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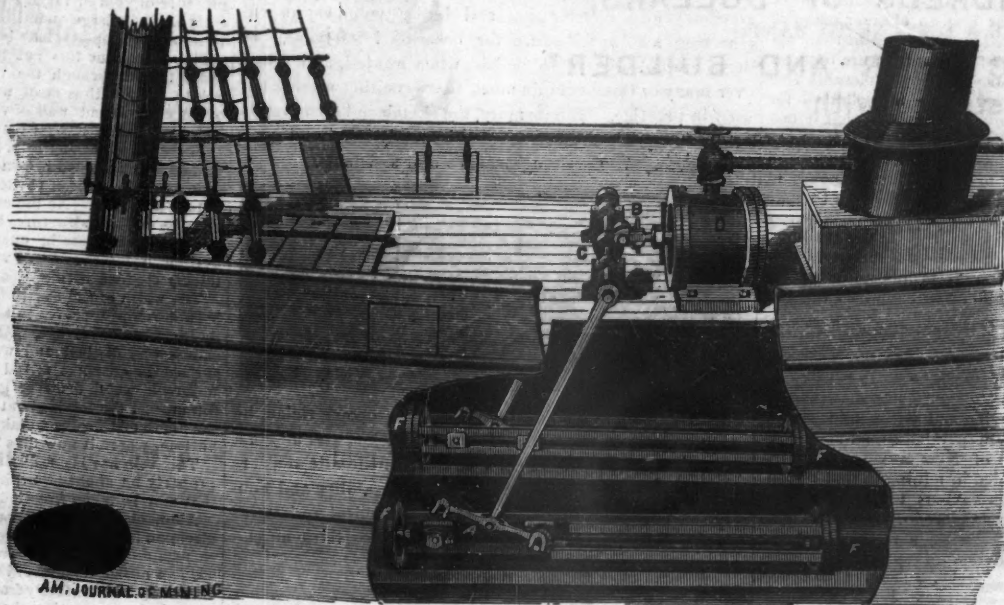
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A NEW METHOD OF PROPELLING VESSELS.

Few branches of science equal, and certainly none surpass in importance, that which relates to steam navigation. Economical and almost perfect as may seem to some our present system of paddle and screw, it is nothing to the possible economy of the future; for at present only a small portion of the power of steam is usually utilized in propulsion—the rest being wasted in friction, slip, lift-water, etc. Mr. FRED. R. PIKE claims to have discovered, by a series of experiments on a 100-ton boat, the primary laws that govern the propulsion of all animate or inanimate nature, viz: That propulsion is simply a matter of power and comparative resistances. That it is, and can only be, produced by repulsion. That what is called "slip" is simply imperfect repulsion, and reducible by making repulsion more perfect. Hence, that perfect propulsion can only be obtained, when power is so applied as to overcome the resistance in line of proposed motion, without overcoming the resistance pressed against in the opposite direction. To be able to accomplish this, the area of immersed cross-section of a boat, being resistance in line of motion, and being as 10 or 15 to 1, as compared with resistance of water at the paddles, which is point of repulsion—it is obviously necessary so to apply this power as to be able to overcome the resistance of 10 or 15 without overcoming resistance of 1. To effect this, Mr. PIKE makes use of a dynamic lever, and applies the power at the nearest mechanically possible point of the centre of its axis, which axis is the point of impact at which the power applied first acts, and represents the resistance to the boat, and by so doing practically multiplies the resistance of the water at propellers, for this then becomes the point farthest removed from the power, and by this means the resistance of water at propellers becomes virtually greater than the resistance of the boat's motion. Mr. PIKE states that in three different experiments made with the same boat, paddle, boiler, and the same consumption of steam, but with cranks of varying lengths, he found that using a crank of one-half radius of paddle gave 90 per cent. slip; crank of one-fifth radius, 50 per cent.; and finally using a crank of one-ninth the radius, gave only 10 per cent. slip in any given number of strokes. This evidence of facts in his own experiments he claims to be corroborated by a series of personal investigations made by the inventor on ferry-boats, ocean steamers, Sound steamers and Mississippi River boats, since in every case he found that the boats having greatest length of crank in proportion to radius of wheel, invariably had the greatest per cent. of slip, and *vice versa*. The accompanying cuts represent the new mode of propulsion, and in Fig. 1 A, B, is the dynamic lever, having its axis at C. The short arm, B, is connected by means of proper links to motion of the engine, D; the long arm of lever, A, is connected by means of proper links to piston-rod of piston propeller, E, (Fig. 3) the piston-rod passing through a proper stuffing-box into a cylinder, F, and terminating in double piston propeller, E; the opposite end of cylinder is open, and admits the water to face of piston, E; sufficient power being applied, and engine, D, making its stroke, the face of piston, E, impinges against the water, and one of two things must happen; either the piston, E, displaces the water in the cylinder, F, in which case the boat will not move, or the piston, not being able to displace the water, and sufficient power being applied to overcome the resistance at C, the boat goes ahead, the exact distance of the supposed stroke of propeller—any other result than one of these two being impossible. By observing the proper propulsion and making the right use of the dynamic lever, the latter effect can be produced. Fig. 2 represents

the bow; and also the stern of a vessel, showing the openings or ports through which the water comes in contact with the propellers. Four propellers are made use of, two placed facing the bow for backing, and two facing the stern for going ahead; either pair can be connected or disconnected in less than a minute by means of proper appliances to connecting links, which terminate in the engineer's room; an odd pair of

several thousand dollars in experiments, will dispose of a share of this invention for a nominal sum, to secure patents in different countries, and would like to put it into a stock company. The novelty of the invention consists in the combination and peculiar use of the dynamic lever, as combined with any form of propeller, so arranged as to impinge on the water on one side only; the form described being merely that thought best adapted for the purpose. It is caveat in this country and patented in England, covering the many possible variations of this method. Further particulars may be had by addressing FRED. R. PIKE, 56 Cedar street, New York city.

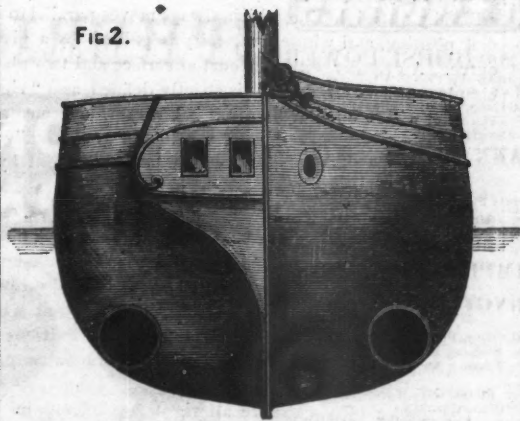


IMPROVED METHOD OF PROPELLING VESSELS—Fig. 1.

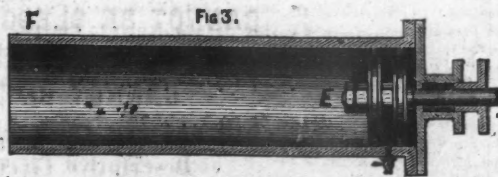
propellers may be worked simultaneously, which would turn the boat around on its own axis. The advantages claimed by the inventor are cheapness and simplicity of construction and durability; that the propellers themselves are perfectly protected from obstructions of ice, logs, weeds, and the action of

waves; especial adaptability for canals, as it causes no waves or rollers to wash the banks, and for any boats of light draught, as used upon the Ohio and Mississippi River; that as the propellers are situated far below the water line, they cannot get out of water by working unevenly, or strain the

Fig. 2.



machinery in even the roughest weather, which is an advantage over paddle and screws. The inventor claims that by this method he can propel a canal boat three miles per hour with two-horse power of steam—or an ocean vessel of 3,000 tons at a speed of 20 miles per hour, with less than 2,000 actual horse power of low pressure. The inventor having spent



ries, but a careful estimate drawn from a close inspection of them all by an experienced quarryman, places the average number of square feet taken from each at about 2,500,000, making an aggregate of 61,300,000 square feet. Some stone cutters who at first laughed at these figures, made a partial survey for themselves, and then placed the number as high as 80,000,000. It will be seen at once by those whose curiosity would lead them to figures that stone enough has already been taken from Quincy to build a city two-thirds the size of Boston, while in ten years more, at the rate of the last five, there will be enough removed to build a granite pyramid the size of the largest Ghizeh. That these quarries will double and even treble their product nearly every year is but a reasonable conclusion, when we take into consideration the fact that the taste for foreign stone is largely on the decrease, while the desire for native granite is increasing in the same proportion. Within the last five years nearly every new lot in Mount Auburn Cemetery has been ornamented with granite. The same will hold true of many other cemeteries in this and other parts of the United States. Many fences of iron and ornaments of marble have been removed from cemeteries and parks, to give place to granite walls or curbing. A few years ago this stone as an ornament was comparatively unknown, and good artists never bestowed much of their time on granite work of any kind. But the beautiful polish of which the Quincy stone has been found to be susceptible has called to it the attention of many of our greatest artists, who have hitherto regarded it only as a useful material in rough buildings. Nearly all the stone now obtained is taken from the side of the mountains by digging and blasting. In some places large holes are drilled in the solid rock, apparently without much regularity, which when loaded and ignited loosen a large bed or throw out ponderous pieces, which are afterwards cut up into the required forms. If, however, it should happen that large pillars or monuments requiring a stone of more than ordinary length or size is required, then the block is marked out on the solid ledge, and holes about six inches apart drilled deep into the rock all along this line, after which stout wedges are simultaneously driven into these holes and the column breaks from its surroundings. After the blocks are thus loosened a stout derrick, usually worked by steam, is brought into requisition, and they are hoisted upon the railway cars, or placed on the heavy horse trucks to be taken to the yards. The same process of splitting the stone by drilling holes in a straight line and driving in wedges is used al-

The Quincy Granite Quarries.

The first quarry was worked about forty years ago, from which, soon after, the first railroad in the United States was constructed to the Neponset River. Since that time twenty-two have been opened and made to contribute largely to the vast file of stone constantly required for building purposes. From the smallest of these quarries has been taken, according to local authority, over 800,000 square feet of granite, and from the largest over 8,000,000 feet. No exact measurement has ever been made of all the other quar-

ries, but a careful estimate drawn from a close inspection of them all by an experienced quarryman, places the average number of square feet taken from each at about 2,500,000, making an aggregate of 61,300,000 square feet. Some stone cutters who at first laughed at these figures, made a partial survey for themselves, and then placed the number as high as 80,000,000. It will be seen at once by those whose curiosity would lead them to figures that stone enough has already been taken from Quincy to build a city two-thirds the size of Boston, while in ten years more, at the rate of the last five, there will be enough removed to build a granite pyramid the size of the largest Ghizeh. That these quarries will double and even treble their product nearly every year is but a reasonable conclusion, when we take into consideration the fact that the taste for foreign stone is largely on the decrease, while the desire for native granite is increasing in the same proportion. Within the last five years nearly every new lot in Mount Auburn Cemetery has been ornamented with granite. The same will hold true of many other cemeteries in this and other parts of the United States. Many fences of iron and ornaments of marble have been removed from cemeteries and parks, to give place to granite walls or curbing. A few years ago this stone as an ornament was comparatively unknown, and good artists never bestowed much of their time on granite work of any kind. But the beautiful polish of which the Quincy stone has been found to be susceptible has called to it the attention of many of our greatest artists, who have hitherto regarded it only as a useful material in rough buildings. Nearly all the stone now obtained is taken from the side of the mountains by digging and blasting. In some places large holes are drilled in the solid rock, apparently without much regularity, which when loaded and ignited loosen a large bed or throw out ponderous pieces, which are afterwards cut up into the required forms. If, however, it should happen that large pillars or monuments requiring a stone of more than ordinary length or size is required, then the block is marked out on the solid ledge, and holes about six inches apart drilled deep into the rock all along this line, after which stout wedges are simultaneously driven into these holes and the column breaks from its surroundings. After the blocks are thus loosened a stout derrick, usually worked by steam, is brought into requisition, and they are hoisted upon the railway cars, or placed on the heavy horse trucks to be taken to the yards. The same process of splitting the stone by drilling holes in a straight line and driving in wedges is used al-

most universally in cutting stone of all sizes. One large stone, cut from the cliff of the Railway Quarry Company in this way, now lies on the side of the mountain. It is thirty-six feet long, eight feet square, and was intended for a column in a Custom House. Nearly all the stone are cut, trimmed, and polished at the quarry, although there is a slight demand for the stone in the rough to be worked by the purchaser after reaching its destination. About five hundred men are now employed in getting out and trimming the stone, which is more than double the number employed three years ago.—*Boston Traveler.*

Heaton's New Steel Process.

Heaton's steel process, that recently made such a sensation among British metallurgists, consists in pouring melted cast-iron upon nitrate of soda, in a suitable vessel. The nitrate is decomposed by the heat, giving off a copious volume of oxygen, which unites with the carbon in the iron, thus reducing the crude pig-iron to a sponge or porous mass of purified, malleable iron. The product is similar, in value, to the puddle ball, which is the product of the puddling process, and must be reheated and condensed to be got into merchantable shape, and is not then homogeneous. The Bessemer process decarburizes liquid crude iron by blowing air into it; but this is done so thoroughly by the Bessemer apparatus, that the product is liquid—liquid soft steel or hard wrought iron—which is cast into homogeneous masses of any size that do not require welding or piling. No steel process can compete in quality of product with the Bessemer process: however steel is produced, it must be finished in a liquid form in order to be sound. And it would appear that no cheaper material could be found for the decarburization of crude iron than atmospheric air. But while the Bessemer manufacture requires crude irons that are free from phosphorus and tolerably free from sulphur—in other words, good irons—it is claimed for the Heaton process that it can convert bad irons—that it can remove phosphorus. This claim is disputed, and further experiments seem necessary to establish it. Just as crude iron in a semi-fluid state is "coming to nature," or changing to wrought iron, in the puddling process, it is known to part with some of its phosphorus. It is therefore possible that it does the same in the Heaton process. But in the Bessemer manufacture iron comes to nature in a liquid state, and if it is, at any stage of the process, free from phosphorus, it is not so at its close, in case the original iron contained this impurity.

Survey in New Mexico.

Captain E. W. Darling's surveying and astronomical party has finished the survey of the 37th parallel so far as it constitutes the northern boundary of New Mexico. A large amount of money has been expended in mining in that region, and those engaged in it have been anxious to know whether their mines were in New Mexico or Colorado. This line runs through a mountainous region, crossing a rattoon and the eastern slope of the Rocky Mountains. Many hardships were encountered in prosecuting the survey. The contract was made with the Commissioner of the General Land Office, last spring, the appropriations having been made in Congress, for the survey of the boundary. The western end of this survey establishes the northwest corner of New Mexico, the southwest corner of Colorado, the southeast corner of Utah, and the northeast corner of Arizona.

Treatment of Horn.

White horn buttons may be made to imitate mother of pearl by being boiled in a saturated solution of sugar of lead, and then laid in a very dilute hydrochloric acid. Combs, to which the boiling process is not applicable, as it distorts the teeth, may be treated by being kept over night in a moderately concentrated cold solution of nitrate of lead, then laid for a quarter to half an hour in a bath containing three per cent. of nitric acid, and finally being rinsed in water.

Iowa Coal and Peat.

Gov. MERRILL says: "Coal, which is found in many parts of the State, is a source of vast wealth, which is being rapidly developed. In 1866, our State census shows there were 99,320 tons taken out, against 66,664 in 1864. Peat has also been discovered within a few years in many parts of the State, in quantities which promise an abundant supply of fuel."

Treating Copper Ore.

In conducting the ordinary process of treating copper ores containing copper and sulphur, by calcining them with common salt, so as to obtain a soluble chloride of copper, Mr. T. Johnson, of Runcorn, England, employs a gas flame, instead of the reverberated flame from a coal fire, by which means he obtains a uniform heat with scarcely any attention.

Another New Gunpowder.

A new kind of gunpowder has been invented by a M. Hahn. It consists of 367.5 parts of chlorate of potash, 168.3 of sulphuret of antimony, 18 parts of charcoal, and 46 parts of spermaceti. This gunpowder can be conveyed without any danger of an explosion, provided the chlorate be added only at the moment of using it, in the proportion of 46 parts of that substance to 29 of the others.

Steam on Canals.

The Lynchburg *Virginian*, November 28 says: "A regular steamer made her appearance here yesterday from Richmond—the first ever seen in these parts. She came up by canal and performed the voyage very easily."

Practical Letters.

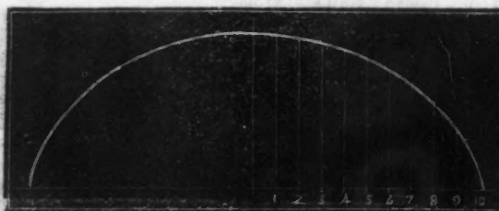
[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

LESSONS ON MECHANICAL DRAWING—No. XXII.

BY T. F. PEMBERTON.

SOLIDS.

In speaking of surfaces, a table of polygons with the number and angles of their sides was given. It will be well for the student to commit to memory the names of certain solids designated Polyhedrons, and to enter the subjoined table in a book of mathematical and mechanical memoranda. And here I would say to all draughtsmen, either students or experts, that every mechanical and architectural draughtsman should keep his own memoranda of mathematical and mechanical data. In this book should be noted not only those rules which will assist in calculations of the measurement and strength of materials, but also such facts as are the results of personal experience and close observation. In this mechanical diary, always handy for reference and always comprehensive, an amount of information will accumulate which frequently will prove to be highly useful. It is well to have books on geometry and mensuration, and bulky volumes on engineering and architecture for occasional reference, but these are not always to be had when wanted, and moreover many of them contain much that is neither needed nor used in practice. The memory, the sketch and memoranda books, the quick and correct eye, the ready hand and good instruments, are the draughtsman's best assistants.



If the student would be a thorough geometrician, he must study works on geometry, mensuration, and algebra. The excerpts from practical geometry in these lessons are to show more particularly the indispensability and consequent usefulness of the science in mechanical and architectural drawing. Having spoken of surfaces, lines, angles and polygons, I come next to

SOLIDS AND THEIR SECTIONS.

The primary solids are known as The Cube, Pyramid, Cylinder, Cone, and Sphere. A cube is bounded by six square surfaces; its opposite sides are parallel. A pyramid is a solid bounded by any plane rectilinear figures, and by triangles having a common vertex, and for bases the sides of the rectilinear figure respectively. For example, a pyramid may have a square for the figure of its base and four isosceles triangles for its sides, making in all five plane surfaces. A cylinder is a solid, the surface of which is described by a straight line, which always moves parallel to its first position, and whose extremity is guided by a given curve. A cylinder with one curved surface and two plane circular surfaces for its ends is strictly defined as a "right cylinder with a circular base;" it is however, in elementary treatises on geometry generally called a "cylinder." A cone is a solid, the surface of which is described out by a straight line, one end of which passes through a fixed point, and the other end through a given plane curve, called its base, or in other words it is a solid having a circle for its base, and tapering uniformly to a point called the vertex. A sphere is a solid, bounded by one curved surface, every part of which is equally distant from a point within, called the centre. In addition to these definitions of the five primary solids the following memoranda may be noted:

The angles of a cube are all right angles, and in its usual position all its surfaces are horizontal or perpendicular. Horizontal and vertical sections of the cube present square surfaces. The slant height of a pyramid is a line drawn from the vertex to the centre of one of the sides of the base. A vertical section of a pyramid presents a triangular surface. A horizontal section will give a figure with the same number of lines as are found on the base. The altitude or height of a pyramid or of a cone is a line drawn from a vertex perpendicular to the plane of the base. The frustum of a solid is the part that remains after cutting off the top by a plane parallel to the base.

TABLE OF POLYHEDRONS.

Name.	No. of sides	R=S+	r=s+C	S s x
Tetrahedron	4	0-6123	2041	0-1178
Hexahedron	6	8660	5000	1.0000
Octahedron	8	9071	4082	4714
Dodecahedron	12	14012	11135	7-6631
Icosahedron	20	9510	7558	2-1817

S—Length of linear edge of a side.
R—Radius of circumscribed sphere.
r—Radius of inscribed sphere.
C—Cube contents of polyhedron.

Mining Summary.

GOLD AND SILVER.

New York.

REPORTS ON THE DUTCHES COUNTY GOLD MINES.

The following is the report of Dr. POHLE on the Dutchess County gold mines:

NEW YORK, October 13, 1868.

R. W. MILBANK, Esq.—SIR:—At your request I visited professionally on June 30th inst., and at various times since, the recently discovered auriferous quartz veins in the township of Rhinebeck, Dutchess County, N. Y., for the purpose of ascertaining the extent and value of the ore existing there.

The property in question comprises an area of about 315 acres, the greater part of which has been under cultivation as farmland for many years past. Its surface is diversified by hills, ridges, woodland, etc. It is situated on and divided by the Rhinebeck Road, three and a half miles easterly from the town of Rhinebeck, and about six miles from the station at Rhinecliff, on the Hudson River.

On the property there have been thus far found four distinct quartz lodes, running nearly parallel with each other and dividing the talco-argillaceous slates in the plane of their cleavage.

On one of these veins (Hudson), at a point elevated about 15 feet above the base of the undulation on which it is located, a lateral ent had already been made into the ridge or undulation through which the vein runs and many tons of ore thrown out; during the progress of this cutting, there were sent to me at various times, small samples for assay, all of which proved the presence of gold in varying proportions. Practical workings on comparatively large quantities, and assays from this and other veins on the property, have been made and will be hereafter stated.

Since that time this ent has been widened and extended, in order to ent through the vein and ascertain its width at this point; the ent thus made would represent an opening from base of ridge to second wall of vein, about 25 feet long, from apex 15 feet deep, and 12 feet on the course.

For six or eight feet from the surface, the quartz is of a cellular structure and stained brown with oxide of iron, the result of the decomposition of iron pyrites, which originally existed there and in part does now. As the cutting increases in depth, the quartz loses its cellular structure, becoming more compact; while the iron pyrites increase in quantity in the quartz, which near the bottom, is interlaminated with thin seams of argillaceous slate, thickly studded with cubical crystals of auriferous iron pyrites.

The width of the fissure filled by the vein to the extent it has been developed, proves to be by measurement, 14 feet 10 inches; its juncture, or selvage, with the adjoining walls of argillaceous slate is very distinct and well defined on both sides; near the surface the quartz is mixed with isolated lamellar fragments of wall-rock, which decrease gradually as the depth increases; the dip nearest the top is about 45 degrees east, but it curves with the depth and begins to take a more perpendicular course at the bottom, where it now dips 27 degrees.

This vein has been distinctly traced by its outcrops on this property for about two-thirds of a mile, and the amount of ore that may be taken from it is almost without limit.

About eight chains (surveyor's measurement) in a southeasterly direction from the opening just described, there is a ledge of quartz, cropping out in a cove of woods; the outcrop is about 200 feet in length, 12 feet in breadth and six or eight feet in height. Northerly and southerly from this point it again shows itself in several places, running about parallel with the other and extending nearly across the property, which is over two-thirds of a mile long. The quartz is compact, and of a milky white color externally, but a new fracture shows it to be stained in streaks and spots with ferruginous and manganese oxides; a single blast was put in here and about half a ton of it thrown off. Assays made from a portion of this prove it to be auriferous.

About 12 chains in a southeasterly direction from the mine out and four chains from last, in about the centre of a swamp there is a third vein, revealing itself by an outcrop about 35 feet long, 10 wide at its greatest breadth, and about three or four feet high, enclosed in talcoose and chlorite slates. The quartz is somewhat cellular in structure and stained brown with oxide of iron; it has been traced northerly by other outcrops and quartz floats, on or near the line of its position, sufficient to prove it of great extent.

The mineral from this locality looks very promising, and sundry assays made from the pieces removed with a sledge hammer, prove it to contain gold.

These three veins run nearly parallel to each other, and have a general direction of N.; 25 degrees E.

About 25 and a half chains in a northwesterly direction from the "Mine out," on the westerly boundary of the property, there is another auriferous quartz vein in talco-argillaceous slate. At a point (believed to be an offshoot from the vein proper) near the Rhinebeck road, there is a mass of about 20 or 25 tons of quartz and slate projecting from the ground; several blasts have here been made at different times and several tons of ore thrown off, portions of which have been submitted to practical workings at various times. About 400 feet in a southwesterly direction from this, (direction of compass S. 33 W.), at a spot on the northerly end of a covered ridge, an excavation with pick and spade was made, and the vein found in talco-argillaceous slate; the ore looks very promising, and assays and practical workings prove it to be so.

These veins extend beyond this property in a northerly and southerly direction. Being guided by Col. Lane, who had made himself familiar with the country and its mineralogical indications in his explorations with Dr. Freilich, I had no difficulty in tracing them several miles by their outcrops and magnetic bearing.

On the westerly side of the Suckley wood lot (vide map) there is a deposit of ferruginous and calcareous quartzite, formed at a geological period subsequent to the formation of those heretofore named; its course is not very regular, but generally about N. 45 E., superficially it is friable and of an iron rust color, but a new fracture reveals a compactly granular structure, of ash gray color mottled with brown; its chemical constituents are:

Silica,
Carbonate of Iron,
Carbonate of Lime,
Oxide of Iron, etc.

At irregular intervals it is seams with thin veins of milky quartz, running in irregular directions. An assay made by me of a portion hammered off, indicates it to yield a trace of gold.

Beside the veins heretofore alluded to and the hills, hummocks, ridges and undulations pertaining to them, there are supposed to be five or six other veins (blind ledges) on the place, but as they cannot be clearly traced by a superficial survey—the rock having been found in place—and although their position is suspected by the indications in the range of their supposed course, the geologist is not warranted in stating them to exist in fact.

A geographical survey and map of the property have been

that which in the course of long ages have been set free by the disintegration of the rocks, and washed down by the water. These veins are frequently worked to the depth of a thousand or two thousand feet. The above will answer for a general description of the gold regions of Nova Scotia, North Carolina, California, and Australia. The region visited by your correspondent yesterday contains, apparently, four parallel veins of quartz, having the general direction N N E. and S S W. The veins are not visible at the surface, except in places at some distance apart from each other. At such places they crop out, and form what is technically called 'chimneys.' On the Murch farm, six miles east from Rhinebeck Station, there are several of these outcroppings, in all several hundred feet in length, and indicating four parallel veins. From one of these outcroppings the surface rock has been removed, the quartz removed to a depth of some 12 to 15 feet, and the width of the vein ascertained to be 14 feet 10 inches. Of course it cannot be told whether the vein will grow wider or narrower until it is traced to greater depths below the surface. The juncture of the vein with the adjoining walls of argillaceous slate, or the 'seavage' as it is called, is distinct and well defined on both sides. The dip at the bottom of the excavation is 27 degrees from the perpendicular. No apprehensions of the veins giving out were expressed by the gentlemen who were of the party yesterday; but, on the contrary, it was predicted that the veins would grow richer as they were worked deeper. There being a series of mountain chains extending from the mouth of the St. Lawrence to the Gulf of Mexico, and bearing the name of the Appalachian range, and gold having been found in Nova Scotia, New Hampshire, Virginia, North Carolina, and Georgia, in the quartz veins, there seemed to be some warrant for the conjecture that the quartz veins of Dutchess might also contain gold. Dutchess County is situated between the Catskill Mountains, which loom up just over the river, and the Taconic Mountains, which form its eastern border, and is therefore similarly situated, in respect to the Appalachian range, with the other Atlantic coast gold regions already mentioned. So much for general resemblances and analogies. The history of the actual discoveries for the precious metals, as given to your correspondent by Professor Pohle and the Drs. Freiligh, will now be briefly sketched. Dr. E. G. Freiligh says that, after repeated examinations with the microscope, he found the first specimens of free gold in some float quartz in the year 1860 or 1861. About 1864 he began to take specimens to his office and to make assays. Some of these specimens were seen by returned Californians, who insisted that the rock was from California. Dr. Freiligh did not attempt to publish his discoveries, from a desire not to be laughed at, nor did he wish the credit of having made the discovery by accident. He traced the principal vein for a distance of 15 miles to the northward, and southward over the river, to a distance of 25 miles from the spot visited yesterday. He had specimens of all the veins subjected to analysis, with results varying from \$8 to over \$100 of gold to the ton. In June, Messrs. Secor, Swan & Co. made an assay of 250 lbs. which yielded at the rate of \$45 64 per ton. In July the same firm made an assay of 565 lbs., which yielded \$39 77, and afterward of 508 lbs., yielding \$11 96. Professor Pohle has made a great number of tests, both by scientific methods and the practical modes of working. He has, he says, endeavored to make an average selection of the quartz, rejecting both the extraordinary rich pieces, and the very poorest specimens—the latter making up, he says, only about one-eighth of the whole. By the practical working, by crushing and amalgamation, the yield was about \$25 15 per ton. By the assays it was upward of \$28. While at the vein Dr. Southwell and Colonel Randall split off a fragment of rock from the bottom of the excavation, and from beneath this removed the decomposed sulphurets, and placed them in a 'horn,' which had been brought along by one of the California gentlemen. This 'horn' was a concave vessel, made of a piece of the horn of an ox, and is the article carried by miners when they are prospecting. Mr. Sperry then 'panned' the contents of this vessel, and finally succeeded in making visible a few particles of gold, which by a peculiar motion were collected in one end of the dish. The mining gentlemen present appeared to be of the unanimous opinion that this was an unusually favorable result. When it is considered that one ounce of gold to a ton of rock is a very profitable yield, the quantity to be derived from two or three pounds, by a coarse process, becomes almost imperceptible. The expense of reducing a ton of quartz and extracting the gold varies, of course, with the situation of the mine, the cost of labor and fuel, economy of management, and other circumstances. It was stated by the experts that rock yielding from \$8 to \$10 per ton can be profitably worked in California. The same statement, substantially, is made in the last official report on the Mineral Wealth of the United States. Quartz rock in Dutchess County ought, at the outside, not to cost more than \$5 in greenbacks for mining, crushing, and amalgamation. The margin for profit on rock yielding \$25 to \$30 in gold per ton is thus seen to be immense. The question is, is there a large deposit of such quartz in Dutchess County? The answer must be a little uncertain. No shafts have yet been sunk to ascertain the depth and width of the veins. It may be probable that the veins grow wider, or continue of their present richness, or even grow richer; but it is not certain. The public will no doubt be glad to see the facts ascertained as to the richness and extent of the deposits. A report of a geological survey and of analyses, hitherto made by Prof. Pohle, is published, and may be had of Mr. R. W. Milbank, No. 82 Front street. It was the unanimous opinion of the Californians that a shaft ought to be sunk down 300 feet without delay, and a mill with 20 stamps put up immediately. They thought the New Yorkers rather slow. It was stated that Dr. Freiligh, who originally bought the Murch farm from Mr. Murch, had sold out his interest to the Messrs. Milbank. The machinery needed, in addition to the hoisting apparatus, etc., is a stamping mill for pulverizing the quartz. The cost of this need not be more than \$30,000. Since the above was written your correspondent has received from Mr. Milbank the following important letter from Prof. Torry of the United States Assay Office in this city. It will be seen that whereas, from the tests of Prof. Pohle and Dr. Freiligh, the average yield was estimated at from \$25 to \$30 per ton, Prof. Torry, from quartz excavated probably at a somewhat greater depth, obtains an average of \$118 50! Here follows Prof. Torry's letter:

UNITED STATES ASSAY OFFICE,
New York, Dec. 2, 1868.

R. W. MILBANK, Esq.—Dear Sir: I have made a number of careful assays of ore, from the great quartz lode on your property in Rhinebeck township, which I shall report on in full very shortly. The ore was obtained and packed in a barrel under my supervision, and sent at once to my address in New York. Every precaution was used to get a fair average sample of the lode. Several assays were made, and in none was the proportion of gold less than \$1,000 per ton of 2,000 pounds, and the average was \$118 49 per ton. Yours, respectfully,

JOHN TORREY.

Colorado.

The Register (Central City) gives the following description of Silver Gulch, and progress of work therein:—"Slaughter-house Gulch, or Silver Gulch, as we shall hereafter call it, is at present

the great centre of interest and excitement in this county, and so we have made a pilgrimage to it. One tunnel, the Gilpin County, has been run in on the lode 120 feet. The Mahaska Tunnel is in between 60 and 70 feet, and another somewhat less, and are all close together, doubtless running into each other and finally forming a single vein, to which the others unite as spurs or feeders. The biggest crevice, best walls and largest body of ore belong to the Gilpin Tunnel. The adjacent rocks are of a coarse crystalline character, much shattered, and consequently the veins are not as concentrated and well defined as they will be at a greater depth. The richest portion of the ore is sulphuret of silver, highly decomposed, and as it comes from the mine is largely mixed with decomposed micaceous granite, yet it yields about \$400 per ton. The more solid portion of the ore is galena and zinc blende, much of the latter being amber-colored, and all containing brittle silver and other varieties of the minerals of that metal. The galena vein probably ranges from four to six inches in thickness, and looks extremely well. While the class of ore first named works finely raw in pans, the latter requires smelting, and cannot be worked well in any other manner. The work is all done by driving drifts from the ends of the lodes as they crop out in Silver Gulch. They are dry and pleasant to work in. It is the opinion of people engaged in mining at Georgetown or elsewhere, that this mine is worth as much as any silver mine at Georgetown. The vein at present does not carry as much ore, and the ore may not be quite as rich, but it is vastly more approachable with a good wagon-road and easy grade to it, so that hauling will cost very little, and the means of reduction can be built on the spot."... The same paper also gives the following details of the German Mountain difficulty:—"German Mountain was the scene of a little excitement yesterday, caused by a collision between the owners of the Vasa and the U. P. R. Lodes. It appears that the Vasa is a strong fissure vein, having innumerable dips, spurs and angles, branching out to the north and south, much the same as the tributaries of other veins of like character. It was discovered in 1862, by one Teers, then in the employ of Messrs. Kip & Buel, who in process of time became possessed by pre-emption and purchase of numbers 1 and 2 west. In July last, or in that vicinity, Messrs. P. H. Dunnegan and James Ewers excavated a hole on number 2 west of the Vasa, claimed it as a new discovery and christened it U. P. R. Until quite recently the discovery of the Vasa has been held by the widow of Mr. Teers, from whom E. K. Baxter, Esq., purchased it, together with numbers 1 and 2 east. The discovery had, at the time of coming into Mr. Baxter's possession, a shaft about 40 feet deep, which was timbered down about 30 feet, the bottom showing a well-defined crevice. Mr. Baxter has run levels on the crevice of this lode directly into the shafts of the parties claiming the U. P. R., clearly establishing his declaration that there was but one vein, and that the Vasa. The U. P. R. parties began work a short distance east of the discovery, and in sinking defined the crevice of the Vasa, and extended their drifts into the discovery claim on that lode. Nothing can be clearer than that they have committed an egregious error in supposing their discovery to be a distinct and separate vein, as shown by the above facts. A large number of men were stationed at the several shafts along the Vasa lode, representing both contestants for the property, and both equally strong in their opinions as to the right of the case. Yesterday morning the so-called jumpers were ejected from Mr. Baxter's mine by the Sheriff, and the rightful owner put in possession. Counsel has been retained by both parties, and the case will be adjudicated before the court now in session."... Our contemporary, speaking of the Consolidated Gregory Mine and its management, says:—"This mine, though regarded by every Coloradan as one of the best in the Rocky Mountains, has long been a 'hissing and a by-word,' simply because the attempts at working the ore have been failures ever since it became the Consolidated Gregory. Hundreds of thousands of dollars have been squandered on smelting works, which failed because improperly constructed and managed, and not for lack of gold and silver in the ore. While the operations of the company were ostensibly in the hands of Mr. Hayes, the failure was no fault of his, for he operated under the direction of his company, and in accordance with their instructions. Fortunately, the whole policy of the company has been changed. They have now completed and in good running order a fifty-stamp mill, each stamp of which falls about 35 times per minute. The engine is one of a hundred horse-power. The boilers are hung in the furnace so as to let the heat pass all around them. The engine is placed on a solid stone foundation so firmly laid that there is not the least perceptible jarring. It is a double engine, so that it is never off the centre, but always starts as soon as the steam is turned on. It runs as smoothly as the one in the United States Mint at Philadelphia. Rock-breaking machines are to be put in, as also Bertola pans and two of Blatchley's. The mill is nicely arranged, and is kept running constantly. With all its capacity it cannot crush the ore now being produced by the mine. Its shafts are as good as the best in Colorado, and its ladder-ways safe, dry and easy of ascent. For several years the work done in the mine has been that of opening. At the bottom new drifts have been started, and both shafts and drifts show no decrease in the quantity. Drifts have been run at intervals of about 65 feet each way from the main shaft in every instance, showing a continuous vein of ore of highly cuprous character, and which in most countries would pay in copper alone, and which is rich in gold and silver. The vein in many places reaches five feet in width. At the very lowest estimate there is ore enough in sight to run the fifty stamp-mill three years without descending below the second level from the bottom. The vein is wide, the walls are solid and safe, and the timbering perfect, all done under the management of Mr. Egan. If there is a mine in Colorado that ought to pay a dividend, it certainly is the Consolidated Gregory."... The following is from the same paper:—"Mr. James Egan, of the Baltimore Mining Company, is developing the Choctaw at Alvarado, Tallahassee at Georgetown, and Illinois at Kinneyville—all silver mines. The Choctaw has a shaft fifty feet deep, and shows a crevice four feet wide, streaked with sulphuretic ores, and decompositions, known by frequent tests to be rich. The Illinois is only ten feet deep, but even this has uncovered a vein of unusual strength and promise. It is situated near the celebrated Young America, and possesses similar characteristics. Mr. Egan has let a contract for sinking the discovery shaft twenty-five feet further. This will undoubtedly define the value of the vein, and give the owners a solid basis for more extended operations."... From the Colorado Herald we take the following in relation to the Smith & Parmelee Gold Company.—"This Company has produced in about three years, since Mr. Beiden has been superintendent, seventeen thousand two hundred and thirty ounces, or fourteen hundred and thirty-six pounds of gold, worth, as it has been sold from time to time, just about \$400,000. This has been done with a twenty-five stamp mill, and a twenty-five horse power, ten-inch cylinder engine. The mine has a large amount of water, and up to this time this little engine has done all the work of raising the ore, running the mill, and working a six-inch pump, now working to the depth of about five hundred feet. The old mill was one of the first built in the country, before much was known about building mills, and was a poor affair at best, but for the past few years has been condemned by the superintendent and every other one who has seen it. And

yet, in expectation that some improved method of extracting gold would be discovered, the company have from time to time deferred building or improving, and the old mill and the incompetent machinery has been worked on, because it was better than none, and the above has been the result. We, and every one who has examined the premises, the means used, and the results produced, confess that it was wonderful. The directors of the company, in New York, have made a move in the right direction, and the old stamp mill has been taken down, and a new improved twenty-five stamp mill put up in its place, which will be completed and running in two or three weeks. They are also putting in a large engine, adequate to the work, about eighty horse power, sixteen inch cylinder, and thirty-two inch stroke." The same paper reports upon the silver works located on North Clear Creek, and run by Mr. Robert Teats. It says:—"The capacity of these works has heretofore been two tons per day; hereafter it will be from five to six tons per day. The mode of treating the ore is as follows: The ore is crushed in a jaw-crusher, run through a ball pulverizer, from which it passes through a machine, similar to a bolting apparatus in a flouring mill, into the California cylinders, of which there are two in the mill. The amalgamating is done in barrels. In addition to these a Blatchley pan (invented by a citizen of Central) has been used for a short time, which treats raw ores and saves 70 or 80 per cent., if the ore is free from galena. From the ore treated in the cylinders from 80 to 90 per cent. is saved. These works have been running for the past few weeks on ore obtained from the Coly lode, in Perley gulch (called Slaughter House gulch) with satisfactory results. Up to last Saturday the actual amount of silver produced was 10,707 ounces, worth in coin about one dollar per ounce. In addition to this, the mine has produced a considerable quantity of ore more than could be treated by the mill. There are now twenty tons of ore in the mill, besides a handsome lot of amalgam, retort and bullion, produced during the week. The ore run from the Coly thus far will average \$200 per ton—some tons have run as high as 700 ounces. When it is remembered that this lode has paid so handsomely from the grass roots, that several such works as Mr. Teats now running could be supplied from it, and that there are a number of other lodes in that same locality which are known to be equally as good, it is not wonderful that some of our people should be a little excited about silver. Prof. Hill has been buying ore from this locality, paying a good price. He bought \$1,900 worth from one man, at the rate of over \$100 per ton. Mr. Teats is also working the Mohawk, which is owned by him, and is located in the vicinity of the Coly. Recently he has rented the Gilpin Co. tunnel, which makes three mines he is working, and is consequently accumulating ore rapidly. He will be able to supply his mill constantly, and can turn out over four thousand ounces per week, when the amalgamating capacity is increased, as it will be in a few days. The Blatchley pan is an important item in these silver works. It works like a charm; treats ores raw, and saves 70 per cent. of the silver. It is cheap and simple, and treats two tons of ore per day."... We take the following items from the Georgetown, Colorado, Miner: "Stewart is erecting two reverberatory roasting furnaces at his works. This will increase his amalgamation capacity to five tons per day... At the Terrible Shaft House the other day we saw a beautiful piece of ore, weighing 298 pounds, taken from the slope. It measures 11 1/2 inches in width, and is solid mineral... The road to the Burleigh tunnel site and Brownville, is rapidly approaching completion, and when finished will be a great improvement over the old road on the south side of the creek... Schirmer & Brueckner have fired up their smelting furnace. They have made but one shipment... Huepden, Wolters & Co., have taken out and shipped since our last report, 2106.95 ounces of silver bullion coin, value \$2,265 68. A steam engine and boiler are being put in place, to furnish power during the winter months... Messrs. Erskine, Potter & Leonard, are working a new discovery, just below the Meudota, on Sherman Mountain. It is called the Steel lode, and at a depth of 20 feet carries from two to four inches of very fine mineral... Mr. Watson is putting in a Hepburn & Peterson and three Bertola pans, in the Brown company's mill, for working their second class ores by raw amalgamation. This is the first move in this direction here, and we hope to see it have a beneficial influence, in inducing others to go into the same enterprise... The work of setting up the new roasting cylinder at the works of Huepden, Wolters & Co., is progressing rapidly and in a short time will be ready for use. This will increase their capacity to about eight tons per day... We were at the Meudota lode on Friday last, and found that active operations had been commenced. A contract has been let to drive the adit on the vein one hundred feet, which when completed will make it about 130 feet in length. Lumber is being got on the ground with which to erect a boarding and ore house, and a blacksmith's shop. The vein is yielding a large amount of ore, there being now full 18 inches on the foot wall, five inches on the hanging wall, and numerous strings from one to two inches in width. The ore is argentiferous galena and zinc-blende, the latter predominating. This is one of the most promising veins in the district, and surely cannot well be excelled as an ore producer."

[FROM AN OCCASIONAL CORRESPONDENT.]

North Carolina.

MINING AND MILLING—THE WILSON MILL AGAIN.

CABARRAS COUNTY, N. C., Dec. 3, 1868.

EDITOR AMERICAN JOURNAL OF MINING:

While speaking of the Alleghany gold belt at this point, in a June number of your JOURNAL, your types make me say that "its western side is in sulphuretted veins of talcose state." It should have read "quartz and talcose state," the more especially as nine-tenths of the veins spoken of are quartz.

Since that writing, I have wandered somewhat in a north-westerly direction, prospecting for health. My course lay through Iredell, Alexander, Caldwell and Watauga Counties. The two latter—on my route, at least—are richest in "indications." In ascending the Blue Ridge by the old turnpike, a large number of quartz veins are crossed, ranging in width from two to twenty inches, although averaging small. Their general course is N N E., and the country rock is slate stratified vertically, but rather crooked or "wavy" in its cleavage. No sulphurets of any kind were observed on the road, although some were brought me from points not far distant; one sample from Alexander County yielding gold by roasting. As far as I was able to judge, most of the ravines give a show of gold, although very few will pay for working. Watauga extends from the summit of the Blue Ridge to the Tennessee line, the latter being also the summit of the Alleghenies. Between these ranges the depression is not great, and is full of mountains. Quartz veins occur of much the same character as those southeast of the Blue Ridge, and the streams have a piece of gold. Near Boone, the country is a small plateau drained by three or four "branches" (rivulets) all bearing gold. Two have been worked somewhat, and paid fair wages, if common report may be credited. In the best of these I found the gold in a stratum of quartz gravel from six to twelve inches thick, overlaid by two and a half to four feet of clayey loam. Some 3,000 dwts. were washed out with a rocker,

during which considerable surface was explored. Nothing very rich was found, the gravel deposit being quite uniform and extensive. My own tests with the pan indicate fair pay by sluicing. The gold, though not coarse, is heavy; the gravel washes readily, and there is sufficient water and fall for moderate operating. These alluvial deposits are generally attributed to some undiscovered quartz veins traversing the plateau, and there is float-rock enough on its surface to give the opinion some apparent value. But there is no outcrop, nor am I aware that any search has been made for "blind leads." The surface quartz corresponds with that dug from the branches, being, like all the veins I examined, white, slightly translucent and without sulphurets. During my stay, some friends visited Elk Knob, one of the Blue Ridge observatories, and brought away specimens of iron and copper pyrites, and some very porous scoria. Quite an excitement prevailed respecting a district some 16 miles west of Boone, where a large vein was reported to be fearfully rich in silver. I obtained two specimens, one from the vein at 25 feet depth, the other from the surface of a rather remote extension. This latter was a rich copper sulphuret with a little quartz adhering, and the other a half pulverized mass of bluish grey color, and showing minute metallic crystals. It is evidently a sulphuret of some kind, disintegrated without oxidation. Ore very like this in appearance comes from certain levels in the Comstock and from the Tarshish Mine in Alpine County, California. Whether the resemblance extends farther, I have not the means of knowing.

The great abundance of water-power and timber, and the cheapness of labor and miners' supplies, offer rare facilities for mining in that entire region, when it is definitely ascertained that there are paying mines. An affirmative decision of that little question seems to be about all that is wanting to make it a first class Eldorado. But it is fortunate in other respects. Although rough, the soil is productive, the air cool and healthy, the mountains well stocked with game and the streams with fish. All the easy slopes of the lesser mountains are cleared to their very summits, but old "Grandfather" and some of his rocky neighbors are still wild as in the middle ages. Bruin yet abides in the gloom of their laurel, and will until bears go out of fashion; visiting the farms of his biped neighbors when he feels like sampling the young corn or caressing tender "shoots." I left while the season was yet early for deer and fox driving, but the scenery was charming and the trout very large and speckled and hungry.

I am much obliged for your practical suggestions in a late issue, on the necessity of thorough and exact tests in milling ores. Statements embodying the number of tons treated, the character of the material, and the days, hours and minutes consumed in the operation, are imperatively demanded. Engineers, millmen, and their backers have a keen eye for facts, although not particularly tolerant of opinions.

I saw the "Wilson Steam Stamp-Mill" a few days ago in Montgomery County, the working of which you had under consideration in the remarks just alluded to. I am satisfied the ores of the Russell Mine average soft, particularly the slate. This must be the case, I think, or the shoes and dies used would have shown greater punishment. The mill has also been fortunate in having the care of a competent machinist. With the largest allowance for these advantages, it is still my "opinion" that this mill has a remarkably clean record. The evidence of work accomplished, compared with the signs of wear in doing it, the entire absence of old iron and the concurrent testimony of the neighborhood, form a healthy verdict in its favor.

[We desire to assure our correspondent that the several letters promised on matters pertaining to the mines of North Carolina, will be welcome.—Ed.]

Nevada.

The Comstock.—During the month of October \$36,641 26 in bullion was obtained from 1,223 tons of Hale & Norcross ore. During the same period the Crown Point receipts of bullion amounted to \$45,989 51, and the expenses, including disbursements for supplies, foot up about \$65,000. In September the bullion returns aggregated \$44,369. The bullion returns of the Savage for the month of October foot up \$123,000, against \$140,000 in September.

Humboldt County.—The *Winnemucca Argent*, Nov. 14, reports that week by week the laboring force is increased in the Humboldt mine, and as their development progress, additional proof is given that they are better than ever represented. It continues:—"In Winnemucca Mountain S. Kennel & Co. are taking out and shipping ore to San Francisco which abounds in horn silver and a black silver ore, which assays high up in the thousands per ton, and all the ore gives large results. The mine is three and one half miles from the depot, and is supposed to be a part of the Union Series upon which Mr. L. C. Pease is prosecuting work for a New York Company. Kunkel & Co. are running a tunnel in the vein, and it is now 120 feet, with a well-defined ledge at all points. Tuesday last eleven tons were shipped for San Francisco, and from returns before received and the developments in the mine, there can be no doubt but ore shipments will continue to be made and in increased amounts. This vein is traceable on the surface for two miles—many places cropping out boldly. The Little Giant mine at Battle Mountain is keeping up its rich reputation. Atchison's mill recently started up on ore from it, and G. W. Fox passed down Virginia the other day with seven thousand dollars worth of bullion. The mill has just been erected, and is not doing as close work as it shortly will. The last ten tons worked in the Golconda mill gave an average result per ton of a few cents short of two hundred and seventy dollars, and the Atchison mill will show as high yield as soon as it can be got fairly at work with needful chemicals. The tailings are carefully saved for re-working. Other ores from this district have been tried by mill process and show large yields." The following, clipped from the *Virginia City Enterprise*, Nov. 11, tells of the reception of the Little Giant's gold brick in that city. Says that paper:—"Bonsfield & Co., assayers in this city, yesterday received a very fine lot of silver bullion for melting and assay from the Little Giant mine, Battle Mountain, Humboldt County. The lot of bullion was the result of a crushing of 31 tons of ore worked at John Atchison's mill, and weighs 443 pounds, which has been moulded into five beautiful bars. The total value of the bars is \$7,616 80, being at the rate of \$245 69 per ton. The average value per ounce of the five bars \$1 26 84-100, and the average fineness 981—the bullion contains no gold. The Little Giant mine is the property of Messrs. Fox & McBeth, and although an outside mine, appears to pan out about as well as some of our inside mines. The bricks may be seen on the counter of the Bank of California, in this city."... The Gold Run mines continue to improve in appearance, and the average yield of the Golconda ore is increasing as well as the fineness of the bullion. The *Humboldt Reporter*, Nov. 14, says of the Rochester mine and Company:—"H. L. Onderdonk, president, and Daniel Putnam, one of the trustees of the Rochester Company, left this place for their home in Batavia, New York, on last Thursday. These gentlemen remained with us some ten days, posting themselves on our mining prospects generally, and on the Rochester mine particularly. It will require at least twenty thousand dollars to develop the mine, besides a like sum to erect a mill. They propose to raise this sum from the stockholders, if possible, on their

return home, and proceed to work. The company was indebted to the amount of \$4,000, which has been paid by Mr. Putnam... Gov. Fall's new road, on which he has expended a great deal of labor and money, is now completed and ore teams passing over it. This new road shortens the distance from the mine to the mill and is a much easier grade to haul over.... The Seminole mine, after a temporary suspension of work, has made arrangements to prosecute operations with vigor. A contract has been let to Evan's & Blackford to continue the tunnel 200 feet, the work to continue on Monday next."

The Eberhardt.

[From the *Reese River Reveille*, Nov. 20.]

At the present time there is perhaps no other silver mine in the United States, and for all we know, in the world at large, attracting so much attention as the Eberhardt, located on White Pine District, Lander county. We propose to furnish our readers a few facts concerning this wonderful mine, such only, however, as we have been enabled to gather from authentic sources. The mine was discovered and located on the third day of January, 1868, by F. E. Eberhardt, whose share of its untold wealth consists mainly, if not wholly, in its bearing his name. According to mining regulations only a certain number of feet on any one lode can be located in the name of a single person. In the White Pine District the number is restricted to two hundred, except that the discoverer of a lode may locate two hundred feet extra for his discovery. Mr. Eberhardt was alone when he made the discovery, and in locating took up for himself four hundred feet in right of his being the discoverer. The ledge was supposed by him at the time of making the location to run north and south, and as usual in that district he made two locations on the same lode, claiming from a centre monument, one thousand feet north and eight hundred feet south. He placed his own name in the claim of one thousand feet north, together with the names of I. F. Cole, F. Woodard, and A. Ammon, giving to each of these two hundred feet. In the location of eight hundred feet south he located W. McCauley, F. Drake, J. W. Crawford, and E. R. Sprout, each two hundred feet. The place where the location was made, from its southern exposure was clear of snow, and Mr. Eberhardt was induced to locate in that particular spot from seeing ledge matter exposed at the surface. It was made, just as all other mining claims are, upon the faith of surface indications and not from any knowledge of its real value. But in order to give any correct idea of the Eberhardt south, it is necessary to speak of some other locations upon the same mineral deposit, or contiguous to it. The mine is situated about a half mile west of the present town of Treasure City. Nothing was done upon it amounting to any development until after the location of the Blue Bell, Grey Eagle, and Keystone. These three claims were located on the 12th day of May, 1868, and in the order named. They were all recorded on the 20th day of the same month. The Blue Bell was discovered and located by E. Applegarth, who claimed for himself four hundred feet; A. Townsend and E. R. Sprout, each two hundred. It was located a little further down the slope of the same hill, east of the Eberhardt, and was at that time supposed to be a separate ledge. Mr. Applegarth discovered a small streak of ledge matter, containing rich metal at the point where he made this location. Being a pioneer prospector, his practiced eye told him that there was a mineral deposit beneath the capping of lime rock, and the subsequent developments have more than realized his most sanguine expectations. The Grey Eagle was located a short distance north of the Blue Bell, by Wm. Harrison and John Turner, the latter the adopted son of Dr. E. X. Willard, then of Austin, now of White Pine District. Mr. Turner being under majority used his father's name in the location, and the ground was claimed for Dr. E. X. Willard, T. J. Read, H. Mayenbaum and Frank V. Drake—each two hundred feet. The Keystone ledge was discovered by following up the evidences so well known to miners, along a canyon or ravine, called "float," until arriving at a point where the lode cropped out. It was discovered and located by E. Applegarth, John Turner and Wm. Harrison—all being present at the time. It was claimed for Applegarth, three hundred feet; Willard, two hundred and fifty feet; and Harrison two hundred and fifty—the discovery being divided between the several locators. The Keystone was located a short distance north of the Eberhardt monument, and at that time supposed to be a separate ledge. The Richmond ledge was located on the 19th of June, 1868, as a claim of twelve hundred feet, and the Defiance on the 11th of August last. The Richmond is located a short distance farther down the slope of the hill, below the Grey Eagle and nearly opposite the Blue Bell and the Defiance, between the Blue Bell and Eberhardt. The country rock of the locality consists of limestone, and the ledge matter of the Eberhardt mine is composed mainly of quartz and spar bearing mineral in rich paying quantities. It was soon demonstrated that the Keystone and Eberhardt South, were one and the same ledge of mineral deposit. Then, that the Blue Bell, Defiance and Eberhardt South were one and the same—thus developing the Eberhardt South from its north to its south wall, (its course having proven to be east and west instead of North and South as at first supposed) to be one hundred and eighty-four feet wide, with rich ore the entire width. Still further developments led to a claim on the part of the Eberhardt Company, that the Richmond location, was part and parcel of the Eberhardt South, whilst the owners of the Richmond, claim that their location is a separate and distinct ledge. This dispute has given rise to a lawsuit which is now pending in our District Court, and which precludes us from saying anything on the one side or the other of the questions at issue between these companies. The lowest workings at present on these claims, is in Blue Bell shaft, which has been sunk to a depth of sixty feet, showing the same character of rich ore at the bottom as that taken out at a depth of thirty feet, and which has given to it so much celebrity. The original workings upon the Eberhardt and Keystone, consist of cuts or open excavations into the side of the hill, quite near and alongside of each other, the Keystone being further up the hill. They extend thus into the hill about fifty feet, and from these open cuts, some drifting has been extended further. These claims—the Eberhardt and Keystone—are kept separate by leaving a small streak of pay ore between them. The Eberhardt and Blue Bell have consolidated and owned by Frank Drake, E. R. Sprout, L. Barris, J. W. Crawford, and E. Applegarth. The Defiance has ceased to exist—the locators having surrendered up to the Eberhardt, their location, after the development showing it to be a part of that ledge. The Keystone is owned by E. Applegarth, E. X. Willard and John Turner. The owners of the Keystone and Eberhardt commenced to take out pay ore from their claims about the 20th of May. We are not able to furnish exact results nor separate proceeds—can only give something near the amount in value of ore taken out and reduced from both which we state in round numbers at four hundred thousand dollars; and the ore taken out, but not yet reduced, at three hundred thousand. The space of ground worked over in taking out this ore is but small in comparison to the entire ledge matter exposed, and we are assured that there is pay ore in sight exceeding in value that already taken out. The Eberhardt Company recently bought the quartz mill built at

Silver Springs by General Page, which they now employ exclusively in working ore from their own mine. Their average yield is over a thousand dollars per ton, and the Keystone yields correspondingly, as shown by the last quarterly returns. This, too, after the very rich chlorides are selected out for smelting, being too rich to run through the stamps. The owners of these rich mines were, till recently, all citizens of Austin, and one year ago none of them made much show on our tax lists; but to-day they are owners of mine which we presume could not be bought for less than two million dollars. Eberhardt, the discoverer of this Aladdin of wealth, placed himself in the north location and his friends in the south, where the rich deposits of minerals, already spoken of, were found and do now exist. But while he may not have made anything out of this location, he has other interests in the district, which are cared for by the friends his location has made wealthy, he having gone East, and which are an independent fortune to him. McCauley sold his two hundred feet in the Eberhardt South for twenty-five dollars gold coin. Harrison sold two hundred and fifty feet in the Keystone a few days after its location for twenty-three hundred dollars and went to the States, supposing doubtless he had done well enough to leave the country. The mineral wealth of White Pine district is not confined to the Eberhardt and Keystone, although they are the foremost mines in the district so far as developments have been made.

**Manufacturing and Mechanical Notes
NO. XII.**

Miner's Street Lamp.

It is singular that while so much attention has been given to new designs for chandeliers, pendants, brackets, etc., to be used in-doors, but few attempts have been made to improve the appearance or increase the usefulness of our street lamps. The patterns now generally used is the same employed ever since the first introduction of gas. The engravings present views of an improved lamp for this purpose. Its beauty of form is apparent at a glance, and its superiority in other respects, to the old style, can be easily demonstrated. Fig. 1 represents a post-lamp for lighting streets. These are also made with brackets to fasten on the wall. Fig. 2 shows a hanging-lamp for depots, markets, etc. The lamps differ only in the mode of supporting. In Fig. 1, it rests on four small rods of iron, by which it is secured to the lamp-post. The glass is made with an outward projecting flange



Fig. 1.

at its top, by which it is suspended in the dome, which projects beyond the glass to protect it from rain and snow. The under side of this projection is painted or enameled white, to better reflect the rays of light. The burner passes slightly through an aperture in the bottom of the glass, and the gas is lighted through this hole. The dome is hinged on one side, so that it may be turned over, exposing the glass for the purpose of cleansing, etc. It is evident that this form of glass is stronger, and is less liable to be broken by a blow than a flat pane, and it being globular, will assist in dispersing the rays of light. No obstruction is offered the light, except the slight rods which support the lamp. Although this lamp was designed for street purposes, it is better adapted for mines and quarries than any lamp in the market.

E. A. HEATH & Co., No. 400 West Fifteenth street, New York city, are sole manufacturers, and their sample room is at No. 44 Murray street.



Fig. 2.

Manufacture of Steel.

Puddled bar is converted into steel, according to the invention of Mr. V. Gallet, a British metallurgist, by coating the bars with a paste composed of wood charcoal, 20 parts; soot, 12; lamp-black, 15; ivory black, anthracite, plumbago, 1 each; carbonate of lime, 33; carbonate of potash, 3 to 20 parts; carbonate of soda, caustic of potash, sea salt, sal ammoniac, 1 each; clay, 13; oxide of manganese, 3; and resin, 3 parts—the whole combined with water. The iron is coated with the paste, and the cementation conducted in the usual manner.

Explosive Missiles.

At a conference held at St. Petersburg recently, to consider the non-employment of explosive missiles in war, it was decided that no explosive projectiles weighing less than 400 grammes (0.88lb.) shall be used.

MARKET REVIEW.

FRIDAY EVENING, Dec. 11, 1868.

Gold and Silver Stocks.—Prices this week show but little change from those of last week. Consolidated Gregory continues to advance, and \$5 25 is now offered for it. Smith and Parmelee is bought at \$4 25—500 shares selling yesterday at that figure. Nevada Stocks remain without change. The following quotations are published by the Stock Board:

Table with columns: Bid, Asked, Stock Name, Bid, Asked. Includes Alameda Silver, American Flag, Bates & Baxter Gold, Boston Gold, Bobtail Gold, Black Hawk Gold, Consolidated Gregory, Edgell Mining, Gold Hill, Gannell Gold, Grass Valley, Hamilton G. & S. B., Holman, Hope Gold, Twin River Silver, Gannell Union, Combination Silver, Sausenderfer, Quicksilver.

Copper Stocks.—Coppers are stronger, 60c is offered for Davidson against 70 asked. Flint Steel River is quoted, 1 50 offered, 5 00 asked.

Copper Stocks.—The following will show the prices of mining stocks bid in Boston this day, Dec. 11:

Table with columns: Bid, Asked, Stock Name, Bid, Asked. Includes Copper Falls, Franklin, Minnesota, Calumet, Quincy, Kipp & Buel Gold, Water Power, Bar. Hart & Erie R. R., Isle Royal, Rynd Farm, United Pat. Farms, Union, United States, Sherman & Barnsdale, Second National, Bath, Northern Light.

Petroleum Stocks.—Prices have declined throughout the list, save in one or two instances. They are quoted:

Table with columns: Bid, Asked, Stock Name, Bid, Asked. Includes Bennehoff Inn, Brevort, Buchanan Farm, Central, Clinton Oil, National, N. Y. and Alleghany, Noble Creek, Home Petroleum, Pacific Oil, Rynd Farm, United Pat. Farms, Union, United States, Sherman & Barnsdale, Second National, Bath, Northern Light.

Miscellaneous Stocks.—Quicksilver mining is quoted at 21c @ 21 1/2; Walkhill Lead is quoted at \$12 @ 13; Rutland Marble, \$16 00 @ \$17 25; Brunswick City L. \$9 75; Lehigh & Susquehanna Coal, 50 Tons; Cary Imp. \$6 75 @ 8 00; Cumberland Coal Preferred, 36; West. Union Tel. 37 1/2; Pacific Mail 11 1/4; Canton Co., 2d c. 47 1/2; Boston W. Pow. 14 1/2; American Express, 44; Merchants Union Express, 16 1/2; New York C. 31 @ 12 1/2; Harlem R. 120; N. Y. & N. H. R. 140; Reading, 97 @ 97 1/2; M. S. & N. L. 8 1/2; Mich Cen 11 1/2; Chicago & N. W. 7 1/2; Cal. & N. W. Pref. 7 1/2; Cal. R. I. 10 1/2; M. L. St. P. 8 1/2 @ 8 1/2; Cal. & Tol. 10 1/2; C. B. & O. R. 17 1/2; Tol. W. & W. 5 1/2 @ 5 1/2; T. W. & W. P. 7 1/2; New Jersey C. R. 11 1/2 @ 11 1/2; P. Ft. W. & C. 11 1/2; Lake Shore R. L. 9 1/2; Mar & Cin 1st P. 2 1/2.

State, R. & Other Bonds.—Tenn. St. Gs, ex. coupon, 6 1/2; Tenn St. Gs new, 6 1/2; N. C. St. Gs, 6 1/2 @ 6 1/2; Va. Gs, new, 5 1/2; Va. St. Gs, ex. coupon, 5 1/2; Missouri Gs, 8 1/2; Ala. St. Gs, A & T H 2d m. Pl. 8 1/2; Tol. & Wab 2d m. C. & R. I., & P. R. R. 7 1/2; N. Y. & N. H. R. 140; Tol. P. & W. 1st East Div Am Dock & Imp Co. 7 1/2; Merchants Bk 12 1/2; Bk of N. Y. 140; Bank of Com, 12 1/2; Ninth N. Bank, 11 1/2; Fourth Nat Bank, 10 1/2.

Government Stocks.—The market is weak and prices are lower, being quoted to-day as follows:

Table with columns: U. S. 6s, 1861, coupon, 114 @ 114 1/2; U. S. 5-20s, '65, new coupon, 110 1/2; U. S. 5-20s, 1862, coupon, 110 1/2; U. S. 5-20s, 1864, coupon, 107 1/2; U. S. 5-20s, 1865, coupon, 107 1/2; U. S. 5-20s, 1866, coupon, 107 1/2; U. S. 10-40s, ex. coupon, 103 1/2; U. S. 5-20s, '65, new coupon, 110 1/2; U. S. 5-20s, 1867, coupon, 110 1/2; U. S. 5-20s, 1868, coupon, 110 1/2; U. S. 10-40s, ex. coupon, 103 1/2.

Foreign Exchange.—Foreign Exchange is quite firm, rates having advanced to close upon the specie-shipping point. There is a difference of 1/2 between sight and 60 days' bills, which is equal to 5 1/2 per cent. for money at London; the unusual difference is due partially to the expectation of an advance, next week, in the Bank of England rate of discount, confirmed by the loss of \$246,000 of specie in yesterday's bank return, and the decrease of 13,000,000 fr. bullion in the bank of France; but it is perhaps more owing to speculative demand. The following are the quotations:

Table with columns: Lon. (pr. bks), 60 days, 109 1/2 @ 109 1/2; Lon. (pr. bks), sight, 110 1/2; London, prime com., 26; Paris (bankers), long, 5.16 1/2; Paris (bankers), short, 5.13 1/2; Antwerp, 5.15 1/2; Swiss, 5.18 1/2; Hamburg, 26; Amsterdam (bankers), 41; Frankfurt (bankers), 41; Bremen (bankers), 7 1/2; Berlin (bankers), 7 1/2.

Gold.—Gold is firm, in connection with advancing tendency of exchange. The prices ranged to-day between \$185 1/2 @ 186 1/2. At the present rate for sight bills on London; bars can be shipped at a slight profit, and we understand that arrangements have been made for sending out some moderate amounts by to-morrow (Saturday) steamers.

The continued loss of bullion by the Banks of England and France is regarded as foreshadowing an advance in the rate of interest on the foreign money markets, some regarding 5 and 6 per cent. at the Bank of England not a remote probability. The price has ranged at 136 and 136 1/2. Loans are made at 6 and 7 per cent. There is a hardening tendency in the money market. This morning a 1/2 per cent. on demand loans has become the general rate; and some of the banks having called in loans, there is considerable activity in the inquiries.

Discounts show rather more activity, there being a considerable amount of paper offering. Rates are rather firmer, and we now quote prime names 7 1/2 per cent.

The total net debt on the 1st of December for the last three years compare thus:

Table with columns: December 1, 1868, \$2,599,081,544; December 1, 1867, 2,501,288,734; December 1, 1866, 2,549,631,238.

The following will show the Exports of Specie from the port of New York for the week ending December 5, 1868:

Table with columns: Total for the week, \$230,492; Previously Reported, \$9,123,655; The Tribune of this morning, speaking of the Morris and Essex and the Delaware, and Lackawanna and the Western consolidation, says: "We understand that the final papers and agreements between the Morris and Essex and the Delaware, Lackawanna and Western Railroad were signed, by virtue of which the latter pay to the former 7 per cent. free of all taxes whatever, perpetually, and a contingent 1 per cent. in addition after a certain period. Also, that a stock dividend has been declared on Morris and Essex of 7 per cent., payable previous to January 1, from which date the dividend in cash begins. This arrangement is considered an advantage to both roads."

Petroleum.—Crude in bulk is a trifle firmer, held at 18 @ 18 1/2. Refined standard white—the market continues active, with an occasional lot taken for export. Prices are a little higher, closing at 35 1/2. The sales are 6,000 barrels, buyers' option balance of the month, at 36c; 5,000 bbls. same delivery, at 35 1/2c; 100 bbls. on the spot at 34c; and 1000 bbls. for Feb. delivery at 32c. For Philadelphia delivery there is a fair inquiry at strong prices, closing at 32c. for December. The sales are 14,000 bbls. for balance of the month at 32c., and 1,000 bbls. for March and April at 31 1/2c.

Receipts for the week ending Dec. 5, 15,748; Exports for the week ending Dec. 5, 16,798; Exports from Jan. 1, 49,605,199; Exports same time last year, 31,157,599.

The following is the quantity exported from other ports, Jan. 1 to Dec. 5.

Table with columns: From Boston, 1568, 2,168,639; Philadelphia, 36,710,019, 27,672,978; Baltimore, 2,568,021, 1,315,157; Portland, 704,907, 900.

Total, 42,318,426, 31,152,269; Total exports from the United States, 95,234,567, 62,662,492; Same time in 1866, 62,559,342; Same time in 1865, 25,967,923.

Copper, has been very irregular, but on the whole the tendency is rising. Sales of the week have been 2,260,000 pounds, at 28 1/2 @ 29 1/2 for all kinds, and 24 1/2 @ 25c. for January and March delivery. Detroit is quoted to-day at 29 1/2c., the other kinds at 24c.

The London Market is firm at 70 for Chill Bars.

Lead.—Lead quiet and steady at \$4 1/2 @ \$4 7/8 for ordinary foreign.

Imports from Jan. 1 to Nov. 30th, 1868: Pigs 351,335; Coastwise ports, 3,768; Total, 360,103; Same time in 1867, 386,937.

Tin.—5,000 lbs. Straits sold to arrive in Boston, at 25 1/2c. On the spot, 3,000 lbs. Straits, has been sold at 26c., cash, and 30 days. Banca, 2000 slabs sold at 29c.; English, 10 tons, at 26c.

Import from Jan. 1 to Nov. 30, 1868: Pigs, 1868, 1867, 69,290, 73,006; Plates, 776,956, 724,903.

The London market advanced to £105 for Straits. Spelter.—64d. for Silesian; this is a decline of a half cent, owing to large amounts. Imports from Jan. 1st to Nov. 30th, 1868: Plates, 195,465; 1867, plates, 128,911.

Lime.—Prices are well maintained, owing in a measure to the competition with North River lime being stopped by the freezing of the canal. We quote Rockland at \$1 60 for common, and \$2 for lump. Cement.—Rosendale is firm at \$2, cash.

Cardage.—The price of Manila is reduced half a cent, say to 21 @ 22c. for large and small sizes. Regulus Antimony.—Is dull but steady—3 casks sold at 18 1/2 cents, in gold.

Oils.—The movement in linseed continues at full prices; 10,000 galls. were sold for January and February delivery, at \$1 08. Crushers are realizing \$1 05 @ \$1 07, casks and barrels.

Paints.—The market generally is quiet. Prime grades German Glim is moderately active and prices are steady; for common grades there is but little inquiry for these—prices are without quotable change—the sales are 2000 lb. Cologne at 25c; 5000 lb. Light Transparent German, 20 @ 21 1/2; 2000 lb. English and 27,000 lb. Domestic on private terms. Of other goods the sales are 4 tons China Clay, from store, at \$80; 5 casks Nitrate Lead, 14 1/2; 25 kegs Orange Mineral, 15 1/2; currency; 5 casks do., 11 gold; 11 tons English Ground White Lead, 14 1/2 @ 14; 25 kegs super Indian Red, 12 1/2; 35 kegs No. 1 do., 11 1/2; 50 kegs English Red Lead, 11 1/2; currency; 10 casks Patent Dryer, in bulk; 7 casks do., in tin; 8 casks Imperial Green, 8 gold; 35 tons Paris White from store, 24 @ 24 1/2; and 50 bbls. Venetian Red, 24, cash.

Drugs and Dyes.—Opium has been in active demand, and the market is very firm; a telegram received from London yesterday, reports sales at 85s., being an advance of 2s. on the previous day's quotation; sales have been made of 50 cases, here and to arrive, in bond, at \$9 25 @ \$9 30 gold. The sales besides are 720 cases Shell Lac (including 300 cases reported in our last), part at 2 1/2, in bond; 55 tons Soda Ash, 24 @ 25 1/2; 50 casks Sal Soda, 14; 50 cases Licorice Paste, in bond, 12 1/2 gold; Refined Camphor, \$1 07 1/2; 40 cases English Shell Lac, 44; 5000 lb. English Nitrate Lead, 14 1/2; 400 kegs Bl. Carb. Soda, \$5 40 @ \$5 50; 50 casks low test Bleaching Powder, 3c; 15 bbls. Salem Blue Vitrol, 11; 25 casks French Copppers, 2; 5 bbls. Baker's A. A. Castor Oil, 24; 15 cases do., 35 currency, cash; 40 bales Sorts Gum Arabic, 10 tons Acetate Lime, 5 casks Dutch Madder, 25 do., to arrive, 10,000 lb. Gum Kowrie, 100 cases do., to arrive, and 100 do. Singapore Gum Damar, on private terms.

THE IRON TRADE. NEW YORK, Dec. 11, 1868. We have but little change to report in the markets; trade is very dull and sales small.

In American Iron we report 200 tons No. 1 Crane, private terms; 150 tons other brands also on private terms.

In Scotch Iron prices have advanced. Glengarnock is now held at \$43. Consequently we have no sales of importance to report.

In Scrap Iron we note 500 tons from yard, sold on private terms. We have no change or improvement to note in Bar from Store, business being light, and quotations nominal. We hear of no invoices offering. Sheet is steady at our quotations.

BOSTON, December 9, 1868. The demand for Pig Iron is steady, and further sales of Scotch at \$41 @ \$45 per ton for Gartsherrie, Coltness and other brands; and American Pig at \$40 @ \$45 per ton. Bar Iron remains without change, with small sales at \$96 @ \$95 for common, and \$100 @ \$105 for refined English and American. Russian Sheet Iron is quiet at \$12 @ 13c. per lb. gold.

Imports of Pig Iron from January 1 to December 5, 1868: From Great Britain, tons, 20,264, 29,695; Costwise Ports, 11,100, 8,622.

PHILADELPHIA, December 8, 1868. In Pig Metal there is no change to notice. Sales of No. 1 Anthracite at \$42 @ \$43, and No. 2 at \$38 @ \$40. Scotch Pig is quiet at \$43 per ton, and Forge at \$35 @ \$35 50 per ton. Manufactured Iron commands \$37 50 for Bars. Blooms are quiet.

Lehigh Valley Iron Trade. Pig Iron transported by the Lehigh Valley Railroad Co. for the week ending Dec. 5, 1868:

Table with columns: From, Tons, Total. Carbon Iron do., 125, 7,500; Lehigh Valley Iron Co., 255, 8,690; Thomas Iron do., 730, 29,965; Lehigh Crane Iron do., 1650, 29,935; Allentown Iron do., 490, 22,465; Robert Iron do., 215, 8,970; Glendon Iron do., 360, 19,355; Other Shippers, 490, 14,770.

Total, 3,625, 141,519.

Imports of Foreign Iron and Steel at New York. For the week ending Dec. 4.

Table with columns: Quantity, Value. Railroad Iron, bars, 5,450, \$35,490; Hoop, tons, 61, 2,615; Sheet, tons, 822, 31,221; Pig, tons, 600, 8,917; Other iron, tons, 3,929, 89,901; Chains and Anchors, packages, 58, 3,150; Tubes, packages, 2,110, 4,355; Nails, packages, 68, 1,000; Steel, packages, 6,390, 74,407; Machinery, 423, 31,655; Pipes, 73, 3,471; Anvils, 500, 3,000; Wire, 314, 3,031.

Total value, \$254,963.

Market Prices. NEW YORK, Dec. 11, 1868.

Iron.—Bars, 1 to 1 1/2c. per lb.; railroad, 60c. per 100 lbs.; boiler and plate 1 1/2c. per lb.; sheet, band, hoop and scroll, 1 1/4 to 1 1/2c. per lb.; pig, \$9 per ton, polished sheet, 3c. per lb. Payable in gold.

Am. pig, fy. No. 1, best, \$41 00 @ 43 00; Grey Forge, 36 00 @ 39 00; White and Mottled, 32 00 @ 35 00; Pure white for Cal. mar., 32 50; Scotch Pig, No. 1, best bid, 42 00 @ 45 00; outside, 42 00; Wt. No. 1 Scrap f'm yd., 46 00; Ex ship, 43 00; Bar, Ref., En. & Am., 90 00 @ 92 50; Old Rails, s. sizes, gold, 87 50; R. R. Iron, For. Am Stock, 51 50 @ 52 50; R. R. Iron, For. to Imp, 50 00; Amer. at wks., 77 00; R. R. Iron, Am. deliv'd 50 00; Sd rails of any pattern at works, currency, 114 20; Solid Steel ris. For. gal. 110; Street Rails at works, 85 00; Lightria, for mines &c., at works, \$85 00 @; Do. delivered here, American German, 10 13.

STORE PRICES. Bar, Sweden, ord'y sizes, — 155 00; Bar, Eng. and Am., rfd., — 100 00; Scroll, — 180 00 @ 175 00; Ovals and half round, 125 00 @ 155 00; Band, — 130 00; Horseshoe, — 130 00; Rods, @ 3-16 inch, 105 00 @ 165 00; Hoop, — 135 00 @ 190 00; Nail, R. per lb., 12; Sheet, R. per lb., N. (gold) 11 1/2; Sheet, R. G. & T. com, 5 1/2; Ralls, Eng. & d. ton, 51 00 @ 52 00; Ralls, American, 79 00 @ 81 00.

STEEL. English, cast 2d & 1st qual., 18 @ 23; Emk. Spring 3d & 1st qual., 10 @ 12; Eng. Blister 2d & 1st qual., 11 1/2 @ 20; English Machinery, — 134 16; Eng German 2d & 3d qual., 14 16; Am. Blister, "Black Diamond," 104 16; American, Cast, Tool " 19; American, Spring " 10 13; American Machinery " 13; American German " 10 13.

PITTSBURGH, December 5, 1868. The market for crude iron during the week, says the Commercial, is substantially the same. Whilst the receipts of medium grades of standard forge iron continue in barely sufficient supply to meet the demand, foundry descriptions are in rather better supply than at date of our last report. The operations for the past two weeks were as follows:

Table with columns: This Week, Last Week. Anthracite, 390 tons, 810 tons; Bituminous, 2590 tons, 1435 tons; Charcoal R. H., 945 tons, 510 tons; Alleghany Coke, — tons.

Total, 3,905 tons, 2,775 tons. The above shows an increase in sales for the week of 1090 tons.

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORES.

Table with columns: 100 tons Medium Gray, from yard, 39 00—5 mos; 100 tons Medium Gray, from yard, 39 00—5 mos; 200 tons Medium Close, from yard, 39 00—4 mos; 60 tons Medium Close, from yard, 39 00—4 mos; 200 tons Medium, at furnace, 37 50—4 mos; 60 tons Medium, at yard, 39 00—5 mos; 400 tons Close Medina, to arrive, 39 00—5 mos; 150 tons Open Gray, 40 00—6 mos; 500 tons Inferior Close Forge for Rails, 35 50—4 mos; 500 tons Close Forge, deliverable at furnace, 36 00—4 mos.

100 tons Good Medium Gray, to arrive, 39 50—5 mos; 60 tons Good Medium Gray, to arrive, 39 00—4 mos.

ANTHRACITE. 50 tons Mottled, 38 00—4 mos; 50 tons Anthracite, 39 50—4 mos; 40 tons No. 1 Anthracite, 41 00—4 mos; 40 tons No. 2 Anthracite, 41 00—4 mos; 50 tons No. 1 Anthracite, 41 50—4 mos; 70 tons Forge, 38 00—6 mos; 20 tons No. 2, 40 00—4 mos; 10 tons No. 2, 38 50—cash.

HANGING ROCK CHARCOAL. 30 tons Foundry, 45 50—4 mos; 200 tons Common Foundry, 43 00—4 mos; 100 tons No. 2 Common Foundry, 42 00—4 mos; 180 tons Close Forge, 40 00—90 dys; 290 tons No. 1 Foundry, to arrive, 43 50—time; 150 tons Extra, to arrive, 45 50—6 mos; 50 tons Extra Juniata Forge, 47 00—5 mos.

BLOOMS. 45 tons No. 1 Juniata, 95 00—6 mos; 20 tons No. 1 Juniata, 92 00—cash.

CINCINNATI, December 8, 1868.

Pig.—Receipts continue light, and with fair demand prices are maintained at the advance. Per ton. Days Hanging Rock H. B. Mill, \$37 85—30; Hanging Rock H. B. For., 41 48 1/2; Hanging Rock Cold Blast, 38—90; Hanging Rock Cast Blast, 38—90; Hanging Rock Cast Wheel, 55 60—90.

MANUFACTURED.—Trade is quiet, but no change in prices, though concessions are made from card rates.

Table with columns: B, C, C, Half Oval and 1/2 Round, Angle Iron, T & Hollow Rail, Round and Square, Saddle tree, Hoop and Light Band, Oval Iron.

LOXDOX, Nov. 20th, 1868. In Staffordshire there is every reason to regard the condition of the trade as satisfactory. The cessation of orders for shipment to the Baltic has not sufficed to prevent the continuance of a good demand, and a steady trade during the winter is confidently anticipated, with an active demand as soon as spring commences. Advances from the United States hold out hopes of considerable requirements for that country. Manufacturers are now indisposed to take orders far in advance based upon present prices. In Wales the rail mills continue busier than they have been for a long time, and this will tend to allay the fears lately entertained as to there being sufficient orders to keep hands employed with regularity after the shipping season of the northern ports had been closed. Prices remain firm, and several makers have refused to accept contracts for delivery next year at present prices. Home enquiries are more encouraging; large quantities are still being shipped to South America, and there are several good orders for that country remaining on makers' books. To the United States shipments are steadily increasing; the total sent during the present month being 14,095 tons. In Swedish iron there is not much doing at present. In Scotch pig-iron an improved business has been done during the week, and the price at one time went up to 54s. cash; it afterwards, however, receded to 53s. 9d. cash, and 53s. 10d. one month.

Iron. Iron, Welsh, in L'n 26 10 @ 26 15 0; Iron, W. to arrive, 6 10 @ 6 12 7; Nail Rods, 7 0 @ 7 2 6; Do. Staff's, in L'n 7 12 @ 8 10 0; Bars, in London, 7 10 @ 9 10 0; Hoops, in London, 8 2 @ 9 15 0; Sheets, single, 9 0 @ 11 0 0; Pig, No. 1, in W. 3 15 @ 4 5 0; Ref'd metal, in W's 4 0 @ 5 0 0; Bars, com' in, in W's, 6 0 0 0; Bars, Merchant, Tyne, 6 10 0 0; Bars, railway, in W's 6 0 @ 6 0 0; Bars, Sweden, in L'n 9 17 @ 10 5 0; To arrive, 10 0 @ 10 5 0.

PHILADELPHIA, December 8, 1868. The market can be reported quiet and light, with prices somewhat unsettled. The coal trade for the season is over, and shipments may be regarded as entirely suspended for this year. As we predicted last week, the miners stopped work. A few small collieries are at work, but no shipments will be made to tide-water. We learn from Philadelphia that stocks are very light at Port Richmond. Shippers and others are clearing up stock on hand. But few vessels are offering. Freight remains unchanged.

The following table will show the exports of coal from the port of New York for the week ending Dec. 5, and for the season to that date, also the amount exported last year for the same period:

Table with columns: Exports for the week, tons; Do. from January 1, do, 61,201; Do. same time last year, do, 65,640.

BOSTON, December 9, 1868. English Canal continues quiet at \$1 1/2 @ \$20 per ton, for large and small lots. In Sidney and Pictou nothing of any consequence has been done, and cargo sales are nominally \$8.50 @ \$9.00. Anthracite, in retail lots, is selling at \$11 @ \$12, and cargo prices are nominally \$11 @ \$12 per ton.

PHILADELPHIA, December 8, 1868. There is less doing, and prices are rather lower.

The following table exhibits the amount of Coal that was passed over the various routes of transportation from the Pennsylvania Coal districts for the week ending Dec. 5, 1868, and for the season to that date. A comparison is also made with the amount transported the corresponding week in 1867 showing the increase or decrease, as the case may be:

Table with columns: COMPANIES, WEEK, TOTAL, WEEK, TOTAL, WEEK, YEAR, INC. OR DEC. Includes Phil. & Read R. R., Schuylkill Canal, Lehigh Valley R. R., Lehigh & Sus. R. R., Lehigh Canal, Scranton North, Scranton South, Penn. Coal Co. rail, Penn. Coal Co. canal, Del. & Hud'n Canal, Shamokin, Trevorton, Short Mountain, Lykens Valley Co., Hunt'n & B'd T'p, Wyoming South, Wyoming North, Williamstown Col.

Total, 235,959, 8,895,013; 268,200, 11,225,113; 235,959, 8,905,013; Increase, 1,271, 11,320, 100.

Report of Coal Transported over Lehigh Valley Railroad. For the week ending December 5, 1868, and previously this season, compared with same time last year.

Table with columns: WHERE SHIPPED FROM, Tons, Cwt., PREVIOUSLY Tons, Cwt. Includes Total Mahanoy, Total Hazleton, Total U. Lehigh, Total B. Meadow, Total Wyoming.

Total total, 35,344 10, 2,225,690 02; Same time last year, 42,029 05, 1,943,855 05; Increase, 6,814 15, 277,844 17; Decrease, —, —, —.

Forwarded east from M. Chank by r'l Delivered at M. Ck and on line of r'd above that point, 2,969 04; At Penn. Haven for shipment by canal, 4,194 06, 202,451 10; At M. Chank for shipment by canal, 2,460 19, 116,160 15.

Total by rail and canal, 44,252 05, 2,603,102 11; Same time last year, 43,118 07, 2,050,156 16; Increase, 1,133 98, 552,945 15; Decrease, —, —, —.

Lehigh and Susquehanna Railroad. Report of Coal shipped for week ending Dec. 5, 1868.

Table with columns: WHERE FROM, WEEKLY TONS, TOTAL TONS. Lists coal shipments from Wyoming, Upper Lehigh, and Mauch Chunk regions.

At Philadelphia, Dec. 10, 1868.

Table listing coal prices at Philadelphia for various grades like Lehigh L'p and St'm't., Broken and Egg, etc.

Table titled 'SPECIAL COALS.—DEALERS' QUOTATIONS.' listing prices for Lehigh, Honeysuckle, and other coal grades.

Table titled 'Scranton Coal at Elizabethport, Dec. 10, 1868.' listing prices for Lump, Steamer, and Grate.

Table titled 'Prices for Pittston Coal at Newburgh, Dec. 10, 1868.' listing prices for Lump, Steamer, and Grate.

Table titled 'Lackawanna at Rondout, Dec. 10, 1868.' listing prices for Lump, Steamer, and Grate.

Table titled 'Lehigh Coal at Elizabethport, Dec. 10, 1868.' listing prices for Lump, Steamer, and Grate.

Table titled 'Wilkesbarre Coal at Hoboken, Dec. 10, 1868.' listing prices for Lump, Steamer, and Broken.

Table titled 'At Baltimore, Dec. 10, 1868.' listing prices for Wilkesbarre and Pittston coal.

Table titled 'At Havre de Grace, Md.' listing prices for coal from the Patuxent River.

Table titled 'At Georgetown, D. C. and Alexandria, Va.' listing prices for coal from the Chesapeake region.

Table titled 'Prices of Gas Coals.' listing prices for Block House, Gowrie, Lingen, Sydney, etc.

Table titled 'Prices of Foreign Coals.' listing prices for Liverpool Gas Caking, Liverpool House Canal, etc.

Table titled 'Provincial Freights.' listing rates for Sydney, Lingen, Cow Bay, etc.

Table titled 'Foreign Freights.' listing rates for Liverpool, Lehigh, Bellingham Bay, etc.

Table titled 'Rates of Transportation to Tide Water.' listing rates for Philadelphia and Reading Railroad, etc.

Table titled 'To Elizabethport.' listing shipping expenses and rates for L. V. Railroad, etc.

Table titled 'To Port Johnson.' listing shipping expenses and rates for C. R. R. of N. J., etc.

Table titled 'To Hoboken.' listing shipping expenses and rates for L. V. R.R., etc.

Table titled 'To Philadelphia [BY CANAL].' listing shipping expenses and rates for Lehigh and Reading Railroad, etc.

Table titled 'To New York via Morris Canal.' listing shipping expenses and rates for Lehigh Canal, etc.

Table titled 'Expenses from Mauch Chunk to Jersey City for Re-shipment.' listing various costs.

Schuylkill Coal Trade. BY RAILROAD AND CANAL, FOR WEEK ENDING, DEC. 10, 1868.

Table comparing coal trade by railroad and canal for the week ending Dec 10, 1868.

Lehigh Canal Coal Trade. Shipped for the week ending Dec. 5, 1868.

Table showing coal trade for the Lehigh Canal for the week ending Dec 5, 1868.

Cumberland Coal Trade. By R. & O. RAILROAD.—The shipments over the Baltimore and Ohio Railroad, for the week ending Dec. 5, were as follows:

Table showing coal trade for the Cumberland Coal Trade via the Baltimore and Ohio Railroad.

Prices of Coal by the Cargo. [CORRECTED WEEKLY.] At New York, Dec. 5, 1868.

Table listing prices of coal by the cargo at New York as of Dec 5, 1868.

Table titled 'Coal Freights.' listing rates for various destinations like Stamford, Bridgeport, etc.

Table titled 'Rates of Freight from Newburgh.' listing rates for various destinations.

Table titled 'Freights on Coal Sea-borne from Port Richmond, Philadelphia.' listing rates for various destinations.

Table titled 'From Elizabethport and Port Johnson.' listing rates for various destinations.

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British Copper Trade Circulars. THE COPPER TRADE.—Messrs. Pitcairn-Campbell & Co. (Liverpool, Nov. 14) write: Holders of Chili Bars having freely met buyers, considerable transactions have taken place since our last, at however a reduction of 20s. to 40s. per ton.

Table listing copper trade statistics for various regions like Liverpool, Swansea, etc.

San Francisco Stock Market. A telegram from San Francisco, dated Dec. 9, quotes:

Table listing stock market prices for various companies like Gould & Curry, Savage, etc.

Expenses from Mauch Chunk to Jersey City for Re-shipment.

Table listing various expenses for re-shipment from Mauch Chunk to Jersey City.

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AMERICAN Journal of Mining.

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T. F. FEMBERTON is Corresponding and Traveling Editor.

W. B. HARRISON is Editor of the Mechanical Department.

Correspondents, exchanges and others addressing us should be extremely careful to write "JOURNAL OF MINING," instead of "MINING JOURNAL," and to give the number of our Box at the Post Office, which is 5969, to ensure safe carriage. Communications intended for publication should be plainly written, and on one side of the paper only.

NEW YORK, SATURDAY, DECEMBER 12, 1868.

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NOTICE TO CORRESPONDENTS.

In consequence of a new regulation recently adopted by the Postmaster of this city to facilitate the early delivery of mail matter, we have to request our correspondents, in addressing us, to give the number of our post-office box, No. 5,969, in lieu of, or in connection with our business office address.

MINES OF THE PERSIANS AND EGYPTIANS.

In the early times, of which we spoke last week, as in all subsequent periods, conquest was one of the foes of mining. The Egyptians were twice conquered by the Ethiopians, and had several Assyrian wars, which must not only have produced such a disturbed condition of affairs as prevented the prosecution of mining, but also have drawn into the military service the classes of laborers employed in that business. The final establishment of the Persian dominion removed the disturbances from without, but the tyranny of the provincial governors produced numerous revolts, which doubtless had a disastrous effect upon mining. The Persians, however, amassed much treasure from their conquests, and obtained from the Egyptian mines, in particular, the finest silver. The strength which wealth imparted to this dynasty was painfully felt by the Greeks, in the vast armies which invaded their territory and the bribes with which their leaders were corrupted. The first period in the history of mining closes with the overthrow of the Persian empire by Alexander, and the transfer of the treasure and resources of the Orient into European hands. Meagre as are our data for this period, we are nevertheless led to a reasonably certain conclusion with regard to the tenure and authority under which mining was carried on. We hear of kings, like CRESUS, enriching themselves from the product of the mines; but there is no indication that these sources of wealth were open to private citizens. The immense quantities of gold and silver employed by governments, and their use in constant wars, also confirm our conjecture, that the mines of Asia and Africa were the property of the rulers, and that they were worked by slaves. This was certainly the case in Egypt, in the following period. It is probable, therefore, that the doctrine of ownership by the crown of the metals in the earth, was originally established by tyranny, and that before its establishment, mining, like agriculture, was carried on by the citizens. The story of JOSEPH, in the Bible, shows by what means the despot of Egypt was able to destroy the individual industry of agriculture, and to turn the whole kingdom into his own farm. Doubtless the process of "consolidation" in mining followed a similar course.

In the second period, there was apparently still greater activity and extent of mining operations; at least our information on the subject is more satisfactory. Gold, silver, copper and iron were obtained in Ethiopia, and iron at least in Libya. Possibly the recent discoveries of gold in Africa, which are now attracting considerable attention from the English, are but re-discoveries of the fields worked centuries before CHRIST. India and Caramania produced gold, and the latter country also silver, copper and minium. The people, however, are said by STRABO to have been very ignorant of the art of working metals. The Derbe did not know how to melt their gold dust into lumps, and the Indians sold crude specimens of rich ore to foreigners. The Chalybeans, on the other hand, became famous as workers in iron, and derived their principal revenue from this source. In Asia Minor, the gold mines formerly owned by CRESUS were worked down to the times of XENOPHON; but STRABO says that in his day they were exhausted, and only traces of them remained. There were iron mines and skilled workmen in Palestine. Arabia Felix is celebrated by many ancient writers as possessing very rich gold and silver mines, but no traces of them now remain, nor have modern travelers observed auriferous sands in any of the streams of that country. Historical testimony on the subject is, however, quite positive and unanimous, and the matter may be considered as still in doubt. It is not impossible that the ancient writers, who were not always exact in such statements, mistook the treasure obtained by the Arabians through their Indian commerce for a product of their own soil.

We may well believe that this wide-spread development of mining, accompanied as it was with a diffusion of government, brought about some change in the mining law. The loosely-strung empire of ALEXANDER fell to pieces after his death, and no doubt the mines became the property of governors, generals, nobles and wealthy citizens. We have, however, in Egypt a type of the general systems which obtained, on a greater or smaller scale, throughout the petty despotisms which divided the world. DIODORUS gives us a picture of Egyptian mining, partly taken from the earlier work of AGATHARCHIDES. According to this account, the mines of Egypt were the property of its kings, who obtained immense sums from them.

Those were in one sense the palmy days of mining; for the king got his mining ground gratis, worked only the richest deposits, captured or reduced to slavery the necessary laborers, and levied contributions on his kingdom for the necessary food and other mining supplies. Rich mines worked at no expense, naturally paid handsome dividends. Machines were not employed to any extent, since human power was cheaper. The Egyptian monuments which remain to us represent the most stupendous works of engineering, as accomplished by the labor of countless multitudes of men. The labor of the mines was performed by prisoners of war, convicts and purchased slaves. As the Egyptians were not a warlike people and seldom returned from battle victorious, it is not likely that their prisoners were numerous. Neither could the convicts have supplied their extensive mines. It is probable that the greater portion of their miners were purchased slaves. We are, in fact, informed that the workmen in the Egyptian mines spoke different languages. To prevent conspiracies and escapes, the different gangs were placed under overseers who were not their countrymen, and all hope of flight was finally extinguished by fetters, by constant confinement in contracted caverns, and by the nature of the region itself, which offered no opportunity for successful escape. The lot of these unhappy creatures in the mines and furnaces was indeed a hard one. They were forced to labor day and night, without rest or hope, and under the most dreadful hardships and cruelties. They were entirely naked, and neither age nor sex, sickness nor wounds, excused them from the severity of discipline. The stronger ones hewed the rock in the mines, the half-grown youths carried the ore to the surface, persons over thirty years (so soon was their vigor destroyed) were set at the easier task of crushing it in mortars, and the women and old men ground it fine in hand-mills. The historian adds, with laconic pathos, that they continued to labor until they dropped dead beneath their burdens.

THE MONT CENIS TUNNEL.

This great work of modern engineering has been the theme of many essays, reports, letters, and leading articles; and, even to-day, it is the favorite refuge of newspaper correspondents (and possibly editors also, for that matter—*peccavimus!*) who find themselves a-strand, with no tide of thought coming in to float them. Perhaps it was some such dearth of ideas which lately led the Paris correspondent of the London Times to make a long letter out of the fact that this tunnel, which a few days before the first day of October had progressed 30 many meters, had on that day attained 30 many meters; and, in a desperate attempt at originality on so trite a theme, to add that this was a specious statement, and that it was apt to mislead. For argued he, the tunnel consists of two inclines, meeting in

the center of the mountain at their highest point. It will be a difficult and unpleasant business to go past this highest point from either end. Consequently the work on both sides should be continued till the parties meet at that point; and therefore those who get there first "must cross their hands and wait." Now, the working parties from the Italian side have advanced 3.25 miles (5,211 meters) and those on the French side 2.24 miles (3,631 meters). The space which remains, out of the whole 7.6 miles of the tunnel, is 2.11 miles, and this must be divided unequally, giving 1.55 miles to the French and 0.56 to the Italian end. Hence, when the parties from the south get their work done, the parties from the north will have yet a mile before them. The Times writer mentions, in conclusion, the expectation that the tunnel will be opened in 1871, and remarks, "*Qui vieta terra*;" but it would surprise a great many people if the tunnel is open for traffic even by the last day of that year."

Ton d'apomeibonos speaks ZERAH COLBURN of London Engineering, one of the ablest and altogether the most pugnacious journal in existence. Mr. COLBURN, not satisfied with the weekly thirty-two page opportunity which his own paper offers him to reduce unfortunate sciolists to impalpable powder, replies in the columns of the Times to the suggestions of its correspondent, asserting that there is no serious difficulty to be apprehended in passing the interior summit from the Italian side, and pitching down hill with the tunnel at the rate of 1 in 45 for half a mile, to meet the northern party coming up; that there is no difficulty in keeping the true line, and that all the water which may reasonably be expected can easily be removed with pumps. The rejoinder of the correspondent, reiterating and defending his opinion, and the surrejoinder of Z. C., declaring that his opponent is not far from a first-class idiot, we cannot quote at length. At the risk of being caught between the upper and the nether mill-stone, we mildly venture our opinion, that the difficulties mentioned do exist and may be serious; that it will on the whole be better for the work from both ends to be prosecuted upward, and not on a down grade; but that all this has apparently been taken into consideration by the engineers in charge, and that their work will be finished in 1871, even without the adoption of the measures suggested by Mr. COLBURN. As for the tunnel being "open for traffic," the Americans have shown how long a time it would take, after the excavations were completed, to effect that object. Give us the road-bed on Monday, and we will lay the seven and a half miles of track and have the trains running before Tuesday night!

Mr. COLBURN justly remarks that the greatest difficulty will be to ventilate the tunnel when it is completed, and trains are constantly passing through it. As it is a tunnel without shafts, there will be no escape for noxious gases, except at the ends; and even the introduction of compressed air, in the manner in which it is now transmitted as a working power, will not prevent the inconveniences arising from the "drag" of the outward currents. We do not doubt, however, that this problem will be solved, and the greatest work of modern engineering will be in every respect a complete success. Let the fainting "Hoosac" take courage, and the unborn "Sutro" leap for joy!

THE NEW TARIFF ON COPPER.

Our Lake Superior friends suffered at the close of the last session of Congress a most tantalizing disappointment. The bill establishing a new tariff on copper, for their protection, was brought to a vote in the House, with a certainty of success, when the speaker's hammer, falling in the very middle of the last roll-call, put an end to the session and to the further progress of the bill, for the time. Fortunately for its friends, however, all this occurred under the operation of the "previous question;" and on the first day of the present session, the House of Representatives found itself obliged, at the close of the morning hour, to attend to the copper bill at once and without debate. The result was the immediate passage of the bill by more than two-thirds of the members present, the vote standing 107 to 51.

Other localities besides Lake Superior will be benefited by this measure. We may expect it to revive the now prostrate copper mining of California, and to give new vigor to the operations going on in Tennessee, Virginia and North Carolina. If it bears hard upon the great smelting establishments which have been built at various points on the Atlantic coast, and have depended to some extent for their metallurgical and financial success upon an admixture of foreign ores, they must try to find at home the material which they have hitherto brought from abroad, or else they must stop business altogether. We hope the tariff will not be found so heavy as to force such a result. It is the danger in all tariffs laid upon raw material, that they may destroy manufactures; and we should be sorry to see what little metallurgical science has got foothold in this country, crushed out by well-meant legislation for the protection of another interest.

The following are the rates, which will take effect on the

passage of the bill by the Senate, and its approval by the President:

On all copper imported in the form of ore, 3 cents for each pound of fine copper contained therein; on all regulus of copper, and on all block or coarse copper, 4 cents for each pound of fine copper; on all old copper, fit only for remanufacture, 4 cents per pound; on all copper in plates, bars, ingots, pigs and in other forms not manufactured nor enumerated in the bill, 5 cents per pound.

There is room to fear that these rates will stop the importation of copper ores, but not that of copper; in other words, hurt our furnaces more than they will help our mines. We hope this will not be the case; and, sincerely congratulating the miners of Lake Superior on the attainment, so far, of their wishes, we shall look, when the bill becomes a law, for the good effects which they have promised us from its passage.

NEW PUBLICATIONS.

REPORT TO THE MANHATTAN GAS LIGHT COMPANY on the Merits of the Lime and Iron Methods of Gas-purification, by HENRY WURTZ. New York, 1868.

This interesting report is partly the result of a rivalry between the New York and Manhattan Companies, the former of which employs limonite, or native hydrated oxide of iron, and the latter moist hydrate of lime, for the purification of gas. Professor WURTZ comes to the conclusion that "the Manhattan Company could scarcely do better than now, so far as the questions apply, of efficient purification and avoidance of production of nuisances thereby." This is not encouraging to the aristocratic and democratic noses of up-towners, which are alternately turned heavenward in scorn, and held tightly in despair, as odors, not of Araby the Blest, come flying on the wind. Perhaps they will not even be consoled by the information that the most intolerable variety of stench, which the Professor pronounces "beyond the power of words to describe," proceeds from the works where the foul ammoniacal liquor of the gas company is manufactured into sulphate of ammonia. Neither is it exhilarating to know that the odor is "less offensive close to the ammonia works than at some distance in the direction of the wind." Not every body is so happy as to live close to those fragrant works, nor can all the sufferers move nearer, to escape the nasal torment. At the present stage of scientific knowledge, we can only recommend to the afflicted a steady course of cold in the head. It is a choice between two evils—blowing the nose, and holding it. The author of this report is, we understand, engaged in supplementary investigations, which may eventuate in the suggestion of remedies less severe.

PLYMOUTH PULPIT, the interesting and most beneficent periodical issued weekly by J. B. FORD & Co., is fast finding its way to the households of this land. The Democrat of this city, one of the most outspoken opponents of HENRY WARD BEECHER's political views, recently reviewed his published sermons in a most generous and appreciative spirit; and this we take to be a fair example of the hearty admiration and respect with which all Americans regard the greatest pulpit orator, and one of the most noble and earnest Christian men of their country. Long after the animosities of partisan warfare shall have subsided, his influence as a preacher of the Gospel and a fearless champion of public and private virtue, will continue to be powerful among men. More than one secular or religious newspaper has buoyed itself up by the publication of reports of Mr. BEECHER's sermons, sometimes with, sometimes without his permission. Those who desire to read what he really says, and to have it in a form convenient for preservation, should subscribe for *Plymouth Pulpit*, which, after the first of January, will be the only authoritative version of his sermons.

ACT OF INCORPORATION, etc., of the WHITE PINE MILL AND MINING COMPANY, of Nevada. Philadelphia, 1868. This company is located on two veins in the celebrated White Pine district—the "Charter Oak," and the "Confidence." Our opinion of the titles in White Pine is not favorable, on account of the great probability that the so-called veins of Treasure Hill are not veins at all, but irregular deposits in a stratum of limestone. A company that is early on the ground, however, as this one is, and especially one that possesses a mill in the district, ready for custom work, is likely to make considerable money before the troubles of litigation or exhaustion set in. Our views of White Pine, gathered from a personal examination, will be given as soon as we have an opportunity to write out our notes. Meanwhile, there is no doubt of the immense production of bullion from the mines; and MILLER's mill, at Hamilton, which is owned by this company, is to be credited already with some "heavy runs."

APPLETON'S RAILWAY AND STEAM NAVIGATION GUIDE is so well known as scarcely to require a notice. It is an indispensable part of the outfit of the traveler. As it is issued semi-monthly, the wise man who, instead of trusting to a last year's copy, procures the very latest number, may traverse the continent as easily as if he knew by heart the time-tables of a hundred railroads. But woe to the paltry economist who, to save a quarter, travels with a Railway Guide that is out of date! Him shall dismal way-stations receive, where no connections are, till the next day; appointments of love or business shall he fail to keep, and eyesight shall be damaged, reading the fine-print "anecdotes of railway progress"—bitter satire!—in the fore-front of that once useful, but now detestable volume. Hence we to the publisher thus: Prithce, print thy railway anecdotes in larger type; and to the reader: Buy always the last number of APPLETON'S *Railway and Steam Navigation Guide*, and shun the old numbers as thou wouldst cold pancakes.

THE GALAXY, under SHELDON & Co., its enterprising publishers, makes brilliant promises for the year to come; and the numerous readers of this popular monthly have no reason in the past to fear disappointment in the future. The great feature will be a new story by CHARLES READE, who is now the most eagerly perused, if we except DICKENS, of living English writers. A much smaller attraction, yet one which may have greater force with some than it has with us, is a story by Mrs. EDWARDS. Short stories many and piquant; critical papers on living American authors; popular articles on Science, Physiology, Food, Language and Literature, fill up the tempting list.

ANSWERS TO CORRESPONDENTS.

S. B., OF COLORADO.—"A young man (chemical student only) from New York, asserted here lately that he could distinguish garnets from tin ore by the shape of the crystals only—is this true? Is this test sure? Decidedly is it true, and so perfectly certain that no chemical analysis is required when the peculiar shape of the garnet crystal is recognized, to settle the matter that no tin can possibly be found in the ore, as garnets consist of a silicate of alumina with some iron. We have no space under this head to explain more about this important subject, but will do this later under the proper heading.

L. B., OF MONTANA.—"Is a nickel mine valuable? Is this metal used to such an extent that the current value would not be much affected if large quantities were at once thrown in the market?" 1st, When you have really got a nickel mine, it is a very valuable property. 2d, Nickel is used to a very great extent, principally to alloy with copper, to make the so-called German silver, which is now mostly imported from Germany. It is quite abundant; however, we believe you may throw quite large quantities on the market before affecting its price.

L. K., OF CONN.—"What is used to color glass?" Metallic oxides; that of cobalt produces blue glass; of manganese, violet; of gold, red; protoxide of iron, green; sesquioxide of iron, brownish yellow; oxide of copper, ruby red; black oxide of copper, green; oxide of tin, milk white, etc. In our new paper, "THE MANUFACTURER AND BUILDER," this will be described in detail.

Original Papers.

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

REPORT OF EXPLORATIONS ON THE GOLD FIELDS OF VIRGINIA AND NORTH CAROLINA.

BY DR. H. CREDNER.

II.

DESCRIPTION OF INDIVIDUAL MINES AND WORKS.

1. *White Hall Mine*, in Spottsylvania County, 20 miles from Fredericksburg; operations are suspended at this mine. The principal workings consist in two shafts, respectively 90 and 100 feet deep; now, however, full of water. To judge from the material of the dump, the deposit is a quartz vein, carrying free gold and auriferous pyrites. The country-rock is chloritic and talcose slates. The alluvium of 20 feet thickness contains free gold in nuggets, and has in former days been successfully worked. Shortly before our visit, one nugget of \$35 value, and various smaller ones of \$1 to \$3 value, had been washed out. In the neighborhood of the two shafts are the valueless veins of former works, pumping machinery, aqueduct, dressing works, etc., etc.

2. *Amler Mine*, Orange County, six miles from the above; two shafts caved in and filled with water, two sets of stamps and three rollers and engine, all in a rather dilapidated condition, and possessing no value; remain as signs of former operations, the extent of which, however, could neither be ascertained by examination of the material on the dump, nor by inquiries of the inhabitants of the neighborhood.

3. *Vaucluse Mine*, Orange County, three miles from the former. Two extensive pits, 80 feet deep (filled with water to within near the surface) 300 feet long and 25 feet wide, have been dug out on the outcrop of a deposit, the chief part of which is quartz, and which is encased in chloritic and talcose slates. The quartz carries free gold and auriferous iron and copper pyrites. Besides these open cuts, there are several shafts, over one of which there stands an engine of 80 horse-power, for pumping and hoisting purposes. A roasting house, with four still unused reverberatory furnaces, a crnsing house with six pairs of rollers, and two engines (one of which is 180 horse-power), a stamp-mill with thirty stamps, and a whole row of shaking tables are all in a state of excellent preservation, and may be set in operation after insignificant repairs. We saw specimens of quartz which contained free gold of mossy appearance in earthy oxide of iron, and which proved, aside from the general appearance of the ore, the great value of this deposit.

4. *Melville Mine*, Orange County, two miles from Vaucluse Mine. Shaft is 72 feet deep, but filled in with debris. The stamp-mill is in a middling well preserved condition. Specimens of the ore contain a rather light-colored mispickel, which has been converted, as is usual in Virginia mines near the surface, into oxide of iron.

5. *Liberty Mine*, Fauquier County, five miles from Ellis Mill and Rappahannock River. There is a quartz vein of four to six feet in width, containing iron pyrites in bunches. Tests of the ore showed the richness of the deposits in gold. The outcrop of it was traced for about half a mile in a northeastern direction; the gangue contains large cubes of iron pyrites in a half decomposed state.

The sheds and houses around this mine contain the following apparatus, in a well preserved state: 12 stamps; one crushing apparatus, with two rolling balls of a weight of 1,000 pounds each, which move in a pan; two Chilean mills for amalgamation and grinding ore; sifting apparatus; one amalgamator working in connexion with shaping tubes; one engine of 70 horse-power.

6. On the outcrop of the same vein, and about one mile distant, is the deserted mine of the old Union Company. An old dilapidated shaft marks the spot.

7. *Wykoff's Mine*, Fauquier County, about two and a half miles northeast from the foregoing. The outcrop of the deposit is exposed, and exhibits a belt which is composed of a multitude of lenticular quartz—concretions in soft talcose slate. These quartz concretions are small, quite flat, unconnected with each other, and contain oxide of iron, auriferous iron pyrites, and but little free gold. Separate small laminae, or flakes of pyrites, lie also directly in the slates. The mill is only five years old, and still in excellent condition. It contains six revolving iron stamps; one crushing apparatus (cost \$6,000), with balls of 1,000 pounds weight, revolving in a pan; one very good engine of 60 horse-power; one amalgamator for alluvial sands; one very complicated crusher and amalgamator of new construction, and four boilers.

8. *Franklin Mine*, Fauquier County. The workings are on two veins parallel, but 300 feet distant from each other; each from six to ten feet wide, and both of the same character. The gangue is quartz, in which are disseminated particles of oxide of iron, iron and copper pyrites and free gold. The best mill ore has furnished \$30 of gold per ton, but ore of much less value—as low, it is said, as \$8 per ton has been worked here with profit. The principal workings are on the northern vein, and consist in (a) a shaft 106 feet deep. At 60 feet depth the vein was cut, and from that point followed downward. (b) An air shaft, 50 feet deep, for the purpose of ventilating the lower parts of the mine. (c) Another shaft, further southward, 60 feet deep, from which a cross-cut towards the southern lode was started but not finished. The outcrop of this northern lode has been taken out to a length of 500 feet, and an average depth of 25 feet.

On the southern lode a shaft of 40 feet depth has been sunk opposite shaft No. 3, of the northern vein. In sinking this shaft a posset was found which furnished \$700, gold, in three days. Negroes are employed even now to stamp the quartz of the dump in iron hand-mortars. They realize per hand from one to two dollars a day. The apparatus and steam engine contained in the mill are well preserved. There is an abundance of water for milling purposes. Connected with the quartz-mill is a saw-mill, which furnishes 5,000 feet of lumber per day. The tailings of the mill, of which there are 600 to 700 tons, contain on an average, according to our tests, \$6, gold, per ton.

It is but just to designate this deposit as one of the most promising among the number of those examined.

[TO BE CONTINUED.]

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

MINERAL RESOURCES OF THE ISTHMUS OF PANAMA—NO. I.

BY I. BLANCHARD, MINING ENGINEER.

Of the many countries which American enterprise has traversed and explored, there is perhaps none so little known in proportion to the endless crowds of travelers passing yearly over it, as the Isthmus of Panama. Many wonderful tales have been told about it at one time or another; but for some reason, probably the bad reputation of its climate, has not yet to attracted on any extended scale the attention of the mining or scientific world. It may not be untimely, therefore, to present a few considerations concerning the mineral treasures, topographical and climatic conditions of this geographically so important country.

There have been many things to prevent a thorough exploration of the Isthmus, such as difficulty of access and communications, scarcity of food, exposure to fevers, etc. Yet there are many attractions there for the naturalist, especially the botanist. But the chief features of the country are geological and mineralogical, as might be naturally expected, from the peculiar agencies to which this strip of mountain between two seas has been subjected, in the swift alternation of plutonic and neptunic forces. Nowhere do we find geological phenomena more diversified and diametrically opposed than here. Close upon neptunic deposits, and overlying them, there are vast surfaces of congealed lava, trachytic and phonolitic masses—strong indications of once active volcanic powers; and the metalliferous character of the country itself shows the results of this wild and apparently lawless succession of geological processes. Unlike the well-formed and regularly-defined veins of California and some parts of Europe, where the same mineral deposit sometimes maintains for thousands of feet along its course the same appearance and size, the veins of the Isthmus are frequently faulted, thrown out of their true dip, pinched, or otherwise made to vary in character. The difference between the gold region of the Isthmus and that of California it is interesting to notice. In the latter State, nature has done much to facilitate the exploitation of her treasures by men. The Californian gold deposits are described as belonging to three epochs. The quartz veins form the earliest; next to them follow the deep diggings, which are the first neptunic secondary deposits; and finally, out of these secondary deposits are formed the recent placers. In the Isthmus, on the other hand, mineral wealth is not so widely diffused, but more confined to its original localities. The third class of California deposits, the rich gold-bearing alluvial beds does not exist there; the other two classes are represented.

Of these, the veins, as being the oldest, first claim attention. A great many laws have been suspected or invented to systematize the occurrence of auriferous veins in general. Some consider them as particularly belonging to the tropics; but this view is not in accordance with facts which show us that gold and gold veins abound in all quarters of the earth. Those who hold the theory of the essentially tropical character of gold-bearing veins ascribe them to the greater relative velocity of the earth's revolution at the equator than at the poles. Others, again, con-

nect them with the supposed great tides in the interior of the earth, simultaneous with the ebb and flow of the ocean tides, which are known to be extreme in the tropics. Others believe in a regular tenor and value of ore down to sea-level, and an increase or decrease in definite ratio, below that line. All these theories being set aside, the facts are simply, that the veins of the Isthmus combine with their great irregularity, above mentioned, an extreme narrowness, but good average richness of ore. Those of the North are generally richer than those of the Pacific slope. Their thickness varies from six to twelve inches, their dip is generally 75° to 85° S E., and their course mostly N E. and S W. The quartz is dense, compact, without selvages, abundantly intermixed with epidote, micaceous iron, copper pyrites, copper glance, peacock ore, galena, zinc blende, arsenical pyrites, etc. Gray copper and antimonial ores, I never noticed, either on the Atlantic or the Pacific side. Silver does not occur in independent ores, though it is found alloyed with the gold, which is very minutely divided in the ore, and often, even in the surface ore, not to be discovered by the usual test of washing in a horn spoon. Fire assay alone determines it. Free gold occurs near the surface; in depth the ore becomes richer, because impregnated with sulphurets, but at the same time unfit for amalgamation. It is yet to be ascertained whether this non-efficiency of quicksilver upon the sulphuret bearing quartz is caused by a chemical association. On this point, careful and suitable scientific investigations must decide.

The value of the gold quartz of the Isthmus, as given by cupellation assay, averages from \$40 to \$120 gold per ton; the value of sulphurets from \$120 to \$600. In so-called "red ores," containing a great deal of the peroxide of iron from the original sulphurets, there is of course an exceptional richness. Not everywhere does the quartz appear, as above described, in dense flinty masses. This is the case in the richest and narrowest veins; but in some others, and particularly in the wider ones, and those which break in porphyritic rocks, the whole vein seems to be intersected with threads and seams, themselves imbedded in a matrix of kaolinitic felspar, in which the very crystals of quartz, though still retaining their hexagonal form, have been disintegrated by the action of earths and alkalis. The veins of the Pacific side of the Isthmus generally distinguish themselves by their smaller contents of sulphurets. Their thickness and dip are about the same as those of the Atlantic lodes. The value of their ore seems to range from \$30 to \$60 gold. The gangue is mostly porphyry.

Scientific Meetings.

POLYTECHNIC BRANCH OF THE AMERICAN INSTITUTE.

NEW MOTIVE APPARATUS—MODE OF VENTILATION—STEAM INDICATOR.

The regular weekly meeting of the Polytechnic Branch of the American Institute was held on Thursday evening, Dec. 10th. Professor TILLMAN in the chair.

Mr. B. R. PIKE presented illustrations and explained his new mode of propulsion, which consists of cylinders placed below the water-line of a vessel, with pistons operating in these cylinders and impinging against the water received at one end, which opened outside. Some discussion followed the speaker's remarks, and as much interest was manifested, it was proposed to take up the subject at the next meeting. [An illustration and description of Mr. PIKE's mode of propulsion will be found upon the first page of the present number of the AMERICAN JOURNAL OF MINING.]

Mr. HAWLEY explained a method of ventilation which is an improvement upon the old RUTAN method. The room in which the Polytechnic Meetings are held has lately been ventilated by this method, and the manner in which it is done will illustrate the principle. Cold air is received at one of the windows and conducted to the floor. The air being warmed rises, and as the deleterious gases sink, they are taken out at an escape made in the lower part of the partition, on a line with the floor, and conducted to a flue and discharged into the air at the top of the building. For the perfect ventilation of the room, the thanks of the Association were tendered to Mr. HAWLEY.

The continuance of the discussion upon CLARKE & EDSON'S Recording Steam Indicator was then taken up and argued with some interest. Mr. CLARKE again explained the principle of the apparatus and its method of self-recording. The objection that it might be tampered with was overruled by having it locked up out of the reach of persons so disposed, and it was the opinion of the majority that it was so perfect a "tell-tale" of the performance of a boiler, that it might be considered just the thing to render engineers careful and skilful, and exclude all careless persons from the charge of a steam boiler. Much animated discussion followed, and at a late hour the meeting adjourned.

THE NEW YORK SOCIETY OF PRACTICAL ENGINEERING.

MINING ENGINEERING.

The stated semi-monthly meeting of the Society of Practical Engineering was held on the evening of Tuesday Dec. 8th, at Room 24, Cooper Institute.

The regular paper before the society was read by Mr. W. B. HARRISON, upon the subject of "Improvements in Mining Engineering." The peculiar properties of gold and

silver, their beauty and resistance to oxidization were observed, and the remark was made that it was probably these properties, together with malleability that made them valuable among the ancients, and occasioned a search that resulted in the discovery of other metals. Reference was then made to the early mode of washing for gold with the bowl and pan, and the speaker mentioned the extremely rude implements employed by the early miners of California, and remarked that the same means and the same process is now employed in Honduras, Hungary and other places. The rocker was mentioned as the first improvement upon the pan. The four methods of mining now in use were then explained—viz: Hand tools, fire explosives and machinery. After a description of some of the hand tools, the means of drilling and blasting with gunpowder was explained, and several kinds of improved fuse described. The use of gunpowder occasioned a revolution in the art of mining, and a still greater revolution when electricity was used to explode the cartridge. The speaker dwelt at considerable length upon the employment of nitro-glycerine and dynamite, and contrasted their effects with those of gunpowder. The disintegrating of rock by means of fire was then described, together with the method pursued at the mines in Rammelsburg, in the Hartz mountains of Germany. Examples of machine mining were given in the plans employed in Mont Cenis, and the Hoosac Tunnels. At the close of the paper quite a discussion ensued in which many prominent engineers took part, after which the meeting adjourned for two weeks.

LECTURES BEFORE THE AMERICAN INSTITUTE

THE TELESCOPE.

The second of these lectures before the American Institute was given at Steinway Hall on the evening of Dec 4, by Prof. ALEXANDER, of the College of New Jersey, the subject being "The Telescope." The Professor said that the principle of the telescope was not by any means a recent invention or discovery, though it was of late years only that its powers had been developed to such a degree as to render it one of the most valuable agents of science and astronomical study. The magnifying glass, although of somewhat limited capacity, was known to the ancients of the time of Pharaoh, and specimens had been found in excavating the remains of some of the Egyptian cities of that period. Explaining the principles of the refraction of light and color, he demonstrated in a lucid manner the philosophy of the magnifying qualities of the discs and lenses used in telescopes, which was that of concentrating by means of a convex lens or concave mirror a greater number of rays than would naturally converge on the eye, and producing near the focal point an image of the object. The invention of the telescope had been ascribed to Bacon, Jansen, and others, and in a primitive form, though on the general principle of that now used, it was used about the middle of the seventeenth century. As an aid to the researches of astronomy, navigation and engineering it was almost invaluable; but in the former science especially had it been the means of the most gratifying results to the world. The primary obstacle encountered in the construction of the telescope disc was in obtaining the glass of sufficient purity and most evenly adjusted density, as upon the clearness of the material depended the distinctness with which objects were discerned, while by the adjustment of its proportions the proper production of the magnifying light from the colors reflected was obtained. A disc two feet in diameter was the largest now produced and would cost not less than three thousand five hundred dollars. He concluded by referring to the fact that an American optician was now considered as one of the first in the world, and had succeeded in manufacturing glasses equal to any now made. A number of astronomical diagrams were used by the speaker during the evening to facilitate the illustration of his ideas.

Special Notices.

Fisk & Hatch.

THE CENTRAL PACIFIC RAILROAD, connecting San Francisco and the Pacific coast with the Atlantic lines, now nearly completed, and doing a large and remunerative business, must speedily become one of the most important and valuable lines of through traffic on the continent.

The first mortgage bonds issued thereon, having a lien superior to that of the United States, are now widely known and esteemed as among the safest, best, and most profitable corporate securities for investment. A limited quantity will be sold at 108 and accrued interest, in currency. Principal and six per cent. interest payable in gold. Government bonds received in exchange at full market rates, allowing the difference in cash.

FISK & HATCH.

Bankers &c., 5 Nassau street, New York.

New Railroad Directory.

Messrs. LINDSAY, WALTON & Co., of 58 John street, have in process of compilation a new Railroad Directory, which is designed to reach every President, Superintendent and Master Mechanic of railroads in the country. They have a few spare pages for advertisements, and as we have secured one for our new paper, the "MANUFACTURER AND BUILDER," we would advise any reader of the JOURNAL OF MINING, who deals in railroad supplies and desires to reach a large class of consumers, to "go and do likewise."

Burners for Kerosene Lamps.

The American Institute is now engaged in a laudable investigation to ascertain the best and safest lamp-burner for using the products of petroleum, and also ascertain the merits of all other apparatus using the products of petroleum for illuminating purposes. Inventors and others, who may be interested, are requested to send burners or apparatus to the clerk of the American Institute. See advertisement in our advertising columns.

A Developed Silver Mine.

As will be seen by the advertisement in another column, Mr. J. N. HAYES, 80 Broadway, basement, announces for sale a developed silver mine of great value. Parties desiring to find such a property (and there are many who daily give evidence of such a desire), would do well to call and examine the evidence in this case.

Removal.

In consequence of the recent fire in Trinity Building, 111 Broadway, Messrs. AECHTERNACHT & SILVER, coal dealers, have removed to 119 Broadway, room No. 7.

Patent Claims.

Interesting to Miners, Millmen, Metallurgists, Oil-Men, and Others.

84,113.—ROASTING IRON ORES BY WASTE GASES.—Alexander Hamer, New York City:

I claim the combination, as set forth, with the kiln, of the open top for charging the raw ore, the open bottom for discharging the roasted ore, the flue encircling the roasting-chamber, and communicating with it by the sills, d, and a fan for forcing in the heated waste gases escaping from the blast-furnaces.

84,220.—GENERATING AND APPLYING CARBONIC OXYD FOR TREATING METALS.—Thomas Shaw, Philadelphia, Pa.:

I claim the employment of hydro-carbon fluids for the purpose of generating carbonic oxyd, for operating on heated metals, as described.

84,333.—APPARATUS FOR REFINING IRON AND MAKING STEEL.—John Absterdam, New York City:

I claim the combination of the nozzle, F, and conical spout, E, either one or both of which may be made movable toward or from each other, with the suction-pipe, C, and converter, A, substantially as and for the purpose herein shown and described.

84,334.—PROCESS FOR REFINING IRON AND MAKING STEEL.—John Absterdam, New York City:

I claim the within-described process of refining iron and making steel by exposing the molten metal in the converter to the combined action of a current of air produced by suction, and of a current of air produced by force, substantially as and for the purpose set forth.

84,335.—APPARATUS FOR MAKING STEEL AND REFINING IRON.—John Absterdam, New York City:

I claim, 1st, The spark-arrester, B, in combination with the converter, A, substantially as and for the purpose set forth.

2d, The tubular pivot, b, in combination with the spark-arrester, B, steam-pipe, d, and exhauster, C, substantially as and for the purpose described.

3d, The chamber, D, having a rising and falling motion in its socket, m, in combination with an air or gas-supply pipe, o, or both, and with a converter, A, substantially as and for the purpose set forth.

4th, The arrangement of nipples, s, in the chamber, D, substantially as and for the purpose described.

5th, The movable plugs, t, in combination with rising and falling chamber D, substantially as and for the purpose set forth.

6th, The pipe, r, connecting with an air-forcing apparatus, in combination with the converter, A, and exhauster, C, substantially as and for the purpose described.

84,480.—METHOD OF WORKING STEEL AND IRON.—Henry James Dickerson, Appleton, Wis.:

I claim, 1st, The working of steel and similar substances, more readily and with better results, by the assistance of the first-described compound, applied for the purpose substantially as described.

2d, The refinement of steel and similar substances, by the application of the second compound in the manner and substantially as described.

3d, The refinement and hardening of steel and similar substances, by the application of the third compound, in the manner and for the purpose and substantially as described.

4th, The accurate attainment of the desired quality in many articles at once, by the use of the receptacle and instruments above described, in the manner and substantially as set forth.

84,534.—FURNACE FOR DESULPHURIZING STEEL AND OTHER WIRE.—Alanson Cary, New York City:

I claim, 1st, A furnace for desulphurizing wire and other articles, or substances, constructed with valve openings between the combustion and desulphurizing chambers, whereby the heat of the fuel has direct access to the wire or other article to be desulphurized, substantially as described.

2d, The chamber, A and B, with valve-openings between them, substantially as described.

3d, The door, H, when the same is hung and operated, substantially as described.

84,543.—ROCK-DRILLING MACHINE.—Robert Gidly, Freedom Plains, N. Y.:

I claim, 1st, The frame, C, D, E, F, of a rock-drilling machine, when such frame is made adjustable around the axis of the beam, C, and around the pivot, g, substantially as herein shown and described.

2d, The legs, B, pivoted by the pin, b, to the side of the frame, A, the outer end of said pin having an eye, a, in which the legs are adjusted vertically, as herein described for the purpose specified.

3d, The combination of the winged wheel, I, with the up-and-down as well as with the laterally movable bar, M, from which latter the pins, l and n, project as set forth.

4th, The up-and-down as well as the sideways moving bar, M, in combination with the lever, J, spring, I, rod, N, rack, o, and ratchet-wheel, P, all made and operating substantially as herein shown and described.

5th, Imparting an intermittent rotary motion to the drill shaft, N, by means of the sliding plunger, p, horizontal rack, o, and vibrating bar, in, arranged and operating as herein shown and described.

84,576.—ROCK-DRILL.—George Phillips, Cadet, Mo.:

I claim, 1st, The slide bar, H, with its diagonal slot, a, and the lever, V, with a slotted head, P, both constructed and operated substantially as shown and described, in combination with the stud, n, for the purpose of operating the valve of a drilling machine by the piston rod of the same, all as set forth.

2d, The ratchet plunger, o, in combination with the ratchet rod, M, slide plate, H, lever, V, and piston rod, F, of a drilling machine, all operating substantially as shown and described, to rotate the drill, G, of a drilling machine, in the manner set forth.

3d, The projections, h, and g, of the plates, I and N, substantially as shown and described for the purpose of forming guides for the guide-rod L, all as set forth.

4th, The plate, I, and uprights, U, U', of a drilling machine, in combination with the cylinder, A, of the same, substantially as and for the purpose shown and described.

84,644.—MODE OF PRODUCING STEEL.—James Myers, Jr., Brooklyn, N. Y., assignor to Barron's Steel Manufacturing Company:

I claim, 1st, The conversion of cast iron into steel, by the combination of the two processes of decarburization and recarburization above described, in the manner and for the purpose substantially as above stated.

2d, The conversion of articles of malleable cast iron, produced by any known process, into steel, by the application of gases produced from any solid or liquid carbonaceous substances, in the manner substantially as described.

3d, The production of cast steel, by remelting steel formed from malleable cast iron, when made in the manner above described.

RE-ISSUES.

70,447.—BLAST FURNACES.—George Asmus, assignee of F. W. Lurmann, New York City. Dated Nov. 5, 1867: re-issue 3,204:

I claim, 1st, A blast furnace with a closed breast, where the slag is discharged through an opening or openings, cooled by water, substantially as set forth.

2d, The slag-discharge piece or cinder-block, D, constructed and arranged substantially as described.

3d, The cinder-block, D, in combination with the plate, C, to which it is attached, substantially as described.

4th, The shape of the discharge-opening or openings of the cinder-block, D, being made flaring at its ends, and of diminished diameter in the middle or central part, substantially as described.

5th, The combining of the slag-discharge piece or cinder-block with a series of water-channels or pipes, substantially as and for the purposes above set forth.

6th, Combining with the metallic plate, C, a series of water-channels or pipes, substantially as and for the purpose set forth.

7th, The method of controlling the discharge of slag from blast-furnaces by regulating the temperature of the slag-discharge piece or cinder-block, substantially as described.

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 hattan Gas Light Company, New York; Metropolitan
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 ington, D. C.; Portland Gas Light Co., Portland, Maine.
 Reference to them is requested. May 30:1y

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 JOURNAL OF MINING, Vol. VI, No. 22, page 346. Orders
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 It has been for many years very extensively used by
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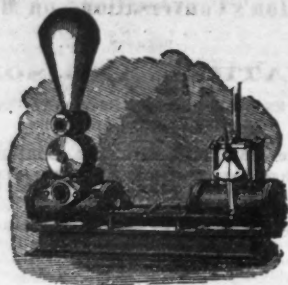
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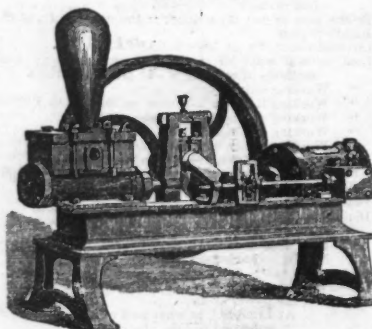
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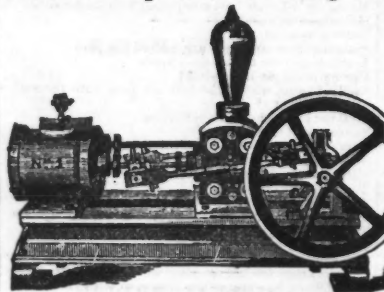
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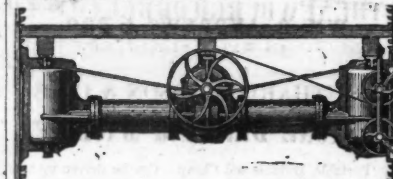
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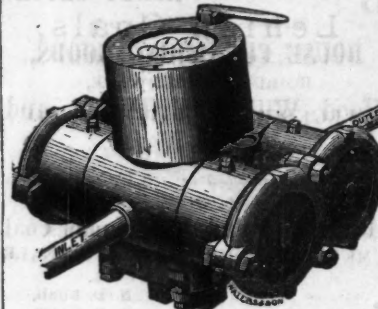
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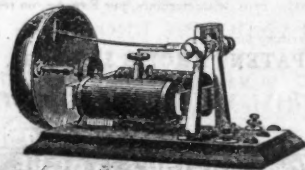
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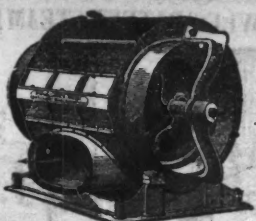
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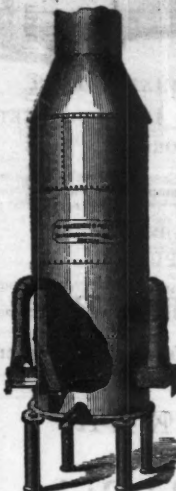
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Rush of, into each division
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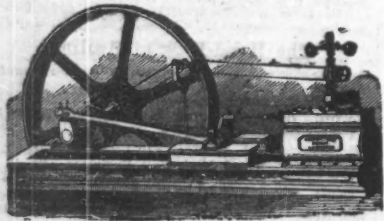
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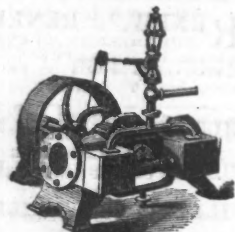
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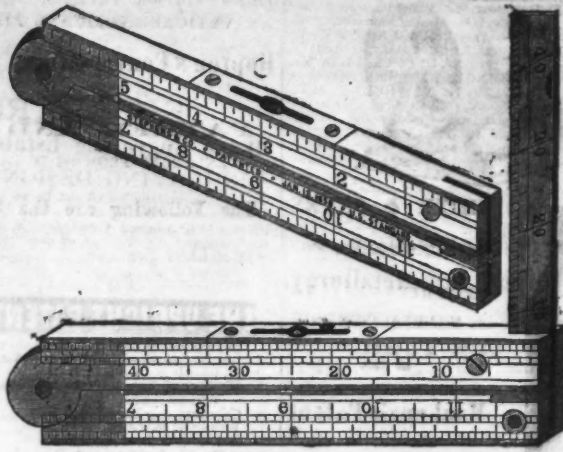
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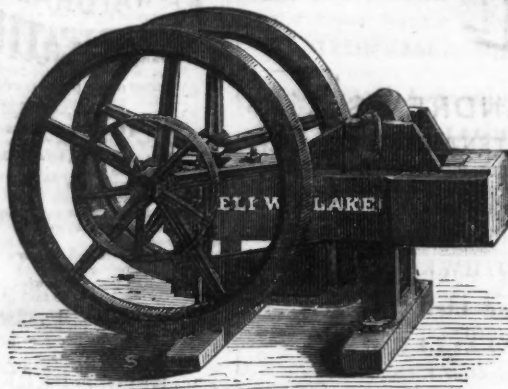
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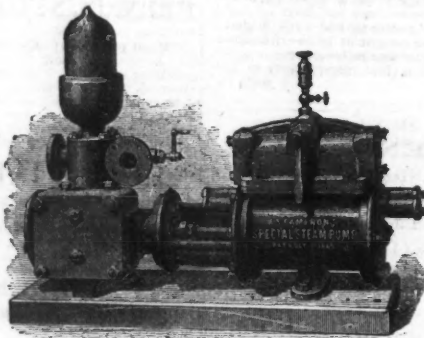
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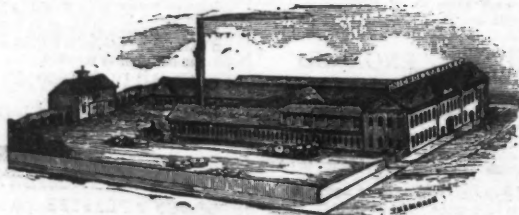


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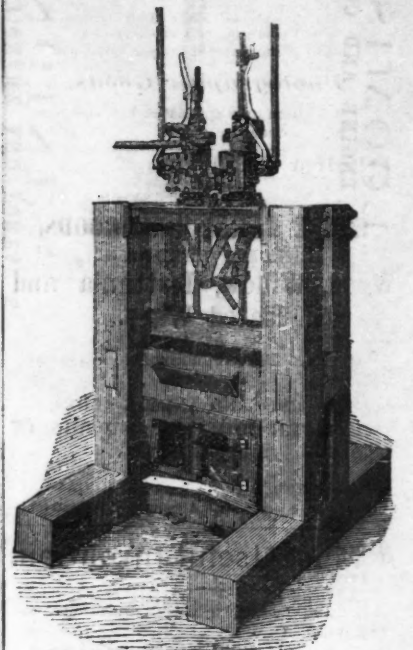
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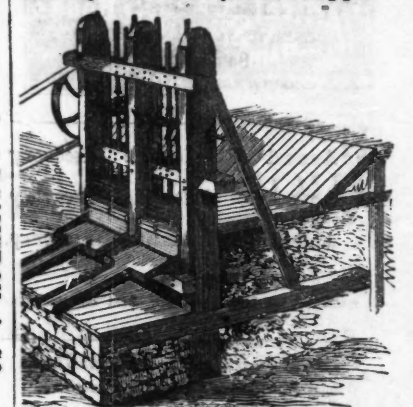
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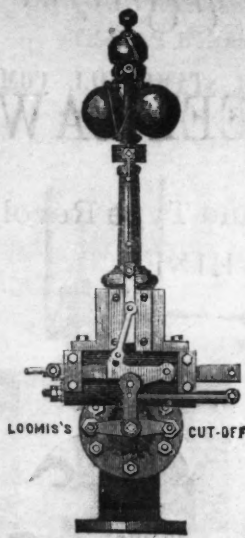
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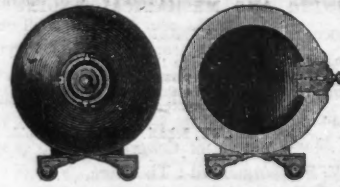
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