258 00	715 00	d 457 00
Total Tonnage per Week	4,324 06	6,396 00	d 2,071 14
Previously this year			
Total to date	4,324 06	6,396 00	d 2,071 14

Report of Coal Transported over Central R. R. of N. J. (Lehigh and Susq. Div.)

Week ending Dec 6—Compared with same time last year.

REGION SHIPPED FROM.	TIDE. tons ct.	LOCAL. tons ct.	CANAL. tons ct.	TL. WEEK tons cwt.	TL. DATE tons. cwt.
Wyoming	15518 04	7513 14		23031 18	1692246 07
Upper Lehigh	54 08	3496 15		3551 03	185532 15
Beaver Meadow	52:3 00	2512 18		7735 18	3[illegible] 16
Hazleton	94 18	1680 07		1775 05	2 5[illegible] 12
Mauch Chunk	345 00	6539 05		6884 05	491481 11
Total	21235 10	21742 19		42978 09	2892110 01
Prev'ly reported	1364624 04	[illegible]35 04	615572 04	2949131 12	
Total to date	1385859 14	890678 03	615572 04	28[illegible]2110 01	
Same time 1872	1092615 18	827154 18	[illegible]5 15	2408356 11	
Increase	293243 16	63543 05	126066 09	483753 10	
Decrease					

DISTRIBUTION.	WEEK 1873.	WEEK 1872.	YEAR 1873	YEAR 1872.
Forwarded East by Rail to Tidal points	21235 10	15417 04	1385859 14	1092615 18
Forwarded East by Rail to Local points	10131 13	10199 01	418869 12	412381 02
Forwarded East by Rail via Central Division	1900 17	1283 03	84808 18	73772 17
Forwarded East by Rail via L. & S.	209 14	142 14	11129 08	8330 11
Delivered at and above Mauch Chunk	1276 06	996 15	46715 11	57517 11
Delivered at Coalport & Hazard for Canal	3733 19	667 19	656975 17	532178 18
Delivered to L. V. R. R. at Packerton	257 06	364 08	21858 11	15928 07
Delivered to L. V. R. Rd. at Sugar Notch	3504 05		97322 04	
Delivered to L. & B. R. R. at Plymouth Bridge	729 00	4853 18	139090 06	217991 07
Total	43578 09	33625 02	2892110 01	2408356 11

Penn. and N. Y. R. R.—Coxton, Pa.

Coal tonnage for week ending Dec. 6, 1873.

	Week. Tons. Cwt.	Total. Tons. Cwt.
Anthracite received:		
From Lehigh Valley R. R.	9,551 08	
" Lack. & B. R. R.	187 19	
" Pleasant Valley R. R.	....	
" Sul. & Erie R. R.	495 13	
Total	10,235 00	
Same time last year	11,344 18	
Increase	1,109 18	
Decrease	.....	
Distributed:		
To Lehigh Valley R. R.		
To Lack. & B. R. R.		
To S. Central R. R.	1,661 12	
To Ithaca & A. R. R.	3,449 08	
To Erie R. W. Pockets for shipm't.	2,906 00	
To Erie Railway, Watkins direct.	259 08	
To individuals on line of road	1,079 06	
To points at & above Coxton for use of Co	448 12	
To points between Waverley and Elmira	430 14	
Total	10,235 00	

Bituminous received from BARCLAY R. R.

Shipped north from Towanda	4,627 04
Shipped south from Towanda	....
Northern Central R. R.	....
Total	4,627 04
Same time last year	4,564 04
Increase	63 00
Decrease	
Distributed:	
To Erie Railway	4,358 06
To So. Central R. R.	268 18
To Ithaca Valley R. R.	....
Lehigh Valley, R. R.	....
To individuals on line of Railroad	....
To points on line of road for use of Company	....
Total	4,627 04

Grand totals transported;	
Anthracite	10,235 00
Bituminous	4,627 04
Total	14,862 04
Same time last year	15,909 02
Increase	1,046 18
Decrease	.....

Report of Coal Transported over Lehigh Valley Railroad

Report of coal tonnage for the week ending Dec. 6, 1873, with Totals to date, compared with same time last year.

WHERE SHIPPED FROM.	WEEK. Tons. Cwt.	TOTAL Tons. Cwt.
Total Wyoming	16,955 17	
" Hazleton	1,499 05	
" Upper Lehigh	112 16	
" Beaver Meadow	1,558 10	
" Mahanoy	3,785 02	
" Mauch Chunk		
Total	23,911 11	
Same time last year	62,448 19	
Increase	.....	
Decrease	38,537 08	
Forwarded East from Mauch Chunk by rail	10,150 19	
Same time last year	52 125 13	
Increase	.....	
Decrease	41,974 14	

DISTRIBUTED AS FOLLOWS.

Local East of Mauch Chunk	808 15
Forwarded East for use L. V. R.	562 01
Delivered to Furnaces and Manufacturing Companies	555 10
Delivered to Cat & Fog. R. R.	68 02
" " East Penn R. R.	66 07
" " North Pennsylvania Railroad	421 04
" " Port Del.	
" " East Amboy Railroad	
" " Morris and Essex Railroad	1,066 08
" " Bel Del Railroad	5,869 09
" " Central Railroad	1,043 05
Delivered at and above Mauch Chunk for use of L. V. R. R.	1,647 10
To P. & N. Y. R. R.	9,551 08
To Northern Central R. R.	2,353 15
To D. H. & W. R. R.	264 07
To L. & S. R. R. at Packerton for rail	20 10
To Individuals at Mauch Chunk	31 18
To Individuals above Mauch Chunk	384 04
To L. & B. R. R., at Penn Hav., for railroad Do. for canal	
To Lehigh Canal Mauch Chunk	102 00
To Catawissa Railroad	
To L. & B. R. R. at Lack. June	
Total	23,911 11

Northern Central Railway, Shamokin Division.

Below is the return of Coal sent over the Shamokin Division of the N. C. R. W., for the 7 days ending Dec. 5, 1873.

	Tons. Cwt.	
East	3,186 16	
West	8,645 11	11,832 07
Same time last year		5,419 12
Increase		2,960 18
Decrease		6,412 15
Total amount shipped to date		607,230 10
Same time last year		543,484 02
Increase		63,746 08
Decrease		

Pennsylvania Coal Company.

Shipments of Pittston Coal for the week ending Dec. 6, 1873.

	1873. WEEK.	1873. YEAR.	1872. WEEK.	1872. YEAR.
By Railway	21,521 11	1,165,960 06	27,521 08	1,148,388 04
" Canal	.....	7,927 11	.....	6,240 18
Total	21,521 11	1,173,887 17	26,521 08	1,154,629 02
Increase, 1873	19,258 15			

Report of Coal Transported over the Lehigh Canal

For the week ending Dec. 5, 1873.

REGIONS SHIPPED FROM.	TIDE. tons, ct.	LOCAL. tons, ct.	TL. WEEK tons cwt.	TL. DATE. tons, cwt.
Mauch Chunk Region	192 00		192 00	2[illegible]639 19
Mauch Chunk Region Hazardville				28,845 16
Beaver Meadow Region				131,534 15
Mahanoy Region		197 00	197 00	20,891 01
Hazleton Region		88 00	88 00	199,891 02
Upper Lehigh Region		95 00	95 00	29,967 04
Wyoming Region				114,259 07
Wyoming Region, Hazardville				4,282 09
Total	192 00	380 00	572 00	736,251 13
Previously reported	260119 12	475560 01	735679 13	
Total to date	260311 12	475940 01	736251 03	
Corresponding week last year	287370 12	479723 12	767094 04	
Increase				
Decrease	27059 00	3783 11	30,842 11	

DISTRIBUTION.	WEEK 1873.	WEEK 1872.	YEAR. 1873.	YEAR. 1872.
Consumed on line of Lehigh Canal	285 00		81,396 00	80,903 13
Passed into Morris Canal to Tidal Points			2,613 17	5,081 05
Passed into Morris Canal to Local Points			28,233 05	23,519 17
Passed into Del. & Rar. Canal to Tidal Points	192 00	193 03	257,797 15	282,289 07
Passed into Del. & Rar. Canal to Local Points		95 13	13,566 01	14,898 08
Consumed on line Delaware Div. Canal		176 04	39,661 11	47,621 13
Passed through to Bristol	95 00	281 14	312,984 04	312,780 01
	572 00	746 14	736,251 13	767,094 04

Prices of Coal by the Cargo.

(CORRECTED WEEKLY.)

Company Coals.

Dec. 1873.

	L.	Str.	Gra.	Eg.	Sto.	Chest
*Pittston at Newburgh	4 60	4 60	4 70	4 80	5 10	4 50
*Lackawana at Rondout	5 05	5 15	5 25	5 40	5 70	5 05
Whit'b'r'a at Pt. John'n	5 05	5 15	5 25	5 40	5 70	5 05
Old Co. Lehigh at Pt. John'n	5 00	5 85	5 85	5 95	5 20	—
New York Coal Exchange	5 85	5 70	5 70	5 85	5 15	—
AT PHILADELPHIA.						
Hard White Ash	4 60	4 60	4 70	4 70	5 00	3 95
Free B'rn'g White Ash Coal	4 60	4 60	4 70	4 70	5 00	3 65
Schuylkill Red Ash	— —	— —	4 70	4 85	5 15	3 95
Alaska Red Ash	— —	— —	4 70	4 70	5 00	3 95
Shamokin White Ash	— —	— —	4 80	5 00	5 20	4 10
North Franklin	— —	— —	5 20	5 20	5 10	4 00
Lorberry	— —	— —	5 50	5 50	5 60	4 35
Lykens Valley	— —	— —	— —	6 10	6 10	4 75
SHIPPED FROM ELIZABETHPORT, HOBOKEN AND TRENTON.						
L. C. and N. Co., Newport	— —	— —	5 35	5 50	5 70	5 10
" " Plymouth Red Ash	— —	— —	5 25	5 60	5 80	5 10
" " Room Run	5 85	— —	5 70	5 70	5 95	5 15
Honeybrook Lehigh	5 90	— —	5 80	5 85	5 90	5 20
Fulton, "	6 00	— —	5 85	5 85	5 95	5 20
Scranton	4 85	5 10	5 20	5 55	5 65	5 00

For freights to different points see "Freights."
*To contractors only.

Prices at Baltimore—Dec. 1873.

Wholesale Prices to Trade.

Wilkesbarre, by cargo or car load	$5 05@5 70
Pittston and Plymouth, do	75@6 00
Shamokin Red or White Ash, do	00@5 25
*Lykens Valley Red Ash, do	@5 80
By retail, all kinds per ton of 2,240 lbs	7 50@8 50
*George's Creek and Cumberland f. o. b. at Locust Point for cargoes	4 85@5 00
West Va. Gas Coal	6 50
Youghigheny gas f. o. b. at L. Point, nominal	7 50
Kanawha Cannel, coarse	@12 50

* Freight to New York $2 15.

BITUMINOUS COALS.

Kittaning Coal Co.'s Phœnix Vein, f. o. b. at Phila	$
Lemon " " "	
Cumberland Vein Coal	
Tyreonnel f. o. b.	$7 00

Prices at Georgetown, D.C., and Alexandria, Va.

Dec 1873.

George's Creek and Cumberland f. o. b. for shipping $4 60@4 75

Prices at Havre de Grace, Md.

Dec. 1873.

Wilkesbarre and other White Ash for Cargoes	$— —@5 00
Lykens Valley	— —@6 50
Shamokin Red or White Ash	— —@5 25

Bituminous Coals (Cumberland).

Georgetown, F.o.b.	$4 60
Baltimore	5 00
New York	7 25@7 50
South Amboy	6 80

Prices of Foreign Coals.

Dec. 1873.

Duty 75 c. per ton.

Corrected weekly by ALFRED PARMELE, No. 32 Pine street, N. Y.

Liverpool Gas Caking	16 00@18 00
" " Cannel	13 00@18 00
" House	20 00@21 00
" Orrel	20 00@— —

Per ton 2,240 lbs., ex-ship.
(PRICES FROM YARD.

Liverpool House Orrel, screened	$20 00@22 00
" Cannel, "	22 00@25 00

Per ton 2,000 lbs. delivered.

Prices of Gas Coals.

Dec. 1873.

PROVINCIAL.

Corrected weekly by Louis J. Belloni, Jr., 41-43 Pine st., N. Y.

	Coarse	Slack
Block House, f. o. b. at Cow Bay	$2 75	$1 25
Gowrie	2 25	0 00

Corrected by Bird, Perkins & Job, 27 South street.

	Coarse.	Culm of Coal,
Picton	$3 00	1 50
Sydney	3 25	1 00
Lingan	2 75	1 00
Caledonia	2 75	1 25

A discount from the prices of the coarse Coal on purchase of 5000 tons and upwards. Duty on all slack coal or Culm: 40c. per ton of 28 bushels, 80 pounds to the bushel. On all bituminous coal or shale: 75 cents per ton of 28 bushels.

AMERICAN.

	Nominal qu. Currency.
Westmoreland, f. o. b.	$3 00 @7 00

Fairmount Gas Coal Co. of N. Y.	"	6 50 @7 00
Despard Coal Co.	"	6 50 @7 00
Penn	"	6 50 @7 00
Newburg Orrel Gas	"	6 50 @7 00
West Fairmount Gas Coal	"	6 50 @7 00
Redbank Cannel, at Ps	"	12 00 @0 00
AT PHILADELPHIA		
Westmoreland		7 50 @0 00

Rates of Transportation to Tide Wates.

BY RAILROAD.

TO PORT RICHMOND, PHILADELPHIA.

Philadelphia and Reading Railroad, from Schuylkill Haven Lump and St., net, $1 60; Br., Egg and Ch., $1 65; Stove, $1 75 Shipping at Pt. R., 20c., for use at Phil., $2 15 from Pt. Carbon,

MAUCH CHUNK TO ELIZABETHPORT.

L. V. Railroad from Mauch Chunk to Phillipsburgh	$0 72
C. R. R., N. J., Phillipsburgh to Elizabethport	66
Shipping expenses at Elizabethport	25
Wharfage	10
Total	$2 23

MAUCH CHUNK TO PORT JOHNSTON.

L. V. R.R., or L. & S. R. R. from M. C. to Phillipsb'g	$0 72
C. R. R., of N. J., Phillipsburgh to Pt. Johnson	1 06
Shipping expenses	25
Wharfage	10
Total	$2 23

TO HOBOKEN

L. V. R. R., Mauch Chunk to Phillipsburgh	72
Morris & Essex R. R. Phillipsburgh to Hoboken,	6
Shipping expenses	25
Wharfage	00
Total	$1 23

TO SOUTH AMBOY.

L. V. R. R.	84
R. & D. R. R. and Cam. & Am. R. R.	$1 06
Shipping Expenses,	35
Total	$2 23

PENN HAVEN TO ELIZABETHPORT.

L. V. R R. Penn Haven to Phillipsburgh	84
C. RR. of N. J. Phillipsburgh to Elizabethport	1 06
Shipping expenses	15
Wharfage	20
Total	$2 25

Freights.—Dec. 1873.

TO EASTERN PORTS.	Cumberland. From Georgetown.	Cumberland. From Baltimore	Anthracite. From Elizabeth Port, Port Johnston, Port Amboy, and Hoboken.	Anthracite. From Newburgh.	Anthracite. From Rondout.
Amesbury	—	—	—	—	—
Bangor	—	—	—	—	—
Bath	—	2 75	—	—	—
Boston	—	2 50	2 25*	2 25	—
Bridgeport	—	2 25	90	90	—
Bristol	—	—	1 20	1 20	—
Chassett Narrows	—	—	—	—	—
Derby	—	—	1 25†	1 25	—
Dighton	—	—	—	—	—
East Cambridge	—	—	2 25	2 25	—
Fall River	—	2 35	1 20	1 30	—
Hackensack	—	—	—	—	—
Hartford	—	—	Ice.	Ice	—
Hoboken	—	—	45	45	—
Jersey City	—	—	45	45	—
Lynn	—	—	—	—	—
Middletown	—	—	—	—	—
Mystic	—	—	—	—	—
New Bedford	—	2 35	1 30	1 30	—
Newburyport	—	2 75	2 50	2 50	—
New Haven	—	2 25	90	90	—
New London	—	—	1 10	1 10	—
Newport	—	—	1 30	1 30	—
New York	—	2 00	45	45	—
Norwalk	—	—	90	90	—
Norwich	—	—	1 30	1 30	—
Pawtucket	—	—	1 40‡	1 40*	—
Portland	—	2 50	2 10	2 10	—
Portsmouth, N. H	—	2 75	2 40	2 40	—
Providence	—	2 35	1 30	1 30	—
Rockport	—	—	—	—	—
Saco	—	—	—	—	—
Sag Harbor	—	—	1 10	—	—
Salem	—	2 50	2 75	—	—
Stamford	—	—	90	—	—
Stonington	—	—	1 20	—	—
Taunton	—	—	1 80	—	—
Warren	—	—	1 30	—	—
TO RIVER PORTS					
Albany	—	—	—	—	—
Catskill	—	—	—	—	—
Cocksackie	—	—	—	—	—
Coeyman's	—	—	—	—	—
Cold Spring	—	—	—	—	—
Fishkill	—	—	—	—	—
Haverstraw	—	—	—	—	—
Hudson	—	—	—	—	—
New York vessels	—	—	—	—	—
Nyack	—	—	—	—	—
Poughkeepsie	—	—	—	—	—
Rhinebeck	—	—	—	—	—
Rondout	—	—	—	—	—
Saugerties	—	—	—	—	—
Sing Sing	—	—	—	—	—
Stuyvesant	—	—	—	—	—
Tarrytown	—	—	—	—	—
Troy	—	—	—	—	—
West Point	—	—	—	—	—
Yonkers	—	—	—	—	—

Canal closed for the Season.

* 3 c. per bridge per ton in addition to freight.
† New Haven rate and towing 25 c. extra per ton
‡ Towing from Providence and return, extra.
‖ And towing.

St. Thomas	$— —	Gold
Martinique	— —	"
Demerara	— —	"
New Orleans	— —	"
Mobile	— —	"

Foreign and Provincial Freight

Dec. 1873.

Foreign.
Newcastle and Ports on Tyne, per keel of 21 1-5 tons £
Liverpool, 5 per cent primage

TO NEW YORK.

Provincial

Sydney	$3 00
Lingan	4 00
Cow Bay	4 00
Port Caledonia	4 00
Little Glace Bay	4 00

TO BOSTON.

Sydney	3 50
Lingan	3 50
Cow Bay	3 50
Port Caledonia	3 50
Little Glace Bay	3 50

TO MONTREAL.

Caledonia	3 75 gold.

TO CUBA.

Caledonia	9 50 gold.

MARKET REVIEW.

NEW YORK, Dec. 11 1873.

IRON—There is very little doing in large parcels of Scotch Pig. Buyers are not plenty, and holders, as a rule, are only willing to sell to prompt paying parties. The business, besides 250 tons Glengarnock, part at $42. 25, is confined to parcels from yard as needed by consumers. The recent reported business in American Pig has been followed by a very quiet market. We do not alter our quotations, which may be considered full prices. Holders, however, are not pressing stocks, while buyers are not disposed to further enter the market, except at lower figures. We have heard of no further sales since our last. New Rails both English and American, are still without business. Old T have been in some inquiry, and 750 tons are reported sold at about $37. Scrap is without movement. Refined Bar from store, is unchanged, though perhaps turn firmer at our late reduced quotations. Russia Sheet is scarce, and held firmly.

LEAD—The stock of Foreign is concentrated, and held firmly at 6¼@7 cents gold, but Domestic is offered so much lower, and considered to be about as good for ordinary purposes, that the demand, which is light, is almost wholly for this decription; we note sales of 50 tons Domestic, in lots, at 6@6¼ cents gold. Bar 9¼ cents, Sheet and Pipe 10½.

COPPER—The manufactures of Copper are steady at the reduced prices noted in our last. In Ingot, there continues a fair degree of activity, without further change in prices; sales have been made of 200,000 lb., 24½@24¾; and 225,000 lb., in lots, 24½@25. December deliveries may be quoted 24¾@25 cents, and January and February 25.

REGULUS ANTIMONY—We have only to note a sale of 5 casks at 13 cents gold. The stock here is light, and the article cannot be imported at this price.

SPELTER—Foreign is in small stock, but the market is dull, the demand being chiefly for Western, which is selling at 8 cents currency. 10 tons Silesian brought 7½ cents gold.

TIN—The transactions last week embraced about 4000 slabs on the spot, on a basis of 27 cents, 30 days; since then the market has been quiet, but firm; 50 slabs Straits sold at 27½ cents; 10@15 tons English L. & F., 26; and 5 do. 25½, 30 days; the closing quotations were —Straits 27¾@28 cents, English L. & F. 26¼, Refined do. 27¼@27½, and Banca 32@32½, all gold. Messrs. DUMMLER & Co., of Batavia, report the sale of Billiton there of October 1, 17,100 slabs or 9034 piculs at the average price of fl.79.67 per picul. Cables from London quote Lamb and Flag £118 10s., an advance of 10s. Plates are scarce, and stocks are held for high figures, but buyers do not respond very eagerly, so that there is some irregularity in quotations, and they are rather wider than usual; there has been considerable business, however, and we notice sales of 500 bxs. Charcoal Tin at $10.25, 1000 do., for January delivery, 10.50; 1000 do. Coke Tin at prices within our range; 2000 do., January delivery, $7.37½@$8.62½; 500 do., 14 by 20, $8.25; 500 do. B. C., $8; 500 do. Charcoal Terne within our range; 1000 do. $9.75; 250 do. ordinary, $9; 500 do. $9.50; 300 do., Coke Terne, $8: 500 do. $8.25; and 500 do. to arrive, $7.94, all gold.

The following is from Messrs. WHITE & HASKELL'S circular of 5th inst.:—

	Slabs.	Tons.
Import of Pig in November, Straits.	12,500	500
" " English L. & F.		50

From the East Indies, there are on the way.

	Slabs.	Tons.
Straits		3500
due in all December, 1873, January and February, 1874.		150

Stocks in importers' and speculators' hands;—

	Slabs.	Tons.
Straits, &c.	12,627	507
English L. & F.		20
Total, New York and Boston	13,627	528
Against Dec. 1, 1872	13,000	540
" Dec. 1, 1871	1800	90

ZINC—There is nothing to change former prices—demand moderate at 8¼ cents gold, net from dealers' hands. Manganese black oxide 3¼ cts. currency. Manganese gray peroxide 6 cts. currency.

PHILADELPHIA, Dec. 11, 1873.

The general tone of the Iron markets here has greatly improved during the past week. Some important sales have been made in Iron. It is reported the Allentown Company sold 7,500 tons a few days ago at $32 per ton, cash, 30 days, or 1 per cent. off for cash down. This may be considered as about the cash price of Lehigh Pig here at present, the nominal quotations being $34 and $35 for immediate delivery of No. 1 at New York or Philadelphia. There is a good demand for Grey Forge at $26 to $28 asked, and $25 to $27 given.

There is no demand for Manufactured Iron.

METALS.

NEW YORK, Dec. 11, 1873.

IRON.—Duty: Bars, 1 to 1¼ cents ℔ lb; Railroad, 70 cents ℔ 100 lbs.; Boiler and Plate, 1¼ cents ℔ lb; Sheet, Band, Hoop, and Scroll, 1¼ to 1¾ cents ℔ lb; Pig, $7 ℔ ton; Polished Sheet, 3 cts. ℔ lb; Galvanized 2¾; Scrap Cast, $6; Scrap Wrought, $8 per ton. All less 10 per cent. No Bar Iron to pay a less duty than 35 per cent. ad val.

	Store Prices.
Pig, Scotch—Coltness ℔ ton	45 00@46 00
Gartsherrie	— —@46 00
Glengarnock	42 —@43 00
Eglinton	— —@— —
Pig, American, No. 1	32 00@34 00
Pig, American, No. 2	29 00@30 00
Pig, American, Forge	26 00@28 —
Bar Refined, English and American	— —@— —
Bar Swedes, assorted sizes (gold	— —@137 50

	Store Prices, Cash.
Bar Swedes, ordinary sizes	162 50@— —
Bar, Swedes, Plow sizes	172 50@— —
Bar, Refined, ⅝ to 2 in. rd. & sq. 1 to 6 in. x ⅜ to 1 in.	77 50@— —
Bar, Refined, 1¼ to 6 by ¼	82 50@— —
Bar, Refined, 1 & 1¼ by ¼ & 5-16 in	82 50@— —
Large Rounds	82 50@100 00
Scroll	100 00@135 00
Ovals and half-round	105 00@125 00
Band	100 00@— —
Horse Shoe	115 00@— —
Rods, ⅝ to 3-16 inch	82 50@130 00
Hoop	117 50@157 50
Railroad	9 @ 9¼
Sheet, Russia, as to assortment (gold)	17¼@ 18
Sheet, Singles, D. and T. Common	—4½@— 5¾
Sheet, D. and T. Charcoal	—6¾@— 8
Sheet, Galv'd, list 10 per cent. discount	— —@— —
Rails, English (gold), ℔ ton	60 —@— —
Rails, American, at Works in Pennsylvania, currency	65 —@— —

COPPER.—Duty: Pig, Bar, and Ingot, 5; old Copper 4 cents ℔ lb; Manufactured, 45 per cent. ad val.

	All Cash.
Copper, New Sheathing, ℔ lb	— @— 33
Copper Bolts	— @— 35
Copper Braziers, 14oz. and over	— @— 35
Copper Nails	— @— 40
Copper, Old Sheathing, &c. mixed lots	20 @— 23
Copper, Old, for chemical purposes, 14@16 oz.	— @— —
Copper, American Ingot, Cash	24½@— 24¾
Copper English Pig	— @— —
Yellow Metal, New Sheathing & Bronze	— @— 26
Yellow Metal Bolts	33 @— —
Yellow Metal Nails, Sheathing and Slat'g	— @— 36

LEAD.—Duty: Pig, $2 ℔ 100 lbs.; old Lead, 1½ cents ℔ lb Pipe and Sheet, 2¾ cents ℔ lb.

Spanish (gold)	6 87½@— —
German, do.	6 87½@— —
English do.	6 87½@7 00
Foreign, Refined	7 25 @7 50
Domestic do.	6 00 @6 12½
Bar (net)	9 25 @— —
Pipe (net)	— —@10 50
Sheet	— —@10 50

STEEL.—Duty: Bars and ingots, valued at 7 cents ℔ lb or under 2½ cents; over 7 cents and not above 11, 3 cents ℔ lb; over 11 cents, 3½ cents ℔ lb, and 10 ℔ cent ad val. Store prices.

English Cast (2d and 1st quality) ℔ lb	— 17 @— 21
English Spring (2d and 1st quality)	— 9½@— 10½
English Blister (2d and 1st quality)	— 14 @— 18½
English Machinery	— 14½@— —
English German (2d and 1st quality)	— 12½@— 14½
American Blister "Black Diamond"	— —@— 11½
American, Cast, Tool do.	— —@— 17
American, Spring, do.	— —@— 11
American Machinery do.	— 11½@— 13
American German, do	— 9 @— —

TIN.—Duty: Pig, Bars, and Blocks, 15 ℔ cent. ad val.; Plate and Sheets and Terne Plates, 25 ℔ cent.; Roofing 25. ad val.

	Gold ℔ lb.
Banca	32 @32½
Straits	27¾@28
English	26½ @—
English Refined Gold	27¼@27½

PLATES. Fair to Good Brands.	Gold.	Currency
I. C. Charcoal, ℔ box	$10 25 @10 75	$11 50 @12 00
I. C. Coke	8 00 @ 8 62½	9 00 @ 9 62½
Coke Terne	— — @— —	7 75 @— —
Charcoal Terne	9 25 @— —	10 50 @11 25

SPELTER—Duty: In Pigs, Bars & Plates, $1.50 p. 100 lb

Plates, Foreign (gold) p. 100 lb.	7 37½@—7 62½
Plates, Domestic p. lb.	7¼@—11

ZINC—Duty: Pig or Block, $1.50 per 100 lb.; Sheet 2½c per lb

Sheet per lb.	—8¾ @ —

San Francisco Stock Market.

BY TELEGRAPH.

NEW YORK. Dec. 11, 1873.

The following report from the San Francisco Stock Board is dated the 9th inst. The general tendency of the list is upwards, the exceptions to which is a decline of $6 per share in Crown Point, and a decline of $1 per share in each of the following: Imperial, Meadow Valley, and Eureka, G. V. The following dividends, with their dates of payment, are announced, Eureka, G. V. $1 per share, December 8th; Belcher $5 per share, December 10th; and Crown Point $3 per share, December 12th.

Savage	—	—	69
Crown Point	—	—	96
Yellow Jacket	—	—	64
Kentuck, "New Issue"	—	—	14½
Chollar Potosi	—	—	59
Gould & Curry "New Issue"	—	—	20
Belcher "New Issue"	—	—	99
Imperial	—	—	5¾
Raymond & Ely	—	—	60½
Meadow Valley	—	—	13¾
Eureka G. V.	—	—	18
Ophir	—	—	—
Hale and Norcross	—	—	—

THE ENGINEERING AND MINING JOURNAL.

ROSSITER W. RAYMOND, Ph. D.
JOHN A. CHURCH, E. M. Editors.

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CONTENTS FOR THIS WEEK.

THE address of Mr. RAYMOND at the inauguration of Pardee Hall, in Easton, has been widely noticed by the press, and is to be published, we understand, in pamphlet form. A very courteous and complimentary editorial on the subject in Appleton's *Popular Science Monthly* makes the mistake of alluding to the Pardee Scientific Department of Lafayette College as a new institution. This department was organized in 1866, and is consequently now in its seventh year.

THE Meadow Valley Mining Company in Pioche, Nevada, treats by pan amalgamation an ore which contains a very considerable amount of lead and other minerals that make amalgamation difficult. Their operations in 1872-73 show that from 9318 tons of ore, and 6766 tons of tailings reworked, the extraction amounted to 71·94 per cent. The fine bars carried 571 silver and 18·5 gold in 1000, and the low grade bullion had 163 silver in 1000. These figures sufficiently prove the difficulty of treating such ores with mercury.

ON Wednesday, December 17, the corner-stone of the bridge across the Hudson at Poughkeepsie will be laid with Masonic honors, after which the occasion will be celebrated in a grand banquet, given by the citizens of Poughkeepsie at the Opera House. The governors and State officers of New York, Connecticut, New-Jersey, and Pennsylvania, the mayors of Hartford, Springfield, Providence, Boston, New York, Albany and Philadelphia, the officers and directors of the railroad lines interested in the bridge and its connections, and numerous representatives of the press, are among the invited guests.

A PRIVATE letter from England reports some slackness in the iron trade in the middle of November. Prices had a downward tendency, but in spite of that the colliers were in a fair way of getting an advance of 10 per cent. on their wages. In the face of the high prices business has, on the whole, been very good in England, and though one great market has been completely closed by the condition of affairs in this country, the loss has, to a large extent, been made up by unusual activity in the trade with other countries. Among the current items of trade is the fact that specifications for a Bessemer plant in the United States have been sent to England for estimates.

WE have several times received circulars from abroad, calling upon us to denounce an institution calling itself the "American University of Philadelphia," which has for years been reported to be engaged in the work of selling medical certificates to foreigners. In ordinary swindling affairs, it is hopeless to punish the offenders. Their business is to swindle, and if they are punished for one misdemeanor they only take up another mode of cheating. It is the victims who alone offer any hope to the reformer, and the usual mode of curing them of their folly is to tell them they have been served right. This, however, is not an ordinary case. The sale and purchase of the bogus medical certificates was a conspiracy between the American confederates and a set of English swindlers. The latter wanted to victimize their countrymen, and the former were willing, for a consideration, to help them do it. Such are the charges which, for years, have been made against this concern, and the Dean of the "University" has at length been arrested in Philadelphia. He roundly asserts the innocence of his institution, and as he has not yet been tried, we must wait to know what a jury thinks about it. We notice the matter here for the sake of those foreign friends who seem to think that the exposure of medical frauds in this country is the bounden duty of even an engineering journal.

WE publish this week a statement from Mr. SIDNEY WINTER, formerly engaged in operating the KROM system of concentration at Star Cañon Mill in Nevada, describing the method followed and the result obtained at that mill. This is the best account of the matter which we have yet seen, because, although it does not add much to the evidence already offered, it gives some details from which the degree of accuracy attached to that evidence may be determined. The system of sampling followed appears to have been thorough. The assays made by Mr. VAN LENNEP, of Unionville, are undoubtedly correct. We infer, however, that the gross quantity of ore treated and the quantity of each product obtained were not weighed on scales, but probably estimated in bulk. The managers of this mill can scarcely be blamed for not carrying out in the middle of the desert, and in the absence of proper apparatus, minute and precise experiments, however much we may wish that this had been done. The mineralogical character of the ore in each class of products, as well as their contents in silver, should be ascertained. According to our recollection, the gangue is mainly quartz and the ore consists of sulphurets of silver, argentiferous fahlerz and zinc blende, the last mineral having been found, by separate assay, to carry a high value in silver. It is certain that second-class ore, of the grade described by Mr. WINTER, did not contain sulphurets of silver to any extent. If it had, the assay would be much higher, since one per cent. of this mineral would represent more than three hundred dollars in silver per ton. We may conclude, therefore, that this concentration was mainly confined to fahlerz and zinc blende; but we cannot undertake to base any further argument, in the absence of exact determinations, upon a mere inference like this. All that can be said is that the story, as it stands, is in general highly encouraging for Mr. KROM and his friends.

THE dissection of continents by inter-oceanic canals, seems to be one of the principal tendencies of the day. The latest aspirant for the somewhat doubtful financial honors of such an undertaking is Mr. THEODORE TUBINI, banker of Athens, Greece, who has obtained a concession for a canal through the Isthmus of Corinth. The prism of the canal is to be 8½ meters (28½ ft.) deep and 12 meters (40 ft.) wide at bottom. At the center will be a dock covering about 37,000 square yards. This work is to be finished in six years, and will cost four million dollars. Our own canal, through the Isthmus of Darien, is by no means laid on the shelf, and the advantages it offers to this country in particular, but also to all others, are a strong ground for expecting a steady effort to carry out the work. Three routes have been surveyed, one across the Isthmus of Darien proper, one by the Isthmus of Tehuantepec, and the third by Lake Nicaragua. The second of these lines may be left out of consideration, partly on account of the high elevation to be surmounted, and partly because the water supply is not certain for all the levels. By either of the other routes the cost would be $60,000,000 or thereabouts. At Darien the highest level is 120 feet above the sea, and a tunnel three miles long would be needed. Against these disadvantages are to be placed the existence of good natural harbors and the shortness of the canal. By the Nicaragua route tunnelling would be avoided, the height of lockage is only 103 ft. and the summit level is formed by an inland sea 35 miles wide. This would undoubtedly offer decided advantages as a quiet harbor for repairs etc., and for transhipment of freight. Ships from California would also save nearly a thousand miles over the Darien route. These different routes, with the reports of the surveying parties who have examined them, are under consideration by General HUMPHREYS, Chief of U. S. Engineers, and Prof. PIERCE of the Coast Survey, and these gentlemen will make a recommendation to Congress on the subject.

The Manufacture of Iron Sponge.

THE preparation of iron by the direct method in a reverberatory furnace is an operation against which there are no theoretical grounds, since theory ignores the item of cost, but it is one which few persons who know the extreme difficulty attending the complete reduction of oxides of iron, and the equally decided waste of fuel when the reverberatory furnace is used for strong reducing operations, would think of undertaking. Nevertheless, in England, the peculiar field of wonder-working metallurgists, iron sponge is made by heating a pure ore with coal in an ordinary reverberatory furnace. This is done at the works of the Bede Copper Company, where roasted Spanish pyrites, which have been used to make sulphuric acid, are again roasted, this time with salt, for their copper, of which metal they contain three to four per cent. To precipitate the copper, any old iron is used, and in the numerous works near Liverpool the hoops which we send around our cotton bales are made good use of. But, the residues left after the extraction of the copper are in themselves a rich ore of iron, and are used to the extent of several hundred thousand tons yearly, both as fettling, and, also,

as a valuable addition in the charges for the blast-furnace. Of course there is no reason why rich ores which are pure enough for the puddling furnace should not be made directly into iron for use as a precipitating agent. This is done at the works above-mentioned by placing the residues, mixed with finely ground coal dust, in a reverberatory furnace. The furnace is heated by an ordinary coal fire, the flames from which, after passing over the charge, return under the hearth plates to the chimney, which is placed near the fire-place. In the walls of the furnace there are short iron pipes opening in the hearth above where they are closed by iron plates.

After 20 to 40 hours heating the ore is reduced, but this point must be tested by a chemical examination before proceeding to draw the charge. If the examination is satisfactory, a low wagon carrying a number of sheet iron boxes is shoved under the furnace, and one of the boxes is placed in communication with one of the pipes, the joint being closed as well as possible by a telescopic arrangement of tubes. Then the plate is removed from the upper end of the pipe, part of the charge is raked into the sheet iron box, and when it is full it is drawn away from the pipe, instantly closed by a cover, and luted tight. Its place under the pipe is taken by another box, and in this way the whole charge is taken off in closed boxes, where the iron sponge cools out of contact with the air. It is then ground, sifted to remove the coal, and added slowly to the copper solution which is constantly stirred during the operation. The rapid reaction due to the immense surface of the finely divided iron, produces the heat necessary for a complete precipitation of the copper.

In this process we have one of the most difficult reductions known in metallurgy performed in an apparatus, the distinguishing advantage of which is its powerful oxidising action. Reduction, it is true, is often performed in it, but always at great expense of fuel, and we doubt if a good workman would select the air furnace for a permanent plant for the manufacture of iron sponge. As a matter of fact we may mention that the operation, as conducted at the above works, is not only a difficult, but is very apt to be a faulty one, unreduced oxide being left in the sponge. Unfortunately we are not able to give any particulars as to cost, but this furnace must work at far greater cost than CHENOT'S, BLAIR'S, WILSON'S, or any of the other systems in which a mixture of powdered ore and coal are heated in a retort, or muffle, though heating by transmission, through the walls of a retort, is necessarily a process very costly in fuel.

But, though the method above described is not one to be imitated in the presence of so many better modes, the example we have given of a reverberatory used for the manufacture of iron sponge is one which is noticeable and instructive. When Mr. LOWTHIAN BELL experimented with a view to reproduce in laboratory experiments the operations of the blast furnace, he fell upon many suggestive reactions and deductions. His investigations, and also the experience of inventors like CHENOT and the long line of his successors, ending in the example we have cited all, all prove that iron ores do not require for their *partial* reduction the ponderous machinery of the blast furnace. That furnace, with all its adjuncts, undoubtedly forms the most perfect apparatus in the hand of man for the reduction of refractory ores. But, if we are willing to lose a third or a quarter of our metal in the first operation, instead of distributing the loss over a number of processes, we can make iron with apparatus much less perfect, for the reason that the first portions of oxygen are not difficult to remove. Next to these there come portions which engage the powers of the blast furnace for a considerable part of its height, and in a zone where the heat is great and the gases almost entirely reducing in their character; then we have other portions of oxygen which cling so stubbornly to the metal that the highest heat, and the purest reducing gas acting through the largest zone of the furnace are needed to separate them; finally there is always a certain percentage of oxygen, which either passes through the whole furnace unaffected by the fuel, or else is added to the iron before the tuyeres, and causes a part of the latter to enter the slag.

Metallurgists, both practical and theoretical, are at present giving great attention to the subject of the direct production of iron, and there can be little doubt that the result of their labors will be most flattering. Already inventors have accumulated a valuable amount of experience, though mostly in the way of failure. That, however, does not lessen its value; success has already been attained, and the workers in this field have only to improve methods which have long been known. The improvement needed is not so great as that which the successful practice of BESSEMER'S process for steel, the use of gas generators, and numerous other improvements in metallurgy, have required. Indeed the present condition of the direct method is rather to be compared to that of the sulphuric acid business when the use of pyrites as a source of sulphur was commenced. The percentage of acid made from a ton of ore was at first very much smaller than it is now, and yet the improvement is not the result of any wonderful invention but is chiefly the product of skill and care.

It is worthy of note that in thus studying to improve the manufacture of wrought iron direct from the ore, we are turning back into a channel which was almost completely abandoned many years ago, for the line of action which is now the common one. Such a course would be by no means an unusual one, but on the contrary it is quite common for improvement in any kind of work to complete a regular cycle of changes, by which practice ends where it began—on the same ground, that is, but in a higher state of perfection.

THE power of wind in a gale is shown by a recent occurrence at the Tortugas where, during a hurricane, it is said, a solid bar of iron, weighing 1800 lb., was carried 200 yards over the parapet of the fort.

Parallel Columns.

SOME time ago we received the first number of a handsome pamphlet quarto, published at Chicago, and called the *Journal of the American Bureau of Mines*. Subsequent numbers have not come to hand, but we presume they have appeared monthly. Our anticipations of original contributions of value, aroused by the typographical appearance of the August number, have been somewhat dampened by a closer examination of its contents. The leading editorial, "Can We Become a Practical Mining People?—How it can be Accomplished," from the pen of the editor, "Col. W. C. M'CARTY of Texas," is a remarkable piece of workmanship, as may be seen from the following quotations:

COL. W. C. M'CARTY.

Mining and agriculture are the two great forms of productive industry. Strictly speaking, agriculture is the most important, since without it men could not exist; yet mining is almost as essential, since without it men could only exist as savages. All human activities, in material things, are based upon the products of these two, their manufacture and exchange. But there are great differences between mining and agriculture, which indicate that while these arts stand on a par as fundamental sources of the wealth of nations, they do not occupy the same position in all respects. We may say that mining yields a permanent form of wealth from a transient source, while agriculture presents a perennial source of perishable wealth. The products of mining are in general far less perishable than those of agriculture, and, in proportion to their first cost, of greater, because more prolonged, use to mankind.

R. W. RAYMOND, *Commissioner of Mining Statistics—Report of* 1869.

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We may say, then, that mining yields a permanent form of wealth from a transient source, while agriculture presents a perennial source of perishable wealth. (p. 176).

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And so on, through many paragraphs, with only this variation, that Col. M'CARTY forsakes the comparatively safe course of wholesale appropriation, and ventures upon alterations and additions which are anything but improvements. Where the Commissioner says that gold and silver are valuable as articles of export, he says they are valuable as articles of import—and a few other similarly original novelties, after which the hash degenerates into a watery gravy of praise of the American Bureau of Mines of Chicago, in which fragmentary remnants of Mr. RAYMOND'S reports—and, for all we know to the contrary, of other authorities—swim about, mocking the hopes and eluding the spoon of the patient seeker after nourishment. Col. M'CARTY would have done better by adhering more strictly to the principle (undoubtedly original) laid down in his prospectus in these words: "With a careful selection of good reading matter, many costly experiments may be avoided."

If the American Bureau of Mines of Chicago is dead and buried, we shall be sorry to have disturbed its ghost. If it still enjoys a semblance of existence, we trust the respectable men connected with it will suggest to Col. W. C. M'CARTY of Texas that his way of editing is not calculated to inspire public confidence in the concern he represents. Plagiary is a fine art, and the Colonel is not an expert.

The Austrian Coal Fields and Their Production.

FROM the days of Marie Theresia, Austria has been known as the richest country of all Europe, in gold, silver and iron. It is also one of the richest countries in the world in coal, and especially in that variety known as lignite or brown coal.

The true coals are much superior to the lignites for metallurgical purposes, and, indeed, these latter have not thus far been used successfully in the manufacture of iron in the blast furnace, but the day is probably not far distant, if it has not already come, when the reduction of iron ores can be effected successfully in gas furnaces, and in that event, the enormous deposits of brown coal which exist in various parts of the country will, in connection with her magnificent iron ore deposits, make Austria one of the principal iron producing countries of the world, and will inaugurate an epoch of substantial prosperity more glorious than the victories of armies, and more honorable than the conquest of nations. Owing to its low price, lignite is already taking the place of true coal in many industries; at Teplitz, the Bessemer Steel Works are supplied exclusively with it, as are also the puddling furnaces of Komatau, and the rolling mills of the Teplitz and Dux basins; it is preferred as a fuel in the glass and porcelaine works of Northern Bohemia; it is highly esteemed as a steam generator and as a domestic fuel in Berlin; and in Vienna it has a high reputation under the trade name of "Boehmische Salon Kohlen" (Bohemian parlor coal.)

The great variety of uses in which lignite is now supplanting bituminous coal, as is shown by the great increase in its production and consumption in Austria and Germany, is a subject of the greatest interest in this country, and especially in our Western States where there are enormous deposits of this fuel, while the true coal is very dear, having to be brought from the east to the Mississippi.

The following tables compiled from Austrian official documents, give the production of coal and lignite in the different provinces of Cisleithane Austria only. The Transleithane provinces, comprising the Kingdom of Hungary, are

also rich in mineral fuels, but we have not been able to obtain the statistics.

PRODUCTION OF BITUMINOUS COAL IN AUSTRIA IN 1871, NOT INCLUDING THE KINGDOM OF HUNGARY.

	Percentage of total production.	Tons of coal mined in 1871. Tons of 2204 lb.	Number of miners employed.	Tons produced per man.	Price per ton, 1871.	Price per ton, 1870.
Bohemia	57 84	2 248,087	19,107	117.6	$2.25	$1.92
Silesia	24.35	946 466	8,744	108.2	2.76	2.30
Moravia	11.26	437,431	4,342	100.7	3.17	2.64
Gallicia	5.30	205,835	2,463	83.5	1.85	1.38
Styria	0.13	51,263	268	19.1	3.61	3.43
Austria under the Ems	1.09	42,414	811	52.3	3.52	3.14
Austria on the Ems	0.03	1,123	107	11.5	3 00	4.80
Total	100.	3,932,619	35,842	109.7	$2.44	$2.11
BROWN COAL (LIGNITE) PRODUCTION, 1871.						
Bohemia	56.27	2,121,351	9,305	228.	$1.07	$0.85
Silesia		152	4	38.	.58	.58
Moravia	2.49	93,732	758	123.7	1.21	1.17
Gallicia	0.14	5,336	161	33 1	1.87	1.21
Styria	26.22	988,516	7,804	126.7	1.64	1.60
Austria below the Ems	1.46	55,111	426	119.3	1.83	1.94
Austria on the Ems	6.20	233,779	1,081	216.2	1.72	1.55
Corinthia	1.85	69,679	1,095	63.7	2.34	2.16
Carniole	3.89	146,638	924	159.2	1.60	1.65
Littoral	0.79	29,740	608	48.9	3.02	3 02
Dalmatia	0.11	4.044	76	53.2	1.91	2.11
Tyrol	0.54	20,384	192	106.1	3.47	3.34
Bukovine	0.04	1,500	5	300.0	.19	
Total	100.	3 769,962	22,475	167.7	$1.35	$1.21

From the above, we perceive the increase in price of true coal in 1871, over that in 1870, was 15 4-10 per cent.; while the increase in the price of brown coal was but 11.1 per cent.

The average price of coal in 1871, was $2.44 per ton, that of lignite being but $1.34 per ton, or only 55 per cent of the price of true coal, while, as we know, the calorific power of the brown coals is by no means so far inferior as this would indicate. It is not surprising, therefore, that for general purposes the use of lignite will continue to increase more rapidly than that of true coal. Austria does not produce as much coal as she was, having imported in 1870—1,922 tons, and in 1871, 317,473 tons. The actual production of 1870 being—coal, 3,355,913 tons; lignite, 3,087,667 tons; total, 6,443,580 tons. In 1871: coal, 3,886,482 tons; lignite, 3,769,962 tons; total, 7,656,44 tons. While the total consumption was in 1870, 8,414,332 tons; in 1871, 10,228,290 tons. Previous to 1870, the production exceeded the consumption. In another column will be found a description of the coal fields, taken from the admirable series of reports on the Vienna Exposition, published in *Engineering*.

CORRESPONDENCE.

Coal Mining on the Great Kanawha Line of the Chesapeake and Ohio R.R., West Virginia.

By JED. HOTCHKISS, Mining Engineer, Staunton, Virginia.

THE opening of the Chesapeake and Ohio Railway in February, 1873, from Richmond, Virginia, at the head of tidewater on the James, 421 miles to Huntington, West Virginia, on the Ohio, for the first time made the large coal-field of the Great Kanawha accessible by rail, and introduced its valuable coals to the Eastern, or Atlantic seaboard, markets. Previous to that time the Great Kanawha coals were only sent down that river to the Ohio and its cities.

The Chesapeake and Ohio runs for 86 miles from Meadow Creek station, on New River (as the upper portion of the Great Kanawha is wrongly called), to St. Alban's, or Coalsmouth station, where Coal river runs into the Great Kanawha from the south, across the Great Kanawha coal fields, the belt of which extends northeast and southweast, and in that distance the railroad has, literally, *passed through* the entire *lower* and *middle* series of coal strata, and a considerable portion of the *upper*.

Reserving for a future number a description of this most important coal-mining region, and details in regard to mines, etc., it is proposed to give a statement of what is actually being done to develop this field, and the location of the operations.

IN THE LOWER MEASURES.

1st. At Quinnimont, 294.26 miles from Richmond, near the eastern edge of the field, the New River Coal Company—in which SAMUEL COIT, Esq., of Hartford, Conn., and Hon. HOWELL FISHER, of Pottsville, Pa., are the active members—has completed its short branch road and incline to a fine 6 ft. seam of bituminous coal, fully opened about 1000 feet above the railway, and have just commenced shipping the coal to market. At the same point this company is erecting, and will have ready for operation early next spring, a capital iron furnace that will cost some $120,000, to use iron ores from the North Mountain iron belt of Virginia. It is also erecting coke ovens in which to coke the coal there mined.

2d. At Sewell station, 312.81 miles from Richmond, the Longdale Iron Company—in which WILLIAM FIRMSTONE, Esq., of Glendon, near Easton, Pa., and ARIO PARDEE, of Hazleton, Pa., are the "*head*" men—has nearly completed its incline and accessories, and opened its mines, and will be ready to ship coal in a fortnight. No doubt most of the coal mined by this company will be coked for use at its present and proposed furnaces in the North Mountain iron belt in Virginia.

3d. Near Fernspring station, 317 miles from Richmond, Mr. NUTALL, an active coal operator at Phillipsburg, Pa., has opened a mine, and has an incline well under way. He proposes to ship the coal as it is mined, to eastern markets.

IN THE MIDDLE MEASURES.

1st. At Hawk's Nest Station, 324.09 miles from Richmond, the Gauley-Kanawha Company, of London, England, of which Prof. D. T. ANSTED, F. R. S. is President, and in which Gen. JOHN D. IMBODEN, of Richmond, Va., occupies a prominent position,—has begun the construction of a branch, 30 inch gauge, railway, 3 miles up Mill Creek to its splint coal mines in Gauley Mountain, which are being opened. This company will run its cars directly into the mine and not use an incline. This is the last "working" on New River.

2nd. The Cannelton Coal Company, at Cannelton on the Great Kanawha, 342.69 miles from Richmond, is mining a large quantity of cannel coal from its mines across the river from the railway, ferrying its loaded mine cars over from the foot of the incline, and drawing them up another incline to bins near the rail road. This coal is sent to New York by way of Richmond.

3rd. At the Cannelton depot, on the railway, a mine is opened and worked in the "Hole" seam of bituminous coal; the coal is delivered on the C. & O. cars from a short incline. This work has been in operation but a short time.

4th. At Paint Creek depot, 348.15 miles from Richmond, Messrs. GORDON & SEAL will be ready in a fortnight to ship from a 40 inch seam of splint coal which is reached by an incline 418 feet long. They will extend their incline to 1204 feet in length, to a seam of semi-cannel or gray splint coal 4 feet, 3 inches thick.

5th. A half mile below the last named, Messrs. COLE & Brothers, of New York City, have begun the construction of an incline to the "Coalburg" seam, higher up the mountain side than the one just mentioned.

6th. At Blacksburg, 350.37 miles from Richmond, the Chesapeake and Ohio Railroad Company has opened a mine by the side of, and just below the level of, the railroad, and constructed bins, with a stationary engine, to supply bituminous coal for its locomotives.

7th. The Kanawha and Ohio Coal Company has its mines at Coalburg, 352.76 miles from Richmond; this company is composed of men in New York and other Eastern cities, and its manager is Col. W. H. EDWARDS, the well-known *Lepidopterist*. These mines have been in operation for a number of years, shipping splint coal from the "Coalburg" seam down the Kanawha and Ohio until the completion of the railway, since which time it sends its coal both East and West by rail. The "Coalburg" seam is some 500 feet in perpendicular height above the rail, and is reached by an incline about 1,300 feet long. This coal is now used *raw* in the iron furnaces of Virginia, and is in great demand for domestic and other purposes.

8th. Not far from Coalburg, but on the opposite side of the Great Kanawha, is the mine of Mr. TOMPKINS. The coal from this is sent down the river in barges towed by steamboats that can generally reach this point.

9th. At Lewiston, 356.10 miles from Richmond, Messrs. LEWIS & DONNELLY recently began shipping coal, both by rail and barges, down the river from a four foot seam of splint, reached by an incline. This coal proves to be of excellent quality, and meets with ready sale.

10th. A short distance below Lewiston, on the other side of Field's Creek, at Redhouse, Mr. REABER, of Ohio, is about ready to send splint coal from the same seam.

11th. Nearly opposite the latter, a mile lower down across the river, is the Shrewsbury mine, the coal of which is sent down the Ohio.

12th. At Alden Station, 363.53 miles from Richmond, the "Campbell's Creek" seam of coal, six to seven feet thick, is mined just above the railroad level, for use in the salt furnaces at that place.

13th. Some two miles above Alden, on the other side of the Kanawha, at the Burning Spring Salt Furnace, one of the "Campbell's Creek" seams is mined for furnace use.

14th. At Splint Coal Furnace, 366 miles from Richmond, a three to three and a half feet seam of coal is mined for making salt at that furnace.

15th. Nearly a mile above Alden, on the opposite side of the river, the "Campbell's Creek" seam, which there "splits" into two, is mined for Dickinson's Salt Furnace.

16th. At Malden, across the river from Alden, are the George's Creek mines, where the five and a half to six feet "Campbell's Creek" seam is mined for general sale. The coal from this seam has a fine reputation.

17th, 18th, 19th. Not far below Malden, on the same side of the river, the Pioneer Salt Company mines the "Campbell's Creek," 5½ to 6 ft. seam for its own use and the Campbell's Creek Coal Company, and another company, the same seam for local sale and shipments down the Ohio, the Campbell's Creek Company shipping from 8,000 to 10,000 bushels a day.

20th, 21st, 22nd, 23rd. Nearly opposite Splint Coal Station, over the river, are the mines of the Snow Hill, Crittenden and Daniel Boone salt furnaces and Black Hawk Hollow, all taking coal from the "Coalburg" or "Furnace" seam, which is here only some 50 feet above the river. Besides the large

quantity of coal here consumed in making salt, considerable is sold for local use, and some shipped to Cincinnati, etc.

24th. A half mile below Splint Coal, the "Furnace" seam, there 3 to 4 ft. thick, is worked for gas coal of a superior quality.

25th. At Coalsmouth, or St. Albans, 380.91 miles from Richmond, cannel coal from the noted Peytona mines, some 30 miles up Coal river, down which it is brought in barges by a lock and dam navigation, is loaded on the cars for shipment to New York via Richmond; and also via Huntington and Parkesburg to New York by barge and rail.

THE UPPER MEASURES.

1st. A mile and a half below Splint Coal siding, and 2 miles above Charleston, the Capital of W. Va., but on the opposite, or south side of the river, where the railway runs, is the Roffner mine, above the "Flint Ledge," the boundary between the *Middle* and the *Upper* series of coals. This seam is 4 ft. thick, and only worked for local use.

2nd. Davis' Creek is crossed by the C. and O., near Spring Hill station, 374.5 miles from Richmond. An Ohio Company is now constructing a railroad some 5 miles up the creek, to mines of coal and iron ore they are opening.

3rd. Some 6 miles below Coalsmouth, on the opposite side of the Great Kanawha, are the Raymond City mines, named after RAYMOND of the N. Y. Times, who, with JESSE D. BRIGHT and others, opened these mines some years ago. It is said the 5 to 7 ft. seam of coal there worked, is the "Pittsburg" seam. The shipment of coal down the river from there is some 10,000 bushels (28 to the ton) a day.

These 31 mines, 3 in the *Lower*, 25 in the *Middle*, and 3 in the *Upper* series are, it is believed, all that are worth naming, now in operation in the Great Kanawha coal-field.

The Star Canyon Mill.

TO THE EDITOR—SIR :—In some of the articles that have appeared in the various mining papers on the relative merits of wet and dry concentration, mention has been made of the Star Canyon Mill, Nevada, employing KROM'S dry concentrators.

I take considerable interest in all that has been written on the subject, from the fact that I assisted to erect, and afterwards to run, that mill; and I propose briefly to state a few of the facts as I know them.

The entire machinery of the mill consists of a BLAKE'S crusher, two sets of KROM'S steel-faced rolls, an elevator, four revolving screens to size the crushed ore, a STURTEVANT exhaust fan, for removing the floating dust from the mill, six concentrators for original ore, and three for re-concentrating when necessary.

The ore is fed into the BLAKE'S crusher, and is broken into small pieces, suitable for the first pair of rolls, set three-eighths of an inch apart, to which it passes directly. The portion that is crushed fine enough is taken out by a screen, and the remainder passes to the second pair of rolls, set one-sixteenth of an inch apart. The crushed product is continuously elevated to the screens, situated in the upper part of the building, and passes from one to the other without any handling or tending, until it is finally deposited in four separate portions in bins prepared to receive it. These portions consist of: No. 1, what will pass a screen of ten meshes to the linear inch and will not pass one of twenty; No. 2, the portion between twenty and forty meshes; No. 3, the portion between forty and one hundred meshes; and No. 4, or dust, which will pass through a one hundred mesh screen, or ten thousand holes to the square inch, and is composed of particles less than one two-hundredth of an inch in diameter.

These several operations are all automatic, requiring no attention or assistance, except that of the man at the crusher, who feeds in the ore, after which it is not handled until the concentrations are sacked. The tailings being fed into a stream of running water are carried away without any trouble whatever.

We commenced running about the middle of April, 1873, on ore from the DE SOTO mine, the assay value of which was $54.56 per ton. The amount worked was about 700 tons.

During the concentration of the DE SOTO dump of 700 tons, but one assay was made. The samples were taken from the elevator discharge, where it enters the screens, in portions of about two pounds every half hour, for ten hours; and by the usual method employed on the Pacific coast, assay samples were obtained. Portions were taken in the same manner from the concentrated ore and tailings, and assay samples obtained.

These samples were sent to the Assayer at Unionville, Nevada, who returned the following figures:

Original ore	$54.56	per ton silver.
Concentration No. 1	1219.00	" " "
Tailings No. 1	3.23	" " "
Tailings No. 2	3.67	" " "
Concentration No. 3	1660.00	" " "
Tailings No. 3	8.00	" " "

The relative proportions of the three grades of tailings are about as follows:

No. 1, 45 per cent. of whole ton, or 900 pounds, value	$1.44
No. 2, 30 " " " " " " 600 " "	1.10
No. 3, 15 " " " " " " 300 " "	1.20

Average loss of mineral in tailings, $3.47 per ton; the dust which was not treated, but sold at regular tariff rates, amounts to five per cent. of the original mass, and the concentrations to five per cent. more, making up the total 100 per cent.

It was my intention to keep a full record of the mill-work as a matter of reference; but after these figures and results were published, and favorable reports began to be circulated, I received notice to withhold all facts about the mill, the owners having some end of their own to subserve. After this no figures on which statements could be based were made known to me; but the mill continued to work in the most satisfactory manner, crushing and concentrating over 1,200 tons of ore until the supply of ore and water power began to fail.

Under the present arrangement, the Star Mill is capable of working forty tons per day, or nearly two tons an hour; but as the mines are not sufficiently developed to furnish more than eight or ten tons per day, the mill will be able to work it all during the season of water, which is about six or eight months of the year.

The erection of the mill at Star Canyon is now deemed a mistake by the owners, who had been led to believe the mines could furnish a sufficient quantity of ore to keep it steadily employed. It is a misfortune that the mill should be idle for want of ore, as persons not informed of the facts might attribute its stoppage to other reasons. But I can freely say that, so far as my experience goes, the dry concentrators do their work admirably and easily, requiring scarcely any attention. All others who have seen the mill in full operation express their opinion that the mill is a perfect success, and the principle correct.

I can give no better illustration of the simplicity of the machinery and its operation, than to say that the total force employed to work forty tons per day is only eight men, all told, viz: six men during the day and two during the night. Sufficient ore is taken in during the day to keep the crusher supplied at night, this labor requiring the extra day men. Of the two night men, one is employed at the crusher, the other having the general supervision of the machinery to see that nothing gives out.

The ore worked at Star Canyon was the low grade ores from the DE SOTO and Sheba mines, and was considered almost valueless, on account of its containing so much base metal, as to render its amalgamation impracticable. As the DE SOTO has taken out first-class ores in sufficient quantities to pay expenses, the sum realized from the concentrations of low grades over the expense of milling is considered clear profit. Various small lots of ore have been offered for concentration by miners having undeveloped claims. The result has been unanimous satisfaction; and many claims that had been opened and abandoned, on account of the low grade of their ore, are now being prospected anew. In fact, the mill and the system have given a new impetus to the mining industry, that for years has lain dormant on account of the lack of a satisfactory method of working ore, which is now acknowledged by those in the neighborhood to be supplied by the KROM process.

SIDNEY WINTER.

Taking Sights in Mine Surveying with the Transit.

SHAMOKIN, Dec. 6, 1873.

TO THE EDITOR—SIR: You publish in your issue of 2nd inst. a paper on the surveying of coal mines, read by O. HAIGHT, E.M., before the A. J. M. E. at Easton, Pa., in which he says: "In taking the sights, the north end of the needle should always be kept ahead of the surveyor, and the vernier should be set at zero at every station." With your permission, I will describe my method of proceeding, which I deem much more convenient, after the surveyor has accustomed himself to its use, besides possessing the merit of assuring greater accuracy. Instead of running the north end of the needle always ahead, I reverse it at every station, *e.g.*, at station one I place the north end of the needle ahead, at station two I place the south end ahead, and so keep alternating to the end of the survey.

I think this method possesses the advantage over Mr. H's of compensating for, or neutralizing, any error that may arise in measuring a great number of angles, from any slight error or disarrangement in the adjustment of the transit. The transit is presumed at all times to be in accurate adjustment, when in use; but it sometimes happens in mine surveying, that the instrument is subjected to rougher usage than it is intended to withstand, slightly disturbing the adjustment of some of its parts. An error from this source would, by Mr. HAIGHT'S method, multiply itself at each succeeding station, while by mine it is corrected, assuming that the stations—back—and fore-sights—in an extensive survey will approximate the same average length.

I find the following method of setting the vernier much more convenient than always setting to zero. Having assumed or established a base line or initial course, the magnetic bearing of which I ascertain, I set the vernier to correspond with the magnetic bearing of the base, (the zeroes being N and S,) deflect right or left and read from the vernier the magnetic bearing of the second course. I examine the vernier at the end of each course before taking back-sight, to see that it has not moved since observing the reading at the preceding station, and adjust it, if moved. I use a W. J. YOUNG transit, graduated from 0 to 90°; but the same method will apply to a graduation of 360°. By this method I avoid loosening the vernier clamp once at every station, and save wear of the plates consequent upon moving them over considerable space at each station, in order to set back to zero.

Very little practice will enable any one to read off the magnetic bearing from the vernier as readily as to read off the angle measured.

R. A. A.

THE supporters of the Anti-Coal Ring Association held a meeting in London recently, at which it was stated that it would shortly be proposed to send a deputation to the Chancellor of the Exchequer on the famine price of coal. The chairman of the meeting (Mr. JAMES ROBERTS) advocated the compulsory working of all collieries, and the imposition of a duty of 10s. on every ton of coal sent abroad. He said the coal owners, coal vendors, and railway companies, had formed a ring to keep up prices.

Lake Superior Mining Statistics.

THE Marquette *Mining Journal* publishes the following statement of the iron and ore shipments from that port:

IRON ORE.

COMPANY.	Tons.	COMPANY.	Tons.
Cleveland	73,673	Albion	1,186
Lake Superior	125,386	Keystone	10,372
Champion	65,165	Shenango	7,313
Lake Angeline	15,361	Himrod hematite	2,065
Washington	37,216	Rolling Mill	4,062
Edwards	37,348	Kloman	21,271
McComber	28,258	Hungerford	56
Winthrop	6 232	New York	1,863
Republic	89,027		
Total			526,264

PIG IRON.

Champion furnace	3,712	Grace furnace	5,684
Morgan furnace	4 585	Collins furnace	1,830
Michigan furnace	3,275	Iron Cliff furnace	60
Greenwood furnace	2,642	M. & P. rolling mill	282
Bancroft furnace	3,927		
Total			25,997
Total ore and pig iron			552,261

The following is a statement of the shipments of iron ore and pig iron from the port of Escanaba up to and including the 19th day of November:

IRON ORE.

MINE.	Gross tons.	MINE.	Gross tons.
Jackson	104,482	Cascade	16,241
New York	61,544	Winthrop	21,952
Cleveland	50,432	Bagaley	12,775
Angeline	28,531	P. & L. S	21,496
Barnum	48,073	Saginaw	35,404
Foster	27,363	Other mines	56,388
Total iron ore			479,712

PIG IRON.

Pioneer	3 817	Escanaba furnace	2,175
Deer Lake	3,256		
Total pig iron			9,248
Total ore and pig iron			488,960

The following is a statement of the shipments of ore from the port of L'Anse for the season:

	Gross tons.
Spurr Mountain	31,933
Michigan	28,966
Total	60,899

The copper business has been exceedingly prosperous so far as amount of extraction goes. The Portage Lake Mining Gazette says: "We must congratulate the friends of the mineral developments going on up here on the magnificent exhibit which the copper and iron regions make for the current year. By comparing the totals in our copper tables it will be seen that the production in 1873, in the Portage Lake district exceeds that of last year by 2,582 tons, while in the Keweenaw Point district the product for the year just closed foots up 945 tons more than in 1872. Ontonagon has fallen off, but we hope there are better days in store for this pioneer district. It will be seen by the grand total given that the yield of the three districts net 18,514 tons of mineral, or about 14,500 tons of ingot copper. This is the largest amount of copper ever obtained in one year from the copper mines of northern Michigan. We look for even better results than this next year. Nearly all of the mines which helped to make up this large yield, were never looking better than they are to-day, while the prospective features of at least two new concerns—the Osceola and Allouez—are such as to warrant the belief that they will contribute an amount of copper toward the product of this district in 1874."

PORTAGE LAKE DISTRICT.

	Tons.	Pounds.
Calumet & Hecla, for year ending Nov. 30, 1873	11,551	1,938
Quincy, for year ending Nov. 30, 1873	1,600	180
Franklin-Pewabic, for year ending Nov. 30, 1873	671	1,673
Atlantic, for broken season	464	701
Houghton, for year ending Nov. 30, 1873	285	—
Schoolcraft, for year ending Nov. 30, 1873	270	1,520
Concord, for year ending Nov. 30, 1873	72	—
Isle Royale, for year ending Nov. 30, 1873	143	1,417
Albany & Boston, broken season	50	—
Sumner, for year ending with close of navigation	77	—
Other sources	8	—
Total	15,194	1,429
Production in 1872	12,612	319
Increase in 1873	2 582	1,110

KEWEENAW POINT DISTRICT.

Central, for year ending Nov. 30, 1873	1,081	1,983
Copper Falls, for year ending with close of navigation	834	927
Phœnix, for year ending with close of navigation	350	—
Cuff, for year ending with close of navigation	279	1,264
Delaware, for year ending Nov. 30, 1873	209	500
St. Clair, for year ending Nov. 18, 1873	55	742
Amygdaloid, broken season	19	303
Other sources	2	184
Total	2,781	1,903
Product in 1872	1,836	894
Increase in 1873	945	1,009

ONTONAGON DISTRICT.

	Tons.	Pounds.		Tons.	Pounds.
Ridge	150	113	Knowlton	39	1,864
National	131	318	Rockland	16	460
Minnesota	103	1,700	Mass	6	868
Flint Steel	45	1,356	Adventure	3	1,238
Bohemian	40	500	Tremont	—	700
Total				537	1,117
Product in 1872				725	1,000
Decrease in 1873				187	1,883

RECAPITULATION.

	Tons.	Pounds.
Portage Lake District	15,194	1,429
Keweenaw Point District	2,781	1,903
Ontonagon District	537	1,117
Grand total for 1873	18,514	4,449

MINING SUMMARY.

Montana.

GREENWOOD MINES.

From the Deer Lodge City *Independent* of Nov. 8.

The mines are situated about five miles north of Greenwood, and were discovered about two months ago by Mr. CAL. ADAMS, who has been working in the District since that time. The gold is coarse and of good quality. Three other companies have got fairly under way and are averaging $10 to the hand. Five more sluices will be running within a few days, should the weather continue favorable. One hundred and five claims have been recorded; forty-five below and sixty above discovery. In the spring there will be from forty to fifty sluices running in the camp and not less than one hundred and fifty men will thus find profitable employment in the new mines. Messrs. Wm BUTLER & Co., are digging a ditch from the right fork of Dog Creek to Meadow Creek Bar, and will have it completed by the first of May. The company have ground enough to last ten years and it will pay from ten to twenty dollars a day to the hand. MCIRWIN & ROWEN have a claim opened in Hope Gulch and intend to work all winter, using spring water to wash with. HORNEVILL & FINK are drifting on Uncle Ben's Gulch, and are taking out rich ground. A good wagon road has just been completed to the Dog Creek mines, and miners' cabins are going up at a rapid rate. The town will probably be called Adamsville, in honor of the discoverer.

Oregon.

THE SWAUK RIVER MINES.

The Walla Walla *Statesman* says:

For many years it has been known that gold in large quantities existed in what is known as the Yakima country, but just precisely where, none were able to ascertain. The belief was strengthened by the fact that on several occasions Indians belonging to the Yakima Reservation had sold to the traders at the Dalles considerable quantities of coarse gold. On being questioned, the Indians invariably refused to disclose where they had obtained the precious metal. Confident that gold was to be found in paying quantities, several prospecting parties were organized. They all found the color, but none were successful in finding sufficient to warrant them in remaining. These reports reaching the ears of several men residing near Yakima City, and confident of the existence of gold in that locality, they organized themselves into a prospecting party, and about the first of August last started out, fully prepared to thoroughly explore a large extent of country. After an examination they concluded to commence operations on a small creek which empties into the Weenatchie. At the expiration of ten days a "clean up" was made, disclosing that they had only realized about seventy-five cents a day to the man. This meager showing discouraged the party, and they at once determined to return home. On the 20th of September, after travelling several days they camped on the bank of the Swauk, a stream about the size of the Mill Creek. While some were preparing the evening meal others were examining the stream, with the vague hope that possibly they might be fortunate enough to "strike it." Raking around among the loose dirt near the water's edge one of the men discovered a piece of gold worth about six bits. Encouraged by this favorable indication, the men commenced crevicing the bed rock which in places was exposed. Their exertions were soon rewarded by the sight of a $12 nugget. During the afternoon, and before supper, the party had secured in the neighborhood of $40. The journey homeward was now indefinitely postponed. The next day they prospected up the creek for a distance of a quarter of a mile. The result of the day's work was $164, nearly $27 to the man, there being seven in the party. The stream was then explored for a distance of six miles, and the farther up they went the richer the prospects. The drift from the hills on either side of the creek averages seventy-five cents to the pan. Wherever the bed of the creek is exposed, gold in large quantities is to be found. In some places the water is quite deep, and to remedy this the course of the creek will have to be turned, which can be accomplished without difficulty. The gold is coarse, the largest piece found so far weighing $18, and very much resembles the Kootenai dust. Three hundred and fifty claims have been taken up and recorded. The diggings are two hundred miles from Walla Walla, and sixty-five from Yakima City. Along the creek there is a heavy growth of timber, and, therefore, there will be no lack of lumber for mining purposes. It is thought the miners will be able to work through the winter, as the weather in that locality is mild.

California.

AMADOR COUNTY.

From the *Amador Ledger* of Nov. 22.

Amador *Ledger*, Nov. 22: Work is progressing rapidly on the Amador Canal. Mr. MERRIMAN, who has taken five miles to complete, has 175 men now employed on his contract and is pushing the work rapidly. On the three mile contract, which will bring the canal to the river, 125 men are now employed, which force in a few days will be increased very materially. The force of carpenters that passed through Jackson a few days ago is now engaged in constructing the flume around Bald Rock. All the material necessary for construction, is being placed along the line of work as rapidly as the same is required; a force of men are engaged in cleaning out and removing all obstructions from that part of the canal heretofore finished. No work of that kind and magnitude has ever before been pushed on more rapidly or satisfactorily than is now being done on the canal under its present supervision.

STATE OF MAINE.—We learn that in running this drift from the bottom of the main shaft, the workmen a few days ago came on to a very fine quartz ledge about three feet in thickness, solid and compact, with well defined walls and all indications surrounding well formed permanent ledges. The ore not only looks fine but prospects well. The mill belonging to the company has been moved from its former site to a position near the mine, and will soon be ready for crushing. We are further informed the mine never presented a more flattering appearance than at present.

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 first volume of Transactions of the Institute is in course of preparation and will be sent, as soon as issued, to all members not in arrears.

THOMAS M. DROWN, Secretary.

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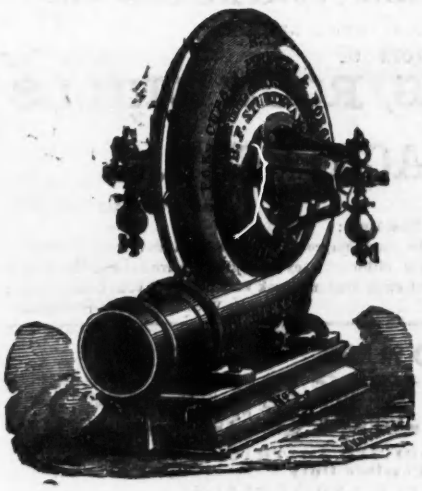

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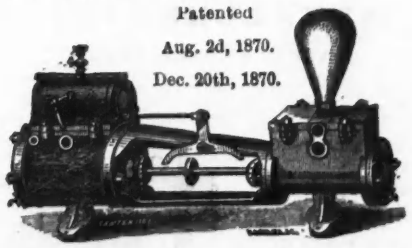

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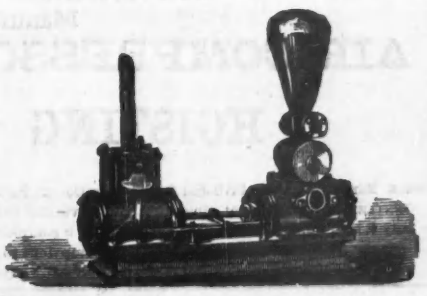

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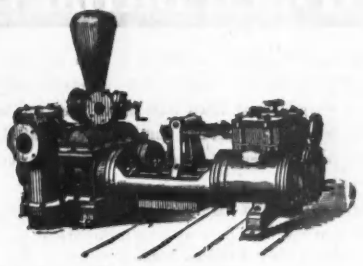

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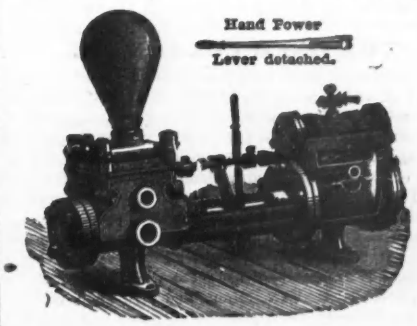

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