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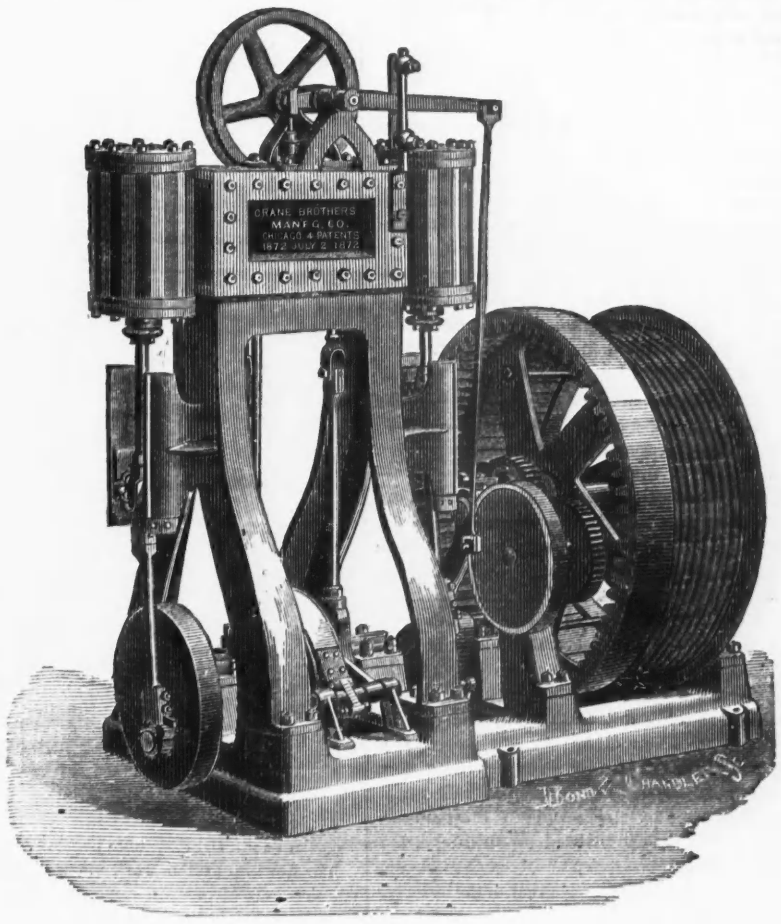
Crane's Automatic Direct Geared Hoisting Engine.

In a recent visit to the west we noticed that the hoisting engine made by the Crane Bros. Manufacturing Company of Chicago was quite generally introduced into new blast furnaces. The engine, which is illustrated on this page, appears surprisingly small when set up against the huge bulk of a furnace, but it is an effective one, as its rapid introduction into metallurgical and mining works in Pennsylvania, Ohio and numerous Western States, sufficiently proves. Its success as a mine hoist is equally great. No branch of mechanical engineering has received more attention from miners than the subject of hoisting machinery, but it is undeniable that the best engines in use might receive very important modifications with advantage. Most of them were double horizontal engines, with linked motion, and two winding drums. The machinery is quite expensive, and often takes up more space than can well be afforded, and demands the services of an engine-runner with his hand upon the reversing lever in order to stop and reverse the engine when the cage had reached the proper point of elevation. In spite of all his vigilance, there is a liability to overwind and carry the cage beyond the proper stopping point, which sometimes has the most serious results.

Another defective appliance was that for stopping the cage from a downward fall in case of the breaking of the cable—very serious accidents have occurred from this cause—the teeth failing to catch firmly in the rack on the upright post, would allow the cage to slide and go rattling down, endangering the lives of the workmen.

This elevator dispenses entirely with such services of a special engine-runner, and at the same time provides with the most perfect certainty against overwinding or falling of the cage—even if the cable is entirely broken or cut away.



CRANE'S AUTOMATIC DIRECT GEARED HOISTING ENGINE.

The machine consists of two vertical engines, as shown in the engraving. The cylinders and steamchest are cast in one piece and securely bolted to the top of a heavy iron frame, which, together with the bearings of the winding drum, is secured to a massive iron bed. The guides for crossheads are cast on the frame to which the cylinders are bolted, thus securing all firmly. Both cylinder and guides are bored at one operation by a machine especially constructed for the purpose, which gives great exactness.

Power and motion are communicated to the winding drum by means of a full crank with very heavy bearings on either side, at the end of which is a pinion running in an internal gear which is cast as a part of one of the drumheads. The cranks are placed at right angles in the usual manner of double engines. The winding drum, to prevent unnecessary wear of cable, is lagged with hard wood, grooved to correspond with the size of the cable; and is firmly held in position by means of heavy bearings secured to the iron bed plate. Two ropes run on the drum, one winding as the other unwinds. Two platforms are consequently used—one ascending as the other descends, and the motion of the engine may be governed from the top or bottom of a furnace, as desired.

The valve motion is an original and ingenious device. The main valves in appearance resemble the plain slide valve, but are really quite different in construction. While they combine all the advantages of a plain slide valve—in point of wear they have this important superiority, that simply by means of the peculiar construction of the throttle or operating valve the motion of the engine can be immediately reversed, thus dispensing with all links, hooks, and other old appliances used in reversible engines. But one eccentric is used with each engine. The throttle, or operating valve, is opened automatically by two special automatic devices. The following device which is used in the ordinary freight and passenger elevators, has been applied to the Crane Hoisting Engine with great success; to the lever of the valve is connected a small cable which is arranged through the hatchways by means of sheaves to any desired distance. At certain points upon the cable are stops so arranged that the slides attached to the cage and sliding on the cables will, at the point of elevation desired, come in contact with the stops and thereby close the throttle valve and apply the brakes, instantly stopping the engine.

The second automatic stop, another independent arrangement to secure perfect safety, is original and unique. This additional stop motion provides for cutting off the steam and applying the brake automatically in case the one above described should fail. A disk is formed with a surrounding flange prepared to receive an outer plate—upon the inner face of the disk is cut a worm or scroll surrounded by the flange, between the threads of the worm or scroll runs a steel traveler, which easily slides in a slot upon a plate arranged to fit inside the flange. The motion of the disk is positive with that of of the drum. The drum revolves the disk and the revolution of the disk carries the worm or scroll over the traveler; this slides in the slot on the inner plate until the traveler has arrived at the end of the scroll in the direction for which it is adjusted; then of necessity it stops and locks the plate, containing the traveler, to the disk containing the scrool, thus uniting the plate and disk firmly together; then the motion of the disk acts upon the throttle lever and automatic cam, which instantly shuts off the steam and applies the brake.

The automatic stop can be adjusted at pleasure, and is so arranged that there will be a perfect stop at any point desired.

Among other appliances is the triple tooth pawl which differs very materially from the old appliance of the single tooth. The old arrangement consisted of a spring and cranks in the center of the cage giving motion to horizontal bars, and forcing the teeth into the rack. This, in many instances, has proven unreliable, and serious accidents have occurred from the failure of the spring to

force the teeth firmly and securely into the rack. The safety pawl instantly shoots three teeth instead of one into the rack upon either side, and the force of the spring is sixteen times greater in its application through the safety pawl than through the horizontal bars. This additional force is secured from the peculiar construction of the safety pawl. The spring, which is in the center of the cage under the beam, is applied to two levers connected with the safety pawls, and the point of connection is so far below the axis of the pawl, on which it swings, that the least catching of the first or upper tooth near the axis of the pawl (the distance being three and a half inches from a vertical line drawn through the axis and a parallel line drawn from the outer edge of the upper tooth) turns the pawl and forces all the teeth into their proper places in the rack, operating as a rolling cam. Thus the least action of the spring at the center of the cage gives a power at the pawl equal to sixteen times the power communicated through the old direct horizontal motion. In experimenting with this pawl 8,000 lb. were placed upon the cage, and the cables cut, but the loaded cage was securely held.

The machine was first constructed to operate coal mines and iron furnaces, but is of course as well adapted to iron and other mines as to those of coal. This class of engines with single drum (shown in the engraving) is designed for furnaces, but it is also used and considered well adapted to mines. The company also build a machine especially for mines with double drums. This company also manufacture steam elevators, both passenger and freight, for hotels, stores, warehouses, etc., of which there are about one hundred in use in Chicago alone.

Messrs. COOKE & BEGGS, No 16 Courtland street, New York, and Mr. P. D. NICOLS, Pittsburgh, are the Eastern agents, and Messrs. HENDRIE BROS., Salt Lake City, the Western agents for the sale of CRANE'S hoisting machinery of all kinds. The Chicago offices are at No. 19 North Jefferson street.

A New Method of Sinking Shafts.

By ECKLEY B. COXE.*

WITH SUPPLEMENT.

CONTINUED FROM PAGE 194.

Description of the machinery used in drilling.

The bit used in drilling is shown in Fig. 11, and Fig. 12. It differs from the ordinary diamond bits in being concave instead of convex. The circular grooves and the small cylindrical holes are for the outlet and circulation of the water, which is forced down through the center of the boring rods. The rods are made of gaspipe, one and a half inches in diameter outside. The water takes up the fine sand or pulverized rock, carries it away from under the bit and then rises on the outside of the rods or pipes to the surface. The water is supplied under pressure to the rods either by a common pump or by bringing it from a height (the tops of the shaft for example), which is sufficient to produce the desired pressure. The machine used for drilling is much more compact and simple than the old diamond drill apparatus. A Root rotary engine has been substituted for the two oscillating cylinders, which turned the drill. The arrangement of the machine is shown in Fig. 15, Fig. 16 and Fig. 17.

The main shaft A, Fig. 17, of the rotary engine carries a bevel pinion B, which gears into another bevel pinion C upon the sleeve D, through which the boring rod passes and to which it is fastened. The lower end of the sleeve has a screw cut upon it by means of which the drill is fed. Upon the upper end of the sleeve D, a key-seat of from four to six feet in length is cut (the distance depending upon the length of the sections of the rods); over this sleeve a pinion M, Fig. 15, also key-seated, is slipped. A key, hanging loosely in the key-seats, causes D and M to revolve together. This pinion M gears into another pinion N, Figs. 15 and 16, which is slipped upon the head of the shaft P, Fig. 16, which has a feather on it. Upon the lower end of P is fastened a third pinion O, that drives a fourth, Q, which forms the nut of the screw of the sleeve D. This nut is so fastened to the machine that it can turn, but cannot move in the direction of the axis of the sleeve. If the pinions M and N are of the same diameter, the nut makes the same number of revolutions as the screw, and the rod does not advance; but if the diameter of N is larger than that of M, the nut makes fewer revolutions than M and the rod moves downwards. By changing the dimensions of M and N the drill can be fed at any desired rate. The part of the machine which carries the drilling apparatus can, by unscrewing a few bolts, be turned round the shaft of the engine so that it can be used for drilling either vertically, horizontally or at an angle. It is not necessary to dwell upon the construction of the drilling mechanism, as it does not differ from that of the ordinary diamond drill machines.

Fig. 18 and 19 show the apparatus used for drawing up the rods. It consists of a Root engine, D, similar to the one used for drilling, upon the shaft EF of which a small pinion is keyed. This drives, by means of the small cog wheel B, the grooved drum C, round which is wound a small wire rope that draws up the rod.

The West Shaft has seven rows of five holes each, as shown in Fig. 4, and the East Shaft (see Fig. 5) has five rows of five holes each. The method adopted for boring the holes was the same in both shafts. I shall therefore describe in detail the operation for the East Shaft only. At the points where the boring machines are put to work the cross section of the shaft is made a little larger than it is elsewhere, so that the machine can bore the holes in the corners and along the sides of the shaft. Two heavy timbers or sills, A, A, Fig. 8 and Fig. 9 are then laid across the shaft about three feet above the bottom, and supported by the upright posts, B, B, B, B; upon these timbers are placed three cast iron bed plates, C, C, C, Fig. 8 and Fig. 9, (see also on a larger scale in Fig. 10,) upon which the drilling machines can be made to slide until the axis of the drill is vertically over the point where the hole is to be bored. The machine is then fastened down by bolts, the heads of which fit in the grooves on the bed plate. As soon as the first hole has been bored to the required depth the machine is moved to the next. Two or three machines can work at the same time on the same bed plate. When the five holes in the first row have been bored, the bed plate is moved to the next row. The operation is continued until all the holes in the shaft are drilled. A large quantity of water is required for drilling, as a constant stream of it, filling a pipe about half an inch in diameter, must be forced down through each of the boring rods. The water passes through the center of the rod, takes up the fine sand produced by the action of the machine upon the rock, and carries it up on the outside of the pipe or rod, which is smaller than the hole.

In boring the first set of 25 holes, this water was brought from the surface and was returned to it, when it had become dirty, by a steam pump. Two small Cameron steam pumps were employed for forcing the water down the rods and raising the dirty water to the surface. After the first hole had been drilled, so as to open a way for the water into the cross-cut from the slope, the water which collected in the shaft and that which had been used for drilling found its way through this hole to the pumps in the slope. When the shaft becomes deeper, the intention is to use the same water over and over again for drilling, by pumping it into a settling tank, placed from 200 to 300 feet above the bottom of the shaft, in order to get head enough to force the water with the required velocity through the rods. The tank will be divided into two parts, so that the water can be partially filtered in passing from one to the other. It is essential to remove any oil, which the water may take up in its passage through the rods or which may fall in it from the machinery, as the oil solidifies or gums and clogs the holes in the bit, through which the water passes out from the center of the rods. It is not necessary to remove all the fine particles of pulverized rock which the water may bring up, unless it is important to know the exact nature of the strata in which the drill is working.

The average rate of drilling, as shown by the following table, is from 30 to 40 feet a day for each machine.

Statement of Drilling done at East Shaft of East Norwegian Colliery, on Lands of Mammoth Vein C. & I. Co.

No. of Machine.	Date when Started.	Date when Finished.	Depth of Holes. Feet.	Inches.
1	January 17,	February 1,	334	5
2	" "	" "	318	11
3	" 31,	" 8,	200	8
4	February 3,	" 9,	198	7
5	" 6,	" 12,	200	0
6	" 12,	" 17,	197	2
7	" 13,	" 22,	205	2½
8	" 15,	" 23,	179	2
9	" 19,	" 24,	205	2
10	" 20,	" 27,	205	2
11	" 21,	" 26,	200	8
12	" 23,	" 28,	201	5
13	" 24,	March 6,	312	0
14	" 24,	February 27,	200	4
15	" 26,	March 6,	293	0
16	March 1,	" 7,	254	8
17	" 1,	" 9,	279	0
18	" 1,	" 11,	290	0
19	" 5,	" 14,	295	3
20	" 8,	" 19,	295	0
21	" 9,	" 16,	307	4½
22	" 9,	" 18,	298	0
23	" 13,	" 20,	281	7
24	" 15,	" 23,	295	0
25	" 16,	" 23,	301	2

Greatest number of Drilling Machines used 7
Average " " " at work.....3
Average Drilling done per day of 24 hours by each machine.....31 feet.

The machines often work much faster, but there are incidental delays. Seven machines are at present employed, and as there are no cores to be removed, all the rock being ground to powder and carried off by the water, it is not found necessary to take out the rods very often. Steam is now used to drive the boring machines and the pumps, but preparations are being made to use compressed air in the lower levels, partly because the use of steam would render the shaft uncomfortably warm, and partly because there would be great danger of injuring the men in case any accident should happen to the steam pipes. A fan has also been erected for the purpose of ventilating the shaft.

When all the holes are bored to a depth of from 250 to 300 feet, the machines, pumps, etc., are taken to the other shaft to bore the holes in it. During the boring in one shaft, the rock is blasted and removed in the other. There is always time to spare, as three hundred feet of holes can be drilled much more quickly than the shaft can be sunk through the same distance in rock. The diameter of the holes is in all cases 1¾ inches. On the completion of the holes they are filled to the top with sand, and the work of blasting and removing the rock begins. The operation of blasting is conducted as follows: The miner by means of a small pump, such as is used with ordinary boring rods, removes the

* A Paper read at the meeting of the American Institute of Mining Engineers held May 21st, 1872.

sand from the holes Nos. 7, 8, 9, 12, 13, 14, 17, 18 and 19 of Fig. 5, to a depth of from three to four feet; clay is then forced into each hole, so as to make a plug from 6 inches to a foot long, and on the top of this a cartridge of dualin is placed, and the holes are then tamped with clay. The cartridges are connected together by wires leading to a galvanic battery and they are all fired at once. The explosion is produced by a cap filled with fulminate of mercury. The result of the simultaneous discharge of these nine holes is the formation of a large cavity in the center of the shaft to the depth of the bottom of the cartridges. The rock loosened by the operation is removed, and the remaining holes are then charged and fired in the same way, those on each side together, but only one side at a time. It should be noted here that powder is not effective in vertical holes. Dualin, dynamite, or some other of the nitroglycerine compounds must be used, particularly where the strata are nearly vertical and to a certain extent fissured. The sides of the shaft preserve their proper form and no hand blasting is necessary for trimming them up. When all the holes around the shaft have been fired, the miner begins again with the nine central holes, and the work goes on in this manner until the depth to which the holes have been bored is reached; the machines are then set to work again and the holes are bored from 250 to 300 feet deeper.

[TO BE CONTINUED.]

Mineralogical Notes.

CORINDON of North Carolina, Georgia and Montana. Specimens of this mineral have been found in crystals of a pyramidal form. They vary greatly in color, being grey, green, rose, blue, red, with all intermediate shades. Diaspore so abundantly associated with corindon at Chester (Massachusetts), has not been found accompanying it here. Specimens supposed to be diaspore were colorless kyanite. Chlorite envelopes and penetrates the corindon. Its composition is—

	Large Plates.	Friable.
Silica	27·00	29·15
Alumina	21·60	10·50
Oxide of iron	16·63	23·50
Magnesia	22·00	25 44
Water	12·30	10·04

Margarite (emerylite) accompanies corindon or emery everywhere; in the present localities it is abundant. Its composition is:—

Silica	32·41
Alumina	51·31
Lime	10·98
Soda	2·43
Water	2·13

Zoisite.—This mineral appears in two forms; a black and a transparent green variety. Both of these have been called *Arfvedsonite*, but neither has the composition of that mineral. The following is the composition of three kinds:—

	Transparent Green.	From Geneva.	Black Variety.
Silica	45·70	43·59	45·90
Alumina	24·01	27·72	13·34
Peroxide of iron	4·56	2·61	11 46
Lime	13·34	21·00	12·20
Magnesia	8·03	2·40	12·53
Soda	2·91	3·08	3·89
Water	0·60	—	0·65
Chromic oxide	0·52	—	—

Andesite.—This mineral is found in a granular form. Its composition is—

Silica	64 12
Alumina	24·20
Soda	9·28
Lime	2·80
Oxide of iron	0·14

—*J. Laurence Smith in Comptes Rendus.*

The Cost of Pig Iron in America.

A correspondent signing himself "J. M. B," sends to the London *Mining World* some statistics of the cost of iron in this country; he says:

"It has long been my opinion that within a very few years our exports of iron to the United States will be a thing of the past, unless the cost of manufacture in this country be reduced to something like old rates and even then, I fear, it will be next to impossible to compete with the American ironmasters, who now in many districts are producing iron at a less price than it can be made in the United Kingdom. I do not speak unadvisedly, but from actual facts within my own knowledge; and as these facts, and the manner in which they became known to me, may be interesting to those connected with this great staple of our country, I shall be glad to relate them if you will grant me the space.

About 18 months ago I sent out to the States a practical ironmaker, a gentleman trained in some of the largest steel and iron works in this country, expressly to examine into the mineral resources of a district in Western Virginia and East Tennessee, which, when certain railways now in course of construction are completed, will become a great center of iron manufacture. During this investigation he visited the works of the Roane Iron Company in East Tennessee, where two close-top blast furnaces are in full work, producing 80 tons of pigs per day. The following is the working cost for December last:—

MONTH ENDING SATURDAY, DEC. 26, 1872.

Material.	No. Pounds.		Dollars. c.
Ore charged	2,144,000	....	2,835 86
Coke charged	891,200	....	2,005 20
Coal charged	1,339,200	....	1,101 80
Limestone	552,700	....	304 58
Labor	—	....	1,170 15
Salaries	—	....	400 00
Materials from store	—	....	303 37
Blacksmithing	—	....	118 56
Foundry castings	—	....	98 02
Total			8,337 55

Product, 590 tons No. 1 mill iron; cost, 14 dol. 13 c. currency per ton; ore yielding 62·40 per cent.

The foregoing analysed shows about the following cost in sterling:—Iron ore, 15s. 6d.; fuel, 17s.; flux (limestone), 1s. 9d.; labor, salaries, stores, castings, &c., 12s, 6d. = 2*l.* 6s. 9d. per ton of pig iron. Present selling price to United States, 40 dol. currency, 6*l.* 16s., showing profit of 4*l.* 9s, 3d per ton.

There is no reason why numerous furnaces and rolling mills should not be in this neighborhood, as for over 200 miles the coal is cropping out to the surface, with red fossiliferous ironstone (yielding 60 per cent. in furnace), never more than half a mile distant, carboniferous limestone lying between, and a navigable river within five miles.

I merely mention this one district, where iron is being manufactured at so low a figure that it carried 500 miles to seaboard, and thence to United Kingdom, it would leave a profit on the transaction."

The deductions he makes from these facts are that the day for selling English iron in the United States has gone by, and that "the foregoing facts should show our workmen that strikes and contracted out-put of fuel, if persevered in, will drive the iron trade to countries where Nature has provided minerals in such abundance that unskilled labor can produce them for the manufacture of iron and steel at prices which will enable them to supply the markets which the English ironmasters have so long monopolised."

The figures of J. M. B. have been quoted by some of the daily papers with great approval as being the actual cost of making pig iron in the United States, and therefore exhibiting our ability to meet the world on equal terms. But they carry the matter further and say that the Pennsylvania ironmasters must be making enormous fortunes since they make iron for less than $15 a ton and sell it for, say $35 to $40. The logic is certainly invincible, but the facts are worthless. It is true that iron can be made in some parts of the country at a cost which will about match the cost of the metal in England before the rise in prices, and some firms are making a great deal of money by the happy conjunction of favorable opportunities for manufacture with a ready market. But most of those localities where iron is made so cheaply are far from a market and heavy charges for transportation must be added to the cost of the metal. Pennsylvanians are in a very different condition. The iron business in their State is a great one, but it is not the bed of roses which some of the papers would have us believe. In fact the cost of making a ton of iron in that State is pretty close on its selling price; twenty-eight dollars a ton may, perhaps be taken as a figure of cost not very far from the truth, and this is fully double the cost in Tennessee.

The letter of the English correspondent will probably be the root of a fresh breeze of alarm in English journals, and there is now more cause for dismay at the outlook in England than there has ever been before. The dreadful shock which railroad schemes have received in the panic whose effects the country still suffers from, must prove a serious matter to the iron trade. There cannot possibly be such a call for iron from the railroads for a few years to come as there has been since the war. This is less likely to affect American than foreign furnaces. The iron we make will still be called for in other manufactures, but the falling off in the demand brings the producing power of our furnaces much nearer the consuming power of the country, and it is the foreigners who will feel most severely the brunt of the panic in railroads.

Peat at Lake Superior.

ACCORDING to a *Tribune* correspondent, the utilization of the Lake Superior peat bed is not to be confined to the making of pig iron, but will extend even to such intricacies as the manufacture of steel. "Marquette," he says, "enjoys a remarkably favorable situation, for it can ship its ores by water at small cost to nearly all the great iron manufacturing centers of the West; for this reason it must forever enjoy a position in iron mining scarcely rivaled by that of any locality in the West. The attention of English manufacturers is also turned in this direction, and a recent shipment of 3000 tons of pig iron to Montreal, destined finally for England, will show to what extent the exportation of these ores may be carried on. Although Marquette has confined its efforts almost entirely to the mining of ore, a blast furnace and a rolling mill are now in successful operation. For the manufacture of pig iron it enjoys some advantages, for coal can be laid down here much cheaper than at Detroit. The vessels employed in taking the iron ore down the lakes are satisfied to take a return cargo of coal even as ballast, or for the nominal charge of 75 cents per ton. There are immense fields or bogs of peat in this district, and much attention has been given toward its fit preparation as a substitute for coal in the manufacture of pig iron and for charcoal steel. Some samples of steel made by the use of peat were recently submitted to the inspection of steel manufacturers in Pittsburgh, who reported that in quality and texture they were fully equal to any steel made with charcoal. This fact is of great importance, and may tend to a revolution in the present processes of manufacture.

The Diamond Rock Drill.*

CONTINUED FROM PAGE 205.

THE following table shows the dates on which some bore holes have been commenced and finished, and at this moment the Diamond Rock Boring Co. have over thirty machines either at work or about to commence, all of which are keeping fully up to the average of speed there shown. I beg to read the certi-

* A paper read at the meeting of the Iron and Steel Institute at Liege. Major BEAUMONT, M. P., the author of the paper, is the patentee of the machine described therein. The paper was illustrated with drawings, plans, &c.

ficates given in two instances, as I think that independent testimony of work actually done would be more satisfactory than any statement of mine :

Statement showing Results obtained in some Boreholes executed by the Diamond Rock-Boring Company.

Locality.	What for.	Including getting Machinery on the Ground, &c.	Actual work'g days.	Depth.	Remarks.
		Commenced 1872.	Ended 1872	ft. in.	
Girrick.....	Ironstone	October 1..	Nov.30	54	902 0	Ironstone.
Moorsholme	"	June 1.....	July 27 1873.	48	641 0	Ironstone found.
Fishburn...		November 9. 1873.	Feb. 1	54	434 0	Coal found.
Beeston....	Coal	Feb. 22.... 1872.	July 22	146	1008 0	Boring stopped on the 22d July, by J. Boot.
Chewton...	"	Dec. 31.... 1873.	July 13	168	802 0	Boring stopped, and commenced in another place
Wollaton ..	"	Feb. 16....	Ap'l.12	48	700 0	Commenced boring at 357 ft. below the surface of the ground. At 452 ft., passed a seam of coal 1 ft thick; at 587 ft., a seam 6 in. thick; at at 654 ft. 6 in., a seam 4 ft. thick; and at 696 ft. through a seam 5 ft. 10 in thick.
Loftus.....	Ironstone	March 16...	June 7	60	640 0	Ironstone found.
Ballymere..	Coal.....	April 7.....	May 24	42	558 5	Nothing of value discovered.

The greatest speed attained was at Walluff, in Sweden, when 304 ft. 6½ in. were put down in one week.

In soft strata, such as clay, sand, and alluvial deposit, the diamond system is of no use, and in such ground we always use the ordinary method of boring, turning to the diamond directly rock is reached. I may add, however, that the boring tubes, pump for supplying water, and the whole arrangement of prospecting machinery (irrespective of the diamond crown), is found of great use in getting through the soft, and fixing any necessary lining tubes. The actual speed of cut is the same as that previously quoted. There is, however, no advantage in cutting at so rapid a rate, as the time employed in actual boring is as nothing compared with that which is consumed in lifting and lowering the rods. Different distances are bored without lifting, according to the nature of the strata, and the necessity for obtaining information. The core, when formed, is passed into a core tube, and is kept from falling out on withdrawing the rods by means of sliding wedges or clips, which allow the core to pass freely up, but prevent its returning. The great advantage claimed for this system of boring consists in the speed obtained—work being done in less months than it formerly took years, and in the fact that sample cores of the strata passed through are obtained.

The drills, not being subject to the heavy blows which percussion action would throw upon them, are not more liable to deterioration than ordinary machinery. Some drills are now in good order, and at work, which were made three years ago, having since then cost next to nothing for repairs. Any number of drills that may be required are mounted on standards, which are connected with the air motion behind them, so as to be all driven from it. Each drill can be stopped and started independently, and as they work equally well, no matter how they may be angled, holing can be put in in pointing where a miner would find it extremely difficult to work. I would draw your particular attention to the method of fixing and removing the machinery. The rocks on the top of the standards gain the whole firmly in position, while on their being slackened and the standards tilted back, which is done by the machine itself, the whole is on wheels and free to move. Twenty minutes suffice ordinarily to get the machine ready for work, and it could be done in less time. The compressors used to drive the Company's machinery at Bristol, viz., a single cylinder, 18 in. diameter, with a 5 ft. stroke. It was geared directly to a 24 in. steam cylinder, and was usually driven at twenty revolutions per minute. In applying machinery to driving headings, and speaking only of those machines that operate by holing the face of the heading, and use explosives, there are two broad systems of working, which have been followed. One is to endeavor to imitate the action of the miner who seeks to put in his holes to the best advantage, watching each shot and angling the next accordingly, and putting down at the most three or four holes before firing. The other system is to disregard the lay of the rock and the result of the previous firing, putting down such a number of holes as to make an absolute certainty of the rock being fetched to a given depth. All attempts to solve the question of tunnel-driving machinery by the first system seem to me to have failed, while the second, if fully applied has always been successful. In practice, there is a very great difficulty in bringing forward and fixing the machinery, prior to the actual boring being commenced, and as all boring machines, once fixed, put down their holes, in a very few minutes it follows that ease of manipulation, and exemption from break downs, is a far more important element of success than mere rapidity of holing, which, indeed, all systems that I have seen possess. The following statement taken from actual practice will exemplify what I mean :—In a gallery driven in compact mountain limestone by the Diamond Boring Company as an advanced heading for a railway tunnel on the Great Western Railway, at Bristol, the holes were 3 ft. 6 in. deep, and an advance each shift of 3 ft. 3 in. was obtained. Six drills were employed, their average speed of holing being 2 in. per minute; thirty holes at 3 ft. 3 in. = 98 ft., and six drills at 2 in. a minute = 1 ft. per minute; or the complete holing was done in 98 minutes = 1 hour 38 minutes of actual working. As a matter of fact, it was a very good work to get the lot holed in four hours. Supposing now the drills had been speeded to 3 in. per minute, or 50 per cent. quicker, the holing would have been done in a little over an hour, which would have shown a saving of only half an hour in four hours. My aim has, therefore, been to take a reasonable rate of speed like 2 in. a minute, and, by so doing, get certainty of obtaining a given result without break-downs, rather than trying for a *tour de force* in actual rate of cut. Exploding the holes is done successively, beginning with the central holes, which are angled, and progressing successively to the outside ones. At Mont Cenis, the length of their machines precluded the possibility of angling, hence they were driven to obtain a first opening by putting down larger holes in the center of the heading, which were not fired. The Diamond Drill being shorter, enables the drills to be angled, and the center is blown without the aid of empty holes. I think it likely this is the cheaper plan, but I am not clear that the Mont Cenis engineers did not choose the more expeditious one as the fact of angling means a loss of progress. In comparing the Diamond system with the Mont Cenis or other good system of reciprocating drill, mounted in such numbers as to have a proper command of holing power, I do not contend that there is much advantage in favor of the former in point of speed, as in either case the holes can be put in in any reasonable fixed time. I submit, however, that there is a certain gain, owing to the holes being true cylinders, and to the non-liability of the drills to break down; the machinery getting out of order being always a fearful source of delay. The great advantage claimed for the diamond system is its economy. No drills have to be sharpened, the plant is no more liable to get out of order than ordinary machinery, and the air in the motor can be used expansively, against which have to be set the wear of the diamonds, and the fact that the motor must be kept running whether one or six drills are at work. The latter disadvantages are, however, more than counterbalanced by the former advantages. The certificate of Mr. BRUNLEES, the engineer for the Bristol Tunnel, is as follows :

"TO THE MACHINE TUNNELLING COMPANY : Gentlemen,—Last week I had the pleasure of seeing your Diamond Borer at work in this tunnel. The material through which the tunnel is being made is hard mountain limestone, with numerous joints filled with calc spar. The heading, which measures about 10 ft. by 8 ft., was previously driven by hand labor at an average speed of 9½ ft. per week. The Boring Machine, during its first week of actual work, advanced the heading 26 ft., though the men only made eight shifts, the rate of progress per shaft being 3 ft. 3 in. The result of the week's work was, therefore, nearly three times that attained by hand labor, and it is only reasonable to assume that when the machine men are fairly up to their work they will be able to bore 4 ft. per shift, and make twelve shifts per week. Hence there can be no reasonable doubt that the advance of the heading will become 48 ft. per week, or about five times that of hand labor. So far the diamonds show no symptom of wear, nor have any of them got loose in the setting."

Plant is now about to be applied to sinking two pits, each 700 yards deep, for HARRIS' Navigation Company, in South Wales. [These shafts are to be sunk on the continuous system which Mr. E. B. COXE describes so thoroughly in current numbers of this journal. ED. E. & M. J.]

In the discussion which followed the reading of the above paper,

Mr. COCKBURN, of Messrs. JOSEPH PEASE and Partners, mentioned that with a diamond rock borer he started a hole of 800 feet deep on the 8th day of June, and finished it on the 28th day of July. They started with the ordinary hand borer to bore a hole on the 6th of July, 1871, and did not complete it before the 4th of May, 1872. The difference between the diamond drill and hand boring was so great that they could scarcely understand it. Under the old system everything was broken to pieces, to small dust; and if they came to a hard rock they were liable to chip the chisel, giving a false impression of the nature of the strata; but under the new system they got a solid core out, and they had thus a complete section to judge by. He had great pleasure in testifying to the excellent way in which the Diamond Rock Boring Company had done their work.

The President of the Institute, in winding up the discussion, referred to a case in which some samples of ironstone were got for the purpose of analysis, and on being submitted to a chemist, he gave in every instance 5 or 10 per cent. more iron than the stone really contained. Upon the faith of the analysis blast furnaces were erected, and the results of their working utterly discredited the opinion given by the assays. The chemist, either through want of skill or from want of care, had returned the alumina as iron. Major BEAUMONT, he might tell them, was engaged in erecting a machine near the Clarence Works, and it was intended to put down a hole 200 fathoms, in order to ascertain the existence of salt. In a few weeks—he believed in less than two months—they expected to complete that hole. They would agree with him that they were greatly indebted to Major BEAUMONT for the manner in which he explained the principle of his machine, and, so far as he was personally concerned, he wished him every success.

THE COAL TRADE.

NEW YORK, Sept. 25, 1873.

THE auction sale, occurring, as it did, amid a sudden and extremely severe financial crisis, resulted in a decline of prices which may be put at nearly 5 cents a ton. The time was so unpropitious that many dealers thought the sale would be postponed, and since it took place with the result above given, many others wonder that it was not postponed. We cannot share in this feeling. One of the fundamental reasons for holding an auction is to make it the pulse of the trade. If that pulse is never to be felt except when the patient is known to be perfectly well, the Scranton Company might just as well go into the open market with its coal. In every point of view the auction would lose its value both to dealers and to the companies if the least irregularity were permitted. In fact, such an irregularity has not yet occurred except in one case when it was held a week later for causes unconnected with the market.

The prices are averaged by Mr. JOHN MOORE, Room 74, Trinity Building, as follows:

		September	October	
Steamer,	10,000 tons,	$4.87½,	$4.80½,	decline, 7c.
Broken,	20,000 "	5.04	5.00½,	" 3½c.
Egg,	12,000 "	5.38	5.33½,	" 4½c.
Stove,	36,000 "	5 45	5 46	advance 1c.
Chest,	12,000 "	4.77	4.71	decline, 6c.
	90,000 tons,	$5.17	$.517	

These figures show that while there was a real decline on all but one size, the whole sale netted the Company the same amount as last month. Its receipts in fact are less than $16 above those of last month. The cause of this apparent contradiction is the transfer of 5,000 tons from the steamer size to egg size, and the higher price of the latter compensates for the loss by the decline. The result of the sale is thought to be very satisfactory, for there was considerable apprehension that the depressed feeling in all branches of business would affect the spirit of buyers.

In spite of the financial storm, the regular monthly advance has been continued, and dealers all report an active business. The following are the new rates:

Lehigh Coal and Navigation Co.

	Old Co's Lehigh	RoomRun	Plymouth	Newport
Lump	$6 00	$5 85	$	$
Broken	5 85	5 70	5 35	5 35
Egg	5 85	5 70	5 60	5 50
Stove	5 95	5 85	5 80	5 70
Chestnut	5 20	5 15	5 10	5 10

Wilkesbarre Coal and Iron Company.

Lump	$5 05
Steamer	5 15
Broken	5 25
Egg	5 40
Stove	5 60
Chestnut	5 05

Lehigh Coal Exchange.

Lump	$5 85
Broken	5 70
Egg	5 70
Stove	5 85
Chestnut	5 15

Pennsylvania Coal Company.

Lump	$5 00	per ton.
Steamer	5 01	"
Grate	5 10	"
Egg	5 20	"
Stove	5 50	"
Chestnut	4 90	"

Philadelphia and Reading Company.

	Lump	Steamer	Broken	Egg	Stove	Chestn
Hard White Ash Coal	$4.60	4.69	4.70	4 70	4.90	3.95
Free Burning White Ash Coal	$4 60	4.69	4.70	4 70	4.90	3 95
Schuylkill Red Ash Coal			4.70	4 85	5 05	3.95
Alaska Red Ash "			4.70	4 70	4 90	3.95
Shamokin White Ash "			4 80	5.00	5 10	4 10
Shamokin Red Ash "			4 80	5.00	5.10	4.10
North Franklin "			5 10	5.10	5 0)	4.00
Lorberry "			5.35	5.35	5 35	4 35
Lykens Valley "				6.10	6.10	4 75

It will be observed that for chestnut size the price is retained unaltered for Pennsylvania and Shamokin coals, and Lykens Valley coal advances only 5 cents. Whether the regular advance will continue to be made in the present condition of the country cannot be foretold, but it is quite likely that the extreme scarcity of money will completely unsettle all prices. If the present trouble continues for thirty days more a buyer with cash in his hand will probably be able to make his own terms.

The following circulars have been issued by the Philadelphia and Reading road:

On and after October 1st, 1873, all drawbacks on anthracite coal shipped from Port Richmond will be discontinued.

On and after October 1st, a drawback of twenty-five cents per ton will be paid on shipments of anthracite coal from Schuylkill Haven and Port Clinton that have passed Fairmount Locks to Philadelphia and vicinity.

Business in soft coal is more affected by the panic than its rival, for the reason that in this part of the country its use is almost entirely confined to railroad and steamboat lines and to manufacturers, all of which find themselves a little doubtful about their future. Still business would be good if there were any money to buy coal with. The Chesapeake Canal has been opened and some boats have passed through.

Anthracite Coal Trade for 1872 and 1873.

The following table exhibits the quantity of Anthracite Coal passing over the following routes of transportation for the week ending, 1873, Sept. 20, compared with the week ending Sept. 21, 1872.

COMPANIES.	1872. WEEK.	1872. TOTAL.	1873. WEEK.	1873. TOTAL.
Phila & Reading R. R†	90,129	3,407,977	98,717	3,791,661
Schuylkill Canal	20,778	690,881	2[illegible]	5 8[illegible]
Lehigh Valley R. R.	85 791	2,444,521	7[illegible]	2.575.516
Lehigh & Sus. R. R.	38,107	1,2[illegible]	[illegible]	1,414,448
" " Canal	22.821	649,843	2[illegible]	5[illegible]
Scranton North	21,911	534,544	28,972	(86 404
" South	89.645	1,5[illegible]	38,343	1,5[illegible]
Penn. Coal Co., rail	25,143	858,258	29,028	898,407
" " " canal	481	4 557	391	5 936
Del. Hnd C. Co. Canal	46,598	1 0[illegible]	39,878	1,045,852
" " East	10,212	410 139	10[illegible]	202 986
" " West	8 716	283,102	15,821	343 709
" " South	9,[illegible]98	7[illegible]29	3,079	145,576
Shamokin	....	3[illegible],315	....	440,100
Tuscarora	....	....	....	....
Lykens Valley Coal Co.	....	....	....	....
Wyoming North	....	....	....	....
Wyoming South	....	....	....	....
P. N. Y. C. & R. R. Co.	12 150	464,[illegible]61	13,934	562,418
Williamstown Co'y	....	....	....	....
Big Lick Col	....	....	....	....
Total	402,179	14,019,991	465,155	14,893,050
1872			472 176	14,019 991
Increase				873,059
Decrease			22,98[illegible]	

These figures are for the week and fiscal period commencing Nov. 20

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

Bituminous Coal Trade, 1872 and 1873.

The following table exhibits the quantity of Bituminous Coal passing over the following routes of Transportation for the week ending Sept. 20, 1873, compared with week ending Sept. 21, 1872.

COMPANIES.	1872. Week.	1872. Year.	1873 Week.	1873 Year.
C. & O. Canal	15,977	464,092	22,784	442,992
B. & O. R. R.	25,772	901,060	30,273	1,057,515
Penn. S. Line	....	.....	4.376	69,225
H. & B. T. R. R.	6.496	212,842	13 054	319 618
*Harrisburg & D	10,591	353,389	4,704	245,523
*L. V. R. R.	468	21,782	418	23,097
P. & N.Y.C. & R. Co.	7, 20	277,084	6.[illegible]04	232 898
Cumberl'd Branch Canal	6,384	159 639	4 825	91 037
" Railroad	278	12,988	1,63[illegible]	67,476
Total	72,586	2,406,746	88 [illegible]55	2,54[illegible],311
	....		72 586	2,406,746
Decrease	....		15,769	142,585
Increase	....			

Report of Coal Transported over the Lehigh Canal

For the week ending Sept. 19, 1873.

REGIONS SHIPPED FROM	TIDE tons cwt.	LOCAL tons, cwt.	TL WEEK tons cwt	TL. DATE tons, cwt.
Mauch Chunk Region	2,515 03	4,043 02	6,583 05	162,338 07
Mauch Chunk Region Hazardville	667 08	665 07	1,332 15	19.117 19
Beaver Meadow Region	1,072 05	4,432 60	5,504 [illegible]	94,425 12
Mahanoy Region		657 06	657 06	15,271 14
Hazleton Region	1,666 02	5,[illegible]37 08	7 003 10	134,9[illegible] 14
Upper Lehigh Region	97 12	771 03	8 8 14	20 [illegible]54 06
Wyoming Region	2,542 07	978 10	3,49[illegible] 17	70,424 [illegible]3
Wyoming Region, Hazardville	686 00		686 00	3,924 14
Total,	8,666 17	17,514 19	26,181 16	520,766 15
Previously reported	18.433 00	314151 19	491,584 19	
Total to date	199099 17	3316 6 18	20,765 15	
Corresponding week last year	210959 11	138883 01	549,842 12	
Increase				
Decrease	21,859 14	7,216 03	29.075 17	

DISTRIBUTION.	WEEK 1873.	WEEK 1872.	YEAR. 1873.	YEAR 1872.
Consumed on line of Lehigh Canal	2,771 05	2,191 04	53,824 19	[illegible]3,47[illegible] 10
Passed into Morris Canal to Tidal Points	....	256 02	2,063 09	4,[illegible]23 08
Passed into Morris Canal to Local Points	791 01	978 09	2[illegible],974 09	17,[illegible]31 14
Passed into Del. & Rar. Canal to Tidal Points	8,666 17	10,[illegible]91 07	187,135 08	206,536 03
Passed into Del & Rar. Canal to Local Points	[illegible]71 02	[illegible]75 18	9,358 02	11,183 07
Consumed on line Delaware Div. Canal	1,372 15	1,003 07	31,644 16	34,146 08
Passed through to Bristol	12,003 16	7,465 19	2[illegible]4 765 01	222,671 02
	26,181 16	23,8[illegible]0 17	520,766 15	549 842 12

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 Sept. 12, 1873.

	Tons.	Cwt.	Tons.	Cwt.
East	693	17		
West	13,564	14		
			14,256	11
Same time last year			10,667	17
Increase			3,588	14
Decrease				
Total amount shipped to date			440,100	03
Same time last year			385,314	11
Increase			54,785	12
Decrease				

Philadelphia & Reading Railroad and Branches.

COAL TONNAGE

For the Week ending Saturday, Sept. 20, 1873.

BY RAILROAD—ANTHRACITE.

PASSING OVER MAIN LINE AND LEB. VAL. BRANCH.

	Tons.	Cwt.
From St. Clair	31,764	03
" Port Carbon	4,883	07
" Pottsville	2,432	15
" Schuylkill Haven	33,743	00
" Pine Grove	6,726	12
" Tamaqua	13,826	11
" Harrisburg		
" Dauphin	5,861	01
Total	98,717	10

FOR SHIPMENT BY CANAL.

Passing Frackville Scales	6 618	12
" Mill Creek "	1,795	11
" Schuylkill Valley Scales	988	06
" Mt. Carbon	1,572	10
" Cressona "	2,869	12
" Pine Grove "		
" Tamaqua "	3,126	03
Total	27,950	12

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

Via Catawissa & Williamsport Br.	189	04
" N. C. R. R. passing Locust Gap	2,840	12
" " " Shamokin	4,798	11
" " " Herndon	....	
Total	7,828	07

SHIPPED WEST OR SOUTH FROM PINE GROVE.

Via Schuylkill & Susquehanna R. R.	1 896	19
" Lebanon & Pine Grove Branch	1,266	08
Total	3,162	07

CONSUMED ON LATERALS.

From Frackville Scales	551	08
" Mill Creek "	90	09
" Schuylkill Valley Scales	813	14
" Mt. Carbon "	317	10
" Cressona "	729	01
" Pine Grove "	116	02
" Tamaqua "	240	05
Total	3,316	10

LEHIGH AND WYOMING COAL.

Received via Silverbrook Junction, Sent East	8,534	16
" " Cat. & Wpt. Br. Sent West	....	
" " Rupert, Cat. & Wpt Br.	66	19
" " Allentown R. Penn's br.	238	14
" " Alburtis, "	....	
" " Oreland, G. & N. Br.	1,103	09
" " Willow Street R. R.	525	00
Total	10,519	00

BITUMINOUS.

From Harrisburg	4,693	14
" Connecting R. R., G. & N. Br.	....	
" Junction R. R.	10	00
Total	4,703	14

COAL FOR COMPANY'S USE.

Anthracite	5,212	07
Bituminous	[illegible]9	16
Total	5 2 2	03

RECAPITULATION.

	Total for Week.	Corres'p'g week last year.	Increase and Decrease.
Passing over Main Line and Leb Val. Branch	98 747 10	90.120 04	i 8,593 06
For Shipment by Canal	21,850 15	19,666 15	i 4.184 01
Shipped Westward via Northern Central R. R.	7.8 8 07	6,537 16	i 1,190 11
Shipped West or South from Pine Grove	3.153 07	1,942 06	i 1,211 01
Consumed on Laterals	3,316 10	4,481 01	d 1 164 14
Lehigh and Wyoming Coal	10,519 00	1,931 88	i 8,587 12
Total Anthracite paying freig't	147,385 10	124,689 11	i 22,695 19
Bituminous	4,703 14	10,[illegible]90 13	d 5,886 19
Total of all kinds paying freig't	152,089 04	135,279 04	i 16,810 00
Coal for Company's use	5,272 03	5,295 01	d 23 18
Total Tonnage for Week	157,361 07	140,574 05	i 16,787 01
Previously this year	4 66 [illegible]20 04	4[illegible]377 16	i 290,942 08
Total to date	8023581 11	4120052 01	i 297,529 10

SHIPPED BY CANAL.

From Schuylkill Haven	19.229 10	20 [illegible]12 00	i 891 00
" Port Clinton	2,597 00	1,097 00	i 1,500 00
Total Tonnage per Week	21,826 10	21,[illegible]09 00	i 2,492 00
Previous'y this year	516,234 19	564,156 15	d 67,781 16
Total to date	538,060 09	584,015 15	d 65,264 16

Statement of Coal Transported over Cumberland and Pennsylvania Railroad

During the week ending Saturday Sept. 20, and during the year 1873, compared with the corresponding period of 1872.

WEEK.

	C. & O. C'l Tons. Cwt.	B. & O. R. R. Tons. Cwt.	Pa. S. Line Tons. Cwt	Total. Tons. Cwt
1873	22,784 01	30,273 10	4,376 02	57,[illegible]68 13
1872	15,276 18	25,771 16	....	41,044 14
Increase	7,507 03	4,501 14	4,376 02	16,[illegible]24 13
Decrease	....	....	....	

YEAR.

1873	442,99[illegible] 00	10[illegible]515 05	69,224 16	1,[illegible]69,732 01
1872	464,161 19	901 60 02	....	1,[illegible]39,1[illegible] 01
Increase	....	156,455 03	69,224 16	209,610 [illegible]
Decrease	25,063 19	....	....	....

Cumberland Branch R. R.

WEEK.

	To C. & O. Canal. Tons. Cwt.	To P. & O. R. R. Co Tons. Cwt.	Total. Tons. Cwt.
1873	4,924 17	1,636 15	6 461 12
1872	6,364 06	278 07	6,642 13
Increase		1,358 08	
Decrease	1,519 09		201 01

YEAR.

1873	91,037 06	67,475 18	158,[illegible]13 05
1872	159,63[illegible] 17	12,987 19	172,625 1
Increase		54,487 19	
Decrease	68,601 03		14,[illegible]12 10

Penn. and P. Y. R. R.—Coxton, Pa.

Coal tonnage for week ending Sept. 20, 1873.

	Week. Tons.	Cwt.	Total. Tons.	Cwt.
Anthracite received :				
From Lehigh Valley R. R.	13,047	02	378,841	12
" Lack. & B. R. R.	2.033	17	31,229	14
" Pleasant Valley R. R.	3,046	05	124.749	18
" Sul. & Erie R. R.	707	03	27,606	08
Total	18,834	07	562 418	10
Same time last year	12,150	06	464 261	02
Increase	6,684	01	98,157	08
Decrease				
Distributed :				
To Lehigh Valley R. R.	248	16	24,004	13
To Lack. & B. R. R.	31	09	1,332	05
To S. Central R. R.	4,313	16	123,152	16
To Ithaca & A. R. R.	4.006	00	113,762	14
To Erie R. W. Pockets for shipm't.	7,350	09	297,104	06
To Erie Railway, Watkins direct.	556	09	9,478	18
To individuals on line of road	931	15	22,503	14
To points at & above Coxton for use of Co.	552	02	21,135	04
To points between Waverley and Elmira	810	11	39,944	00
Total	18,834	07	562,418	10

Bituminous received from BARCLAY R. R.

Shipped north from Towanda	6,218	00	236,820	04
Shipped south from Towanda	85	12	1,583	16
Northern Central R. R.			234	09
Total	6,303	12	232 8	09
Same time last year	7,320	04	277,083	15
Increase				
Decrease	1,016	12	44,245	06
Distributed :				
To Erie Railway	5,910	11	210,032	15
To So. Central R. R.	307	09	20,347	06
To Ithaca Valley R. R.			376	06
Lehigh Valley, R. R.	56	12	940	19
To individuals on line of Railroad.	29	00	1,022	19
To points on line of road for use of Company			118	04
Total	6,303	12	232,834	09
Grand totals transported				
Anthracite	18,834	07	562,418	10
Bituminous	6,303	12	232,838	09
Total	25,137	19	795,256	19
Same time last year	19,470	10	741,344	17
Increase	5,667	09	53 912	02
Decrease				

Report of Coal Transported over Lehigh Valley Railroad

Report of coal tonnage for the week ending Sept. 21, 1873, with Totals to date, compared with same time last year.

WHERE SHIPPED FROM.	WEEK. Tons.	Cwt.	TOTAL. Tons.	Cwt.
Total Wyoming	18,543	1'	695,448	00
" Hazleton	55,073	03	1,747,347	00
" Upper Lehigh	57	05	4,363	17
" Beaver Meadow	13,536	16	521,100	19
" Mahanoy	12 810	17	396,811	06
" Mauch Chunk	269	00	3,321	15
Total	98,530	11	3,336,456	05
Same time last year	76,129	02	3 091,962	13
Increase	22,401	09	244,493	12
Decrease				
Forwarded East from Mauch Chunk by rail	72,199	01	2.575,515	18
Same time last year	55,790	09	2,4 4,521	03
Increase	16,408	14	147,994	15
Decrease				

DISTRIBUTED AS FOLLOWS.

Local East of Mauch Chunk	1,941	09	61,836	03
Forwarded East for use L. V. R.	1,184	18	44,047	00
Delivered to Furnaces and Manufacturing Companies	13,968	12	553,168	13
Delivered to Cat & Fog. R. R.	100	03	5,185	00
" " East Penn. R. R.	289	14	7 533	12
" " North Pennsylvania Railroad.	8,2 2	05	255,3 3	13
" " Port Del.	6,4 3	03	157,910	17
" " East' Amboy Railroad				
" " Morris and Essex Railroad	5 600	14	221,631	06
" " Bel. Del Railroad	27,216	13	832,222	14
" " Central Railroad	7,288	12	438,635	03
Delivered at and above Mauch Chunk for use of L. V. R. R.	1,380	08	54,127	00
To P. & N. Y. R. R.	12,799	08	378,593	18
To Northern Central R. R.	841	02	16,045	07
To D. H. & W. R. R.	494	10	26,673	15
To L. & S. R. R. at Packerton for rail.	486	18	16,897	19
To Individuals at Mauch Chunk	70	05	2,015	16
To Individuals above Mauch Chunk	476	12	11,669	16
To L. & S. R. R., at Penn Hav., for railroad			1 541	10
Do. for canal	6,973	14	134,706	07
To Lehigh Canal Mauch Chunk	2,883	07	54,926	15
To Catawissa Railroad			50	00
To L. & S. R.R. at Lack. June.	5	04	69,092	14
Total	98,530	11	3,336,456	05

Pennsylvania Coal Company.

Shipments of Pittston Coal for the week ending Sept. 20, 1873.

	1873. WEEK.	YEAR.	1872. WEEK.	YEAR.
By Railway	29 028 10	898,407 01	25,142 19	858,258 05
" Canal	390 01	5,935 11	481 14	4,557 06
	29,418 11	904,342 12	25,624 13	862,815 11
Increase, 1873	41,527 01			

Delaware Lackawanna & Western Rail Road Company.

Coal transported on the Delaware, Lackawanna, & Western Railroad for the week ending Saturday, Sept. 20, 1873.

	WEEK. Tons.	Cwt.	YEAR. Tons.	Cwt.
Shipped North	28,971	19	686.404	08
Shipped South	38,343	00	1,536.671	00
	67,314	19		
Total			2,223,075	08
For the Corresponding time last Year :				
Shipped North	2 ,901	10	534,544	08
Shipped South	39,645	10	1,549,134	00
Total	61,547	00	2,083,678	08
Increase	5,767	19	139,396	15
Decrease				

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

Week ending Sept. 20—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	30474 09	6446 04	2927 09	39847 16	1277991 19
Upper Lehigh		2982 18	923 11	3906 09	142440 12
Beaver Meadow	4.10 09	2650 05	2774 03	9858 17	327044 09
Hazleton		103 14	6803 18	6907 12	144 97 09
Mauch Chunk	3152 19	4174 00	6611 12	13945 11	466524 07
Total	37844 11	16257 01	20012 13	74144 05	21963 8 16
Prev'ly reported	1011514 15	687291 04	424039 12	2122844 11	
Total to date	1049359 06	703548 05	444051 05	2196988 16	
Same time 1872	859724 03	520437 05	250495 07	1630656 15	
Increase	189635 03	83111 00	86585 18	366532 01	
Decrease					

DISTRIBUTION.	WEEK 1873.	WEEK 1872.	YEAR 1873	YEAR 1872.
Forwarded East by Rail to Tidal points	37844 11	26870 01	1049359 06	859724 03
Forwarded East by Rail to Local points	10508 03	5560 09	323540 06	229242 11
Forwarded East by Rail use Central Division	1760 11	1586 12	6120 17	56383 16
Forwarded East by Rail use L. & S.	304 03	121 06	8387 02	6304 15
Delivered at and above Mauch Chunk	1415 06	1611 00	56320 15	40851 09
Delivered at Coalport & Hazard for Canal	27042 13	15762 15	478163 08	397357 05
Delivered to L. V. R. R. at Packerton	402 12	153 17	18205 13	10435 16
Delivered to L. V. R. Rd at Sugar Notch	1746 06		60996 08	
Delivered to L. & B. R. R.at Plymouth Bridge		5630 09	129908 01	165351 00
Total	74,144 05	61196 08	2196984 16	1630656 15

Delaware and Hudson Canal Company.

Coal mined and forwarded by the Delaware and Hudson Canal Company for the week ending Saturday, Sept. 20, 1873.

	WEEK.	SEASON.
By Delaware and Hudson Canal	39,878	1,045,552
By Railroad, East	10,567	302,886
" West	15,823	393,709
" South	3,979	145,576
Total 1873	70,247	1,887,723
Corresponding time in 1872 :		
By Delaware and Hudson Canal	46,598	1,037,163
By Railroad, East	10,212	410,139
" West	8,716	283,702
" South	9,698	279 036
Total	75,224	2,010,040
Decrease	122,317	

Delaware and Hudson Canal Company.

Coal mined and forwarded by the Delaware and Hudson Canal Company for the week ending Saturday, Sept. 20, 1873.

	WEEK.	SEASON.
North	57,928 06	1,938,087 09
South	3,978 15	145,575 13
Total 1873	61,907 01	2,083,663 02
Corresponding time in 1872 :		
North	51,318 12	1,866,250 04
South	9,097 15	279,036 00
Total, 1872	61,016 07	2,145 286 04
Increase North	6,609 14	71,837 09
Decrease North		
Increase South		
Decrease South	5,719 00	133,460 07
Increase		
Decrease	890 14	61,623 02

Prices of Coal by the Cargo.

(CORRECTED WEEKLY.)

	AT NEW YORK R.	A.	W.	A	AT PHILADELPHIA. R.	A.	W.	A.
SCHUYLKILL.								
Lump	$—	—	$	—	—	—	4	65
Steamer	—	—		—	—	—	4	60
Broken	—	—		—	4	70	4	70
Egg	—	—		—	4	85	4	10
Stove	—	—		—	5	05	4	90
Chestnut	—	—		—	3	95	3	95
Pea	—	—	—		—	—	—	—
LEHIGH.								
Freight to New York 50 cents.					—	—	—	—
Lump, (on board)	—	—	—		—	—	—	—
Broken	—	—	—		—	—	—	—
Egg	—	—	—		—	—	—	—
Stove	—	—	—		—	—	—	—
Chestnut	—	—	—		—	—	—	—
Pea	—	—	—		—	—	—	—
SPECIAL COALS*								
Honey Brook, Le'h	W.	A.	5	80@5 05	—	—	—	—
Spring Mountain "	"		5	80@5 10	—	—	—	—
Sugar Loaf "	"		4	00@5 90	—	—	—	—
Room Run "	"		5	00@5 75	—	—	—	—
Hill & Harris "	"			—	—	—	—	—
Shamokin "	"		4	10@4 70	—	—	—	—
Lykens Valley "	"		4	70@5 05	—	—	—	—
Broad T "	"			—	—	—	—	—

Company Coals.

Oct. 1873.

	L.	Str.	Gra.	Eg.	Sto.	Chest
*Scranton at E. Port	—	—	—	—	—	—
Pittston at Newburgh	5 00	5 00	5 10	5 20	5 50	5 00
*Lackawana at Rondout	5 25	5 35	5 45	5 50	5 80	5 20
Wilk'b're at Pt. John'n	5 00	5 15	5 25	5 40	5 60	5 05
Old Co. Lehigh at Pt. John'n	6 10	5 85	5 85	5 95	5 20	—
New York Coal Exchange	6 00	5 85	5 85	5 95	5 20	—

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

Prices at Baltimore—Oct. 1873.

Wholesale Prices to Trade.

Wilkesbarre, by cargo or car load	$5 65@6 00
Pittston and Plymouth, do	5 40@5 75
Shamokin Red or White Ash, do	5 60@6 00
*Lykens Valley Red Ash, do	@6 30
By retail, all kinds per ton of 2,240 lbs	7 25@8 25
*George's Creek and Cumberland f. o. b. at Locust Point for cargoes	4 85@5 00
West Va. and Youghigheny gas f. o. b. at L. Point	5 50
Kanawha Cannel, coarse	@

*Freight to New York $2 15.

BITUMINOUS COALS.

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

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

Sept. 1873.

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

Prices at Havre de Grace, Md.

Sept. 1873.

Wilkesbarre and other White Ash for Cargoes	$5 25@5 50
Lykens Valley	5 50@5 75
Shamokin Red or White Ash	6 00@6 50

Bituminous Coals (Cumberland).

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

Prices of Foreign Coals.

Sept. 1873.

Duty 75 c. per ton.

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

Liverpool Gas Caking	— —@— —
" " Cannel	17 00@— —
" House "	20 00@22 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.

Sept. 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 50	$1 25
Gowrie	2 00	0 00

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

	Coarse.	Culm of Coal.
Pictou nett	$3 00	1 50
Sydney	3 25	1 00
Langan	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 quo Currency.
Westmoreland f. o. b.	$6 00 @7 00
Fairmount Gas Coal Co. of N. Y. "	6 50 @7 00
Despard Coal Co. "	6 50 @7 50
Penn. "	6 50 @7 00
Newburg Orrel Gas "	6 50 @7 00
West Fairmount Gas Coal "	6 50 @7 00
Redbank Cannel, at Pa "	12 00 @0 00
AT PHILADELPHIA.	
Westmoreland "	7 50 @0 00

Freights.—Sept. 1873

TO EASTERN PORTS.	Cumberland. From Georgetown.	From Baltimore	Anthracite. From Philada.	From Port Johnson, Weehawken, and Hoboken.	From Elizabethport.	From Newburgh.	From Rondout.
Amesbury	—	—		—	—	—	—
Bangor	—	—		2 00	—	—	2 15
Boston	3 00	3 00		2 00*	2 10	2 10	2 15
Bridgeport	2 90	2 70		1 60	1 10	1 10	1 15
Bristol	—	—		1 35	1 40	1 40	1 50
Cohasset Narrows	—	—		—	—	—	—
Derby	—	—		1 25†	—	—	1 40
Dighton	2 60	—		—	—	—	—
East Cambridge	—	—		2 00	2 10	2 10	2 15
Fall River	2 50	2 80		1 35	1 45	1 45	1 50
Hackensack	—	—		—	—	—	—
Hartford	2 10	3 25		1 50	—	—	1 65
Hoboken	—	—		50	—	—	65
Jersey City	2 10	—		50	—	—	60
Lynn	—	—		—	—	—	—
Middletown	—	—		1 25	—	—	1 40
Mystic	—	—		1 25	—	—	1 40
New Bedford	—	—		1 40	—	—	1 55
Newburyport	—	—		2 15	—	—	2 30
New Haven	—	—		1 00	1 10	1 10	1 15
New London	—	—		1 20	1 30	1 30	1 35
Newport	—	—		1 35	1 45	1 45	1 50
New York	2 25	2 15		60	—	—	65
Norwalk	—	—		1 00	—	—	1 15
Norwich	—	—		1 30	1 40	1 40	1 45
Pawtucket	—	—		1 45‡	—	—	1 60
Portland	2 90	3 00		1 90	—	—	2 05
Portsmouth, N. H	—	—		2 25	—	—	2 25
Providence	2 40	2 75		1 30	1 45	1 45	1 50
Rockport	—	—		—	—	—	—
Saco	—	—		—	—	—	—
Sag Harbor	—	—		1 20	—	—	1 35
Salem	—	—		2 00	—	—	2 15
Stamford	—	—		—	—	—	1 15
Stonington	—	—		1 00	1 10	—	1 49
Taunton	—	—		1 25	—	—	2 09
Warren	—	—		1 85	—	—	1 50
TO RIVER PORTS	—	—		1 35	—	—	55
Albany	—	2 50					50
Catskill							50
Cockaackie							65
Coeyman's							20
Cold Spring							20
Fishkill							40
Haverstraw							40
Hudson		2 60					65
New York vessels							45
Nyack							30
Poughkeepsie							30
Rhinebeck							40
Rondout							40
Saugerties							50
Sing Sing							55
Stuyvesant							50
Tarrytown							60
Troy							20
West Point							50
Yonkers							

†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

Sept, 1873.

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

TO NEW YORK.

Provincial	
Sydney	
Lingan	$ 5
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.

Rates of Transportation to Tide Water.

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., 23c., for use at Phil., $2 18 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	62
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	10
Total	$2 23

TO SOUTH AMBOY.

L. V. R. R.	
D. & D. R. R.	11
Cam. & Am R. R.	
Shipping Expenses	25
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	10
Wharfage	20
Total	$2 35

MARKET REVIEW.

NEW YORK, Sept. 25, 1873.

IRON—The market has ruled very quiet since our last, the general unsettled state of affairs has had a quieting influence on this branch of business. There are no suspensions or failures looked for, as all parties concur in saying that there has not been a more prosperous branch of trade in the past, and one more able to stand any unfavorable state of affairs than is the Iron Trade of to-day. There is more disposition perhaps to sell at cash prices, and our quotations are somewhat nominal in consequence. A fair value for Eglinton would be $46, Glengarnock and Summerlee $47, and Carnbroe $48; sales 50 tons Eglinton, and 200 do. No. 1 Glengarnock, on private terms. American Pig is without change of note—good No. 1 is held at $41,50 at the furnace; sales 200 tons No. 2 X at $35 (at Hoboken); and 200 do., on private terms. Rails, either old or new, are without change. Scrap is without sales. Refined Bar from store is nominally steady at our quotations. A small lot Russia Sheet sold at 18½ cents gold.

PITTSBURGH, Sept. 18.—The Iron Association held a meeting yesterday, and it was resolved not to make any change in the present card rates.

PIG IRON.—(London *Times*, Sept. 3.)—It has long been my opinion that within a very few years our exports of Iron to the United States will be a thing of the past, unless the cost of manufacture in this country be reduced to something like old rates, and even then, I fear, it will be next to impossible to complete with the American Ironmasters, who now in many districts are producing Iron at a less price than it can be made in the United Kingdom. I do not speak unadvisedly, but from actual facts within my own knowledge. About eighteen months ago I sent out to the States a practical Iron maker, a gentleman trained in some of the largest Steel and Iron works in this country, expressly to examine into the mineral resources of a district in Western Virginia and East Tennessee, which, when certain railways now in course of construction are completed, will become a great center of Iron manufacture. During this investigation he visited the works of the Roane Iron Company, in East Tennessee, where two close-top blasting furnaces are in full work, producing 80 tons of pigs per day. The following is the working cost for December last:—

Month ending Saturday, Dec. 26, 1872.

Material.	No. pounds.	
Ore charged	2,144,000	$2,835 85
Coke charged	891,200	2,005 20
Coal charged	1,339,200	1,101 80
Limestone	552,700	304 58
Labor		1,170 15
Salaries		400 00
Materials from store		303 37
Blacksmithing		118 56
Foundry castings		98 03
Total		$8,337 55

Product, 590 tons No. 1 Mill iron; cost $14 13 currency per ton; ore yielding 62.40 per cent. The foregoing analyzed shows about the following cost in sterling: Iron ore, 15s. 6d.; fuel, 17s.; flux (limestone), 1s. 9d.; labor, salaries, stores, castings, etc., 12s. 6d.—£2 6s. 9d. per ton of Pig Iron. Present selling price in United States, $40 currency, £6 16s., showing profit of £4 9s. 3d. per ton. There is no reason why numerous furnaces and rolling mills should not be in operation in this neighborhood, as for over 200 miles the coal is cropping out to the surface, with red fossiliferous ironstone (yielding 60 per cent. in furnace), never more than half a mile distant, carboniferous limestone lying between, and a navigable river within five miles. I merely mention this one district, where iron is being manufactured at so low a figure that, if carried 500 miles to seaboard, and thence to the United Kingdom, it would leave a profit on the transaction. The enormous and ever-increasing demand for iron in the States—where production is stimulated for the moment by a heavy protective duty—will, however, prevent an export for some years. The foregoing facts should, I think, show our workmen that strikes and contracted out-turn of fuel if persevered in, will drive the iron trade to countries where nature has provided minerals in such abundance that unskilled labor can produce them for the manufacturers of iron and steel at prices which will enable them to supply the markets which the English ironmasters have so long monopolized.

LEAD.—Pig has been quiet—both buyers and sellers awaiting a favorable turn to the money market—and prices are nominally as before—75 tons sold at 7 cents for Spanish, and 6¼@6¾ for Domestic, gold. The manufacturers of Pipe and Shot are very busy. Bar 9¼ cents, Sheet and Pipe 10½ and Tin-lined Pipe 16½, less 10 per cent., to the Trade.

COPPER.—New Sheathing Copper (over 12 oz.) is steady at 38 cents, Bolts 40, Braziers (over 16 oz.) 40 Yellow Metal Sheathing, 27, do. Bolts 32, and Sheathing Nails 27, cash. Ingot has not been moved since the sale noted in our last at 25½ cents, prompt cash, and the market closes nominal at about this figure.

SPELTER.—There is little change to note in this market. In Europe, stocks are light, and prices are very strong, with a good demand. The only sales we heard of are 10 tons Silesian at 7¼ cents gold; and 100,000 lb. Western, 8¼ currency.

Withdrawals from bond for consumption 19th and 20th September—

Germany ..... plates 2,500

TIN.—The continuation of the monetary disturbance, has prevented any activity that might have prevailed in Pig, and the market is nominal at about 30½@31 cents gold for Straits and Malacca, 28@28½ for English, and 34 for Banca, the only sales we heard of being 2@3 tons English L. & F. at 28½ gold. Plates have been only slightly affected, if at all, by the commotion in Wall St., though business has been light for the season—the sales are 500 bxs. Charcoal Tin, (two lots) at 10,50; 500 do assorted $10,65, both gold; 500 do. on private terms; 750 do. Charcoal Terne, $9,87½@$10; and 200 do. Coke Tin, 12 x 12, $9,12½, all gold.

ZINC.—Mosselmann Sheet continues steady at previous figures—100 casks sold from agents' hands, at old rates, and 50 casks from dealers' hands, at 8¼ cents, net. Manganese black oxide, 3¼ do. Gray per oxide, 5½.

METALS.

NEW YORK, Sept. 26, 1873.

IRON.—Duty: Bars, 1 to 1½ cents ₩ lb; Railroad, 40 cents ₩ 100 lbs.; Boiler and Plate, 1½ cents ₩ lb; Sheet, Band, Hoop, and Scroll, 1¼ to 1½ cents ₩ lb; Pig, $7 ₩ ton; Polished Sheet, 2 cts. ₩ lb; Galvanized 2¼; 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	51 00@51 50
Gartsherrie	—@50 00
Glengarnock	47 00@— —
Eglinton	46 00@— —
Pig, American, No. 1	43 00@44 00
Pig, American, No. 2	34 00@37 00
Pig, American, Forge	31 00@33 00
Bar Refined, English and American	—@— —
Bar Swedes, assorted sizes, gold	—@137 50

	Store Prices, Cash.
Bar, Swedes, 1¼ to 5 x ⅜ & ¾ 2 sq. & 6 to 12 x ¼ & ½	175 00@— —
Bar, Refined, ¼ to 2 in. rd. & sq. 1 to 6 in. x ⅜ to 1 in.	82 50@ 85 00
Bar, Refined, 1⅛ to 6 by ¼	87 50@— —
Bar, Refined, 2¼ to 2¾ round 1 & 1¼ by ¼ & 5/16	90 00@— —
Large Rounds	92 50@107 50
Scroll	102 50@125 00
Ovals and half-round	110 00@130 00
Band	104 50@105 00
Horse Shoe	117 50@— —
Rods, ¾ to 3-16 inch	92 50@125 00
Hoop	120 00@160 00
Nailrod	— @ 9
Sheet, Russia, as to assortment (gold)	18 @ 18½
Sheet, Singles, D. and T. Common	—8½@— 7
Sheet, D. and T. Charcoal	—7 @— 8¼
Sheet, Galv'd, list 10 per cent, discount	— —@— —
Rails, English (gold), ₩ ton	64 00@ 67 00
Rails, American, at Works in Pennsylvania, currency	73 00@ 75 00

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

	Ath Cash.
Copper, New Sheathing, ₩ lb	— @— 38
Copper Bolts	— @— 40
Copper Braziers, 16oz. and over	— @— 40
Copper Nails	— @— 45
Copper, Old Sheathing, &c. mixed lots	24 @— —
Copper, Old, for chemical purposes, 14@16 oz.	— @— —
Copper, American Ingot, Cash	— @— 25½
Copper English Pig	— @— —
Yellow Metal, New Sheathing & Bronze	— @— 27
Yellow Metal Bolts	— @— 32
Yellow Metal Nails, Sheathing and Slat'g	27 @— 30

LEAD.—Duty: Pig, $2 ₩ 100 lbs.; old Lead, 1½ cents ₩ lb Pipe and Sheet, 2½ cents ₩ lb.

Spanish (gold)	—@7 00
German, do.	—@7 00
English do.	—@7 00
Foreign, Refined	7 25 @7 37½
Domestic do.	6 62½@6 75
Bar (net)	9 25 @— —
Pipe (net)	—@10 50
Sheet	—@10 50

STEEL.—Duty: Bars and ingots, valued at 7 cents ₩ lb or under 2¼ 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	—18½@— 23
English Spring (2d and 1st quality)	—9½@— 10½
English Blister (2d and 1st quality)	—14 @— 18½
English Machinery	—14½@— —
English German (2d an 1st quality)	—12½@— 14½
American Blister "Black Diamond"	—— @— 11½
American, Cast, Tool do.	—— @— 17
American, Spring, do.	—— @— 14
American Machinery do.	—11½@— 12
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	34 @—
Straits	30½@31
English	28 @28½

PLATES.

Fair to Good Brands.	*Gold.*	*Currency*
I. C. Charcoal, ₩ box	$10 50 @10 75	$12 25 @12 75
I. C. Coke	8 50 @ 9 00	9 75 @10 25
Coke Terne	7 50 @ 8 50	8 75 @ 9 75
Charcoal Terne	9 87½@10 75	11 75 @12 25

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

Plates, Foreign (gold) p. 100 lb.	7 37½@— 7 87½
Plates, Domestic p. lb.	8¾@—11

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

Sheet	per lb.—10 @10½

San Francisco Stock Market.

BY TELEGRAPH.

NEW YORK, Sept. 25, 1873.

We have advices from the San Francisco Stock Board dated Sept. 18 and 23d, excepting a slight advance in Savage and Belcher, the list is nominally unchanged; the reports are as annexed:

	Sep. 18.		Sep. 23.
Savage	45	—	46
Crown Point	81	—	—
Yellow Jacket	48	—	46½
Kentuck, "New Issue"	10½	—	10½
Chollar Potosi	39½	—	39
Gould & Curry "New Issue"	11¾	—	11⅝
Belcher "New Issue"	65	—	70
Imperial	4½	—	4¼
Raymond & Ely	71	—	68½
Meadow Valley	17	—	16¾
Eureka C. V.	20	—	19 Bid.
Ophir	—	—	—
Hale and Norcross	—	—	—

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.

IV. The regular October meeting of the Institute will be held in Easton, Pa., on Tuesday, October 21st, beginning at 7 o'clock P. M. Authors of papers are requested to notify the Secretary in advance of the subject and length of their papers.

Members will rendezvous at the United States Hotel.

WM. FIRMSTONE,
J. C. KENT,
J. M. SILLIMAN,
Local Committee of Arrangements.

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

THE ENGINEERING AND MINING JOURNAL.

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

PUBLISHERS' ANNOUNCEMENT.

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

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THE SCIENTIFIC PUBLISHING COMPANY.

WILLIAM VENTZ, SECRETARY.
27 Park Place,
P. O. Box 4404. NEW YORK CITY.

CONTENTS FOR THIS WEEK.

ONE of the first unfortunate results of the scarcity of money and the blow to railroad interests by the sudden fall in values, is the discharge of large numbers of workmen from the locomotive works at Patterson. Other manufacturers of railroad stock can hardly fail to follow suit. The census of 1870 showed that the car builders manufactured $30,000,000 worth of rolling stock in 1869. At $1,000 a car this showed a make of 30,000 cars, but it has been estimated on good authority that last year 100,000 cars were built, and the supply was so far short of the demand that many roads are seriously crippled for lack of transportation facilities. New car works have been built, and a large amount of money has been lately invested in the business. Many of these shops must suffer temporary difficulties, but it seems probable that the old roads will now be able to obtain that attention which new projects have heretofore deprived them of.

THE question of exchange with foreign countries is one that few people have any clear idea of, and from an explanation concerning the law establishing the Custom House value of the pound sterling, it is easy to see that there is reason for the general perplexity. Nearly two centuries ago the exchange was fixed at 54 pence sterling for the dollar, and the pound was therefore worth $4.44 4-9. But this dollar was the old Spanish coin which was replaced by a dollar worth nearly 9 per cent. less. Notwithstanding this change, the old dollar was retained as the basis of exchange, so that our exchanges are quoted at an apparent discount of nearly 8¼ per cent. below their real value. The law above referred to merely directs the abandonment of the obsolete dollar as the basis of exchange, and it goes into effect with the beginning of next year. The Secretary of the Treasury has prepared a circular, with tables of exchange attached, explaining the origin of the law, and recommending an immediate change to the new system.

THE forty-second exhibition of the American Institute opened at the Rink in New York, on Monday, September 9th, if that can be called an "opening," which is attended by less than a hundred persons. The reason why there were no more visitors is the one which recurs every year—lack of preparation. In the machinery department there was not one engine set up, and in every respect the "fair" was still a thing of the future. The opening address was delivered by Mr. NATHAN C. ELY, who had little to say, but spoke sensibly and well. The President of the Board, Dr. BARNARD, is in Europe, and Ex-Governor SEYMOUR and other distinguished gentlemen disappointed the Trustees in their hopes of a formal address, and the result was Mr. ELY's speech. He said that the managers have it in contemplation to postpone the official opening until the Institute has its exhibits really prepared. In this way they will escape the noise of the workmen's hammers, and the proposition is a good one. The fair contains many interesting things, of which we shall speak hereafter.

THE autumn meeting of the American Institute of Mining Engineers will be held in Easton, Pa., on Tuesday, the 21st of October, beginning at 7 o'clock P. M. This is one week in advance of the time for the regular meeting, the change being made in accordance with the resolution passed in May in Philadelphia, to make the October meeting coincide with the inauguration of the new Pardee scientific building of Lafayette College. The new building—probably the finest of its character in the country—will be formally dedicated at 11 o'clock A. M., on Tuesday, October 21st. R. W. RAYMOND, President of the Institute, will make the address. As this event will be the occasion of the assemblage of a large number of scientists from all parts of the country, additional interest will attach to the meeting of the Institute, besides that already possessed by Easton as a scientific and manufacturing center. The local committee of arrangements, consisting of Mr. WILLIAM FIRMSTONE, of the Glendon Iron Works, Mr. J. C. KENT, of the Andover Iron Works, and Prof. J. M. SILLIMAN, have arranged an attractive programme for the Institute, including visits to the principal mines and iron works in the vicinity of Easton. The committee have designated the United States Hotel as place of rendezvous.

The Effect of the Financial Panic.

IT cannot be doubted that the iron business all over the world has received a blow in the tremendous fall of railway values, which has been the financial event of the past fortnight. An ordinary fluctuation in the value of stocks does not affect the progress of railway extension, but this disaster, it seems to be generally admitted, must be the death-blow to that wonderful activity in railway building which has characterized this country for ten years past. The railway business is so enormous that no less than $473,000,000 was received last year as gross earnings, and $166,000,000 as net earnings. This is upon a capital which is put at $1,648,000,000 of stock, and $1,512,000,000 of debt. We give these figures to show to what huge proportions this business had grown, but we are at present concerned with railroads in their relation to the iron business. The Secretary of the Pig Iron Association estimated that 7000 miles of new road were laid yearly, and that each mile required 150 tons of iron—a total of 1,050,000 tons for construction account; also that the existing roads, in round numbers of 70,000 miles, required to renew 10 per cent. of their iron way yearly, making 1,050,000 tons more. Here is 2,100,000 tons of bar iron for the railroads alone, and it is plain that if American furnaces had furnished all the pig for these bars, not a ton of American pig would have been left for other purposes. But we imported 1,250,000 tons and worked up 400,000 tons of scrap. Railway construction has now received so terrible a blow that it may be looked upon as practically closed for some time. The Pacific roads, the numerous narrow gauge enterprises, and the lines projected through the older parts of the country, must all lie quiet for a while, and many of them will not revive for years. If we built 7000 miles last year, we will not build 2,000 this year, and the tightness in money, combined with the caution which will be used in trusting railways, must diminish very sensibly the renewals of track. Though it is now impossible to estimate the future, it is hardly possible that the call for new rails will amount next year to more than half what it was in 1872. Although this may be a temporary embarrassment to iron producers, it cannot fail in the end—in combination with the high prices abroad—to act more seriously against foreign makers than against our own. The slack demand will eventually tell not here but abroad, and the forebodings of English thinkers that they have lost the greatest foreign market in the world must to all appearances be realized. But here, there are circumstances which throw a better light upon the case. Now that railway stocks have broken down, people are looking about to see what is to be the next favorite. Some say real estate and some say mines. We are not going to name any probable favorite, but we think it certain that manufactures will be in better favor now than they have been for years. The state of finances has been such that the wildest railroad scheme was more certain of help from money lenders than the soundest commercial enterprise. We do not say that manufactures are about to become the theatre of undue speculation, and we certainly hope not; but we do think that the discreditable and unjust discrimination against commercial paper will be very much lessened, or entirely cease, and that the immediate inconveniences of a tight money market will be followed by a return to a better feeling than we have had for years.

The Sale of American Iron in England.

AFTER all the discussion about the ability of United States producers of iron to enter the markets of England in competition with those powerful firms who have so long held possession of our markets, it is at least surprising to be told that there has been no American iron sold in England, for the discussion was based upon alleged *bona fide* sales. The Washington despatches of a few days ago contained the following: "The Chief of the Bureau of Statistics says, in reference to the alleged sale of American bar iron in Liverpool, that he has caused a careful examination of the statements of domestic exports from the United States during the thirteen months ending July 31, 1873, to be made, which resulted in the discovery that not a single pound of American bar or railroad iron had been exported from the United States to England direct during that period. If any reached England, it must have been through Canada, to which five tons of bar iron and

326 tons of rails were exported during the fiscal year 1873." Messrs. BIGELOW and JOHNSON, the well known dealers of 48 Pine street, New York, had before that questioned the truth of the sales. The *Shipping List*, of Sept. 6, said that 100 tons of American bar iron had been sold for Liverpool delivery at £11 10s., less 2½ per cent. commission, and the above named firm pointed out that this was equal to $47 36 currency a ton!

A *Tribune* reporter hunted up the sellers of this iron, who proved to be Messrs. JACKSON and CHASE, 206 Franklin street. They asserted the reality of the sale, though they declined to name the price, merely saying that it will give them a profit at present quotations for a quality which will compete with Staffordshire brands selling at £12 to £14. It seems the transaction grew out of their own motion. The reporter says that "taking advantage of the high rates of the English manufacture, and the comparatively low quotations of the home article, they determined to throw some of their goods upon the English market, and to this end broached the subject to a leading Liverpool correspondent. The reply was encouraging on the whole," and finally came an order for 100 tons from their correspondent. They acknowledge feeling surprised that their terms were accepted and hint that the order may be made to test a much mooted question, or for some ulterior purpose. Indeed this is plain enough if the following cable despatch from London, September 16, is true: "One hundred tons of American bar iron sold at Liverpool yesterday at £11 10s., thus underselling the English market."

The reporter then "interviewed" the iron merchants of Cliff and John streets and found them all firm disbelievers in the possibility of selling American iron abroad. They furnished him with the following estimate of the results which might be expected from such an operation.

Cost at works, per ton	$67 20
Carriage to New York	5 60
Freight to Liverpool	7 50
Insurance	80
Cartage	1 00
Commission, 2½ per cent	2 00
Total, in currency	$84 10
Deduction for gold, 16 per cent	13 44
	$70 66
Quotation best refined Bar Iron in Liverpool, English manufacture, £13 2s. 6d	58 33
Loss per ton in gold	$12 33
Loss per ton in currency	14 29

From the first the merchants in England and America have been divided upon this question. The latter, and also the really well informed portion of the press, have denied the possibility of exporting their iron to England at present rates, or under present conditions of production. Their English rivals, on the contrary, both in the trade and in the press, have deliberately expressed precisely the opposite opinion. For instance, on the 10th came a cable despatch saying that "CAINES, the iron merchant of Liverpool, in a letter to the press, admits that iron may be profitably purchased in New York for shipment to England, and says he is convinced that the American trade is lost to England." We have assembled this evidence for and against the question solely because the sale in Liverpool, which seems to be well vouched for, can be significant of nothing but an intention to mislead. It is hard to see how a seller could have been found at the price named, and we quite agree with the trade in looking upon the sale as in no sense indicative of what may or may not be done with American iron.

We can see no reason to alter the opinion expressed many months ago, and which tallies exactly with that of men actively engaged in the iron trade. Whether the English merchants are misled by the difficulty of selling their iron here, and by the certainly doleful outlook for them in the matter of wages and coke, or whether they keep up the discussion merely for its possible impression upon the laborers, we cannot say. They have the reputation of learning with great accuracy the condition of trade in other countries, and we should be surprised if they have really mis-estimated the powers of the trade in the United States.

The Rescue of the Polaris Crew.

THE strange story of the *Polaris* was fitly, last week, wound up by the sudden announcement from Dundee, Scotland, that Captain BUDDINGTON and the remainder of the crew had arrived at that place in a whaling steamer. They had been picked up July 20th, by the whaler *Ravenscraig*. They wintered on Littletons island near the spot where they were separated from their companions, and having burned up all the light stuff in the ship, finally made two boats out of the pine lining of the cabin. The boards were pierced with nail holes, but HUBBARD C. CHESTER, the first mate, who seems to have have been the main prop of the party, managed to make the boats tolerably tight, and the party sailed early in June for Cape York, off the west coast of Greenland, where whaling ships are accustomed to rendezvous early in July. The history of the voyage is interesting, though monotonous. "Every night, when the labors of the day were over, the boats were hauled up upon the floe, and everything taken out, and the only hot meal of the day was prepared. The apparatus employed in cooking was of the most primitive character. Each boat carried a quantity of rigging from the Polaris, and a can of oil. With these a fire was made in the bottom of an old iron bucket. Tea was the only thing that could be made with such an apparatus. They state that the privations they suffered were not serious. The life was rough, laborious, and monotonous; but though dangers occasionally presented themselves, well calculated to inspire the greatest fear, no serious accident occurred, and on the 21st of June the boats reached Cape York in safety." Two days after they descried the *Ravenscraig*. Had they failed to reach the Cape in time they would have had a hard voyage before them to Upernavik, and it is doubtful whether they could have accomplished it.

By this arrival the suspicions of mutiny are set at rest. But at the same time comes information from the *Tigress*, the vessel sent out by our Government in search of the *Polaris* crew. It is a little remarkable that the *Tigress* has been able to make her way to the very spot where the lost crew wintered, interrogate the Esquimaux and visit the *Polaris* herself, now sunk nine fathoms deep and with a small iceberg grounded upon her, and, having done all this, get back to Tessuisak, Greenland, in just fourteen days from the time she left that port. She sailed August 11th, and dropped anchor there again before daylight, August 25th. The cause of this rapid work was the extremely mild weather, and having approached to within 464 miles of the pole, she might have gone much further if that had been her object. But a whole nation was waiting to know the results of her search; and an "ice blink" appearing in the North, she turned round. Her captain had already discovered from the Danish Governor of Uppernavik, that there had been serious dissensions on Captain HALL'S ship before she reached that place. Doctor BESSELL, the Chief of the Scientific Corps, is said to have been the moving cause of the trouble, while renewed charges of incapacity are made against Captain BUDDINGTON. It will undoubtedly be the work of the Treasury Department to investigate this painful affair, and we leave the truth of these reports to be settled by authority.

It is worth mentioning that the cruise of the *Tigress* in search of the *Polaris*, as well as that of the latter vessel, is a new proof that the only way to make voyages in regions of extreme cold is to carry the house, *i. e.*, the ship, along wherever the crew go. Although it was learnedly prophesied that the *Polaris* would pass her first season without doing anything of moment, because of her very late start, she really managed to reach 82° 16 north latitude—the highest position ever attained by any ship. She passed in two days over ground which HAYES with sledges took thirty-one days to cover. Captain HALL landed in 82 deg. 9 min. north latitude, which was 34 minutes higher than human foot had trodden before. At that point they ascended an elevation of 1700 feet, whence they could see land as far as latitude 84° north. Dr. PETERMANN, the celebrated German geographer, says of the results:

It was rather the fault of the actual nautical commander of the Polaris, Captain Buddington, who, it would seem, did not possess interest or devotion enough for the grand object, that the expedition did not attain a higher latitude. It is not only the high latitude reached by the Polaris that is remarkable, but rather the peculiar nature of the Polar Sea, where it has been attained, viz., through Smith's Sound, Kennedy and Robeson Channels, which are shaped like the neck of a bottle, and would seem to be especially favorable for the blocking of ice. Experience also teaches that Smith's Sound is particularly adapted for the accumulation of immense masses of ice, by which, for instance, Kane and Hayes were debarred from going with their vessel further north than latitude 78 deg. 37 min. This was also one of the reasons that caused me to urge the proposition to pursue North Pole explorations not exclusively through Smith's Sound, although before Hall no suitable steamer had ever made a trial there. But it is now proven that even in this relatively difficult and icy region it cannot be said that eternal ice exists; and, furthermore, it was seen that advancing in the vessel is the best means, and that sledge journeying is not to be relied on.

CORRESPONDENCE.

Mining in Vermont.

GOLD "excitements" are no new thing in Vermont, but have formed a part of the history of that State in almost every decade in this century. They do not, however, take on such a development as similar events in the West, for long experience has taught the northern farmers the value of making haste slowly in these matters. A recent discovery of gold in the immediate vicinity of Rutland, the largest town in the State, bids fair to bring about a stir of more than ordinary importance, and prospecting is reported to be going forward with considerable vigor. The sands of Mill River, a stream which runs near the town, are tried daily by parties who find gold, as it is always found here when looked for in that particular belt running down the State, and if the "pay" were really ten cents a pan, as it is said to be, the discovery would be of some importance. But there is good reason for doubting any such exceptional wealth. Even if the dirt is proved to hold such an amount of gold, it is very doubtful if mining operations on the large scale will pay, for Vermont does not show those vast accumulations of alluvium which give to placer mining in California its stable character. Mining may possibly pay, but only on a moderate scale and with such small investments of capital, as a limited amount of "dirt" will sustain. I do not by any means look upon the discoveries at Mill River as insignificant, for Vermont sadly needs an extension of its manufacturing interests both to supply a market to farmers in a State which is far away from the centers of consumption, and as a means of keeping young men at home. The State already presents some of those social phenomena which are usually considered peculiar to older communities, and which are so far unusual in our country. Young men leave it, partly because there would not be farms for them all, even if the land was divided up as it was years ago, and partly, because even the original number of farms is lessening by the absorption of many small estates by one man of capital. This result is not brought about as in some countries by the overwhelming power of capital, but rather by the difficulties attending life upon a small farm with a market which is reached only by railroad. Increase of the unproductive class will tend very de-

cidedly to restore the fortunes of the State, and so far that increase has mostly been in the direction of the mining industries.

By far the most important of these is the quarrying of marble. Between Middlebury on the North and Danby on the South there lies a district which produces large quantities of a marble noted for its excellence. Mr. J. E. MANLEY, of West Rutland, in an address before the State Board of Agriculture in 1872, said that the quarries cover no less than 24 layers of marble, forming a total thickness of 110 feet of which, however, a large proportion is No. 3, or marble which will not pay to work, unless better qualities are found with it. The best developed quarry is that of Messrs. SHELDONS & SLASON who have two openings covering nearly all the layers exposed in the various quarries. One of these openings shows eight layers, 31 feet thick, of which 1-15th is No. 1, or statuary marble, ¼ is No. 2, and the remainder is No. 3, veined, blue and mottled marble. Sixteen layers, 79 feet thick, are exposed in the other quarry, and of these 35-79ths are No. 3 or unprofitable for independent extraction, and 44-79ths are of paying qualities. In Rutland County there are twenty mills, containing 200 gangs of saws, with about 22 saws to each gang. Fully one quarter of the saws are idle from various causes, the principal of which is want of capital. A marble saw cuts at the rate of one and one-half inches an hour through a block 4×6 feet, and the daily production of 150 gangs is therefore 33,000 feet, or 9,900,000 feet a year. Of this marble about $1,500,000 worth goes to market every year. If quarrying and sawing cost 75 cents a foot each, and 25 cents is added for selling expenses, the cost of marble is $1,75 per foot at the mill. Mr. MANLEY says that at least one-half of the marble will not bring this price, much of it being sold for $1,00 a foot. No. 1, or statuary marble, sells for $12 a foot, and the supply is not equal to the demand. It is reported to be a peculiarity of this quality that when the center of a layer is statuary marble the two surfaces are invariably of very poor quality, flinty and coarse.

Next in possible importance is an almost inexhaustible supply of light gray granite, fine in texture, susceptible of a high polish, and enduring exposure in the most satisfactory manner. It lies in Bane County, away from the railroad, and the cost of transportation has prevented its use. It is described as being superior to the granite in common use in cities, and as capable of becoming a very valuable addition to the mineral resources of the State if facilities for transportation are ever afforded to it. It seems to me that the dove colored limestone of Vermont would find ready sale as a building material in cities where the glare of white marble is justly considered offensive. Its color is a delicate pearly gray, it can be had in large blocks and it weathers well.

Of ores the production of the State is not important. Excellent iron has been made from limonite at one or two furnaces, but the industry has almost ceased, partly from the increasing cost of charcoal and partly from the cost of running the 25 foot furnaces which were built in old times. It is hardly possible that this industry should revive except in very limited measure, unless deposits of magnetic ore are discovered. Some chromic iron has been found of sufficiently high percentage to afford a source of chromic acid, but the production has been small, though I believe the explorations are continued by a Boston firm. Better success has attended the mining for copper. At Vershire, in Orange County, there is a mine of cupriferous iron pyrites which affords some ore of three per cent., capable of being dressed to 10 per cent. This deposit is similar in character to those of the Blue Ridge, but the proportion of copper bearing pyrites seems to be smaller. The ore is roasted in piles and reduced by two fusions to pig copper. The furnaces are reported to burn out in a week which looks as if a metallurgist were needed at the works. In January, 1872, when copper was twenty-five cents a pound, the monthly product was $26,000, or 50 tons. Copperas is another product of this mine, and large quantities are made. The works are, however, chiefly noticeable for being, with the exception of those at New Bedford, the only copper smelting works in the Eastern States.

Gold mines and lead mines have been opened, but have in all cases failed to be valuable. In 1868 there was quite a fever at Lisbon and two quartz mills were built. In 1866 quartz veins were mined at Bridgewater, and at Plymouth, gold mining has been carried on for years, but in a feeble way, and in all other places it has been a failure. One of the reports from the new Rutland diggings says that the vein from which the gold sands were probably derived has been found, and shows a well marked line of gossan. The State geologist says he has seen "prominent indications" of tin in the deepest shaft of the Vershire copper mine. What those indications were he does not say, but as the mine is worked by Cornishmen he may have accepted their tales as evidence of the near existence of this metal. Still it is no small thing to place Vermont along with Missouri among the possible tin producing States of the Union!

Altogether the mining prospects of Vermont, while important to the State itself, are not of very great moment. Its marble, limestone and granite quarries offer by far the best chances of prosperity and in the increasing use of stone as a building material in cities there may be a field for an indefinite extension of business. As its mountains are gradually cleared off other deposits of copper ores may be found and small iron industries may rise again in the State. These, while of little general importance, cannot fail to be of great local value and may form a redeeming feature in Vermont's future. X.

Enamelled Iron.

M. PELIGOT has made a report to the Society for the Encouragement of Industry, on the enamelled wrought and cast-iron work introduced by M. PARIS about twenty-five years ago, and for which the Society have awarded him two medals. According to the report in question, the enamel used is a true transparent glass which allows the color of the iron to show through, very tenacious, having the same power of dilatation as iron, and capable of resisting powerful acids. The ordinary white enamelled ware of Paris generally contains lead, and often in large proportions, and is liable to be attacked by even very weak acids.

M. PARIS' ware has been employed for many purposes; cast-iron vases for gardens decorated in imitation of old Rouen ware, have been exposed to all weathers without suffering any injury; a chimney in enamelled plate-iron was set up at the Mazas prison in 1849; the doors of the gold-assay furnace in the laboratory of the Paris mint are of the same, and have borne the effect of nitrous vapors since 1850; in 1866 this enamelled iron was selected for street names and house number plates, in several districts of Paris, and the report states that while other manufacturers make enamelled ware of the same appearance as that of M. PARIS, the latter has shown its superiority in resisting the effects of time.

Specimens of new applications lately introduced by M. PARIS, were presented to the Society, and included chairs, tables, and stools for gardens, enamelled on sheet iron and mounted on castings; and stands for dishes, decanters, etc., made in imitation of ancient earthenware, but presenting the superior advantage of bearing heat well.

The New Oil Wells.

For the sake of easy reference there are several modes of dividing the oil country, but the best general designation, and the one most likely to be understood by the casual reader, is that of the "Old" and the "New" Districts. Of course, where there is such constant change as there is in the oil country, these terms can have no fixed meaning, for what is new to-day may not be so considered three months hence. But just now this division is particularly a good one. The northern extremity, or rather the two northern extremities, of the oil producing region are in the vicinity of Titusville and Tidioute, from which points it extends in south-westerly direction along the Allegheny River, though not following its course strictly, down to Greece City and Millerstown, a distance in a straight line of about eighty miles. The "Old District" begins at the north, as given above, and ends at Parker's Landing, on the Allegheny River, and comprises most of the old famous wells, including those of Pithole, which have figured so conspicuously in times gone by. The "New District" begins at Parker's Landing and extends down to, and includes, the new wells of Modoc. The entire district is a rough farming country, and is traversed with lines of hills which, though not remarkable for height, are of a mountainous character.

The present accepted theory in regard to oil-producing rocks is that they lie in series of belts, the general trend of which is from twenty-two to twenty-three degrees east of north and west of south. But there are minor belts that seem to run across the great belts, and even the most experienced oil men are not very certain of the accuracy of their theories.

BORING FOR OIL.

The business of drilling wells has now fallen almost entirely into the hands of professional drillers. When a man or a company has decided upon drilling a well, and selected its site, the first step taken is to put up a derrick, or, as it is termed here, a "carpenter's rig." This is a framework, made mostly of plank, from 65 to 75 feet high, about 14 feet square at the bottom, and running nearly to a point at the top. The cost of a derrick is about $800. The tools used in drilling are the bit, which is like an ordinary rock drill, but larger, being about three feet in length; above that is the augur stem; then two chain links called the "jars," and above that the "sinker bar." This is attached at the upper end to the rope, which passes over a pulley at the top of the derrick, and thence down to a large windlass outside of the derrick. The drilling is done by a steam-engine with a crank movement, which keeps the drill at work day and night, a man standing by in the derrick to give the tools more rope at proper intervals, and to turn the drill while it is operating. After the drill has reduced a certain quantity of rock to sand, it is drawn from the well up into the derrick, and the sand pump is lowered and the sand brought out, when the drill is again inserted. The rope used must be of the very best quality, and in digging deep wells it requires two ropes, as the sand very soon cuts them out. The expense is a very considerable one, being $400 for each rope. The tools for drilling that are now used weigh 1,800 pounds, those that were first used weighing only 90 pounds. A good set of drillers will put a well down in about 65 working days, provided they have good luck and no accidents, but it oftentimes takes six months to reach the oil sand.

As a rule, those who sink wells confine themselves to the vicinity of good oil-producing country but occasionally a man of rather sanguine bent of mind risks his eight or ten thousand dollars on an outside lore. Such wells are called "wild-cat" wells, and if they prove unsuccessful, which is generally the case, they serve as guides to the more careful oil men, who use them as "tests" in determining the limit of a particular oil deposit. Such wells are sometimes called "test wells," but a test well proper is one that is sunk for the mere purpose of ascertaining whether oil is in a particular locality, the owner being willing to run the risk of sacrificing his money for that purpose.

When the drillers strike a well that gives out only gas, no oil appearing, it is considered an indication that the limits of the oil deposit in that direction are reached, and none but wild-cat borers would think of going further. I visited the great gas well near Modoc, but found it decidedly on the wane. When it was first drilled the rush of gas was so powerful that the roar could be distinctly

heard three miles distant, and within 200 or 300 feet of it audible conversation was an impossibility. The force was so great that the edge of a table-knife could not be held in the jet with the hand. Now, however, the force is so much reduced, owing, as is believed, to the boring of so many wells at Modoc, two and a-half miles distant, that without much difficulty an ordinary cane can be held over the discharge, and in all probability the well will soon cease to discharge at all.

There is another gas well near the village of Fair View, from which that village is both lighted and provided with fuel, the gas pipes being laid upon the surface of the ground. A coating of salt is being constantly formed on the casings of these gas wells, and after a considerable quantity accumulates, it is detached and blown out by the gas, many pieces of which I picked up from the ground around about.

THE NEW WELLS AT MODOC.

The large new wells are what are called "flowing wells," that is, they do not require to be pumped. The stream of oil from a flowing well is not continuous, but comes in pulsations, with occasional intermissions of entire stoppage of greater or less length. A good flowing well runs at first with great force, and the yield of oil is accordingly great, but it gradually decreases in production until it ceases to flow at all, and then it must be pumped, after which the supply goes on decreasing until its yield will not pay the expense of pumping, and then it is shut down. It therefore requires, ordinarily, the constant drilling of 400 wells to hold the production up to the level of the demand. But at the present time all drilling must stop except in the neighborhood of Modoc, because nothing less than a 200-barrel well will pay back to the owner the first cost, $8,000 to $10,000, with oil at the present prices, 80 cents per barrel at the wells. Wells that will yield 200 barrels a day are found only at long intervals, Modoc being at present the exception to this rule, and the richest oil deposit yet discovered in Pennsylvania.

The first well that was sunk at Modoc was the Troutman Well, which was struck last March. At first it averaged about 650 barrels a day, and it turned the attention of oil men in that direction. It, however, stood alone for over four months before any other wells were finished. Its present yield is about 300 barrels a day, and it is considered as holding out remarkably well. In July a number of other wells were struck, among which two of the richest were the Walt Thompson and the Dean & Taylor wells. Their yield is now estimated at 650 barrels each per day. There are at this place 16 wells, all lying within a square mile, which now average 500 barrels each every twenty-four hours. The reports that the new oil wells of Modoc are materially falling off are not correct. It is the opinion of good experts that the yield of oil is even greater than it is reported to be by the producers themselves. I saw wells that were said to be giving 500 or 600 barrels a day which had every appearance of yielding 1,000 barrels a day. As a large number of new wells are being drilled in this deposit, the producers, being anxious to keep the price of oil as high as they can, are evidently underestimating the capacity of their wells.

THE PIPE COMPANIES.

As is well-known, all the oil is delivered from the wells to the delivery tanks on the railroads through pipes. These pipes are laid generally upon the surface, and they run through valley and over mountain, and under rivers, the oil being forced through them by steam power. The longest pipe now in use is about 15 miles in length. When the first pipes were laid, the railroads attempted to monopolize the business, and secured legislation to that effect; but the famous railroad war of about a year and a-half ago frightened them into giving up their monopoly, and now any one is at liberty to lay as much pipe as he pleases. The expense, however, of providing pipe for oil exportation is so great, that the business has fallen into the hands of a few large companies, and it has been charged that they, for the purpose of speculation, are conspiring to depress or keep down the price of oil. I hardly think there is any real foundation for this charge, for the present supply of oil (34,000 barrels a day) is so much above the demand (20,000 barrels a day), that we need look nowhere else to account for low prices. The pipe companies, although they may not yet have used their power, to the injury of the oil producers, possess too much power. The great bulk of the oil at the wells is sold directly to these companies, but they also transport a great deal of oil for owners, to be sold at the railroads.

These pipe companies handle a great deal of oil and have large amounts on deposit; they receive oil for transportation and buy oil themselves, and it is all mixed in the same tank, so that there is no way of knowing whether they are selling their own oil or oil that has been deposited with them. If they want to "bear" market they can take the producer's oil, the very oil that is held for a higher price, and knock the market down. That they have done this already is well known. And as they have the only means of ascertaining exactly to a gallon what each well is producing, their superior knowledge in that respect gives them an undue advantage, and might enable them to control the market entirely. This might be remedied if the pipe companies were required to make a weekly report of the yield of each well. At present there is no security for the producers, and if one of these pipe companies should fail it would cause a great disturbance to the business.

The total oil product is now 34,560 barrels of 42 gallons each every twenty-four hours. Of this product the First District, which is the latest development and includes all the big wells, furnishes 18,560 barrels, the Second District 2,500 barrels, the Third District 4,500 barrels, and and all the other districts, containing the wells that furnished all the oil previous to 1870, 9,000 barrels, making a total, as above stated, of 34,560. The number of producing wells in the entire oil region of Pennsylvania is about 5,000, and the average daily product per well is about seven barrels. The average daily product in the First or Lower District is 41 barrels.—*Correspondence of the Tribune.*

Casualties.

MINING casualties of a serious character have characterised the history of this month. One in a coal mine at Pittsburg was of a very unusual kind. The *Telegraph* of that city says:—"Yesterday afternoon, between three and five o'clock, a distressing accident occurred in KEELING'S coal mine, coming out of Coal Hill, at the head of Twelfth street. A small engine drawing thirty coal cars started through the mines, but had not run very far when the steam gave out. The train was cut, and a portion of the cars taken out. The engineer and fireman returned to bring out the remaining cars, but finding it impossible to move them, prepared to generate more steam. The smoke and sulphur occasioned by firing up, together with the gases in the mine, overpowered the engineer, and he fell forward on to the boiler, barely having time to call the attention of the fireman to his condition. The fireman at once jerked the throttle valve and the engine started just as he became overpowered. On emerging from the mine, Mr. Joseph Burns noticed something wrong in the engine and jumped into the cab and shut off steam, otherwise it would have passed into the check-house and over the hill. It was known that a number of workmen with several boys had been on the train, and it was soon discovered that one of the lads was missing. The mine was explored and the body of the little fellow was found, the head being completely severed from his body."

The mines on the Comstock lode have again to suffer a sharp experience of fire. Despatches from San Francisco say that shortly before three o'clock on Friday afternoon, Sept. 19, a fire was discovered burning in the 1,300 foot level of the Yellow Jacket Mine, north of the shaft. An explosion of gas soon occurred, which nearly knocked down the men standing at the mouth of the shaft, and caused the cages, which were raised to that point, to jump up several inches. Smoke came rushing up the shaft at the same time. Knowing there must be fire or something wrong below, an alarm was given, and the engine sounded the whistle of the works. The alarm was quickly communicated to the Fire Department, and in a short time the firemen, with their machines, were at the scene and a stream of water was pouring down the shaft. Several men were busy putting in a pump to send water from the 1,500 foot level of the Yellow Jacket Mine through to the Imperial shaft by a drift which connects the mines at the 1,300 foot level of the Yellow Jacket Mine, and in a few minutes more would have completed the job. The men were at the 1,500 foot level when the explosion occurred at the 1,300 foot level. Those above warned them of the danger, and they saw a heavy volume of smoke passing from the drift into the shaft. They succeeded in escaping through the Crown Point Mine. The force of the explosion was felt strongly in both Crown Point and Belcher mines, and an alarm was communicated with panic quickness. Miners hurried to the shafts as speedily as possible, and effective hoisting works, with double cages, brought them to the surface. The force of the explosion blew out the lights in the 1,000 foot level, and in continuous parts of the two mines men were thrown violently off their feet. Several miners were missing. It was known that some must have been killed or so injured that they could not escape. As soon as the great rush was over parties went in search of the killed and wounded, and succeeded in finding six. Five were found in the 1,100 foot level of the Crown Point Mine, where they were working. They were evidently killed or fatally asphyxiated by the deadly gas forced in by the explosion. The sixth and last was from the 1,500 foot level of the Yellow Jacket, and was the body of Louis Louisselle, a blacksmith. The fire broke out in the blacksmith shop belonging to the Belcher Mining Company, situated 1,300 feet below the level, in the Yellow Jacket Mine, a short distance north of the Jackson shaft. The timbers being very dry the fire spread rapidly, and very soon filled the Yellow Jacket, Crown Point and Belcher Mines with gas and smoke. After two days' work it was extinguished and work resumed in the mines. The miners are said to insist that there shall be no more blacksmith shops in mines.

Twelve miners were suffocated in the Lincoln Mine at Sutter's Creek on the 4th inst. It appears that seventeen miners were at work on the three hundred foot level of the mine, when they tapped some old works and were immediately overcome by gases which had accummulated in the old works, and which rushed in upon them with stifling effect. Five of the men escaped with their lives, but the remaining twelve fell victims to the deadly gas.

Casting the Standard Meter.

AN important step has been taken in the carrying out of the decisions of the International Metric Commission which met at Paris in October last year. The form and mode of execution of the standard meter having been settled, the Commission entrusted to the French section the manufacture and comparison of the new meters with the original standard in the archives of France. We learn from *Les Mondes* that before proceeding to cast the definitive meters, the French Commission has thought it advisable to execute the first types, with which to test successively all the methods that will ultimately be applied to the definitive meters. The first experiment took place in the laboratory of M. H. SAINTE-CLAIRE DEVILLE, who, with the assistance of M. DEBRAY, has succeeded in obtaining the iridio-platinum alloy perfectly pure. The operation of casting this first interna-

tional meter was considered of so much importance that the President of the Republic and some of his Ministers, and other eminent Frenchmen, "assisted" at it. Nine kilogrammes of platinum, with one kilogramme of iridium, were melted under the action of the oxyhydrogen flame from a blow pipe in three-quarters of an hour. The ingot was then cast, perfectly limpid, in a mould formed, like the furnace itself, of a block of carbonate of lime, whose interior walls alone were burned under the influence of the excessive temperature which was developed; consequently with this substance there is no risk of breakage. The metal was allowed to cool in the mould, and preserved its bright surface; in this condition it will be submitted to all the processes necessary to give it the definitive form which it ought to possess. The operation was considered, by all who witnessed it, as perfectly successful.

MINING SUMMARY.

British Columbia.

A REPORTED NEW GOLD FIELD DISCOVERED.

From the Victoria *Colonist* of September 3:

The steamship Gussie Telfair, on her passage down from Sitka to Portland, called off the mouth of this harbor early yesterday morning and landed Mrs. GOODHUE and Mr. W. K. LEAR.

From Mr. LEAR and from letters which we give below, we have exciting news from the Dease Lake country, in which poor MCCULLOUGH, lost his life last winter while on his way to explore for gold deposits, which he had reason to know existed there, having secured $1500 in gold dust from one of the creeks the previous season. It appears that after MCCULLOUGH'S melancholy death, his partner, Mr. TIBBETS, continued on to Dease Lake. In company with two others he stopped on the bank of a small creek which empties into Dease Lake and proceeded to build a boat intending to descend the river and lake and so reach MCCULLOUGH'S diggings. After they had built the boat and were preparing to start away from the camp, one of the "boys" observed indications which induced him to wash a pan of dirt taken from a small bar. To the astonishment of all he got *coarse gold*. Subsequent examinations induced them to set a rocker to work and they soon found that the diggings were rich!

Other adventurous spirits who were prospecting in the country soon heard the news. They flocked to the spot and set to work with the splendid results narrated in the letters we give below. The creek was called Tibbet's Creek, after MCCULLOUGH'S partner and other creeks that will pay equally well have been since discovered. It is now asserted that MCCULLOUGH knew the diggings were immensely rich and that he frequently stated that after one more season's work there he would be rich enough to abandon mining for ever.

"Buck" Choquette, the H. B. Co's agent at Stickeen, had been to the diggings, came out to Fort Wrangel and saw Mr. LEAR. He had about $200 worth of the dust, which he got at the mines, and pronounced the diggings rich and extensive. The dust he brought out was carried to Fort Simpson by the Gussie Telfair. About $500 worth more of the dust was brought down for BOSCOWITZ BROS., of this city. Capt. WM. MOORE sent down $200 in dust by Mr. LEAR to his family in this city. Mr. LEAR has about $90 worth of the dust. It is dark, resembling Big Bend gold closely, and is in pieces ranging from a bit to $3.50 in weight.

Dease's Lake lies in latitude 59, about 240 miles distant from the coast, or 80 from the head of navigation (Buck's Bar) on Stickeen river. It is fed by numerous small streams, of which Tibbetts creek is one, and is drained by Dease's river, which falls into Lairds river (erroneously printed Deloire river) and which in turn loses itself in McKenzie river. The face of the country is rolling hills and prairie land.

The best route to the diggings is by steamer from Victoria to Stickeen rivermouth. Thence in canoes to Buck's Bar, and from Buck's Bar across a low spur of the Cascades, a distance of eighty miles, which must be travelled on foot.

Below we give two out of several letters which have been placed in our hands for publication.

TIBBET'S CREEK, July 23d, 1873.

MR. LAER—Sir—We arrived here on the 8th, all well and in good spirits. The French company were at work. They cleaned up $70 that evening. We took up a claim about 1,000 feet above them.

The Creek pays, so far as has been worked, from $12 to $16 a day to the man; the gold is a fine quality, I think worth about $18 an ounce.

This Creek is at the foot of the lake. I believe there are several others as good but have no time to prospect, as all hands are working for a winter stake

WILLIAM LYONS.

TIBBET'S CREEK, CASSIAI COUNTRY, July 23rd, 1873.

MR. LAER.—Sir,—I write you a few lines to inform you on the country which we are in. We are on a Creek which we call Tibbet's Creek, named after the man that was along with MCCULLOUGH last year, as he and his two partners were the first to find gold on the creek. This creek empties at the foot near Dease Lake. We were the first on the creek with the exception of three Frenchmen, and there is gold on this creek and it is coarse. Everybody on the creek is making a little. We are the only ones on the creek that have sluices to work. We started work with them to-day; we had to bring a ditch on our ground to work it, and if it holds out as well as it prospects we can make two ounces a day to the man. BILL WIGG started to work yesterday with a rocker and he made $17 for the day's work. I do not know what he has made to-day.

JOE WILSON started to work yesterday, he washed 30 buckets and got $30. The Lyons boys are making $10 apiece a day with a rocker. The Frenchmen have made as high as eight ounces a day with a rocker. JIM HOLLAYWOD and his two partners have been working two days and a half and they made $100 with a rocker. Everybody on the creek is in good spirits and have got good prospects.

By the looks of the country around the Lake it is a general gold country. There are several creeks emptying in the lake. They look well and have gold on them. This Tibbet's Creek is a large creek and there are several small creeks emptying into it which have not been prospected yet.

In addition to the above we have been shown a letter by Mr. L. BLUM, which he received from CHARLES BROWN, a perfectly reliable man, who writes from Wrangle. He says, "Big diggings struck on Stickeen River of coarse gold. I send down 30 oz. of it to Messrs. BOSCOWITZ. I am going up to get a claim there. I think this will be another California. They are making from $12 to 100 per day with rockers on the banks, and the bed is rich—$1 to $5 to the pan. If you see any of my friends tell them the mines are no humbug."

It may be proper to remark that the diggings are in British Columbia, although the Americans hold sovereignty over a 30-mile strip along the coast. We believe, however, that the free navigation of the Stickeen and other rivers was secured by the Washington Treaty. Stickeen River is navigable for steamers to Shakeville, 160 miles above the mouth and 8 miles below Buck's Bar.

On board the Gussie Telfair for Portland is Mr. MARTIN of Tongas, who has 20 ozs. of the new gold dust. Purser Goodhue has also a considerable amount.

Colorado.

From the Central City *Register* of Sept. 17.

COLLOM'S DRESSING WORKS.

Those who have felt a certain premonition that the extensive concentrating works erected on Lower Spanish Bar, in our neighboring county, would fail to accomplish the aims of their inventor, or to meet the needs of the miners, will be pleased to hear of a very different result. During a brief call there yesterday, we took a second thorough review of their operations and effects, anxious, as is everyone in any way interested in whatever promises good for the miner, to find them answering the purpose of their design, and firmly established in the confidence of the surrounding country. Our hopes were fully realized. Mr. COLLOM was there, hard at work, as usual, his honest, pleasant face beaming with good nature and exultation over the successful fruition of a long, weary undertaking upon which his fortune and fame rested.

Since our last account of these works was published, he has made a number of important improvements. The old "sizing machines," into which the ore passed from the crushers preparatory to dressing in the automatic tables, were found defective in this: the sharp ore cut the wire out of the sifting screens very rapidly, and the fall from one to another being insufficient, the lower ones became heavily clogged after a few hours' operation. So the whole concern was torn out, and replaced with others of an entirely different construction, which not only do their work most completely, but greatly expedite the passage of the different sizes of crushed material through the different stages of progress necessary for the perfect separation of the minerals. The process seems now to be substantially complete. The convex discs used for puddling the finest tailings and the cleansing of slimes are working admirably. And the same is true of all the arrangements, which are so much appreciated by the miners of Spanish Bar and Virginia Canyon as to bring a very large amount of low grades there for treatment. Nearly a thousand tons are already piled up on the ground awaiting reduction, and several teams are constantly adding to the accumulation. After treatment much of the product is taken to the Whale mill for smelting, where it is held in high favor. The Hukill, Seaton, Veto, and other mines along the Clear Creek valley, are sending large contributions of what has hitherto been considered "waste," but which, by concentration, proves to be a very valuable part of the product. As a natural consequence all the old dump-piles in the vicinity, some of them containing a thousand tons or more of rock, too lean for treatment, by stamp mills, are being sorted over and the best hauled to Collom.

Many offers of ore have been received from Georgetown, which cannot be taken until the elaborate system of platforms, soon to be built, shall have been constructed. Here the minerals will be weighed in lots, and transferred immediately to the crushing works. By this means a multiplicity of transfers will be avoided. During our stay we saw but three men at work about the establishment, one of whom was the manager, Mr. COLLOM. The machinery is so arranged as to require but little manual service. Examining the dressed ores, we found the work most rapidly and perfectly done, "far better," said the inventor, "than I have ever anticipated." He seemed thoroughly satisfied with results, and sanguine as to the future. There has been no cessation night or day for something more than a week, and as the capacity is about fifty tons daily, a vast quantity of ore has been treated in that time. Still the supply exceeds the capacity to an extent which argues favorably for continuous operations not only throughout the autumn, but the winter also, if the works can be carried on during the season of ice and snow.

In common with the miners and smelters everywhere, we rejoice over what seems to be the successful inauguration of this essential advance in the method of treating ores, and especially the class of ore heretofore without marketable value, at an insignificant cost. If the rock we saw gathered there can be profitably utilized, there are a million tons in the waste heaps of Gilpin County capable of yielding much larger returns. Arrangements are nearly perfected, we understand, for the construction of similar works in this county, a number of capitalists being eager to show their faith by the investment of any amount of money which may be required.

HILL'S SEPARATING WORKS.

The machinery, with the exception of one or two pieces, to be used in Prof. HILL'S bullion separating works, is on the ground, and the new establishment will be pushed to completion as fast as men and money can drive things. Within sixty days it is probable that this new branch of industry will be in full operation, when the Boston and Colorado Works will be placed on an equal footing with the largest and best smelters in the United States.

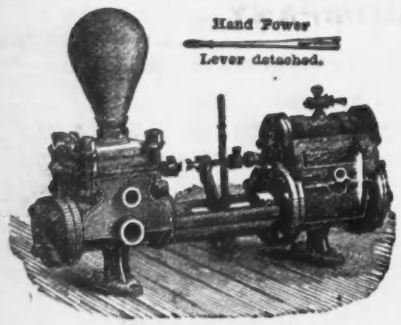
Utah.

RAFT RIVER DISTRICT.

From the *Herald* of Sept. 20: "This district, situated in the Raft River mountains, Utah, the northern boundary being the line between this Territory and Idaho, is slowly but steadily growing into popularity. The first location in the district was made on the 27th of June last, by W. H. Silver & Co., since which time twenty claims have been recorded. On one ledge, claimed to be probably the best defined in the Territory, six locations have been made by as many different companies, making a total of 9,000 feet in length. The ledge is said to crop out on the surface for at least 5,000 feet, and varies in width from two to twenty feet of mineral and vein matter. We were shown, yesterday, specimens of milling ore taken from various points on the lode, some of which assayed as high as $1,300 in silver, and about $19 gold per ton, while the lowest assay was $300 per ton in silver and gold.

"From a gentleman well acquainted with all the districts in the Territory, we learn that Raft River possesses advantages for development over many others. The mineral, so far as discovered, lies in a belt of country five miles long by two and a half wide, through which runs George Creek, a stream of water sufficient for milling purposes, and there is an abundance of timber easy of access. Several companies have miners at work developing leads, and before long Raft River district will be numbered among the ore producing camps of the Territory."

MACHINISTS' SUPPLIES



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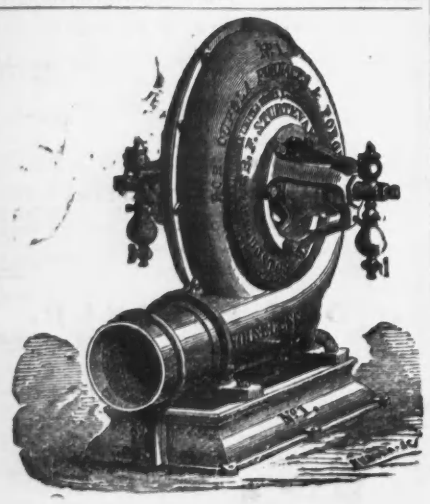

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FOR CRUSHING SCREENING
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MISCELLANEOUS.

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B. F. Sturtevant, Boston, Mass.,

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BARNEY MEE, Supt.

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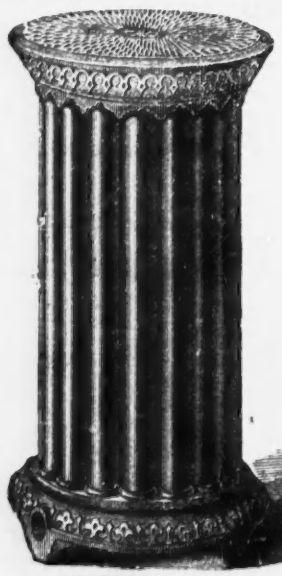

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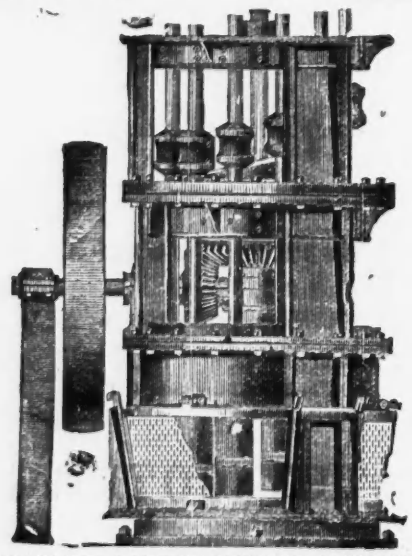

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Nov 19:1y

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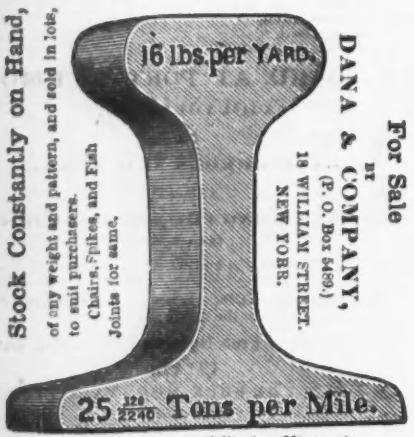

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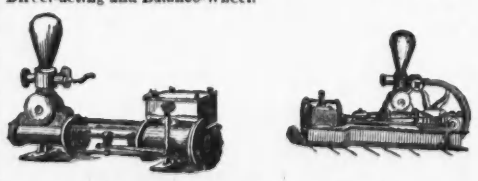
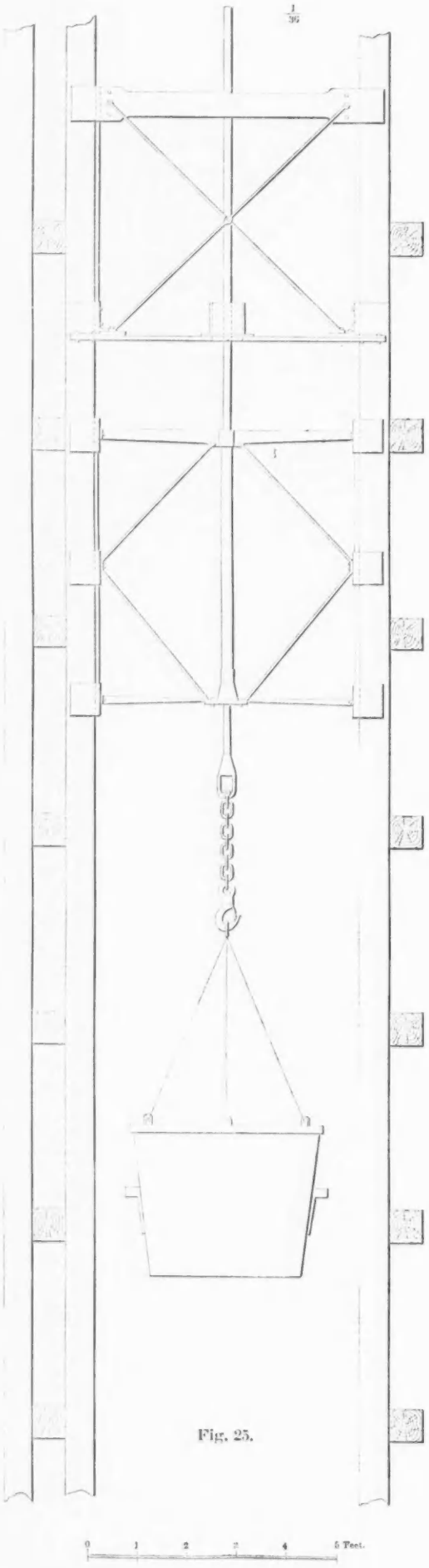


For sale at the Steam Pump Works, 34 to 44 First street, Williamsburg, N. Y. 1y



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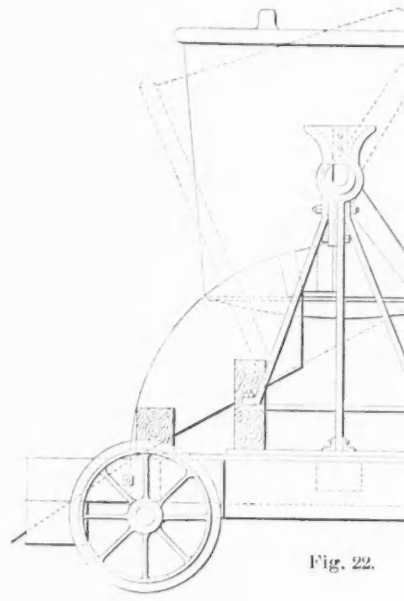

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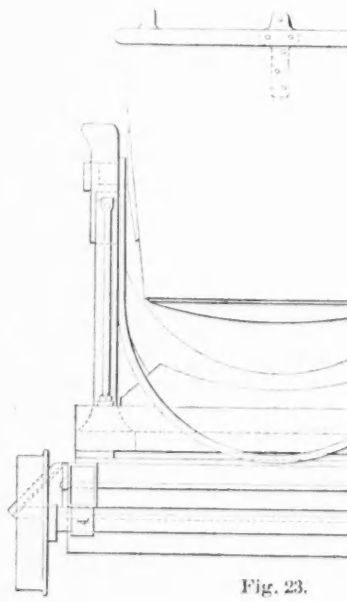

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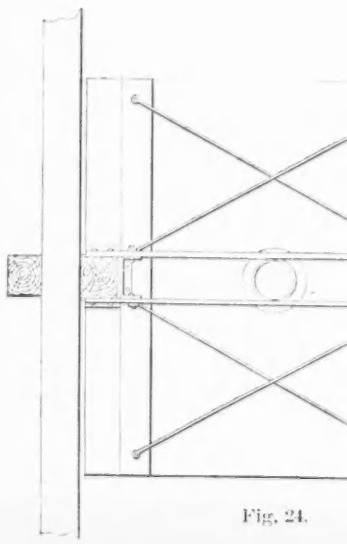

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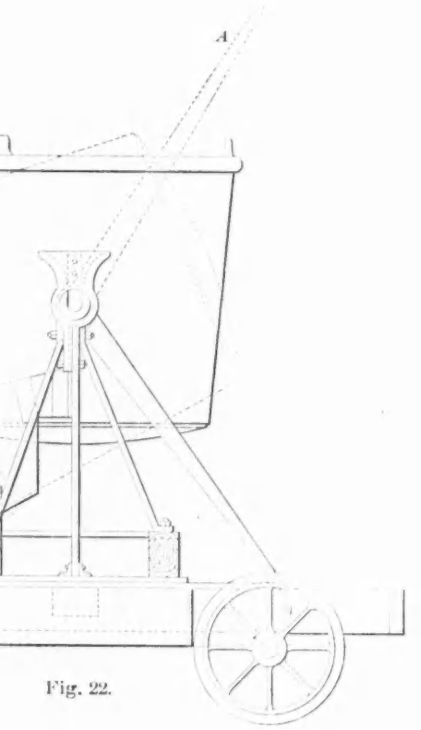

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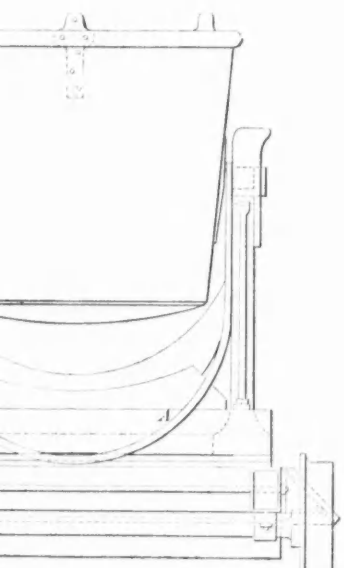

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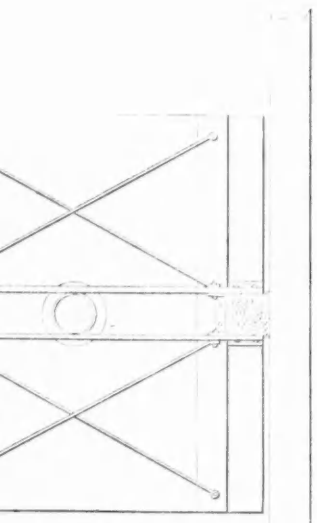

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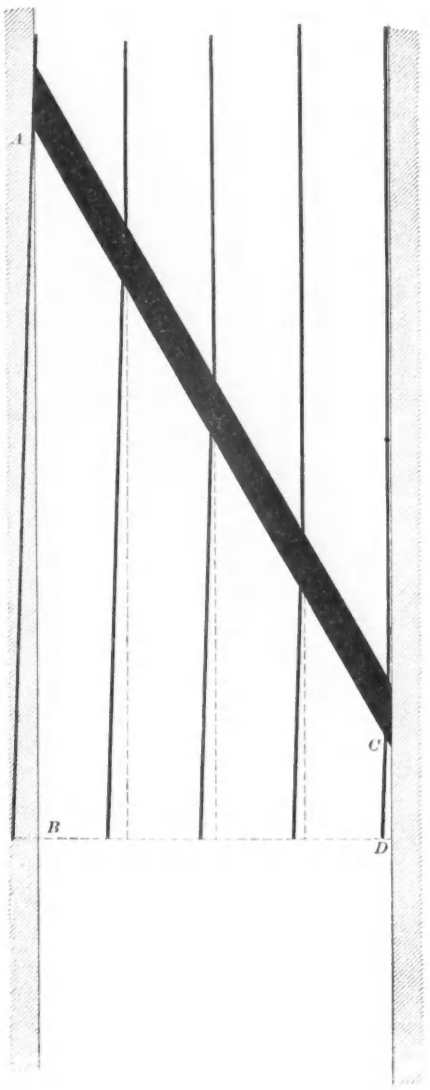
Fig. 20.



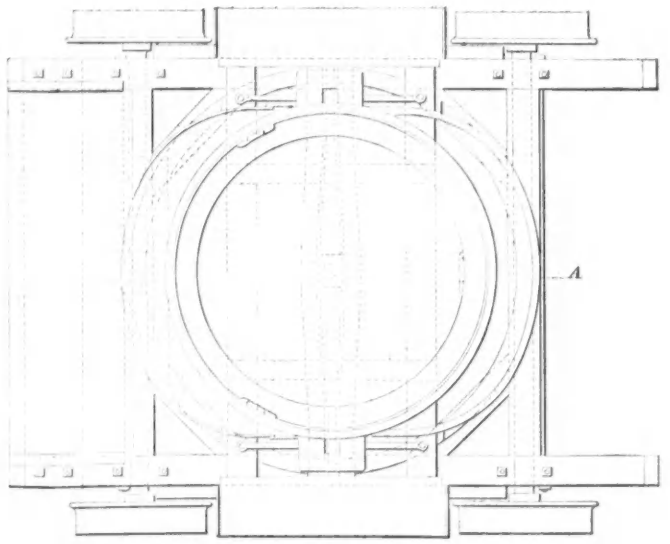


Fig. 21.