AMERICAN

Journal of Mining.

Engineering, Geology, Mineralogy, Metallurgy, Chemistry, etc.

VOLUME V.—Number 15.
New Series.

NEW YORK, APRIL 11, 1868.

$4 A Year in Advance.
Single Copies Ten Cents.

LAMPS AND FIXTURES.

In large cities, even where gas has been introduced most extensively, lamps are still used by the common people; and the adoption of Kerosene Fixtures, in public offices and private residences, whenever a serviceable light is especially required, is far more general than would be supposed. The recent discovery in this country, of petroleum in large quantities, but more especially the degree of perfection attained by our skilled manufacturers in refining it, has led many to consider it of American origin, and, although foreign markets have been largely supplied from here, it is on account of our superior facilities for production, rather than the absence of material in other countries. As early as A. D. 1640, petroleum, in its crude state, was extensively used for lamps by the Greeks and Romans, and found in many parts of Southern Europe and Asia. No proper facilities existed for obtaining, purifying, or burning the oil, until within the past year, Americans, with their unrivalled machinery, have developed in Italy a supply equally exhaustless as exists in this country. The superior quality and illuminating power of the light from refined petroleum, compared with that from gas, can not be questioned. Oil is, also, much cheaper; the cost of a steady, brilliant light, from a good lamp, being less than half that of a poor flickering light from the best of modern gas; and one is also certain that he pays for just what oil is consumed, and no more, which is not the case with gas, where the size of the bill bears no possible relation to the amount of light furnished. The long-felt desideratum has been good fixtures, properly adapted for the safe and satisfactory burning of kerosene, in order to enjoy its full benefits. Artists have designed elegant gas fixtures for city use, but until recently little attention has been given to the production of desirable lamps. We might call to mind the inconvenience and danger of removing the globe, chimney, and burner each morning, to fill and clean a common lamp, or, perhaps a large, high chandelier; then, again, at night to "light up," and, may be, again in a few moments repeating the dangerous and provoking operation to re-adjust the improperly trimmed wick, each time risking the destruction of the glass-ware (especially if hot), beside the waste of time and trial of patience that might easily be avoided by the adoption of improved and more desirable fixtures.

To supply this deficiency, and overcome the many objections to lamps heretofore in use, has been the aim of the inventor of Ives' Patent Lamps, the object having been to produce a lamp which should be, among other lamps, what a chronometer is among other time-keepers. Fig. 1, represents one of the styles of oil chandeliers, as manufactured by Messrs. Ives & Co. Such chandeliers are made with two, three, four, and six lights. They have screw cups for glass founts that are made to fit the thread of all kerosene or gas fixtures, and consequently can be substituted where the common cups or baskets have been used. These screw cups for glass founts are made in two styles, viz.: one of bronzed iron, highly finished, usually used for kerosene fixtures, and one of brass, thin, light, and finished in bronze and gilt, like gas fixtures, for which they are intended. Fig. 2, represents a hall lamp, well finished, and complete in every particular, having not only the improvements peculiar to all the company's lamps, but the burner is fitted with cog-wheels by which the flame may be regulated or extinguished by the knob from the outside, without opening or lowering the lower part of the lamp. Fig. 3 shows a Reflector Standing Lamp, which operates on the same general principle as the Hall Lamp, the shade and chimney balancing the fount and oil. The facility with which this description of Hanging Lamp can be lighted is seen in the annexed cut, that shows the lamp open, ready for lighting, filling or trimming; this is easily done while the fount and burner are lowered and separated from the shade and chimney, which at the same time move upward together. They may be separated a greater or less distance, as desired, raising the chimney up to the smoke-bell, and bringing the lamp down where it may be lighted and cleaned conveniently, or the fount can be removed. Fig. 4, represents a very neat attachment for chandeliers, brackets and Table Lamps. The shade and chimney being combined with the cone of the burner, are opened together on a hinge whenever the wick is to be reached, and remain open while the lamp is being trimmed, cleaned, filled or lighted, and are then as readily closed for burning. In filling the common lamp, the globe, chimney and burner, are all necessarily removed; in the lamps which we are describing the attachment is opened, and filled without soiling the hands, through the Feeder-Burners which never need be unscrewed from the lamp. Fig. 5. shows a description of lamp that has become exceedingly popular. We refer to Spring Bracket Lamps that are so well adapted for kitchens, chambers, and small rooms throughout the house, in place of the small, unsafe hand lamps so commonly used, many with no chimney to keep the flame in safety, or prevent smoking. The arm that sustains the shade and chimney is stationary, being screwed securely to the case or spring-box. The fount is fastened in the ring by the screw in front, and sustained in its proper position for burning by means of a steel spring within the box, which also returns it to its place after being lowered for lighting, filling &c. The fillers made by the manufacturers are made with long, slender, bent spouts, expressly for use with the Feeder Burners, and are a great convenience in draining the oil from the barrel, and filling the lamp neatly. These improved fixtures commend themselves by their intrinsic merits. They are economical—because they give the full benefit of all the light the oil can furnish; require no waste of time in their management, and obviate the unnecessary breakage of glass-ware; safe—as with good oil and proper care, explosions are impossible, and our lamps being stationary, they can not be carried, overturned, or dropped; convenient—as they can be lighted as quickly as gas; filled and trimmed without removing the shade, globe, or chimney, or unscrewing the burner; and are kept in order with less trouble, time, and expense, than any other lamp in use; brilliant—as with the improved Enameled Reflector Shade or patent Corru-

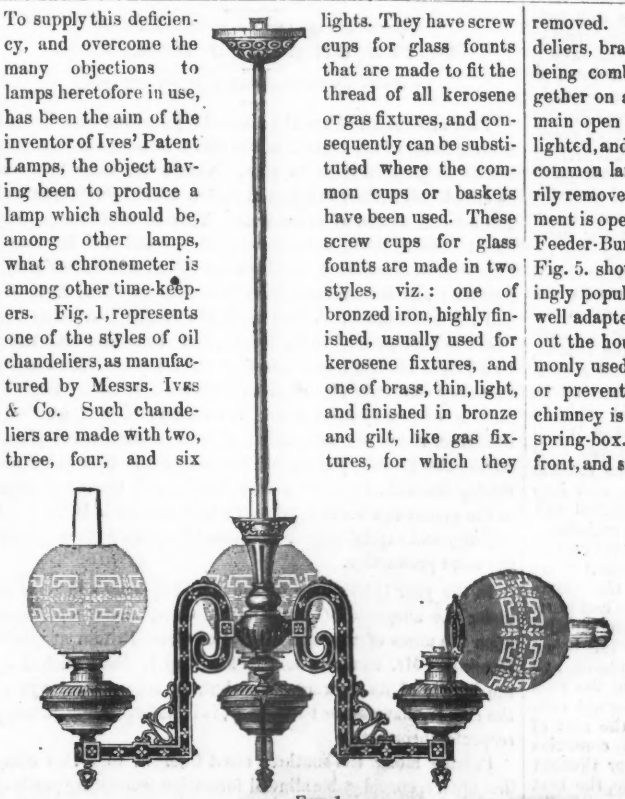


Fig. 1.

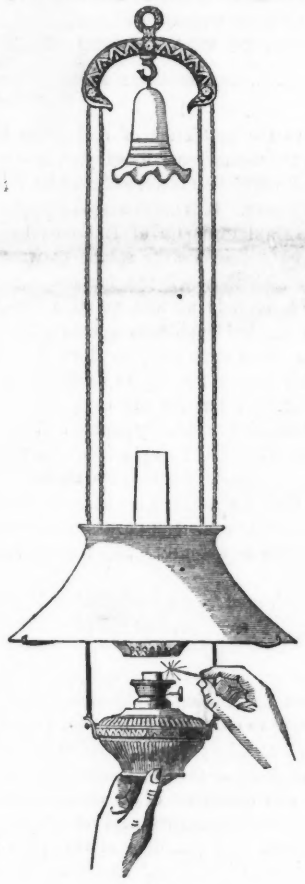


Fig. 3.

Fig. 4.

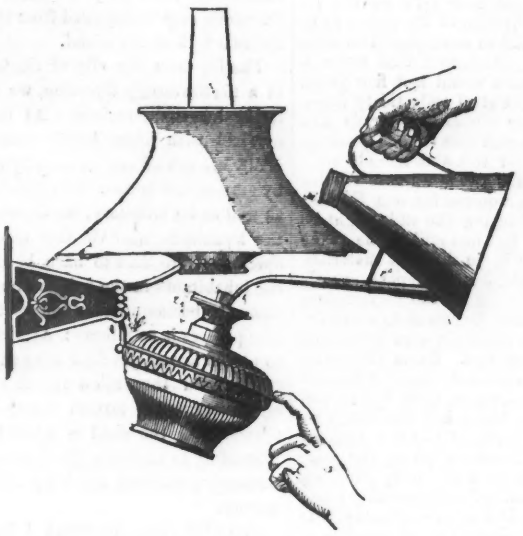


Fig. 5.

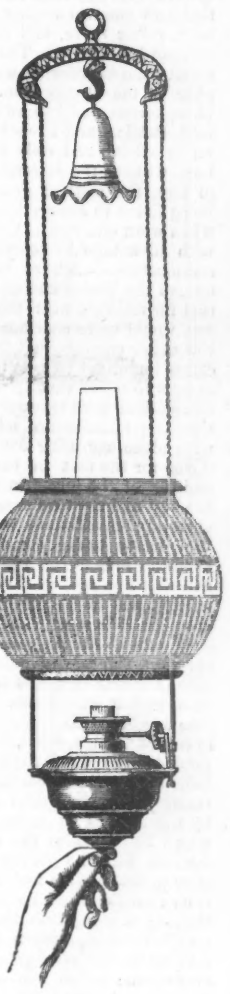


Fig. 2.

JULIUS IVES & CO.'S PATENT LAMPS.

gated Reflector. an economical division of the light is accomplished, whereby nearly all its rays are concentrated and increased in the lower part of the room, and very little light wasted above. We have thus endeavored to show that the general featnres of Messrs. Ives & Co., lamps are not pecnliar, so far as respects their bnrning, yet the improved prineiples upon which they are constructed are claimed by the inventor as new, original, and important, on account of the undoubted advantages over the old methods for using petrolenm, and for enjoying to the fullest extent its illuminating qualities. The extensive show and sales rooms of the Messrs. Julius Ives & Co., are at 49 Maiden Lane New York City, where lamps of all descriptions can be seen, examined and admired.

The Manufacture and Wear of Rails.

At a late meeting of the Institnte of Civil Engineers. England, a paper on the above-named subjeet was read by C, P. Sandberg, C. E., the object of the essay being to ascertain the best method of mannfacturing rails out of eommon iron, and the time they would last; of disposing of the iron rails when worn out; and whether iron or steel, or a combination of both, was most economical. A series of careful experiments was made with sample rails, which were laid down at Camden Town Station, by permission of the London and Northwestern Company, and it was ascertaind that the five different descriptions of rails were, on the average, crushed in six years, and worn out in nine years. The conelusion was thus arrived at, that hammering after the first welding heat for this particular kind of iron, did not improve the endurance of the rails, bnt that the simplest mode of manufaeture had also the material advantage of being the best. These trials at the same time established the fact, that it was not the wear, or the diminished sectional area cansed by abrasion, which produeed the unsatisfactory results in the endurance of iron rails, but the lamination caused by imperfect welding. This explained the great difference between the wear of rails made in exactly the same way, the welding in the one case being perfect, whilst in the other it had been very imperfect. The conelusions the author has arrived at were, that no rule could be laid down for the mannfacture of rails that would apply to every manufaeturing district; but that in the ease of Welsh iron, to which he had more particularly referred, it had been proved that the best method of manufacturing the rail was that now most eommonly practiced, viz., rolling the iron into bars, piling these, and repeated rolling to the finished rail, without hammering. The author assumed that the prejudicial result from hammering was owing to the large amount of sulphur in the Welsh iron. Where the iron contained more phosphorous, and less sulphur, as, for instance, in the Cleveland, Belgian, and French iron districts, hammering had proved beneficial, and rails had been made direct from pnddled bars, without the intermediate process of piling,—this being, in fact, the method generally adopted in those places, and being found to answer best. As to the disposal of the rails when worn out, and as to the possibility of re-rolling old rails with advantage by companies far removed from the seat of manufactnre,—such as the British colonies, the countries around the Mediterranean or the Baltie,—the anthor thought that for railways near the seat of rail mannfaeture, the best way would be to continue to sell the old rails to the rail mills. For other conntries, situated like Sweden, for instance, it becomes important to ascertain whether it be not more advantageous to re-roll them. On this subjeet, precise and detailed ealculations were entered into, which led the author to think that the manufacture might be earried on in that country with advantage, using Swedish Bessemer steel for the head No. 2 iron for the foot or flange, and old iron rails for the remainder of the pile. In the third division of the paper, as to the best and most economical material to be employed for rails, elaborate calculations were made. Assuming that under a very heavy traffie, eommon iron rails would last five years, steel-top rails fifteen years, and solid steel rails thirty years, and that iron-rails would cost £7 per ton, steel-top rails £10 per ton, and solid steel £15 per ton, and that the old steel-top and iron rails were valued at £4 per ton, and the old solid steel rails at £8 per ton, then, with a rail section of 84 lbs. per yard, 250 tons of rails would be required for one English mile of double line, and the eost of laying the rails might be estimated at £1 per ton. Another fact had still to be taken into consideration, the safety of the three different materials, in regard to high speed, severe climate, &c. A report reeently published by Prof. Styffe, the Director of the Government School of Mines at Stockholm, showed the extent to which the tenacity and elongation of various materials were influenced by the amount of earbon they contained. From the tables which accompanied the report, it appeared that the hardest material had the greater absolute strength, both before and after permanent set had taken place, but it had the least ductility; on the other hand, a softer material had the greatest tenacity or elongation, the Bessemer material giving the same results as that prepared from the same pig-iron by puddling, refining, or cast-steel process. In a diagram illustrating these results, the percentage of earbon and of phosphorus was stated in nearly all the cases. The limit for the amount of carbon seemed to be for the Bessemer material 1.2 to 1.5 per cent. With a larger amount the absolute strength, as well as the tenacity, had been found to decrease. When the amount of carbon did not exceed 0.4 per cent., and the material was not worked at too low a heat, the elongation seemed to be 16 per cent., or the same as for puddled iron from the same pig-iron; and, as such Bessemer material was not only much stronger, but also more solid or homogeneous than the puddled material, it deserved a decided preference for all railway porposes. The few eases of the failure of rails by breaking might be accounted for as the result of too hard a material, not perfectly manufaetured, having been made at an early period of the introduction of the proeess. The experience which had now been gained should certainly prevent any recurrence of this. It must, however, be observed that the raw material used in both cases was eharcoal pig-iron, of a superior quality compared with that used in England for making Bessemer rails, which might be seen from analysis made by two eminent ehemists of both countries, whieh were given. These analyses showed that the great difference between the two was the excess of silicon in the English, and of manganese in the Swedish pig-iron; thus explaining why the one gave a better product than the other, although worked entirely without the addition of spiegeleisen. If there were only 0.6 per eent. of earbon in the solid steel, and 0.3 per eent. in the steel for the steel head. the safety ought to be the same for all the three kinds, and this would not influence the former calculations as to which was the best and most economical material for rails. Having watched the development of the Bessemer process in England, as well as on the continent, it seemed to the author that by that process a good and pure raw material had the same advantage over an inferior one as in all other processes, and that a superior product could not be obtained from an inferior raw material by that process any more than by any other. In having mentioned Swedish material as an example, it must not be supposed that it was wished to advocate the use of Swedish iron in England, but simply to draw attention to the better material; as equally good eharcoal iron eould be supplied from Canada and India—both English colonies. It might also be remarked, that the anthor's endeavor had been to arrive at the trnth, irrespective of prejudiee, and that he had no wish to be deemed an advocate for one kind of rail more than for any other.—*Bulletin American Iron and Steel Association.*

Original Papers.

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

NOTES ON SANTO DOMINGO.

BY ROBERT HAUSCHKEL, Mining Engineer, New York.

Vast and varied as are the mineral treasures of the United States, those of the little island of Santo Domingo are scarcely less so, in proportion to its size. Nature has done her best to enrich this hitherto neglected region with vegetable, animal and mineral wealth of every kind. This island, the second in size of the Antilles, lies between 68° 20′ and 74° 30′ longitude west of Greenwich, and between 17° 40′ and 19° 40′ north latitude; and is therefore abont 300 miles long from E. to W. and 150 miles broad. Those monntain ehains, traversing the island in lines parallel to its length, and rising here and there to a height of 9000 feet, show by their steep conical summits that they owe their elevation to volcanic agencies. The elimate is extremely salubrious; the eountry is well watered; the larger rivers are navigable; the surrounding sea is plaeid dnring the greater portion of the year; the mountains are thickly wooded; the soil is very fruitful and the grass-crops of the savannas are extraordinary; and nothing is lacking but industry and capital to give the island its proper place among the most productive.

In the year 1858 a map of the island appeared in London, nnder the auspices of the English Government, and based npon the notes of the then Consul of Great Britain at Santo Domingo, Mr. SCHOMBURCK. This map is distinguished by the beauty of its workmanship; but, as accurate surveys of the country have never been made, it is nnfortunately, in many respects, incorrect.

Passing along the southern coast from E. to W. we come first upon a considerable alluvial formation, consisting partly of fine sand, partly of loose conglomerate. The little island Saona, and the greater part of the region known as Los Llanos and stretching westward to the Rio Ozama, belong to this formation. A little west of the small island Catalina, directly on the coast, there is an ontcrop of zoophytic limestone, containing principally *Halyosites* and *Calamapora*. This limestone may be followed from the coast through almost the entire length of the island.

Passing from the city of Santo Domingo into the interior, in a northwesterly direction, we remain for about ten miles in the limestone regions. At this point the lime is again overlaid with loose, highly ferriferous conglomerates, which finally are eut off on the west by elay-slates, and on the north by granite and gneiss. The granitic gravel of the Rio Isabella, as well as its tributary, the Jiguero, were washed for gold by the Spaniards, after the first discovery of the island. Their operations are said to have been extremely profitable; and the inhabitants in the neighborhood of these streams still continue the business, but in the most rude and primitive manner. The process is as follows: At some convenient point, logs are so placed across the river as to cause a partial damming of the current, and thns allow the fine gold to settle. After the rainy season, the stream nearly dries np, the deposits are opened, and the sand is washed in shallow wooden bowls. According to tradition, the Spaniards carried away from Santo Domingo a hundred and forty million dollars, obtained in this manner.

The elay slates to which I have alluded, and the age of which I was nnfortunately nnable to determine on aceount of the absence of fossils, but which probably belong to the same period as the eopper—bearing schists of Santiago de Cuba (Silurian), are traversed by numerons veins containing ores of eopper. These veins in the neighborhood of El Cobre, elearly belong to two different systems, one class crossing from N. 10°—20° E., to S. 10°—20° W., and the others crossing these at right angles, and having therefore a strike of about E. 10° S., to W. 10° N. The dip of both systems is pretty steep, lying generally between 75° and 85°. These ores comprise copper pyrites, red oxide of copper (erubescite), copper-glanse (gray snlphnret), malachite, lazurite, and some peacock ore. The veins of the meridional system are apparently the oldest, since they contain the yellow snlphnret, probably the original material with which they were filled, while the veins of the other system show none of it. I think these E. and W. veins, which only contain malachite and lazurite, were propably filled by infiltration from the N. and S. veins. Hot aqueous vapors, saturated with carbonic acid, ascending into the older fissures, may have decomposed the yellow sulphnrets of eopper, and then eondensing into water, conveyed the carbonates in solntion, to be precipitated in the newer fissures.

About ten years ago, Col. HENNEKEN, an Englishman, took the first steps to examine the copper district of Santo Domingo, to open the mines, extract the ore, and ship it to England. Unfortunately, at an early stage of these operations, he was snddenly overtaken by death, and the enterprise was prostrated by the loss of its head. Col. HENNEKEN had pnrchased the land between the two creeks Susua and Medina, tributaries of the Rio Jaina, and upon two veins he had driven adits. These two veins were of very different characters. One of them was three feet thick, and carried clay slate, like the country rock, with gray sulphurets, and some oxidized copper ores, while the other vein, about eight feet in thickness, had a quartz gangue, with green and blue earbonates of eopper, in which also gold nuggets, frequently as large as peas, are said to have been found. The ores of the first vein have been frequently analysed, and contain from forty to sixty per cent. of eopper. A new company is now being organized in London, and it is expected that active mining operations will soon be resumed.

South of the Aroya Suzua occur numerous veins, for the exploration of which a company, "*El progreso industrial*," was formed in the city of Santo Domingo. The veins in this district are not so rich as the above mentioned, but still rich enough to be worked with profit.

While the veins in that region, between the two rivers Nigua and Jaina, are characterized by the predominanee of oxidized ores, those which occur westward of the former river earry predominant pyritic ores. The limits of the eopper region, as a whole, are not yet defined, but we may assume, with probable safety, that it extends westward to the Rio Nizao, attaining a length of at least thirty miles.

Another pyritic copper district lies on the south coast of the Bay of Samana, in the neighborhood of Savana la Mar; and still another north of the Laguna de Enriquillo, extending, it is said, from Rio Neyba to the frontiers of Hayti. South of this Laguna are the celebrated salt mines of Cerro de Sal, furnishing an excellent rock salt. The lake itself is salter than sea-water and has no connection with the ocean.

[TO BE CONCLUDED.]

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

ON THE VENTILATION OF COAL MINES.—VIII.

BY J. W. HARDEN, C. E., WILKESBARRE, PENN.

(Continued from page 211.)

Of the fan, as applied to the ventilation of coal mines, I need say but little. It is the means generally adopted in our own country, when natural ventilation is not sufficient, and is therefore pretty generally known. It is much used in Belgium also, and there are some good examples of it there; but, applied to deep mines, in no instance do the results obtained appear to bear comparison with those of the furnace. For shallow pits, on the other hand, it is without question much superior. In England, mechanical appliances generally have not received the attention which some of them deserve, objection being made to their greater liability to derangement, as compared with the furnace; but for the comparatively shallow mines, the fan is becoming deservedly popular. There are several varieties of it—Guibal's, Fabry's, Letoret's, and Pasquet's—all of Belgium, are good. The first two are looked upon as the best. From Guibal's, results have been obtained varying up to more than 100,000 cubic feet of air per minute, with a water gauge pressure representing 15½ lbs. on the sqnare foot.

Air pumps not being much used for mine-ventilation, I need not describe them. Strnve's is the best; but out of Wales it is not much employed.

Dividing the air into a series of currents or splits, and its proper distribution amongst these, being an object of importance, it is necessary, in order to effect this distribution in such a manner as to give to each split its proper proportion of the whole, to have some satisfactory method of ascertaining the velocities of the currents, and qnantities of air eirculating in a given time; and there are several contrivances for this pnrpose. The first, and probably most primitive of these, is, to set floating in the current small particles of something light and feathery, like thistle-down, and note the rate at which they travel, bearing in mind that the current will be faster in the centre than at the sides of the drift. Another and eqnally primitive method, where the veloeity of the current is not great, is to choose a sectionally even piece of air-road, two or three hundred or more feet in length, take a lighted candle and walk in the direction of the current, holding the candle so that the flame may be fully exposed to the draught, and at the same time taking care to walk at the exact speed reqnired, to cause the flame to bnrn in an upright position, without being at all deflected, either by the current or the rate of walking. The time required to traverse the distance measured off being noted by a seconds' watch, and the experiment being repeated three or four times, and the average taken, a fair approximation will be obtained to the velocity of the current, which, multiplied by the average sectional area of the part of drift in which the trial is made, will give the qnantity of air passing in a given time.

Until instrumental observation superseded it, the most generally adopted method of measuring the air traversing a coal pit, was by causing an explosion of gunpowder, and observing

the velocity of the smoke. In currents varying from 100 to 500 feet per minute, a near approximation to truth may be arrived at by this means. Having selected and measured off an even length of air-course, take one cubic inch of gunpowder (not more; the reason is obvious) and having fired it 20 or 30 feet to windward of the commencement of the measured piece, note the time when the smoke reaches the near end, and the time when it commences to pass the remote end of the measured distance. The interval multiplied by the average sectional area of that part of the air-course, will give the quantity of air passing in a unit of time. Turpentine is somtimes used; but it does not ignite simultaneously like gunpowder, and the smoke is not so easily seen.

Within the last few years, anemometers of various constructions have been more or less brought into notice, of which that patented by B. BIRAM is most generally used. It consists of a series of vanes which revolve with the action of the air current, the numbers proportional to the revolutions being registered by points on the face of a dial forming a part of the instrument itself.

There are two or three sizes of this instrument, varying from four to twelve inches in diameter. It is very useful; and with proper care, is not liable to get out of order. In using it, it is necessary to know that the pointers do not register the actual velocity of the air, especially in feeble currents. A certain amount of force is necessary to overcome friction; and although the instrument will continue to revolve in a current of thirty feet per minute, it will take double that amount to keep the vanes revolving satisfactorily. To arrive at correct results, then, it is necessary to ascertain by comparison with the velocity of a known current, what allowance should be made for friction in the instrument, and it will probably be more practically useful to give here general results, than the mathematical formula for arriving at complete accuracy.

In a current registering a velocity of from twenty-five to forty feet per minute, as much more will have been absorbed in overcoming friction, so that the true velocity would be fifty and eighty feet respectively. At one hundred and fifty feet, registering and upwards, the friction will have become constant, when an allowance of something like thirty feet per minute will be near the truth. Yet, to be correct, each instrument will require its own adjustment. For apportioning the air to the several splits, no correction is needed.

THE EOZOIC OCEAN—NO. III.

EDITOR AMERICAN JOURNAL OF MINING:

I must now refer back to my first note (this Journal, Vol. v., p. 170), and pursue the discussion of the chemical constitution of the Ocean in its younger days.

The remarks in my Gold-Genesis excepted to by Professor HUNT, occur merely in a foot-note (this Journal, Vol. iv., p. 339), introduced in allusion to my fundamental induction of a copious content of *sulphates* in the primeval ocean. I remark that:

"Professor STERRY HUNT is one of those who in past years have advocated this theory, but he appears of late to have abandoned it for others that are much more difficult, I think, to reconcile with facts. Thus HUNT suggested some years since that the composition of the primeval ocean had been placed on record and handed down to us in the forms of the concentrated brines, rich in calcic chloride, found permeating some of our ancient rocks, particularly those of Silurian and Devonian ages, and issuing thence as mineral springs, and from artesian wells. This ingenious hypothesis of the existence of "fossil sea-waters," which he has again brought forward forcibly in his recent lecture to the Royal Institution in London, on the "Chemistry of the Primeval Earth," (while admitting its novelty, suggestiveness and beauty,) I can only accept with an important, and, I think, obvious limitation, namely, that, at most, it can prove only those particular seas in which the Silurian and Devonian sediments were deposited, to have had this special composition; and it is generally held by eminent geologists that these were, in all probability, detached seas, nearly or quite *landlocked;* and, being isolated from the great outer ocean, may have had, like the examples we still possess, on a comparatively very small scale, (our Dead and Caspian seas, our Great Salt Lake, etc., etc.,) a very different composition therefrom. Another pertinent and obvious argument arises by bringing in the element of *time;* for few geologists would admit that the particular epoch of the Silurian seas could furnish us with necessary or even probable conclusions regarding the more distant time we are treating of, when the ancient rocks of which these Silurian sediments are but themselves the reconstructed ruins, were being formed. But this is a subject on which very much remains to be said, and which cannot be adequately treated in a hasty note."

Prof. HUNT'S remarks, before quoted, would seem to imply imperfect reading or interpretation, on my part, of his writings on these topics; and it is due, therefore, to your readers, as well as to myself, that I should justify, so far as may be, the understanding that I had formed of these writings. I shall, therefore, present a few passages from his admirable treatise on the "Chemistry of Natural Waters," which was continued through several numbers of the *Am. Jour. of Science*, in 1865.

"It is, however, not impossible that the action of the ancient sea-waters, holding a large amount of chloride of calcium, upon the hydrated and half-decomposed feldspars which constituted the clays of the period, may have given rise to those double silicates which formed the lime-soda feldspars so abundant in the Labrador series." (*Am. Jour. of Science*, xxxix, 179.)

To a detailed statement of the amounts of water held in the pores of different rocks from the Paleozoic strata of the St. Lawrence basin, he appends the remark:—"enough has been said to show that these sedimentary strata include in their pores great quantities of water, which was originally that of the ocean of the Paleozoic age." (Ibid. p. 184.)

On a subsequent page:—

"A consideration of the conditions of the ocean in earlier geological periods will show that it must have continued a much larger quantity of lime-salts than at present. The alkaline carbonates * * which from the earliest times have been flowing into the sea, have gradually modified the composition of its waters, separating the lime as carbonate, and thus replacing the chloride of calcium by chloride of sodium, as I have long since pointed out. This reaction has doubtless been the source of all the carbonate of lime in the earth's crust, if we except that derived from the decomposition of calcareous silicates. In this decomposition by carbonate of soda, it results from the incompatibility of chloride of calcium with hydrous carbonate of magnesia, that the lime is first precipitated with a little adhering carbonate of magnesia, and it is only when the chloride of calcium is all decomposed that the magnesian chloride is transformed into carbonate of magnesia. This latter reaction can consequently take place only in limited basins, or in portions cut off from the oceanic circulation.

"It follows from what has been said that the lime-salt may be eliminated from sea-water either as sulphate or as carbonate. In the latter case no concentration is required; while in the former the conditions are two—a sufficient proportion of sulphates to convert the whole of the lime into gypsum, and such a degree of concentration of the water as to render this insoluble.

"These conditions meet in the evaporation of modern sea-water; but the evaporated sea-water of earlier periods, with its great predominance of lime-salts, would still contain large amounts of chloride of calcium, the insolubility of gypsum in this case serving to eliminate all the sulphates from the mother-liquor. Evaporation alone would not suffice to remove the whole of the lime-salts from waters in which the calcium present was more than equivalent to the sulphuric acid; but the intervention of carbonate of soda would be required.

"In concentrated and evaporating waters freed from lime-salts by either of the reactions just mentioned, but still holding sulphate of magnesia, another process may intervene. The addition of a solution of bicarbonate of lime to such a solution, gives rise by double decomposition, to sulphate of lime and bicarbonate of magnesia. The former being much the less soluble salt, especially in a strongly saline liquid, is deposited as gypsum; and subsequently the magnesian carbonate is precipitated in a hydrous form. The effect of this action is to eliminate from the sea-water both the sulphuric acid and the magnesia, without the permanent addition to it of any foreign element.

"Gypsum may thus be separated from sea-water by two distinct processes—the one a reaction between sulphate of magnesia and chloride of calcium, and the other between the same sulphate and carbonate of lime. The latter, involving a separation of bicarbonate of magnesia, can, as we have seen, only take place when the whole of the chloride of calcium has been eliminated; and if we suppose the ancient ocean, unlike the present, to have contained more than an equivalent of lime for each equivalent of sulphuric acid, it is evident that a lake or basin of sea-water free from lime-salts, could only have been produced by the intervention of carbonate of soda. The action of this must have eliminated the whole of the lime as carbonate, or at least have so far reduced the amount of this base that the sulphates present would be sufficient to separate the remainder by evaporation, in the form of gypsum, and still leave in the mother-liquor a quantity of sulphate of magnesia for reaction with bicarbonate of lime.

"The source of the magnesian carbonate, whose union, under certain conditions, with the carbonate of lime gives rise to the dolomite, may thus be due either to the reaction thus described between bicarbonate of lime and solutions holding sulphate of magnesia, or to the direct action of carbonate of soda upon waters containing magnesian salts; but in either case the previous elimination of the incompatible chloride of calcium must be considered an indispensable preliminary to the production of the magnesian carbonate."

I am sure that no apology is due, Mr. Editor, to your readers, for the length of these extracts. Condensation is out of the question; and I shall, in fact, suggest that the extremity of conciseness used by this eminent author in expressing his views, and apparent in the above, may have been a frequent cause of failure, on the part of others, including myself, to assign to them the precise application intended by him. In the case of a science like Chemical Geogony, whose foundations are just being laid, I must be pardoned for thinking that even a certain degree of diffuseness, or copiousness of style, in the explanation and definition of both terms and generalizations, will often be found meritorious; in the prevention of unfruitful controversy. For example, I dissent from those scientists who cavil at the diffuse and elementary style of BISCHOF'S great Work, regarding this as not the least of its valuable features.

I am obliged, however, again to defer to another note, the further discussion and summing up of the subject.

HENRY WURTZ.

No. 26 PINE STREET, NEW YORK, April 6, 1868.

THE MICROSCOPE:

History of its Invention, its Geological Teachings, and its Uses for the Miner, Mineralogist and Chemist.

BY P. H. VAN DER WEYDE, M. D.

No. X.—Continued from Page 210, Vol. V.

As it is of great importance for the mineralogist and geologist to determine, with certainty, the nature of the strata he has to deal with, the knowledge of the modern methods for searching after the microscopic flints and calcareous shells of the fossil infusoria, is of some importance.

When the chalky or clayish particles are placed under a microscope, without certain previous preparation and manipulation, nothing but dark is seen; in the same way as the crystal figures in the snow cannot be discovered, when examining a snow bank with a magnifying glass: they have to be examined when separated. For instance, when fine snow is falling, if we collect some of those falling particles on a piece of black cloth or velvet, and then place them under the microscope, we may examine them in detail very easily.

The method introduced by EHRENBERG, for the microscopic examination of fossil soils, is very simple and effective. The chalk, clay or earth to be examined, is first mixed with water, and a very thin layer placed on a piece of glass, so thin that it is translucent, and in some small spots transparent. This layer is dried, and after drying, saturated with a cheap Canada balsam, copaiba, Venetian turpentine, or some other varnish like resin. By this simple operation the chalk or clay becomes perfectly translucent; the mutually adhering shells separate visibly from one another, and also from those particles which consist of broken up fragments. The protection which their infinite smallness offers to them against crushing agencies, is strikingly illustrated by a so-called porcelain visiting card. When its surface is treated in this manner, it looks, under a high power of the microscope, like a Mosaic production, containing thousands of different forms, notwithstanding that the surface of such a card has undergone a polishing process by being passed with very great pressure between steel rollers.

When these shells resist by their smallness our rubbing and pressing in a mortar, and even the crushing action of the polishing steel, it is not to be wondered at that the pressure they underwent after being deposited in layers and having mountain masses over them, did still less injury, as this pressure was exerted in all directions and came on very gradually.

In many cases these shells are surrounded by an amorphous deposit, which is not fragments of broken shells, as the highest power of the microscope reveals nothing but dust; in other cases the broken fragments are easily recognized. We must, therefore, conclude that oftentimes two causes of deposit worked simultaneously; the settling down of the shells of the dead infusoria, and the precipitation of the lime which the ocean held in solution, in much larger quantity than at present. This precipitation undoubtedly took place by absorption of carbonic acid, also contained in the atmosphere, at that period, in much larger quantities than at present. We see this operation now occur in any solution of quick-lime in water; continually a formation of carbonate of lime takes place on the surface, covering it with a floating skin, which will settle where the surface of the water is agitated, as undoubtedly took place incessantly by means of the winds in the primitive oceans, acting like those of the present day.

The enormous quantities of lime such oceans or salt water lakes must have contained, and the mighty volumes of carbonic acid gas they must have attracted from the atmosphere in the course of ages, is strikingly illustrated in the astonishing masses of lime-rock formations in many parts of the world; for instance, even in our immediate neighborhood, in the Catskill Mountains, New York. In following the channel of the Schoharie river, from its source, four thousand feet above the Hudson, to its termination in the Mohawk Valley, the masses of lime-rock are observed everywhere; but however enormous the amount of those carbonated lime-rocks is in that locality, it is a mere child's-play when compared with the plains of the Colorado river, which has worn a channel in such a lime-rock deposit, more than one thousand miles long, and in some places having a perpendicular depth of eight thousand feet. Such lime-rocks contain frequently large shells, and the microscopist usually detects the smaller ones in the same localities where the larger ones occur.

All those small animals belonging to the chalk formation are called *foraminiferae*, and are exclusively marine; but there are also fresh water chalks. The interior of Germany has been found to abound with such fresh water deposits, mostly on a substratum of blue clay. In those deposits, however, the microscope detects not a trace of the *foraminiferae*, by which the chalks of marine origin are characterized. This fresh water chalk also contains masses of amorphous chalk, without organic remains.

Mining Summary.

GOLD AND SILVER.

Montana.

[From our Special Correspondent.]

The Errors of Mining in Montana.

VIRGINIA CITY, M. T., March 14, 1868.

I fear that the readers of the JOURNAL OF MINING from my caption, will deem me one that may be classed with the censorious, captious, fault-finders and grumblers of earth; one that would pull down but never construct. Not so. I propose, as your correspondent from this distant mining region, to write and state truths and facts as they appear; not as a sanguine temperament would have them, but as they exist. "To err is human," is an old adage, and to correct errors when known is a duty. It is then a duty we owe both to labor and capital to expose that which may tend to injure or depreciate either, and by so doing we are in discharge of duties incumbent upon us. The first error I shall point out, is the manner in which capital has been obtained, and the application thereof for mining purposes. Gold was discovered in 1862, near Bannack City, in paying quantities. This induced both population and, to a degree, occupation. In 1863 this marvellously rich and extensive gulch, now known as Alder Gulch, was discovered, and at once Montana became one of the rich gold fields of the world. The question is asked, Whence these rich deposits? What can be the source? The solution is found in the auriferous veins of quartz on every side. Mining then becomes a reality, and population permanent. The placer has and is being worked by the adventurer, with varied success, and the gold taken from the bed rock by the strength and industry of the miner, without the aid of capital. The unlucky miner of the gulch turns to the hills and mountains in the hope of bettering his condition. The vein of gold or silver is found; he is in ecstacies: his fortune is secure; but alas! he has not the machinery to extract the precious metal from the ore; what must be done? Selecting the best specimens from the vein he starts off for the east. The glittering ore is placed upon exhibition, and capital is secured. This, so far, is all well; but the application of this capital, what is it? A company must be organized, with its retinue of officers, machinery and supplies purchased; a thousand and one drains are opened to draw upon the capital ere the object for which it has been invested is attained. At last everything is upon the ground. The mill is erected, the machinery is in place, and the shrill whistle of the engine is heard, proclaiming to all, we have started. Thousands have been expended, and yet there has been no development. The mill is idle. Why? No ores, vein is pinched, ores refractory. Must have some other treatment; the vein is a humbug. Montana is played out. The assessed value of the mills of Madison county in 1867, I find to be $216 640. This is not half the amount expended. This capital has all come from the east, and being invested in machinery, delivered here at fabulous prices for freight, and expended in the maintenance of attaches at high salaries; no returns have been made. The mills are idle for the lack of ore. Let me ask then if it has not been an error to build mills and waste money before the mine is open, or the quantity and quality of the ore has been ascertained. Experience has so taught us here. Had a little of the capital that has already been expended been used in development, the mining interests of this wonderful country would not now rest on a speculative basis, but the value of stocks or mines could be ascertained and fixed by the amount and value of ores known to be in the mine. It is simply a matter

of calculation to ascertain the cost of extraction and milling. The question is, What is the supply and what is the average yield? If the vein be narrow or pockety, (as we term it,) though rich, is the cost of extracting and milling equal to the value of the ore? if so, no result is obtained. True, you have increased the world's wealth by your production, but what is the individual gain? Nothing. Again, if your vein be wide, and the ore easily extracted, with but little expense, and the supply equal to the capacity of the mill, so that you are enabled to run during the year, even if this ore should yield less than the assayed value, is it not better than to remain idle, and waste away from inertness and decay. Let capital in mining be governed by the tried rules of political economy; let capitalists apply the experience of other branches of industry to mining; let these things be done, and our mines will become productive and remunerative to all parties in interest. Take one step toward development; add to expenditures already incurred for the working of the mine, and capital that is now idle will soon become productive, and the mining interest will be one that will prosper and bless "the land we love."

WEEKLY SUMMARY OF NEWS.—One million, four hundred and fifty-one thousand, four hundred and fourteen dollars, (1,451,414) have been expressed from the office of Wells, Fargo & Co., at Helena, during the last five months.....Extensive placer mines have been discovered in Ramshorn gulch, about eighteen miles northeast of Virginia City. They will be worked by bed rock flumes this season.....A belt of gold-bearing leads, five in number, have been discovered at the head of Spring gulch, near Summit. They are represented to be well defined, and have been found beneath the limestone debris of Ball Mountain..... The Union mill is at work on the ores of the "Ore Cache" lode, and the runs are very satisfactory. From present appearances, the lode will pay for some time to come, as the vein has opened finely with paying ore.....The several arastras that are being constructed in Brown's district will soon start up on the far famed lodes of the Alameda and Black lodes. Results will be given.....The Jewel House lode is being worked by J. D. Lomax, by furnace process, and the ore is proving exceedingly rich. .....The success of the Essler Co., at Argenta, has stimulated the mining interest in all the silver belts of the Territory, so that the miners are determined to be no longer dependent upon foreign aid, but will rely on themselves. Mr. Essler has, in the past few weeks, shipped through the banking house of Messrs. Nowlan & Weary, of this city, $8.365 20 of silver bullion. The process is simple and inexpensive. We shall give the description of the process in full, at an early day, in your journal.... The greatest yield ever obtained in this Territory is from the mill of Messrs. Plaisted & Nowlan, from the ores of the Atlantic Cable, in Deer Lodge county—from a run of nine days, a clean up of a fraction over $12,000.....Alder gulch will be worked during the season, generally by bed rock flumes. Of these we now have, including those now in course of construction, about twenty. These are owned and operated by the miners themselves. The large yield of gold heretofore obtained by men anxious to secure their "pile," and the careless and hasty manner in which most of the claims have been worked, renders the proposition of working by flumes almost a certainty of its paying well. The fact of flumes requiring a less force of men to work them than the old plan of working, stripping and sluicing, presents an important inquiry. What effect will this mode have upon other industrial pursuits? to the merchant, serious; for without consumers his wares must remain unsold—hence no profits. To the mechanic, alarming; for there is no demand for his skill. And yet by the action of water skilfully applied and used, the production of gold must equal, if not exceed, that of other years. W. Y. L.

A correspondent of the *Independent*, writing from Gold creek, March 6, says that the Energetic Rock Creek Ditch Company have nearly ten miles of their ditch completed, and that they intend to extend it to Pioneer early in the spring, at which point it terminates. "I visited," continues the writer, "their line of ditch a few days since, and was greatly surprised to see the vast amount of work accomplished during the winter. It commands the richest and most extensive placer mines in the Territory of Mantana, and will, according to my judgment, yield more gold in proportion to the same area of Territory, than ever was produced elsewhere."..... Another correspondent writes from Missoula, March 1: "The mills at Fort Owens and Frenchtown are now running, and the mill at this place will start again this week, so that times will again assume a business-like appearance. Prospectors in different parts of the country are getting ready to start out on their annual prospecting tour, and I do not doubt that many new camps will be struck during the summer. Jack Fisher tells me that he is going out with some of his friends into the northwestern part of the country prospecting. He confidently expects to find good mines; he prospected them last summer, but could do but little for fear of the Indians, who annoyed them all the time. He says that there will be some men going to Libby creek this summer, but that he expects to find much better mines north of Libby, near the British line. I have also seen and conversed with an acquaintance who worked at Libby last fall, and says that they turned the creek and worked three or four weeks, and made, on an average, eight dollars per day to the hand; but, at the same time, he says but little can be done until the water goes down, which will be late in the summer. Rumor says that many men will come from Walla-Walla this summer—from what source the report comes I cannot tell. The foregoing is the information which I have gained, after making many inquiries of different parties. Another rich silver lead has been discovered in the Bitter Root valley, located near the one discovered some time since, of which I wrote you. The last one is called the "Fenian," and was discovered by Higgins and Keelher Much rich quartz undoubtedly lies in the range of mountains east of the Bitter Root valley, and many parties will be in there as soon as the snow is off. Then, if you do not hear of some rich discoveries, I will be very much mistaken.....A correspondent at Cable City writes that a custom mill would pay at that place. There are seven tunnels now going into the Cable Mountain—the oldest being in 140 feet, and the others just commenced. A shaft is down forty feet on the W. L. Thomas, where it is well defined and full of rich quartz. The company intend to erect a mill in the spring. Large amounts of quartz are taken out of the Cable daily.....The steam arastra of Rumley & Ruber, at Phillipsburg, is in active operation, crushing about 1,000 pounds of rock per day, with good results. They are also sinking on the lode bearing their name, on which they have already attained a depth of twenty-five feet, with a crevice forty feet in width. The average yield to the 1,000 lbs. of rock is about $70 in silver.

Colorado.

From files of the Central City *Herald* to March 31, we condense the following items of news: The Munsell lode, on Leavenworth mountain, Georgetown, continues to improve steadily. The shaft is now about fifty feet deep, and shows as well defined a crevice as ever, with from eighteen to twenty inches of mineral. A quantity of stephanite or brittle silver ore has recently been taken from it, two assays of which yielded respectively $13,200 and $18,036 to the ton. Work is being actively carried on on the General Marion lode. The crevice is gradually but steadily improving in appearance. The Ingram Bros. have done nothing lately to Live Yankee lode but by last accounts it was looking better than ever. Some parties who have been running a tunnel into the mountain, just above the level of Leavenworth Creek, some time since struck the Herkimer extension at a distance of 75 feet, and are now drifting along the crevice with most promising indications. The tunnelling after the Andrew Johnson lode, still continues. They are still in the slide, but expect to break through shortly. Sinking on the New Boston still goes on; the crevice is daily expected to widen out again, it having become pinched and contracted..... Rice & Co., are working the New York lode, Nevada district. It is supposed to be the continuation east of the Red, White and Blue lode. They have reached a depth in the present shaft of 20 feet, from which they have raised some three or four cords of surface quartz, which from appearances, promises well.... Kassler & Remick are putting the New Bedford mill, in Nevada, in order for business. They will run on custom ore.....Messrs. Lynn & Valkenburgh, of the Onondaga lode, Nevada district, having had Mr. Kenyon run some of the ore, which yielded $35 to the ton, have wisely concluded to prosecute work more vigorously, at a depth of 50 feet, the crevice matter is seven feet between walls.....The Quartz Hill tunnel is in 325 feet. They have crossed three lodes in this distance, and have drifted in upon the second lode a distance of fifteen feet, which shows a seam of two feet of very good looking iron. The main object of the company is to push forward the work until they shall have tapped the Burroughs lode, which they expect to strike in 100 feet or less.....The California Reduction Works have been running on silver ore since the 26th of last November, during which time they have produced 1,000 lbs. of silver. The ore treated has averaged 156 ozs. per ton. The highest average assay of a lot was 628 ozs. per ton, and the lowest 53 ozs. The gulch ore treated by these works since they have started has averaged 3.10 ozs. per ton, of which the highest average assay of a lot was 16 ozs., and the lowest ½ oz. per ton. These figures show the practical workings of the California process during a period of four months. From them a working estimate may be made. It must be remembered that the present works are not of sufficient capacity for working with economy. A high price has to be charged for custom ores, which could be cut down more than one-half by increasing the capacity of the works.....L. C. Miley has the University Company's mill almost in order for running on custom ore.....A large force of hands are at work getting the new mine pump of the Black Hawk Co. ready for service. The agent, Mr. Lee, informs us that he will have everything in readiness for the resumption of work in the Gregory mill and mine by the 1st of May.....Messrs. Dubois & Behr are running the Keith mill, located on North Clear creek, on ore from the Prize lode, Nevada district, for Mr. Samuel Tidd. Mr. Tind has a large quantity out awaiting treatment. This ore contains a great deal of argentiferous galena, which is said to be very rich in silver as well as gold.....Mr. Fitzpatrick's eight-stamp mill, at Black Hawk, this morning started up on ore from the Burroughs lode, for Mr. Conlee. For some time past, this mill has been running on ore from the Smith & Parmelee mine, but owing to the putting in of the new plunger to the mine pump, the supply of ore has run short.....Mr. W. S. Lee has been running the Black Hawk Company's 60-stamp mill, the past week, on ore for the following parties: Twenty stamps upon ore from the Ophir Co.'s claims on the Burroughs; twenty stamps on ore for Mr. Conlee, from the same lode, and twenty stamps on ore from the Illinois lode, from the claims belonging to the North Star G. M. Co., G. R. Mitchell, agent.....Mr. Freeman was down yesterday, and deposited in Warren Hussey and Co.'s bank a large retort of beautiful Empire gold, taken from the Silver Mountain lode.... Peregrine's mill has started up on ore from the Leavenworth lode, Russell district, for Mr. Sawyer.....Mr. Hayes is taking down the patent desulphurizer, erected in the New York Co.'s mill by Mr. Tiernan some three years since. He has also put new housing around the batteries.....Mr. Kenyon's works below, Black Hawk, are in fighting trim for any amount of ore. The desulphurizer has worked like a charm since the putting in of the new fire lining. He is running some eight or twelve Bertola pans in connection with the dolly tubs. At present he is running on Pewabic ore.....J. D. Peregrine this morning commenced work on No. 6 east, Running lode, Enterprise district. This claim has been idle since the fall of 1863. At that time he reached a depth of 65 feet. It is the intention of Mr. Peregrine to sink and drift in order to give his 18-stamper constant employment on ore from this lode, and not be dependent on custom ore, as he has heretofore.....We are glad to learn that Mr. C. W. Havens has reached a depth of 125 feet on the Circassian lode. It is situated in Mountain House district. He claims to have four shafts down to a respective depth of 25 40, 60 and 125 feet. At present they are only working the 60 foot shaft, which gives a showing of a three foot crevice. Assays made recently from this ore give $800 per ton.....Cowenhoven's claim on the Bates lode is improving as they go down.... Mr. Fleming continues to develop the Irish Flag in Nevada gulch. He shipped a large retort this morning.....Mr. Miller, of Black Hawk, has his new 12-stamp water mill ready to run. Mr. E. C. Beach returns another golden egg of 155 ozs., 9 dwt.. ....From the Central City *Miner's Register*, March 26, we condense the following items of news: James Clark is renting the La Crosse G. M. Co.'s mill, in Nevada, for grinding custom quartz.....Mr. Fitzpatrick has started his mill on ore from the Burroughs, in the interest of J. A. Conlee.....Mr. A. N. Rogers, having rented the old Kip & Buell mill, is tearing out the old batteries and screens, and putting in entirely new housings, screens, shoes and dies. When done, the concern will be put to work on ore from the Bobtail.....The Lexington mill is to start up this week under the direction of Mr. Moses Hall. It is for custom business exclusively, has twenty-four stamps, plenty of water, and quartz promised.....The Ophir mine turned out 130 ounces of gold last week, from second quality ore. This is one of the most profitable and best managed mines in Colorado. .....The Clark-Gardner Co. are fixing to obtain fine results from their mines. They are sinking the main shaft, and clearing away for a full crew of hands to be employed in sinking, timbering, drifting and backstoping. They have a vein of pay ore between three and four feet in width, composed of alternate streaks of galena, iron sulphurets and copper pyrites. They are raising but little ore for milling.....The Gaston lode Russell's gulch, is being re-opened by Messrs. Cushman, Emanuel and others. The shaft is fifteen feet deep, and has a crevice of very rich quartz from twelve to fifteen inches wide. They are to have a cord or two crushed at the Chicago mill in Black Hawk..... From the Georgetown *Miner*, March 26th, we glean the following: There are four or five quartz mills going into California district this season, and if indications are to be trusted, we may confidently expect a large increase in the shipments of gold from this territory the present year.....An assay of a specimen of copper ore from Sugar Loaf district, Boulder county, gave a return of 1.412 lbs. of copper to the ton of ore.....J. W. McFarland has struck a four-inch vein of argentiferous galena and sulphuret of silver ore, carrying blue and green carbonates of copper, in the Winnebago lode, situated on Leavenworth mountain. The shaft is now about 15 feet in depth.....The tunnel being driven into Leavenworth mountain by Johnson & Haskins has cut a fine fissure vein 6 feet between walls. The tunnel is now 100 feet in length.....General Marshal has commenced a tunnel on Leavenworth mountain, that will cut many of the prominent veins at a great depth.....Mr. Foster made an assay, last Tuesday, of some stephanite, brittle silver ore, from the Munsell lode that gave $13,200 in silver to the ton.....We understand that Mr. Stewart is running a lot of Young America ore in his experimental works.....We learn that work has been suspended on the Baker mine until more favorable weather sets in.....Some very fine galena and sulphuret ore is being taken from the Cuba lode, on Leavenworth mountain.....More mining is being done on Brown mountain and that immediate vicinity, at present than in any other part of this district.....The Terrible shaft on Brown mountain is 50 feet in depth, 4x10 feet in size. The crevice, between walls, in the bottom of the shaft is five feet in width, carrying an ore vein from the surface down to its present depth which has averaged from eight to ten inches in width. A drift is being run east from the bottom of this shaft, that is now 43 feet in length, the heading being 4x6 feet. The whole amount of first class ore produced by this vein, from both shaft and drift, is 23½ tons. Of this amount 16½ tons have been reduced, that has yielded sufficient to pay all the expense of sinking the shaft, cutting the drift, and driving 30 feet of tunnel last spring, and the tunnel which they are now driving. There is now, in the Georgetown smelting works 5 tons of first class ore, for treatment, and on the dump, at the mine, about 2 tons. Besides this there is now lying on the dump 20 tons of second class ore, and 15 tons of third class. A tunnel is in progress, at a point near the foot of the mountain, which will be 280 feet in length, and will strike the vein 275 feet in depth. This work is now in 17 feet 8 inches, the heading being 4x6 feet. At the foot of the mountain the owners of this property, Messrs. Fred. A. Clark and Henry Crow have a fine water power and mill site, upon which they intend to erect works this season for the reduction of their own ore.

California.

Amador County.—Kearsing's mill in Jackson, says the *Ledger*, is now running on the tailings from the Coney & Bigelow mill, and with the Ambler process, are saving from 1,000 to 1,500 lbs. of rich sulphurets per day. J. C. Fall, superintendent of the old Keystone mine and mill at Amador City, is now putting up machinery for saving sulphurets by the Ambler process. The Coney & Bigelow mill will soon have ten additional stamps placed in their mill, making twenty-six in all. It is in contemplation, by the company owning the Amador mine, to put up machinery and go to work on it in the spring. The company on the McAdams & Hubbard mine, near Jackson, under the title of Casco Co., are prosecuting work with great energy. Their mill and ditch are nearly completed.

Alpine County.—The superintendent of the Morning Star mine has started a drift east from the 110 foot level of the shaft. Prospects are said to be favorable for soon tapping the lode and getting good ore. The Monitor G. M. Co.'s tunnel is in nearly 75 feet. The Mt. Bullion Co. have commenced work on their dam. The Morning Star shaft is now down 100 feet.

Mariposa County.—A company of Chinamen have bought the property of Beach & Co., formerly Mr. Jee's, at Mormon bar. The buildings will be removed and the entire flat mined out. The price paid was $700.

Nevada County.—Negotiations are pending for a heavy sale of mining ground and water rights in Little York township. The Williams ditch, Brown & Bros. mining claims and other ground, is mentioned as being included. San Francisco and English capitalists are said to be interested. The price mentioned is in the neighborhood of $150,000. The North Star mine, says the *Transcript* is now yielding handsomely; six pumps are kept running. The incline is now down 900 feet; the lead is being worked from several levels, and it is proposed to sink 100 feet more for another. Recently a new 30-horse engine has been put up to do the hoisting from the incline, and the 15-horse engine formerly used for this purpose is being put up over a new shaft, which is already 90 feet below the surface. The mill is run by two 60-horse engines. Sixteen heavy stamps are kept going constantly. Several of Hendy's concentrators have been put up in the mill; the sulphurets saved by them are very clean.....During the past year many mining companies in Nevada county have been compelled to shut down, on account of the enormous expense required to prospect, and the failure of the rock to pay large returns. In one instance, over 44,000 was expended in wages alone. There are, it is estimated, 400 men out of employment in Grass Valley township alone.....The Empire Co., at Ophir Hill, have realized $22,211 during the past twenty days, and have averaged $1,124 a day for the past four months. So says the *National*.

Placer County.—The longest line of sluices in this State is said to be at Dutch Flat, 416 twelve foot sluice boxes, six feet wide, and the average yield of each box is said to be $25 at each clean up, which is once in four months.

Sierra County.—It is reported that the Docile Co., of Allegheny, took out, in five days' running, 690 ounces of gold. At Sawpit Flat, the American Co. are working twelve men, and are making from $8 to $12 per day to the hand. The Buckeye Co. are working 17 men, and are making from $6 to $8 per day to the hand. The Union Co. are working seven men, and are making an average of $7 per day to the hand. The New York, Eagle and Union companies are taking out pay dirt.

Trinity County.—M. J. Fegan has sold his mining claims at Junction City, for $6,000. Several hundred feet of iron pipe will be laid in the Carson & Osgood claim: The gravel prospects $1 to the pan. The Washington Fluming Co. have their flume nearly completed. McGillivray's ditch enterprise will be finished by the end of March; 100 men are now at work on it.

Tuolumne County.—The Springfield correspondent writes: The Sultan quartz mine, of Messrs. Lucas and Paige, near this town, will soon be in full operation. Its owners will erect a 10-stamp mill as soon as the weather settles. It has already yielded $3,000 by the mortar and pestle process.

Arizona.

The Wickenburg mine continues to yield rock of extraordinary richness.....The news from Big Bug district is cheering. At latest dates, says the *Miner*, the upper tunnel in the Eugenie lode was in 120 feet, at which distance the ledge was fully six feet wide.....Bowers Bros. and John A. Rush are getting ready to start up the Woolsey 5-stamp mill, on Dividend rock. Some time ago, Mr. Borger worked in Gray & Co's mill, sixty tons of this rock, out of which he said he got $1,200 in free gold. There are four companies of placer miners at work in Big Bug. Lewis & Thomas (ten men,) are cleaning up all of $10 a day to the hand. Water is plenty, with a fair prospect of its continuing so for several months to come.....Very little work has been done in Walker district the past month or six weeks, owing to the snow and cold; but the miners are now taking out ore, which they will work in their arastras, as soon as the weather moderates sufficiently to allow their waterwheels to turn, and admit of amalgamation. Some few persons are working in the bars and bed of the creek, and we believe that Poland & Co., are running their arastras by water power.....In Hassayampa district, work upon the Chase lode is progressing, and Noyes & Curtis's 10-stamp mill is now being hauled up from its former location to the Chase, where it will be erected and set to work. Michael McWilliams, who has the contract for sinking one of the shafts a depth of one hundred feet, told us, the other day, that his shaft was down nearly seventy feet, and that the lode was six feet wide, and looked better than any other lode he had seen in the country. .....Operations upon the Chance lode will be resumed soon, by Messrs. Rodiek & Feland. Jos. Young, one of the owners, will start, in a short time for his former home, Philadelphia, in which city he expects to be able to raise means to work the ledge in a proper manner. He has shipped one hundred pounds of the ore to that city, and will take with him the bullion extracted from

the three tons recently worked at the Sterling mill, which, it will be remembered, yielded well.....Work at the Sterling mine and mill has ceased for the present. Except for the inability of Mr. Reed to account for the loss of the large portion of the quicksilver used, his mode of treating the ore would be an entire success. The gold is amalgamated by his process in a thorough manner; the rock has proved itself as rich as it was supposed to be, from the various tests made of it here and in San Francisco; but from some cause, more than two-thirds of the quicksilver goes off, and is lost in grinding and amalgamating, and of course so large a quantity of quicksilver cannot get away without taking a great portion of the gold with it. Could the quicksilver be retained, Reed and everybody else believes that the rock would yield at least $100 to the ton, by working test; as it is, not more than $40 to the ton has been saved from it. At the request of John A. Rush, a gentleman who has advanced considerable money to defray the expense of working and testing this mine, Mr. Reed allowed Mr. Richardson, the engineer, to take charge of and work the last batch of rock—six tons. Richardson went to work, and weighed every drop of quicksilver used by him—fifty-four pounds in all—and on cleaning up, but fifteen pounds of the silver could be found! The run, however, paid better than any previous run made, and more free gold was saved in the battery and on the plates. Mr. Reed is now anxiously awaiting the arrival of Mr. Kustel, who is expected here shortly, in company with Mr. Gray, in hopes that that gentleman may be able to explain the cause of the loss of the quicksilver. Some argue that the quicksilver goes off in vapor from the heated pulp in the grinder; others say that the quicksilver, from being ground with the rock under a heavy muller for six or seven hours, becomes granulated, and passes off in that way; others again think that the chemicals used for purposes of amalgamation mix and form an oily paste which, with the quicksilver, when the pulp is placed in water, rises to the surface and floats away. Thus the matter rests, waiting for science to explain the cause of the difficulty.....The placer miners on the Hassayampa are making fair wages, and those at work in the gulch on this side of the Sterling are taking out lots of money. Most of the companies were ground-sluicing during the early part of this week.....The Hydraulic diggiogs, on Lower Lynx creek, are yielding about $10 to the hand per day.

Dakota.

Concerning the weather and the condition of the roads leading to the Sweetwater mining region, the *Mines* of the 11th ult. has the following: "Since our last issue, with the exception of part of one day, it has stormed continually, and the high winds have drifted the falling snow to such an extent as to make traveling with teams anything else but a pastime. We have not as yet learned to a certainty of any teams having reached Sweetwater. The traveling between here and Salt Lake is very rough. Some teams have passed this post yesterday and the day before, having been two weeks on the road. Parties intending to start out now should come prepared to camp out in a storm if necessary, for the reason, that at present public accommodation for travelers, other than stage passengers, are very limited on the line of the road. At many points there are none at all; no provision having been made for accommodating a "rush" at this early day in the season. Recollect, gentlemen "rushers," that while you in the valleys may be basking in sunshine and scent the flowers, we of the mountains are yet in the midst of an Alpine winter. Take our advice and go slow, or come prepared to take the consequences.....J. W. Menifee, one of the first settlers of the Sweetwater mining region, writes from Rock Creek, D. T., February 2, to a friend in Belmont, Nevada, as follows, in regard to the mines of that section. He says: "I don't know that I can give you all the particulars of this country, neither shall I speak as well for the mines, as I understand they bear the name of on the outside. We don't pick up gold by the bushel or peck, neither by the hundreds nor twenties. Placer diggings are limited, and what there are I don't think are as rich as some men feel disposed to represent them. I have discovered and own among the best of them in this section, and I would give any one their choice in them for $1,000. Ounce diggings, I think, will be the best we will have in this section. That sum is as much as any of them will pay, and the number of claims producing that amount to the hand will be very limited indeed. I anticipate making about a half ounce to the man daily in my claims here in Rock Creek, but I don't think it will pay all through the creek that well, for it will be very hard to work the most of it. The creek has been located and recorded for a distance of ten miles, and if it should pay the full length it will make a lively camp around here; but if Rock Creek fails I think the camp about played out as to placer diggings. If the weather continues open as it has for the last fortnight, for three weeks longer, I will know about what my claims are going to pay. I am cutting a drain race to them now. There has been a big stampede in the last ten days to Wind River for placer mines, where they can pick up the nuggets on top of the ground—(an Indian story.) The facts about it will not be known for a month yet, for it is over one hundred miles from here. Several of my friends have gone there. (I don't get excited over Indian stories.) The generality of miners here are but poor judges of quartz, and a man only familiar with silver-bearing quartz is a poor judge of auriferous rock. Any man can tell when he sees the gold in the rock, but it is hard to tell what it will pay by mill process. There are many fine ledges here already discovered, and many more to be found, but the most of them are quartz—not gold. I think if they average $25 to $30 per ton they will do extraordinarily. Many that have been located will pay nothing. I will not advise any of my friends what to do, or what is best. My views are that a person who has been for several years in a locality where he has made nothing, and has no sure prospects for the future, desires to change his base and go to the most favorable place he can hear of. I should like much to see you and some of the rest of my friends here, but I don't want you to come through my advice, or to come because I am pleased with the country, or that I think that my prospects are fair; for I may slip up on all calculations. It would be no more than I have done often heretofore. There will be thousands of men here in the spring, many to be sadly disappointed; but a good "rustler" stands a fair chance. If you come, come as soon as you can get here. I understand there were three hundred men left Salt Lake City for this place on the 15th. Times are bound to flourish for a while in the spring."

Idaho.

A dispute has arisen between the workers of the Ida Elmore mine and the Golden Chariot mine, which resulted on the 10th ult. in a serious shooting affray. The *Avalanche* of the 14th ult. says: We went down into the Golden Chariot and saw the "bone of contention," the place which we mentioned in our last, where the partition wall was broken down and the workmen in both mines met. The lights were extinguished and the fight had commenced. We learn that the combats have fortified themselves in the stopes and drifts. It is not known on the outside that any one has been seriously hurt. It is feared that something fatal will occur before the affair is terminated as both parties are well armed. We learn that they have been trying to drown each other out. About forty shots were exchanged on Thursday.....Last week we alluded to the fact that a rich strike had been made in the north shaft of the Oro Fino. We have since visited the mine, and found the ore house half full of ore that we predict will pay as well or even better than any Oro Fino that has hitherto been crushed. At the place from which the rich ore is taken we are informed the vein is nearly eight feet wide, much larger than it was expected to be found. When the company get their steam hoisting works in operation, which will be some time this spring, there will be lively times on that portion of the mountain.....In the ore house at the Golden Chariot mine, this week, we observed some of the richest ore that we have ever seen. We went down into and through the mine, and in different places therein saw ore so rich that the gold and silver could plainly be seen by the light of the candle which we carried. The Mincar mill still continues to turn out Golden Chariot bricks. .....Mr. Billings, who attends to weighing the quartz that is hauled on the Oro Fino road, informs us that during the month of February he weighed 740 tons of Ida Elmore quartz, which was taken to the Lincoln mill.....On the New York work is briskly going on, sinking on the ledge. A splendid whim has been erected, by which much expense and manual labor are saved .....A tunnel 150 feet in length is now completed on the Woodstock mine. It taps the main shaft on the bottom, 75 feet from the surface. In the north shaft the vein is over two feet wide, and of a character of ore that if worked properly should pay from $200 to $300 per ton.....Twenty men are now at work on the Rising Star in Flint. A whim has been erected on the mine to expedite the hoisting of rock and water, until the steam works for that purpose shall have arrived. The company are also at work sinking on the Excelsior, which at the beginning of the present week was down thirty feet.

Nevada.

The Comstock—We condense as follows from the San Francisco *Commercial Herald*, of the 10th ult.: The receipts of the Savage, so far, for February account, are stated at $130,000. The usual dividend will be paid. Imperial closed at $273.00 for the month of February, the receipts of bullion foot up $63.028 07 against $43,883 in January. The Alta mine continues to yield about seventy-five tons of ore per day, and the Holmes nine fifteen tons. Kentuck closed at $283. The receipts of bullion for account of February, amount to $20,422 41. Gold Hill Quartz closed at $95 a $100. The bullion product of February amounted to $5,000. About twenty tons of ore are at present manipulated every twenty four hours. The prospects for March are now considered more favorable. Overman closed at $179. Since our last issue, bullion to the amount of $3,000 has been received at the office in this city. The mine generally is said to take well. Chollar Potosi closed at $188. The drifts on the 352 station have resulted unsatisfactorily, and work has been suspended in that section of the mine. In the new shaft the west wall is said to grow harder as the work penetrates it. The product of the old mine for the week ending February 27th, amounted to seventy-one tons of ore against seventy-eight tons of the previous week, and during the same time two hundred and sixty tons were sent to custom mills, against five hundred and thirty of the previous week. No letters have been received for several days. Crown Point closed at $1,850. Works will soon be resumed in the drifts, and operations commenced at the 800 level. The product of the ore on hand and reduced in February yielded $37,250. A few feet of Hale & Norcross changed hands for election purposes, at about $8,000. The latest advices from the mine state that the face in the north drift shows four feet of ore which will mill $40 to the ton. Amador rose to $325, closing at $330 b. 30. The bullion receipts for February amount to $48,000. Recent reports, based upon survey, confirm the richness of this mine. The north level from the Badger shaft is in about ninety feet, showing a ledge about four feet wide, and is producing some very fine rock. The south level has attained a distance of thirty-six feet, and in the last ten feet the ledge came in again, showing a width of some six inches. The company has now $56,000 on hand. A dividend of $6 per share is payable today, and another one of $4 or $5 may be expected about the 15th inst. Gould and Curry continues to be well maintained, closing at $650. The old chambers of this mine continue to produce the usual quantity of ore; the lower levels are full of water. The sales in February show an aggregate of $9,716,576, being the heaviest amount of transactions since the organization of the Board, and $1,016,662 in excess of January.

COPPER.

Michigan.

From copies of the Portage Lake *Gazette* of March 19th and 26th we take the following items of news: Operations at the Vulcan and Resolute are suspended for the present .....The South Pewabic stamped 356 tons in one day last week .....The Amygdaloid stamps will start soon.....At the Pennsylvania the split reported in the Delaware vein is "mending" again, and the appearance of the lower openings of the mine is "blooming" at present .....Concerning the Huron mine there is a statement in circulation in Keweenaw county that fifteen tons of mineral were obtained in nineteen hours' working of the two heads. To have done this they would have had to stamp 120 tons of 12.5 per cent. rock. Those who choose may believe it .....Captain Hoatson writes that the Ridge mine is not producing this winter, all the force having been kept at the openings. The force thus employed is twenty-three men .....The product of the National mine for the month of February was:

Masses	18 tons,	1,074 lbs.
Barrel.....	3 "	1.252 "
Total.....	22	2.336

The stamp mill, which has been idle during the winter, is to be set in motion in a few days, when a material increase of product will be obtained.....The Cliff product for March will be near if not quite one hundred tons. The amount of silver obtained from under No. 7 floor, in the back of the 150, was not near as heavy as represented. The total amount will probably not exceed twenty-five pounds.....At the Shelden-Columbian, in an exploration a few hundred feet east of the Isle Royale conglomerate, a nest of smooth nuggets of barrel copper was found immediately overlying the rock surface. They would seem to indicate a rich lode somewhere. Early in the week the mill was started up to stamp about a hundred tons of rock each for the Douglass and Concord mines, which, for some time past, have been busy hauling their ore across the lake..... During the month of February the Pewable mine produced:

Masses.....	8 tons,	170 lbs.
Barrel work.....	10 "	95 "
Stamp.....	38 "	436 "
Total.....	56	700 "
And the Franklin:		
Barrel.....	44 tons,	1805 lbs.
Stamp work.....	47 "	758 "
Total.....	91 "	2563 "

The following are the products of the Cliff mine for the past three months:

	December.	January.	February.
Mass.....	15 tons, 275 lbs.	12 tons, 407 lbs.	56 tons, 163 lbs.
Barrel.....	16 " 139 "	8 " 355 "	24 " 352 "
Stamps.....	19 " 1965 "	30 " 225 "	
Total.....	50 2379	50 987	80 515

MISCELLANEOUS.

Michigan.

[From our Special Correspondent.]

THE LAND GRANT POLICY—ADDITIONAL GUARANTEES AND RESTRICTIONS DEMANDED.

Late intelligence from Washington to the effect that certain measures are there being concocted, designed to further private ends and corporate interests at the expense of those who have pioneered Lake Superior mining adventures, bids the latter beware lest the few remaining *mineral* as well as agricultural lands, not already withdrawn from the market, shall be swallowed up by the rapacious cormorants who, under the guise of "great public enterprises," would appropriate our entire public domain to their own use. I refer to attempts now being made by the Portage Lake and Lake Superior Ship Canal Co. to obtain an additional one hundred thousand acres of land grant, and to have selections of mineral lands, already unjustly and illegally made, confirmed to them; also the privilege guaranteed them of selecting *mineral* lands hereafter. A very large portion of the public lands in the Upper Peninsula is already withdrawn from market for the benefit of this and other corporations, and our people are decidedly and almost unanimously averse to any further national legislation on the subject, unless it be to hold such companies to a more strict accountability for the use they make of the privileges granted them. I understand there is a move on foot by the "Marquette and Ontonagon R. R. company"—the title is a misnomer; it should have been *Marquette and Iron Mountain R. R. Co.*—to obtain a *second* five years' extension on the time allowed them to complete their road; in other words, an extension that will give them time to sell out their franchises to any company that will give them a premium thereon. The general feeling on the lake is that no more lands shall be given for such improvements, and no more extensions on existing grants, without ample guarantees from companies availing themselves of such benefits; in a word, we are in favor of the policy recently enunciated in Congress by General Coburn, of Indiana, viz.: that no more public lands should be withdrawn from market for such purposes, but that the proceeds of the sales thereof may be placed to the credit of, or paid over to, said companies as fast as the same are earned, and no faster—the lands meanwhile remaining open to entry and occupation by any who may select them for such purposes. The original grant to both companies was liberal; that to the M. & O. R. R. Co. being made in 1856, and a five years' extension granted in 1863, when the grant was forfeited for non-fulfillment. Had the contract then made by the company been lived up to, viz.. "the said company shall complete and put in good running order *twenty continuous miles of said road*, commencing at the Lake Superior iron mine, within two years from the first day of July next, and twenty miles a year each year thereafter, until the remainder is completed," the road would now have been done, whereas the first section only is completed; probably all that the present company ever intended to do. Under these circumstances, it is natural that we should deprecate the continuance of the land grant policy unless surrounded with additional guarantees and restrictions.

SPECTATOR.

Pennsylvania.

The *Scranton Weekly Republican*, of the 3d inst. gives a lengthy account of the terrible accident that occurred at the Delaware, Lackawanna, and Western Railroad Company's Diamond Mines, at Hyde Park, on the morning of the 31st ult., from which we condense the following particulars: "The accident took place at seven o'clock A. M. as the first carriage load of miners was on the point of descending into the F shaft leading to the E and F veins. Upon the carriage, which weighs from 3,500 to 4,000 pounds, fifteen men and two boys had placed themselves. The signal was given to the engineer to put his machinery in motion to raise the carriage, which is generally raised about a foot, when it settles back upon what are called "fans," which are thrown across the opening to support the carriage. At this time the driving boss, Mr. Patrick Barrett, said to a son of Mr. Rees T. Evans, the boss miner: "Get off, I want to go down this time." As he spoke the boy jumped off, and Mr. Barrett moved the lever which throws back the fans, and jumped on. As he did so the carriage started down with the rapidity of lightning, falling to the bottom of the shaft, a distance of one hundred and eighty-five feet. The sudden start was caused by the breaking of a link eight inches long, of the best of Ulster iron, put in less than three weeks since. There were seven smaller links above this before the wire rope commenced. The broken link was picked up at the bottom of the shaft, and was found to be straightened completely, with the exception of a slight turn at each end. This straightening out showed the tenacity of the iron, as only a slight crack was made in it on the inside of the unbroken end. The other end shows the reason the link broke to have been the imperfect welding of the iron. Upon our inspection we found that the link was made of three-quarter inch iron, and that scarcely one-eight inch, and that less than half way round the rod, was perfectly welded. That portion is purely white, all the rest is blackened, showing that for some reason the weld did not take. When together, the surface evidently looked perfectly joined at the lap. The wonder is that it held together so long while drawing up tons of weight every day. It is said by experts that sometimes welds do not take, on account of unusually sulphurous coal being used in welding, and possibly it was the case with the weld in question. Bituminous coal is considered better for such operations, and we understand coal of this kind will hereafter be employed at the Diamond mines for welding. In addition to the fans mentioned for holding the carriage, are patent "safety catches," which are intended to work when by any accident the rope givesway. These are worked by springs which spread the arms apart and their pointed ends catch in the guides on each side, and thus hold up the carriage. These, for some unaccountable reason, did not work yesterday morning, and there was nothing to prevent the awful catastrophe. One of the employés who stood by at the time of the accident, states that just after the carriage was raised, and as it was on the point of descending, he happened to look up and saw that the lower link was standing crosswise instead of up and down, as would be natural, as if, when the carriage fell back upon the fans, and the chain slackened, this link from some cause caught, and was thrown and held in that position. Consequently, when the fans were thrown off, the link was probably suddenly jerked into an upright position, and the sudden jerk and strain caused the link to part at the weld. This version seems to be substantiated by the appearance now presented by the link, which, for three or four inches from each end shows a bright streak, apparently made by friction as it came to an upright position. Mr. Daniel Langstaff states that, about three weeks since he noticed that the eight inch link was partially worn through, and he immediately caused a new one to be made and put in, which was the one which broke yesterday. Since that time it has been in constant use. He stated further, that after four o'clock on Monday evening, eleven men came up the F shaft, and ten car loads of coal were also brought up. The weight of these cars and load s is about as follows: Weight of car, 800 lbs.; weight of coal, 3,500 lbs.; weight of culm and slate, say 200 lbs.; total, 4,500 lbs. Now, it would seem that the weight of sixteen men and a boy, which at an average (and a large one) of 150 lbs., would only amount to 2,550 lbs., should not have been sufficient to part this link, but the result shows that it was sufficient, or that the

continnal strain had weakened the link to such an extent that it might be possible for it to give way with a less strain. As we were about leaving the vicinity of the Diamond shaft yesterday morning, we were accosted. in the presence of the Superintendent, Boss Miner, and a number of others, by a man named Samuel Carpenter, who desired us to state that the nnfortunate men lost their lives for the want of two "bridle chains" as an extra safeguard. He was very much excited, and in answer to the question, "Is there anything of the kind in this country?" he said: "No;" but that they were always nsed in the old country, and shonld be here. The man is probably right. Bridle chains would have prevented this accident, thongh similar ones, by the breaking of the wire rope, or otherwise, they would be no protection against. But it is certain that too many precautions can not be taken for the preservation of life. There are too many accidents of this nature. Only last Wednesday an empty carriage fell to the bottom of this same shaft, through some imperfect apparatus, or through carelessness. Superintendent Langstaff told us that he should have chains of this kind made at once and applied to the shafts of the Diamond mine. In about an hour after the accident, all the unfortunate men, dead and alive, had been brought to the surface. The record of the killed and wounded comprises: Patrick Barrett, driving boss; John Davis, James Matthews, Patrick McAndrew, Edward Haggerty, Evan Thomas, William Edwards, Henry Lewis, William Thomas, Philip Monahan, Thomas Kelly, miners; John G. Jones, Hosea Davis, John McDonough, laborers; John Jones, track layer; Owen Haggerty, footman; Henry Simon, door boy; of whom all but three are dead, viz, Hosea Davis, John G. Jones, and William Thomas. It is possible that these will recover.

MARKET REVIEW.

FRIDAY EVENING, April 10, 1868.

Gold and Silver Stocks—To-day being Good Friday, no business was done at the mining board. Stocks during the past week have been moderately active, with but little change in prices. Nevada stocks are firmer; $150 is now offered for Manhattan, and Twin River is held at $75. At yesterday's board the following sales are reported to have transpired: 100 Consolidated Gregory, b.3, $3 20; 100 Gunnell, s.3, 90cc.; 500 Montana, 65c.; 500 Montana, b.30, 68c.; 200 Smith & Parmelee, s.3, $2 23; 2,000 Hamilton G. & S. B., b.3, 83c.; 100 Quartz Hill, $1; 100 Quartz Hill, s.3, $1. Prices were quoted as follows:

	Bid.	Asked.		Bid.	Asked.
Alameda Silver	85	1 00	Keystone Silver	— —	— —
American Flag	— 60	65	La Crosse Gold	— 52	55
Atlantic and Pacific	— —	1 50	Liberty Gold	— —	4
Bates & Baxter Gold	— —	— 50	Manhattan Silver	150 00	170 00
Benton Gold	— 20	— 45	Midas Silver	— 45	70
Black Hawk G	4 00	6 00	Montana Gold	— 60	— 65
Bobtail Gold	1 20	— —	New York	— 63	68
Bullion Consolidated	— —	— 75	New York & Eld'o	— —	1 75
Columbian G. & S.	— —	— —	Nye Gold	— 2	3
Combination Silver	— —	— —	Oxy'ee Mining	17 00	— —
Consolidated Gregory	3 15	3 20	Ophir Gold	— —	— —
Corydon Gold	— 25	— 35	People's G. & S. of Cal	— 5	20
Edgehill Mining	:30	2 40	Quartz Hill	1 00	1 05
Gold Hill	— —	— 95	Reynolds Gold	— —	— 4
Gunnell Gold	— 85	1 10	Rocky Mountain Gold	— 18	— 20
Gunnell Union	— —	45	Smith & Parmelee Gold	2 25	2 35
H'n G & S. bs	— —	83	Sensenderfer	— —	7 00
Harmon G. & S. bs	— —	3 00	Symonds Fork Gold	— —	1 00
Holman	— 4	12	Texas Gold	— 5	— 12
Hope Gold	— 10	25	Twin Riv Sil	— —	75 00
Kipp & Buell Gold	— 10	25	Vanderburg G	— —	— 70

Copper Stocks.—The market yesterday was thus quoted:

Caledonia C	— —	10 00	Knowlton	— —	2 00
Canada	— —	— 50	Minnesota	— —	3 50
Davidson	35	40	Ogima	3 00	5 00
Hilton	— —	1 00			

Petroleum Stocks.—Sales of Pit Hole Creek were made yesterday at 75c. Quotations range.

	Bid.	Ask'd.		Bid.	Ask'd.
Bennehoff Run	— —	1 75	N. Y. and Alleghany	1 50	2 50
Brevoort	....	35	Pit Hole Creek	.. .	95
Buchanan Farm	39	41	Rathbone Oil Tract Co	....	50
Central	50	60	Rynd Farm	7	10
Clinton Oil	75	1 10	United Pet. Farms	....	12
Manhattan	....	5	United States	1 55	1 70
National	1 00	3 00	Union	2 00	....

Miscellaneous Stocks.—The following are the only shares upon which quotations were made to-day: Atlantic Mail, 28@32; Pacific Mail, 89@89¼; New York Ceotral, 121@121⅛, Erie, 71¼@71⅝; Reading, 89¾@90; Rock Island, 94⅜@95; Northwestern Pref., 75@75¼.

Government Stocks.—In Governments we hear of no transactions. New Sixty-fives are quoted nominally at 107⅛@107¾; Sixty-sevens, 107¼@108, and Seven-thirties 106¼@106⅜.

Foreign Exchange is very quiet at the following quotations:

London, (prime bankers') 60 days'	109¾@109⅞
London, (prime bankers') sight	110⅛@110¾
London, prime commercial	— —
Paris, (bankers') long	5.15 @ 5.12½
Paris, (bankers') short	5.12½@5.11¼
Antwerp	5.17½@5.16¼
Swiss	5.17½@5.16¼
Hamburg (baukers')	36 @36⅛
Amsterdam (bankers')	41 @41⅛
Frankfort (bankers')	40⅞@41
Bremon (bankers')	79¾@79¼
Berlin (bankers')	71¾@72

Gold is nominally 138⅜@138⅝.

American Silver sells at 6@7c. below the price of gold. Mexican dollars are dull at 103@103¼ in gold.

The money market is working a little easier, from a gradual increase of loanable funds, and a somewhrt diminished demand from speculative borrowers. Call loans are obtained upon good securities at 7 per cent in currency, which is the prevailing rate. Strictly first class business paper is placed at 7@9 per cent. per annum discount.

The following will show the exports of specie from the port of New York for the week ending April 4th, 1868:

March 30, Brig Raven, Ponce, American silver	$ 7,000
" 31, Steamer Allemania, Hamburg, Silver bars	100,000
American gold	25,000
Mexican Silver	46,000
April 1, Bark Teresa, Maricaibo, American gold	2 000
" 1, Schooner Breeze, Mayaguez, American silver	6,509
" 1, Steamer Java, Liverpool, British gold	1 390
" 2, Steamer Morro Castle, Havana, Spanish gold	432,584
American silver	4,800
" 4, Steamer Denmark, Liverpool, Gold bars	66,400
" 4, Steamer Europe, Havre, Gold bars	509,840
Silver bars	39,500
Mexican bars	21,000
Total for the week	$ 1,281,052
Previously reported	14,724,399
Total since January 1, 1868	$16,005,451
Same time in 1867	7,014,259

Tin.—Since the circular, 4 to 5000 slabs Straits tin have been sold at an advance of ½ to 1c. It is quoted to-day, 24e. The advices from London quote Straits 04.

Copper—is quiet. Sales of the last week, 4 to 500,000 lbs. Lake Superior, part for export. Quotations unchanged.

Pig Iron—Both Scotch and American pig iron quiet and nominal.

Seeds—are quiet. Small sales of Clover at 9¼@10¼.

Steel—Prices of English are easy for large lots. Trade is dull, and large purchasers obtain material concessions. American is steady at our figures.

Zinc.—The stocks of Mossolmann and Lehigh, especially the latter, are very light, and Lehigh is firm at 11¾c., currency, which is an improvement. Oxide of Zinc is not subject to much fluctuation.

X Extra, in 5 ton lots, is	7½c. currency.
XX " " "	8½c. "
XXX " " "	8¾c. "

The French Zincwhite, is 9c, gold.

Antimony—Firm at 16 to 17c.

Bismuth—At $5 50 to $6 per lb.

Quicksilver—85c. to 90c. per lb.

Nickel—$1 30 to $2, gold.

Petroleum—is quiet. Crude, in bulk, at 10¼c. and in bbls., 10c. Refined in bond, 20c. for standard white.

Receipts for the week ending April 6	pkgs.	15,815
Exports for the week	galls.	774,639
Do from Jan. 1st	do.	10,721,990
Do. same time last year	do.	7,111,768

The following is the quantity exported from other ports, Jan. 1 to April 4:

		1868.	1867.
From Boston	galls.	584,589	511,951
Philadelphia	do.	5,628,123	4,032,619
Baltimore	do.	290,889	416,578
Portland	do.	6,800	416,578
New Bedford	.....	.....	.....
Cleveland	.....	.....	.....
Total		6 510,381	4,961,148
Total export from the U. States		17,346,979	11,697,266
Same time 1866		.....	12,698,483
Same time 1865		.....	2,828,442

THE IRON TRADE.

But little if any business has been done during the past week in Scotch pig; prices, however, have been quite firm. American has also been quiet, at prices favoring buyers. We notice sales of 1000 tons on terms not made public. The business in other kinds has been moderate. Old rails are wanted at 45@46c. We note sales of 500 tons on private terms; also, 800 tons scrap, at 47@48c.

BOSTON, April 8, 1868.

The market for pig iron continues quiet, and the sales have been confined to small lots at previous prices. We quote Garlsherrie and other brands. No. 1, at 42@45c., per ton, as to quality. In bar iron there is no change. The feeling is firmer with rather an increased demand from the trade. In Russia sheet iron we learn of no transactions. The market is now firm at 11¾@12c.

Weekly Statement of New York Imports.

The following table shows the quantity and value of iron and steel imports at the New York Custom House, for the week ending and including April 3, 1868:

	QUANTITY.	VALUE.
Chains and Anchors	90	$4,854
Iron, hoop, tons	54	2,539
Iron, pig, tons	220	3,284
Iron, Railroad bars	10,887	4,760
Iron, sheet, tons	37	3,259
Iron, tubes	162	1,838
Iron, other, tons	1,388	33,297
Steel	2,548	48,314
Total value		$155,774

Boston Imports of Pig Iron from January 1 to April 4, 1868.

	1868.	1867.
From Great Britain, tons	1,573	10,827
Coastwise Ports	3,264	1,914

Lehigh Valley Iron Trade.

The following table shows the amount of Pig Iron transported over the Lehigh Valley Railroad for the week ending April 4, 1868, and for the season to that date.

From	Tons.	Total
Carbon Iron Co	60	3,075
Lehigh Valley Iron Co	150	3,020
Thomas Iron Co	660	8,115
Lehigh Crane Iron Co	800	5,550
Allentown Iron Co	640	2,525
Robert Iron Co	120	2,900
Glenden Iron Co	795	6,680
Other shippers	290	2 802
Total		34,667

The following is a list of the Anthracite Blast Furnaces of the Lehigh group:

Carbon Iron Works, Parryville, 2 furnaces.

Lehigh Valley Iron Works, Coplay Station, 2 furnaces. A third furnace is proposed.

Thotoas Iron Works, Hockendauqua, 4 furnaces. Preparations have been made for the erection of two more furnaces, which may not, however, be proceeded with at present.

Lock Ridge Furnace, Alburtis Station, E. Penn'a Railroad. A new furnace, only in blast a few weeks. Belongs to Thomas Iron Co.

Lehigh Crane Iron Works, Catasauqua, 5 furnaces in blast, and 1 being built. The latter will probably go into blast this summer or early in the fall.

Allentown Iron Works, Allentown, 4 furnaces.

Roberts Iron Works, Allentown, 2 furnaces.

A new furnace is being erected at Allentown, near the E. Penn'a Railroad junction.

Bethlehem Iron Works, Bethlehem, 2 furnaces.

Northampton Iron Works, Bethlehem. A new furnace, approaching completion, will probably go into blast early in the summer.

Sancon Iron Works, Hellertown, N. Penn'a Railroad. A new furnace; went into blast about ten days ago.

Glendon Iron Works, ocar Easton, 4 furnaces and 1 building, which will probably be ready in summer or fall.

Durham furnaces, Reiglesville, Bucks Co., 2 furnaces.

Cooper Furnaces, Phillipsburg, N. J., 3 furnaces.

There is also a new furnace being built near Edge Hill Station, on the N. Penna. Railroad, which, however, cannot be said to belong to this group.—[Bul. Am. I. & S. Ass'o, April 1.

Comparative Statement of Iron and Steel Imports.

The following table shows the comparative value of the imports of Iron and Steel for the first quarter of this year, and the two preceding:

	1866.	1867.	1868.
Iron, bar	406,045	595,164	445,265
Iron, pig	193,277	196,690	84,294
Iron, Railroad bars	238,422	332,181	324,547
Iron, sheet	86,015	184,637	32,899
Steel	629,658	1,022,907	512,692
Total	$1,553,448	$2,331 579	$1,399,697

Market Prices.

NEW YORK, April 10, 1868.

DUTY.—Bars, 1 to 1½c. per lb.; railroad, 60c. per 100 lbs.; boiler and plate, 1½c. per lb.; sheet, hand, hoop and scroll, 1¼ to 1¾c. per lb.; pig, $9 per ton; polished sheet, 3c. per lb. Payable in gold.

Anthracite, No. 1, best	$39 00@40 00		Swed'h I'n, ord'y sizes	150 00	
" " 2x, fdry	37 00	38 00	Swedish Iron.		
" Grey Forge	32 00	35 00	1⅛x⅜ to ⅝ and ⅞ to 2 in sq	155 00	
Scotch I'n, from yard	42 00	43 00	1⅛x⅜ to ⅜x⅞ "	160 00	
Charcoal, coal blast	50 00	60 00	6 to 12x⅜ to 5-8	165 50	
Old Wrought sc'p, in yd.	47 50	— —	Common Iron		
" " fm. vsl.	46 00	— —	⅜ to 2 in round and sq	....	
English rails, gold	52 00	53 00	Refined Iron.		
American " at works	78 00	80 00	⅜ to 2 in. r'd and sq	95 00	
American Bar Iron.			1 to 6 in. wide x ⅜ to 1 th	90 00	
Common, cash per ton	86 00	85 00	3¼ and 3½, round and sq	105 00	
Refined, " "	90 00	95 00	Rods—5-8 and 11-16, round & sq., per ton	100 00	
Old Railroad Iron	46 00@	....	½ and 9-16 round & square	105 50	
RETAIL PRICES.			7-16, round and square	115 00	
Hoops, ⅝ per ton	$190 00		⅜ " "	120 00	
" ¾ "	160 00		5-16, " "	125 00	
" ⅞ "	150 00		¼, " "	130 00	
" 1 "	140 00		3-16, " "	160 00	
" 1⅛ "	137 50		Horse Shoe Iron	125 00	
" 1¼ to 2 per ton	137 50		Band—1 to 6 in. x 3-16 to No. 12	130 00	
Scroll Iron—⅝x14 per ton	180 00		Ovals and half Rounds.		
" 12 "	170 00		¾ to 1¾	120 00	
" 10 "	160 00		⅝ & 11-16	125 00	
" 3-16 "	150 00		½ & 9-16	130 00	
" ¼ "	140 00		Nail Rods, per lb.	9@10	
" ⅝x14 "	160 00		Norway Shapes	8¾c	
" 12 "	160 00		Spring Steel	—@ 9¼	
" 10 "	150 00		Tire " ⅞ to 1¼x1¼ & 5-16	10¼c	
" 3-16 "	140 00		Toe Cork Steel	10¼c	
" ¼ "	135 00		Sleigh Shoe Steel	10¼c	
" ⅝x14 "	150 00		Plow Steel—6 to 14x¼ to ⅜	10c	
" 12 "	150 00				
" 10 "	140 00				
" 3-16 "	135 00				
" ¼ "	132 50				

STEEL.

English, cast (2d and 1st quality) per lb	18 @23
English Spring (2d and 1st quality)	10 @12¼
English Blister (2d and 1st quality)	11½ 20
English Machinery	13½ 16
English German (2d and 1st quality)	14 16
American Blister, "Black Diamond,"	11½ 17
American, Cast, Tool " "	21 22
American, Spring " "	10 13
American, Machinery " "	— 14
American German " "	10 13

PHILADELPHIA, April 8, 1868.

Prices of pig iron firm. Bars more active, with an advance of $5 to $7 per ton in price.

Anthracite Pig, No. 1	$38 50@$39 50
" " No. 2	34 50 35 50
Gray Forge	33 00 34 00
Charcoal Wheel	48 00 50 00
" Blooms	90 00 95 00
Scotch Pig (by the cargo)	41 00 43 00
Railroad Bars (American)	78 00 80 00
Refined Bar	85 00 90 00
Common Bar	75 00 80 00
Band Iron, 1¼ to 6	110 00 120 00
" 12 to 3-16	....
Hoop Iron, 1 and upwards	135 00 ....
" " ⅞	140 00 ....
" " ¾	150 00 ....
" " ⅝	175 00 ....
" " ½	200 00 ....
Nails and Spikes	5 25 ....
" 4d	5 75 ....
" 3d	6 75 ....
" 3d, fine	8 25 ....
Boiler Rivets	7¼ pr. lb
Railroad Spikes	5@6c. "

PITTSBURGH, April 4, 1868.

Pig Iron and Blooms.—A fair business is doing in raw irons. Receipts of desirable standard forge descriptions continue light, scarcely equal to the demand, and with sales of favorite brands, in some instances in advance of production. Prices for such are well sustained.

Medium and common grades are in better supply, and being offered at relatively lower rates, are attracting more attention from consumers.

For fine charcoal irons, both forge and foundry, there is more inquiry, especially for forge descriptions, yet the business doing is light.

Having been unable to obtain reports from several of the commission merchants, our report of sales is necessarily less complete than we would desire.

Our object in reporting the details of the sales, is that those who take an interest in our iron market may have the benefit of such details. Whilst we have always endeavored to give the fullest detail possible, we have carefully guarded against any exposure of business, in which the most sensitive could object, yet it seems that from some cause, whether an imagined grievance or an unwillingness that the true state of the market should be known, a few parties engaged in the business of selling raw irons decline reporting their sales, and seem to be generally dissatisfied at our efforts to give our readers a complete report of the business doing.

We quote the following sales:

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORE.

400 tons Good Grey Medium Forge deliverable at furnace	$33 75—cash.
400 tons deliverable at furnace	35 65—4 mos.
200 tons deliverable at Rochester	35 65—4 mos.
600 tons White and Mottled to arrive	35 00—6 mos.
500 tons Open Grey to arrive	38 00—6 mos
100 tons Foundry iron yard	38 00—4 mos
30 tons Foundry iron yard	39 00—
200 tons Mahoning	P. T.
50 tons Neutral	34 00—6 mos.

ANTHRACITE.

30 tons No. 1 Foundry	$42 50—cash.
30 tons Foundry	40 00—4 mos
30 tons Foundry	40 00—4 mos.
20 tons No. 2 Foundry	41 00—4 mos.
20 tons No. 3 Forge	41 00—4 mos.
30 tons Foundry	40 00—4 mos.
30 tons Foundry	40 00—4 mos.
60 ton5 Grey Forge	P. T.
30 tons No. 1 Grey Forge	42 50—cash.

SCRAP IRON.

100 tons Scrap	$50 00—cash.

CHARCOAL.

100 tons No. 1 Extra Forge	51 00—60 dys.
200 tons Extr Forge	51 00—cash
100 tons Extra Forge	51 00—4 mos.
50 tons Extra Forge	52 00—6 mos.
150 tons Hanging Rock, No. 1 Foundry	45 00—time.
50 tons Hanging Rock, No. 2 Foundry	44 00—time.
40 tons Hanging Rock, No. 1 Foundry	47 00—time.
25 tons Hanging Rock, Foundry	46 00—4 mos
30 tons Cold blast	66 00—4 mos
100 tons No. 1 Foundry, medium	42 00—4 mos
40 tons Common	43 00—cash.
100 tons Juniata Forge	46 00—cash.

ALLEGHENY COKE.

100 tons Forge	46 00— mos.

IRONTON, Ohio, April 2, 1868.

The metal market is quiet, but holders anticipate brisk demand this spring. Prices appear a little firmer at our quotations than they did a week ago. We hear of sales at the minimum rates quoted. The receipts for the week were 350 tons; shipments, 150. We quote this week:

Mill, hot blast	$38 00@$40 00
Foundry, hot blast	40 00@ 42 00
Cold Blast	55 00@ 60 00

Manufactured Iron is looking up, and it is possible that the demand will keep our rolls in motion. At present the Ironton Rolling Mill has ceased operations, but it will probably resume in a few days. Rates are firm at 3¾@4¼ cents. Shipments for the month, 500 tons.

Nails are active at $5 for 10d. Orders are coming rapidly, and the production is taken as fast as made.

Stoves are in good request, and the foundry is working full force.

BOSTON, April 1, 1868

Swedish—common ass'd	$150@155	Scotch Pig, No. 1	.....
English—com	85 90	Gartsherrie	$43@45
dc refined	95 100	No. 1, other brands	43 45
do sheet, per lb	6½@10c.	American, No. 1	44 45
Russia, sheet	15@16c		

LONDON, March 14, 1868.

Bars, Welsh in Lond.	£6 5 0@..	Do. railway, Wales	£5 5 0@£5 10 0
Ditto to arrive	6 5 0	Do. Swd. in London	10 0 0 10 5 0
Nail rods	6 15 0 7	To arrive	10 0 0 10 5 0
" Stafford in Lond.	7 7 6 8 10 0	Pig, No. 1, in Clyde	2 13 0 2 18 0
Bars	7 7 6 8 10 0	Do. f.o.b, Tyne, Tees	2 9 6 .. ....
Hoops	8 7 6 9 12 6	Do. Nos 3, 4, f.o.b. dn	2 6 6 2 7 0
Sheets, single	9 2 6 10 0 0	Railway chairs	5 10 0 5 15 0
Pig, No. 1, in Wales	3 15 0 4 5 0	" spikes	11 00 0 12 0 0
Refined metal, ditto	4 0 0 5 0 0	Indian Charcoal Pigs	
Bars, common, ditto	5 7 6 5 10 0	in London, pr. ton	7 0 0 7 10 0
Do. merch. Tyne or Tees	6 10 0		

STEEL.

Swed., kegs (rolled)	.14 5 0	Swed., in faggots	....16 0
" (hammered	.15 5 0 15 10 0	English, spring	..17 0 0 23 . 0

SAN FRANCISCO, CAL., March 18, 1868.

There is a fair inquiry for Pig Iron, with sales in lots of about 500 tons Scotch, chiefly from second hands, in lots, at $40 cash; $41, 30 days, and $42 upon 60 and 90 days. Holders are now asking $42 50.

Scotch and English Pig, tons	42 00	@— —
American White Pig	42 50	45 00
Refined Bar, had assortment, per lb	— —	— 2
Refined Bar, good assortment, per lb	— —	— 3
Boiler, 1 to 4	— —	— 3½
Plate No. 5 to 0	— —	— 3¼
Sheet, 10 to 13	— —	— 3¼
Sheet, 14 to 20	— —	— 4
Sheet, 24 to 27	— —	— 4

Iron.—In Staffordshire there is a slight improvement in the trade, and during the past week plates for shipbuilding purposes have been inquired for, while several orders have been received from the United States, and the demand for sheets and plates for India has been brisker than for some time past. This improvement is not, however, sufficiently marked to relieve the smaller houses from the strain which many have long felt, and an addition to the failures which have already occurred is not improbable. In Welsh the position of the trade remains about the same as last reported. From the United States inquiries have slackened a little. Confidence is entertained that the opening of the Russian season will bring a considerable accession of contracts, and there are already offers in the market for freights to that quarter. Last month the exports reached 8,108 tons, of which New York alone took 6,152 tons. The home demand continues quiet, with an occasional indication of increased vitality. In Swedish iron there is a little more movement, incident upon the opening of the navigation. In Scotch Pig Iron there has been some little speculative inquiry during the week, and a good business has been done in warrants, the price at one time going up to 53s. 3d. cash, but has recently declined again to 52s. 9d. cash.—[Mining Journal.

THE COAL TRADE.

NEW YORK, April 10, 1868.

WHOLESALE.—The trade during the early part of the week, met with but little variety—the general unsettled state of the governing features of the trade, such as the uncertainty of the Lehigh tolls, and the action of the leaders then in Council at Philadelphia, together with a light demand, were not calculated to produce other than a quiet market. A little animation has, however, prevailed during the past two days. The Lehigh Valley Railroad tolls have been promulgated, as have also those of the Central Railroad of New Jersey, the Morris and Essex Railroad, and the Morris Canal, all of which will be found correctly reported below. As yet we have not been able to catch even a rumor as to what the Lehigh Canal tolls will be; but that there will be the same average decline there is no doubt, or else they throw all the traffic to the Railroad Company.

Now, if some wise "Manch-Chunker" will post us as to what advantage has been gained by holding off these rates of transportation, causing many of the Trade to work entirely in the dark or refuse contracts altogether, we would be pleased to receive the information. On the contrary, we claim that Schuylkill county has been greatly benefitted thereby, and this is the only feature that is at all commendable.

Freights remain unchanged.

Lehigh prices for April will be found quoted this week.

The following are official:

OFFICE OF THE MORRIS CANAL AND BANKING COMPANY,
JERSEY CITY, April 7, 1868.

A drawback will be allowed from the established tolls on Anthracite coal entering the Morris Canal, at Port Delaware, on and after Aptil 1st inst., until further notice, to make the nett tolls per ton, including Delaware river ferriage, as follows:

To Pattterson	0,86
" Bloomfield	0,90
" Newark	0,80
" Comunipaw	0,70
" Jersey City	0,60
" New York and vicinity	0,40
Delivered along the Passaic and Hackensack rivers	0,70

Also an export drawback on re-shipment to points north of New York City..... 0.26
East of New York City..... 0.26

W. H. TAILCUTT, President.

OFFICE OF THE TREASURER CENTRAL RAILROAD OF NEW JERSEY, NEW YORK, April 8, 1868.

Gentlemen—The charges for conveying coal shipped on and after Monday April 13th inst., will be, until further notice, as follows:

From Phillipsburgh to Elizabethport..... 1.06
" " " Port Johnston..... 1,12
" " " Jersey City..... 1,33

Yours, truly,

SAMUEL KNOX, Treasurer.

The Morris and Essex Railroad issue no official bulletin, but it is understood that they will be the same as the Centrel Railroad to Port Johnston, which is $1 12 to Hoboken.

FOREIGN AND PROVINCIAL coals are quiet and we hear of very few sales, and no contracts are being made for Gas purposes. In American Gas coals there is more activity.

RETAIL.—The trade has been very much broken up during the past week by the low and unprofitable prices for which the Delaware and Hudson Canal Co are offering their coals.

The amount of coal exported from the port of New York for the week ending April 6, was:

Exports.....tons,..... 1,044
" from January 1st..... " 12,785
" same time last year..... " 13,100

BOSTON, April 8, 1868.

In English Cannel nothing has been done. The price is nominally $20 per ton, at which figure it is offered to arrive. No Sidney here and nothing doing. Pictou has been selling at $7 50@7 75 per ton, by the cargo: Cumberland has been selling at $8 50 per ton, by the cargo, and the price delivered at Georgetown is fixed at $4 35, and at Baltimore at $4 75 per ton; Pennsylvania and Westmoreland Gas, delivered in Philadelphia, is steady at $7 20 per ton. In Anthracite, considerable reduction has taken place, the retail price having declined to $7 50 per ton. Two cargoes of Scranton Furnace coal sold at $6 per ton. The arrivals for some weeks have been large and there is now an abundant supply, with the prospect of low prices throughout the season.

PHILADELPHIA, April 8, 1868.

The market continues dull. We quote Locust Mountain lump and steamboat at $3 50; do., broken, $3 50@3 65; do., Egg, $3 90@4 10; Stove, $4@4 25; Red Ash, Egg and Stove, $4 10@4 50; Lehigh lump, steamboat and broken, $5; do., prepared, $6; do., Chestnut, $4 25.

The following table exhibits the quantity of Coal passed over the following routes of transportation for the week ending April 4, 1868:

	1867.		1868.		INC. OR DEC.	
	WEEK.	YEAR.	WEEK.	YEAR.	WEEK.	YEAR.
Phil. & Reading R. R.	.....	729,217	64,942	728,499	i	i 124,132
Schuylkill Canal.....	22,518	45,127	28,816	28,816	i 6,298	i 16,311
Lehigh Valley R. R..	34,985	396,030	50,280	115,539	i 15,294	i 241,410
Scranton North.....	7,085	92,001	6,334	96,209	d 751	i 4,208
" South.....	25,621	313,119	16,516	257,430	d 9,105	d 55,689
Penn'a Coal Co. Rail.	.....	.....	.....	.....	.....	.....
Shamokin.....	11,782	99,868	9,090	87,913	d 2,693	d 1,955
Trevorton.....	418	3,866	255	4,873	i 163	i 1,007
Short Mountain.....	.....	18,268	1,826	12,852	.....	i 5,416
Lykens Valley C. Co.	1,397	10,260	1,937	21,808	i 540	i 11,548
Broad Top.....	6,195	50,526	6,059	47,768	d 136	d 2,758
W'mstown Col'y, E..	1,499	15,813	2,998	32,113	i 1,499	i 16,300
Total.....	111,501	1,174,095	59,053	1,433,820	.....	.....
	.....	.....	111,501	1,174,095	.....	.....
Increase.....	.....	.....	d 52,448	259,725	.....	.....

Schuylkill Coal Trade.

BY RAILROAD AND CANAL, FOR WEEK ENDING APRIL 9, 1868.

	RAILROAD	CANAL.
St. Clair.....	27,935	.....
Port Carbon.....	5,011	.....
Pottsville.....	578	.....
Schuylkill Haven.....	14,489	.....
Auburn.....	1,545	.....
Port Clinton.....	5,378	.....
Total for week.....	54,936	32,333
Previously this year.....	728,499	28,816
Total.....	783,345	60,149
Same time last year.....	729,917	68,148
Increase.....	54,318	d 2,001

Cumberland Coal Trade.

By B. & O. RAILROAD.—The shipments over the Baltimore and Ohio Railroad, for the week ending April 4, were as follows:

From Cumberland & Pa. R. R., via Cumberland:

Consolidation Company		2,292 16
Borden	do.	2,175 08
New Hope	do.	102 05
Midland	do.	10 14

From George's Creek via Piedmont.

George's Creek C. & I. Company		644 16
Central	"	3,144 14
Atlantic	"	690 01
Piedmont	"	1,316 12
American		2,167 10
Swanton	"	484 16
Potomac	"	1,611 07
Hampshire	"	1,405 10
Franklin	"	19 00
Total		16,065 09
From Eckhart Railroad.		
C. C. & I Co		938 14
Total		17,004 03

Report of Coal Transported over Lehigh Valley Railroad

For the week ending April 4, and previously this season, compared with same time last year:

Total Wyoming	5,238 15	79,223 01	84,461 16
" B. M. Reg	10,312 05	102,410 11	112,722 16
" Hazleton	22,977 10	280 052 00	303,029 10
" Total U. L. Reg	1,043 04	29,673 03	21,716 07
" Mahanoy	10,708 17	104,881 00	115,539 17
Trand Total	50,280 11	587,189 15	637,470 06
Same time last year	34,895 14	361,014 10	396,030 04
Increase	15,294 17	226,145 05	241,440 02
Decrease	....	....	....

Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

At New York, April 10, 1868

Schuylkill R. A., choice..	$6 00@$....	Lehigh Broken.....	4 87½ ....
" Ordinary.....	5 75	" Egg	48 7½ ....
" W. A., Lump..	5 00	" Stove	5 12½ ....
" Steamboat....	5 00	" Chestnut	4 37½ ...
" Broken	5 00	Wilkesbarre Lump.....	5 00 ....
" Egg.....	5 50	" B'keu & Egg.	5 50 ....
" Stove.....	5 50	" Stove.....	6 00 ....
" Chestnut.....	4 50	" Chestnut....	4 75 ....
Lehigh W.A. Lump Old Co	5 00		

SPECIAL COALS.—DEALERS' QUOTATIONS.

Diam'd Vein R. A., Seb'kill	6 00	Broad Mountain.....	....
Locust Dale W. A., "	5 50	Buck Ridge W. A., Sh'kin.	....
Honey Brook " Lehigh.	5 50	H. Heils, E. P'klin, Lorb..	5 50 ....
Harleigh " "	5 50	New England Red Ash....	5 25 ....
Spring M'n " "	5 50	Wyoming	5 50 ....
Sugar Creek " "	5 50	Locust Mount'n (Reppller)	5 50 ....
Ashburton " "	5 50	Duncan Red Ash "	6 00 ....
Fulton White Asb.....	....		
Stout.....	....		
Old Co.'s " "	5 50		
Mt Pleasant.....	5 00		

Dealers in these Coals may be found in our advertising columns.

At Philadelphia, April 10, 1868.

Lehigh Lump and St'mb't.	5 00@....	Schuylkill Chestnut.....	2 50@2 60
" Broken and Egg...	5 00	Locust Mount Lump and Steamboat	3 50 ....
" Stove.....	5 50	" Broken.....	3 50 3 65
" Chestnut..... ..	4 25 ..	" Egg....	3 90 4 10
Schuylkill R. A. Prepared.	4 25 4 50	" Stove	4 00 4 25
" Chestnut.....	2 45 2 50	Lorberry Coal.....	4 50 ....
" W. A. Lump and Steamboat.....	3 00 3 25	Shamokin.....	....
" Broken.....	4 00	Franklin, (Lykens Valley)	4 75 ....
" Egg and Stove..	3 35 3 50	Broad Top.....	4 60 ....
	3 90 4 00		

Scranton Coal at Elizabethport, April 10, 1868.

(Corrected weekly by D. L. & W. R. R. Co.)

Lump.....	$4 10@....	Egg.....	4 50 ....
Steamer.....	4 10	Stove.....	4 25 ....
Grate	4 25	Chestnut.....	4 00 ....

Prices for Pittston Coal at Newburgh, April 10, 1868.

(Corrected weekly by Penna. Coal Co.)

Lump, per ton of 2240 lbs.	$4 10@....	Egg " " "	4 20 ....
Steamer, " " "	4 10	Stove " " "	4 55 ....
Grate " " "	4 20	Chestnut " " "	4 00 ....

70 cents additional to New York.

Lackawanna at Rondout, April 10, 1868.

Lump	$4 10@....	Egg.....	$4 10@....
Steamer	4 10@....	Stove.....	4 30 ....
Grate.....	4 10@....	Chestnut.....	3 90 ....

70 cents additional to New York.

Lehigh Coal at Elizabethport, April 10, 1868.

Lump.....	5 00@....	Chestnut.....	4 25 ....
Steamboat and Broken....	4 75	Stove.....	5 00 ....
Egg	4 75		

Wilkesbarre Coal at Hoboken, April 10, 1868.

(Corrected by Wilkesbarre Coal & Iron Co.)

Lump.....	$4 25	Egg.....	4 50 ....
Steamer.....	4 35	Stove.....	4 80 ....
Broken	4 35	Chestnut.....	4 15 ....

Ten cents additional on shipments from Jersey City.

At Baltimore, April 10, 1868.

Wilkesbarre & Pittston W. A. by car.....	$5 25@5 50	From wharf or yard, 50c. to 75c per ton additional	
Lykens Valley R. A. by car.....	@ 5 80	Ret ll, del'd, per 2,240 lbs	7 00@7 75
Sunbury & Shamokin R. or W A. by car..	5 25 5 75	George's C'k and Cumberland f. o. h. at Locust P't for shipping.....	@4 75

At Havre de Grace, Md.

Wilkesharre or Pittston, W. A., on board.....	$....@5 50	Sunbury or Shamokin, R. or W. A., on board.....	@5 50
Trevorton R. A., on board.	5 50	Lykens V'y, R. A. on b'd.	@5 75

At Georgetown, D. C. and Alexandria, Va.

Georgo's Creek and Cumberland f. o. h..... $....@ 4 35

Prices of Gas Coals.

April 3, 1868.

PROVINCIAL.	Coarse. Gold.	Slack. Gold.	AMERICAN	Coarse. Currency.	Slack. Currency.
Block House	$2 00	$ 75	Westmoreland Co.....	$8 25	$8 00
Gowrie	1 75	75	Despard.....	8 25	8 00
Lingan.....	1 75	75	Cameron.....	8 25	8 00
Sydney.....	2 13¾	71¼	Penn.....	8 50	8 00
Pictou.....	2 13¾	1 18¾	Newburgh Orrel Gas.....	8 50	8 00
Little Glace Bay.....	1 75	1 00	Delivered in New York.		
International Co.'s.....	1 75	....			

Prices of Foreign Coals.

Duty $1.25 per ton.

Corrected weekly by PARMELEE BROS., 32 Pine Street, N. Y.

Liverpool Gas Caking.....	$10 00	Liverpool House Cannel..	—@20 00
" " Cannel.....	13 00	" " Orrel..	16 00@18 00

Per ton 2240 lbs., Ex. ship.

PRICES FROM YARD.

Liverpool Orrel, screened.....	$18@20	Liverpool Cannel, scr'd..	22 00@— —

per ton 2000 lbs. delivered.

Coal Freights.

(Corrected Weekly.)

From Elizabethport and Port Johnston.

Albany.....	$1 00@— —	New London.....	1 25 — —
Boston.....	2 00 — —	Newport	1 50 — —
Bridgeport.....	1 15 — —	New York.....	60 — —
Fall River.....	1 50 — —	Norwalk.....	1 25 — —
Hartford.....	1 50 — —	Norwich.....	1 30 — —
Hudson.....	1 00 — —	Pawtucket and towing....	1 60 — —
Lynn	— — — —	Portland.....	2 00 — —
Middletown	1 50 — —	Portsmouth	2 00 — —
New Bedford.....	1 50 — —	Providence.....	1 50 — —
Newburyport.....	2 25 — —	Salem.....	1 85 — —
New Haven.....	1 25 — —	Tannton.....	2 00 — —

Rates of Freight from Newburgh

On "Pittston" Coal, by boats and bargos of the Pennsylvania Coal Company, per ton of 2,240 lbs.

RIVER.		EASTERN.	
Troy and West Troy.....	$ 55	Stamford.....	$1 25
Albany and Greenbush.....	50	Norwalk.....	1 25
Coeymans.....	45	Bridgeport.....	1 25
Coxsackie and Stuyvesaut.....	40	New Haven.....	1 25
Hudson & Catskill.....	35	New London.....	1 40
Sangerties and Barrytown.....	35	Norwich.....	1 50
Rhinebeck and Rondout.....	30	Mystic.....	1 45
Po'keepsie and New Paltz Land.	25	Stonington.....	1 45
Fishkill Landing.....	20	Sag Harbor.....	1 45
Cold Spring and West Point.....	30	Bristol.....	1 55
Peekskill	40	Newport.....	1 55
Haverstraw.....	45	Fall River.....	1 55
Sing Sing and Nyack.....	50	Providence.....	1 60
Tarrytown and Piermont.....	50	Dighton.....	1 60
Yonkers.....	55	Warren.....	1 60
New York.....	70	Pawtucket.....	1 75
		New Bedford.....	2 00
		Fall River.....	2 00
		Salem.....	2 00
		Newburyport.....	2 00
		Portsmouth.....	2 05
		Portland.....	2 00

The Coal must be discharged with all reasonable dispatch, at the expense of the consignee, who shall also pay wharfage on the boat. Boatmen will tend guy while unloading.

Rates of Transportation to Tide Water.

[BY RAILROAD.]

To Port Richmond.—(Philadelphia.)

Philadelphia and Reading R. R. from Schuylkill Haven..... $2 00

The following are the drawbacks allowed on all coal shipped East of New Brunswick and South of Cape Henry, until further notice:

	Drawback.	Freight.	Nett.
Lump.....	$1 25	$2 00	$ 75
Steamboat.....	1 15	2 00	85
Broken.....	1 00	2 00	1 00
Egg.....	65	2 00	1 35
Stove.....	50	2 00	1 50
Chestnut.....	75	2 00	1 25

From Port Carbon, 8 cents per ton more.

To Elizabethport.

L. V. Railroad from Mauch Chunk to Easton.....	$ 69
C. R. R., N. J., Easton to Elizabethport.....	1 06
	1 75
Shipping Expenses at Elizabethport.....	25
Total	2 00

To Port Johnson.

L. V. R.R.....	$ 69
C. R. R of N. J.....	1 12
Shipping Expenses.....	25
Total	2 06

To Hoboken.

L. V. R.R.....	69
Morris & Essex R.R.....	1 12
Shipping Expenses.....	25
Total	2 06

[BY CANAL.]

To Port Richmond.

From Schuylkill Haven to Port Richmond.....	$1 00
Freights and tolls by Raritan Canal.....	1 90
	2 90
Drawback	30
Total	2 60

To New York.

From Manch Chunk to New Brunswick, by Lehigh, Del. Div. and Del. & Raritan Canal.....	$ ..
Freights through.....	1 25
Towage.....	22
	..

To New York via Morris Canal.

Lehigh Canal.....	$ ..
Morris "	..
Towage.....	10
Freight	1 45
Total	..

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

Lehigh tolls (net).....	$ ..
Morris "	..
Freight.....	1 40
Re shipping.....	30
Total	..

Provincial Freights.

	Currency.
Sydney to N. Y.....	....
Lingan.....	....
Cow Bay.....	....
Big Glace Bay.....	....
Little "	....
	3 00

Foreign Freights.

New Castle and Ports on Tyne.....	£14@16 keel.
Liverpool.....	12s. 6d.@15s. ton.

SAN FRANCISCO COAL TRADE.

[From the San Francisco *Commercial Heral*, March 18.]

Imports from January 1st to March 16th:

Anthracite, tons.....	14,041	Coos Bay, tons.....	1,354
Australian, tons.....	1,207	English, tons.....	4,918
Bellingham Bay, tons.....	4,955	Lenigh.....	182
Cumberland, cks	1,155	Mt. Diablo, tons.....	20,843
Chili, tons.....	700	Nanaimo, tons.....	6,902

Importations include cargoes from Nanaimo, 1,500 tons Cardiff from Liverpool, etc. The sales include 750 tons Authracite, ex Samoset, upon terms reserved. The free receipts from Vancouver Island tend to keep prices both low and nominal. Quotations range:

Australian.....	13 00 — —	Lehigh.....	18 00 — —
" Wallsend.....	14 00 — —	Liverpool.....	14 00 — —
Bellingham Bay.....	11 00 11 50	Pittston, ton.....	— — 16 00
California.....	7 00 9 00	Scranton.....	15 00 — —
Cumberland cks.....	21 00 22 00	Scotch.....	14 00 — —
" bulk.....	18 00 19 00	Vancouver Island..	13 00 — —
Chili.....	12 00 13 00		

METAL CIRCULAR.

NEW YORK, April 6, 1868.

The improvement noticed in my last circular of 6th March did not last long. In the middle of the month the money market underwent a sudden change from great ease to severe stringency, and this brought business to a stand. Money is still dear but the general impression is that the pressure will soon be over.

Gold declined steadily from 141 per cent. on the 6th of March, to 137¾ per cent. on the 3d inst. To-day it is quoted 138⅛ per cent. Exchange on London 9⅛ per cent.

Tin has declined to 23½ cents for Straits without wholesale transactions. 500 slabs Banca were sold at 26½ to 26¾c. It is now bold at 27c. English 23½ sold.

The importations for March amounted to 11,500 slabs straits, 500 slabs Banca and 50 tons English. From the East Indies 25,000 slabs are on the way. The stock is ostimated at 18,000 slabs Straits,

1,100 " Banca and Billiton,

And 30 tons English, equal to 900 "

Total in first hands, Boston and New York, 20,000 slabs

Against 22,000 slabs on the 1st April, 1867.
30,000 " " 1866
8,600 " " 1865
26,900 " " 186

The European markets have further advanced. In London, Straits was quoted on the 21st March, 91s. 6d. At the auction in Amsterdam on the 31st of March, 10,000 slabs out of 51,000 slabs Banca fetched fl. 55, and the remainder was withdrawn.

SPELTER is dull at 6¼ cents gold for Silesian, 200 to 300 tons have been sold at this figure to arrive. The importations in March amounted to 175 tons and the stock is 400 tons against 800 tons on the 1st of April last year.

COPPER has fallen to 23c. for Detroit and Portage Lake, and 22¾ for Baltimore. The business has been unimportant as the bulk of the stock is not offered Of the winter product of Lake Superior, to be expected here towards the end of May, sales have been privately made at different times during the last two months, and probably 1½ million pounds have been disposed of, part at 24c.

The first arrivals will not be as heavy as usually, but if the expectations raised in regard to 3 new mines are realized, the total product of the season of 1868 will be larger than that of any previous year. On the other hand the Baltimore and Eastern smelters are doing very little.

A good many orders for export to France and Germany are in the market, but as they mostly call for Minnesota they cannot be executed; there is scarcely any stock of this brand, and the mine produces very little. It is difficult to understand why a preference is given in Europe to this particular brand, for there can be no difference in the quality of our native copper, although of different mines, smelted as it is in the same establishments. Our manufacturers make no difference between the various brands.

The European markets show a rising tendency. Chili has been sold at £74 but the last quotation by mail was £72 10s.

LEAD is 6¾c. for ordinary foreign. The importations for March amount to 2,400 tons, and the deliveries for consumption to 2,100.

The stock is 4,600, against 2,100 tons on the 1st of April, 1867.
4,600 " " " " 1866.
6 000 " " " " 1865.

RUDOLPH C. WINTERHOFF, 66 Beaver street.

Weekly London Copper Trade Circular.

Messrs. Vivian, Younger & Bond (March 20) write:—The transactions which took place during the first fortnight of the current month absorbed all the parcels of West Coast produce which were obtainable at the market price, and more could not have been had without a further rise in prices. On Monday the mail from Valparaiso was delivered, bringing the intelligence of charters having been effected during the second half of January, comprising 1,800 tons of fine copper, of which 1,500 tons were bars. This caused some second hand holders to be more disposed to sell, and 90 tons of a good brand of Chili bars were sold at £72 10s. Importers, however, have viewed the news by the mail as rather favorable for the immediate future of the metal, and have not pressed anything on the market. The consequence has been a pause in transactions. At Havre, however, as well as in Paris, business has been done at a higher proportionate price than above named, and the market has reassumed a firm aspect. several buyers of spot parcels having yesterday appeared at 185l. per 100 kilos. (the equivalent of £72 in Liverpool), whilst no sellers could be found under 187·50f., equal to £73 usual Liverpool cash terms. A cargo of regulus, to arrive at Swansea, was taken by smelters at 15s. Early in the week 100 tons of Wallaroo were sold at £82, prompt three months, and a few small parcels at £81 cash, which latter is the price asked.

BOSTON STOCK MARKET.

(By Telegraph.)

BOSTON, April 8, 1868.

The following were the prices of mining stocks bid, to-day:

Calumet	25	Quincy	26
Copper Falls.....	22½	Cary Improvement.	7
Franklin.....	14	Isle Royal	—
Hecla.....	40	Water Power;.....	19¾
Hancock.....	47⅛	Bos., Hart & Erie RR.....	14⅛
Minnesota	3	Rockland.....	—

Sales at Boston Stock Exchange, April 9.

100 shs	Water Power.....	20¼	8½
400 "	Bos. Hart. & E.....	15¼	
100 "	Hancock.....	5	SECOND CALL.
700 "	Native.....b30	1	15¼
250 "	"	95c.	15⅜
	5 shs Pewabic.....		7⅞
	130 " H. & Erie.....		
	200 " do b30		
	50 " Cary Improvement....		

SAN FRANCISCO STOCK MARKET.

A telegram from San Francisco, dated April 6, to Messrs. LEES & WALLER, Bankers, 33 Pine street, this city, quotes stocks as follows:

STOCKS.	Bid per Pt.		STOCKS.	Bid per Pt.	
Gould & Curry.....	665	@ 680	Belcher.....	392½	@ ..
Savage (per share)...	171	@ 173	Imperial (per share).	287½	@ 290
Chollar Potosi...	294	@ 295	Alpha.....	104	@ 110
Ophur.....	267	@ ..	Kentuck (per share)..	460	@ 470
Hale & Norcross.....	No sales.		Cal. Steam Nav'n Co..	..	@ ..
Crown Point.....	2,200	@2,250	Cal. State Telegraph Co	..	@ ..
Yellow Jacket.....	1,515	@ ..	Greenbacks.....	..	@ ..

☞ Two new alloys of tin and lead are described by M. Piho. While containing less tin than is used in common pewter, they are said to possess most of the advantages of that useful alloy. They are not acted upon by vinegar, sour wine, or salt water. The first is made by melting 1 part of tin with 2-4 parts of lead. The lead is first melted and skimmed, then the tin is added, and the mixture is stirred continually with a wooden stick until it begins to cool, to prevent the lead from settling to the bottom. This mixture has the density of 9·64, and its melting point is 320 deg. Fahr. It may be rolled cold, and the plates do not crackle when bent. It takes a very good polish, and tarnishes but little on exposure. It will mark paper like lead, and is so soft that it may be scratched with the nail, but it will not foul a saw or file. The second alloy is made by melting together in the same way 1 part of tin with 1·25 parts of lead. This alloy is less elastic and harder than the foregoing. It is rather brittle, less malleable than the former, and fills up a file. Neither of these alloys was acted on by boiling with acetic acid for half an hour, and standing in the acid for twenty-four hours longer, nor had salt water any action upon them; hence, they may be useful for some kinds of utensils.

AMERICAN
Journal of Mining.

WESTERN & COMPANY, PROPRIETORS.

ROSSITER W. RAYMOND, EDITOR.

OFFICE, 37 PARK ROW, NEW YORK.

By publishing contributions, the JOURNAL OF MINING does not necessarily endorse the positions assumed by contributors.

Published Every Saturday Morning.

TERMS.—Subscription, $4 00 per annum, in advance; $2 25 for six months. Single copies Ten Cents. ☞ Specimen copies sent free.

ADVERTISING:

Twenty-five cents per line of thirteen words for each insertion inside, and forty cents outside. Terms invariably cash in advance.

DESIGNING, LITHOGRAPHING, WOOD ENGRAVING, and JOB PRINTING Executed in elegant style, on reasonable terms.

SPECIAL AGENTS AUTHORIZED TO RECEIVE SUBSCRIPTIONS AND ADVERTISEMENTS.
MASSACHUSETTS.—M. A. LATHROP & BRO. 11 Court street, Boston.
MICHIGAN—J. W. CROZIE, Ontonagon.
MONTANA.—WILLIAM Y. LOVELL, Virginia City.
NEVADA.—J. D. EMERSLEY, Austin.
COLORADO—GEO. TRITCH, Denver City.
CALIFORNIA.—W. E. LOOMIS, San Francisco.
PENNSYLVANIA.—T. R CALLENDER, cor. 3rd and Walnut streets, Philadelphia
W. H. DAVIS, Easton, Pa.
ENGLAND.—FREDERICK ALGAR, 11 Clements Lane, Lombard street, London.
MEXICO.—JAMES SULLIVAN, City of Mexico, JUAN CARREDANO, Vera Cruz, JACINTO QUIROS, Acapulco.
SOUTH AMERICA.—COLVILLE DAWSON & Co., 271 Calle de la Union, Lima, Peru.
M. NAVARRO DE VILLALBA, Rio de Janeiro, Brazil, LUCIEN HIJO, Buenos Ayres, Argentine Republic.
CUBA.—THOS. W. WILSON, Havana
Mr. T. P. PEMBERTON is editor of the Mechanical Department and agent for the AMERICAN JOURNAL OF MINING.
DEALERS AGENTS.
THE AMERICAN NEWS COMPANY, 121 Nassau street, N. Y
THE NEW YORK NEWS CO., 10 Spruce street, N. Y.

☞ Correspondents, exchanges and others addressing us should be *extremely careful* to write "JOURNAL OF MINING," instead of "MINING JOURNAL," to ensure safe carriage. Communications intended for publication should be plainly written, and on one side of the paper only.

☞ The American JOURNAL OF MINING has a larger circulation than any other paper of the kind in the United States.

NEW YORK, SATURDAY, APRIL 11

CONTENTS OF THIS NUMBER.

NOTICE TO SUBSCRIBERS.

Subscribers receiving their paper in a *blue* wrapper will accept the same as a notification that their subscriptions have expired, and that the JOURNAL will be discontinued unless we are otherwise authorized.

STEEL vs. IRON RAILS.

The great question of the day in railway engineering, concerns the relative economy of steel and iron for rails. We have often found that the general reader, interested in such a subject, but plunged at once into its technical discussion, is obliged to give up in despair the attempt to gain a comprehensive view of the whole matter and to wait until the experts have finished their arguments pro and con, and the results are summed up in the text-books. Perhaps a simple statement of the present position of affairs may be acceptable to many of our subscribers; and such a statement we propose to give, merely premising that if any one finds, on perusing the present article, that he knows all that, and more too, he may be assured that we are not writing for him.

In regard to safety, it was at one time asserted that steel rails are too brittle; and in some instances, the quality of steel employed being unsuitable, this fear was confirmed by experiment; but it is easy enough to make steel rails that are not open to this objection. In all other respects, it may be assumed as generally acknowledged, that steel rails are superior to iron ones. But it is equally certain that they cost much more; and this difference in cost was, until recent wonderful improvements cheapened the manufacture of steel, conclusive against its use. At present, the question is one of calculation; and, in our opinion, the decision is neither wholly one way, nor wholly the other.

In England, where the discussion is most vigorously (and bitterly) waged, the engineers are mostly on one side, and the manufacturers of iron rails on the other. This fact should not prejudice us against either party; for, while it is obvious that self-interest may have much to do with the arguments in favor of iron, it is historically proved that experts are liable to sudden "swarming" (as CARLYLE calls it) in a particular direction. The *penchant* for steel is becoming a *furore*, and this material may possibly be urged as the best in all cases, because it is the best in some cases.

The problem is sometimes stated thus: iron rails last so many years, steel rails so many more; the original cost of the latter, together with the interest on the capital so employed, is less than the cost of laying and periodically renewing the former, together with interest. Hence, in a certain number of years, the steel will prove most economical. To this it has been replied, that some iron rails last twenty years, while no steel rails have ever been tested for so long a period of time, and hence the comparison is as yet impossible.

A little consideration shows that the time a rail lasts, although it is an important factor of its cost, is not the measure of its endurance. The amount of traffic passing over it is the real test in the latter respect; and from this stand-point, we have abundant data upon which to judge between materials. The endurance of rails may be fairly measured by the product of the speed and the passing weight. Switches and the use of the brakes are locally disturbing elements in the calculation, which, in a comparison like the present, we may leave out of account. It is possible, by subjecting different rails to practical trial under extraordinarily heavy traffic, to determine how long they would last under other circumstances; and so we need not wait twenty years to decide upon the endurance of steel.

On the other hand, as time directly influences the question of cost, the difference of duration in favor of steel becomes less decided (economically) the longer iron lasts in any given case. The proper method of comparing the two is to calculate, from the elements given in a special case, the cost and duration of each kind of rail; then calculate the amount of capital employed, at compound interest, for each case; deduct the value of the worn-out rails; and, finally, turn these amounts into annuities, that is, find that annual sum which would, in the given period, extingnish the amounts thus calculated.

As an instance, we take an estimate contained in a recent paper by Mr. C. P. SANDBERG, before the Institution of Civil Engineers, in England. Assuming a case in which iron rails would last five years, and the original cost would be £7 per ton, the rail section 84 lbs. per yard, the cost of laying £1 per ton, and the value of the old rails £4 per ton, he estimates as follows for one mile of double track:

250 tons at £7 per ton,	£1,750
Cost of laying down,	250
	£2,000
Amounting at compound interest, 5 years, at 5 per cent., to	2,552
Deduct the value of the old rails, 250 tons, at £4	1,000
Actual cost	£1,552
Equivalent to a five-year annuity of	£280
A similar calculation gives for steel rails	£230
And for steel-topped rails	£218

assuming that solid steel rails cost £15 per ton, would last nder the same circumstances, thirty years, and bring when worn-out £8 per ton, and that steel-topped rails cost £10 per ton, would last fifteen years, and bring, when worn-out, no more than the old iron ones, or £4 per ton. In this instance, therefore, the steel-topped rails are more economical than either of the other kinds; but in cases where the traffic and speed are greater, and the time required for the destruction of the rails less in proportion, solid steel rails acquire the superiority; while, in cases where the traffic is less, so that the rails last longer, the relative economy of iron is increased. Thus, the same authority calculates the annuities for a case in which iron rails would be destroyed in two years at £587 for the iron, £395 for the steel-topped, and £325 for the solid steel; while, when iron rails last fifteen years, (steel-topped forty-five and steel ninety!) the respective annuities are £134, £148 and £201. In such a case, there would be also a great margin of chances in favor of the iron; since a steel rail would almost certainly be destroyed, if not by normal wear, yet by other causes, not usually taken into account, within a period so extended. It is evident, quite aside from calculations like the foregoing, that the fact that solid steel rails will endure six times or (allowing for the use of both faces) eight times as much as iron ones, cannot be rigidly applied when this endurance is to be measured by the product of little wear and much time. For periods exceeding ten years, the probable economy of iron would be greater than a close calculation theoretically assigns to it.

We have not quoted the above figures as applicable to all circumstances, but merely as showing the nature of the comparison which has to be made in every case. We draw with caution one or two general conclusions.

It is certainly shown that the amount of traffic must decide which material it is most economical to use for the maintenance of the permanent way; and the greater the traffic the more decidedly does the balance incline in favor of steel. Apparently, moreover, between that large traffic which requires solid steel rails, and that light traffic which makes iron the most suitable, there is a medium of business for which steel-topped rails are better than either. This may *perhaps* be from seven to ten years (using the duration of iron rails as a sort of measure for the business); and, if so, would secure for the steel-topped rails a wide demand, since that is not far from the average of ordinary business on well-sustained railways.

In this country it is usual for the construction of railways to precede the creation of the business which is intended to support them. We do not wait for a region to be settled and rich before we tap it with a road; we build the road, and carry population and wealth into the country. For our new railroads, therefore, iron is undoubtedly the best material; and it is not until they have acquired an immense traffic that there is for their purposes any superior economy in the use of steel.

SULPHUR.

In estimating the mineral resources of this country, few persons have ever thought of including its sulphur. Many people seem to know nothing of the vast and varied usefulness of this substance, except that in the form of brimstone it is useful in certain cutaneous afflictions; and many others have heard of it only as a hindrance and a pest in some metallurgical operations, and are ready to curse it, believing that if it had not been for the sulphur, they would not have lost so much money in Colorado mining speculations. Be that as it may, there is scarcely anything, except iron, which the world of manufactures could not more easily spare than this same sulphur. In the form of sulphurous and sulphuric acid, it is essentially connected with almost all chemical manufactures, with the preparation of cloth and of artificial manures, with photography, with telegraphy, with gold and silver plating and electrotyping, with the preservation of wine (sulphurous acid is one of the best anti-fermenting agents), with the refining of petroleum, and with a thousand other important branches of the useful arts. If the supply of sulphur were to cease to-morrow, civilization would be almost revolutionized.

The volcanic soil of Sicily has furnished a great deal of this article, in its native state, to the markets of the world; and there are many other localities which might be relied upon, in case of need, for such a supply: but these bear no comparison to the boundless stores laid up in the form of metallic sulphurets, or pyrites. England has long been emancipated from dependence on the supply of crude sulphur; and the Spanish and Irish "sulphur ores" have, to a large extent, taken its place. An illustration of the amount of these ores consumed in the manufacture of sulphuric acid—the basis of almost all manufactures—is furnished by the fact that a single firm near Liverpool desulphurized in the year 1865 eighteen thousand tons of pyrites. This firm was but one of fifteen or more, about equal as to extent of business.

The matter is so simplified as to be reduced to the lowest point of economy. There is a large ore-yard on the Mersey, where ships from Spain, Ireland, or the United States, unload the sulphur ore. The charge for receiving is three half-pence per ton, and the rate of storage is one penny per ton, monthly. To each of the chemical works connected with this yard runs a separate railroad, bringing the material directly to the furnaces. Many of them also own railroads communicating with some convenient colliery, so that they can obtain fuel at the cheapest rates. Within the past year or two, a considerable quantity of pyrites from the Hudson River has been shipped to this cluster of works, and consumed by them.

Meanwhile, our own manufacturers of sulphuric acid for the most part continue to import the products of Sicily, though the material lies at their doors. It is said that four tons of the pyrites of New York will produce as much acid as a ton of Sicilian sulphur; if this be the case, the balance of profit is immensely in favor of the former; and those manufacturers who adopt it first, on a sufficient scale, will be able to control the market.

Nearly a quarter of a century ago, Dr. BECK, in a New York Geological Report, called attention to the deposits of pyrites as a source of future wealth, and suggested the use of this material instead of native sulphur for the vitriol production, referring at the same time to the success which had even then attended English experiments in the same direction.

Now the English come and carry away the pyrites under our very noses (under Anthony's Nose, to our knowledge, they have got a good deal of it!) and we keep sending to the Mediterranean for our material. This is not the way to contest with Great Britain the commercial supremacy of the world; and we are glad to see that several of our sulphuric acid manufacturers are awake to the fact. There will be a shaking among the dry bones before long.

THE UNION PACIFIC RAILROAD.

One of the most interesting documents yet given to the public, in connection with this great work, is the Report of the Chief Engineer, Mr. G. M. DODGE, with accompaning reports of the Division Engineers, and of Mr. DAVID VAN LENNEP, the Geologist. These papers are all more than a year old; but their publication at this time is not out of season; since they contain much material of permanent scientific and practical value. The report of Mr. THOMAS H. BATES, engineer of the Pacific Division, whose survey extended from "station o, of Mr. REED'S line of 1865, in latitude 41 deg. 8 sec., longitude 114 deg. 58 sec. west of Greenwich," westward to the boundary line of California and Nevada, on the Truckee river, connecting with the Central Pacific of California, indicates the great and immediate advantages which will accrue from the completion of the railroad to a most important mining district. A region like that of the Truckee, described as "a beautiful dale, having an area of twenty-five or thirty miles square, entirely surrounded by mountains of great height," with a river furnishing a column of twenty-three thousand cubic feet of water per minute, a vast area of fertile land, and abundant supplies of timber, only needs to be

made accessible, to become the scene of a busy and productive industry. The Humboldt Valley is another example of great capabilities, now comparatively dormant.

Perhaps it is too much to say that mining cannot be successfully carried on in a district where it is the only productive employment of the inhabitants; but certainly, under such circumstances, mining is carried on at an immense disadvantage. The burden is more than any industry should be required to carry. But, in the nature of things, mining is one of the first activities of a new country, and becomes the pioneer of every other business. In casting up the account of the mining enterprise of this country and its results, it must be borne in mind, that, without that enterprise, the Atlantic and Pacific would still be separated by a trackless wilderness, the area of civilization would be much reduced, and the Great Railroad itself, which is the most beneficent national work of this or any age, would scarcely have been projected, to say nothing of its rapid progress and approaching completion. If mining had cost this country much more than it has, and yielded in return much less, the balance would still be in its favor as an element of our increasing power and wealth.

It is simple justice that the industry which has accomplished so much for all others, should now begin to reap the results of that advance of which it has been the chief motive power. The mines have brought population, trade and the railroad; and hereafter these elements of wealth will repay, with interest, the advantages they have received. The period of successful *bona fide* mining among us has but just begun; and those capitalists who have the nerve to persevere and the good sense to avoid mere speculations, will find the winter of their discontent made glorious summer by that "son of York," the Union Pacific Railroad.

CONGRESS AND THE MINING INTEREST.

The impeachment business apparently prevents legislation on the part of either house at present; but legislation is a very small part of the duty of a member of Congress. The real work is done in the rooms of the committees, and at the homes of the members themselves. It is there that matters are studied and discussed; and one who should judge of the ability and the labors of Congress by the buncombe oratory, or the partisan anger, or the careless indifference which the visitor observes from the galleries in the Capitol, would seriously undervalue a body of men, many of whom are candid and laborious.

We must confess, however, that hitherto the mining interests of the country have not received that attention from Congress which they deserve. The appropriation of money for the collection of mining statistics, and the passage of the law regulating mining titles, do indeed "shine as good deeds in a naughty world;" but these are measures which should be only the steps to greater and more beneficent ones. Why take such pains to collect information about the mining enterprise of the country, and then stop short, without acting upon that information?

We have repeatedly urged upon Congress the passage of Senator Stewart's bill for the establishment of a National Mining School. What we desire is, not that this or any other measure shall be blindly adopted—not merely legislation, but intelligent attention and examination.

The great Gustavus, when one day dissuaded from entering a deep and dangerous mine, is said to have replied, "What sort of a King is that, who dares not go into his own treasury?" We beg the members of Congress to enter, in spirit, the treasury of the nation, to get just notions of its nature and extent, and to use their knowledge for the good, not only of the mining community, but of the whole people. The report of the late special commissioner, Mr. Ross Browne, now in the hands of the public printer, contains food for thought; and we bespeak for it (especially while Impeachment gives so much leisure to the members of the House) a careful perusal.

Who cares whether his estimate of the production of this or that district is too low? Nobody need feel very badly to be richer than his neighbors and the Assessor think him to be. Much more important for future action is Mr. Browne's view of the needs of the great gold and silver mining interests, and their bearing on the prosperity of the country. Let Congress study these to good purpose, and the gentlemen from Idaho and Montana will have no reason to complain of the result.

BESSEMER STEEL.

It seems to be pretty well settled that, in the fabrication of Bessemer steel, as of every other variety, the purity of the ores employed is an important matter. The best ore makes the best steel, and not even the Bessemer process will produce superior steel from inferior materials. The *Iron Trade Review*, the organ of the English Cleveland iron trade, asserts that only about six per cent. of the total quantity of pig iron made in Europe is capable of being converted into Bessemer steel, and that the spathic and pure hematite ores occur in such limited quantities, that the production of Bessemer pig iron is not likely to be largely increased, unless further deposits of suitable ore should be discovered in some European locality, favorably situated for smelting operations. The conclusion is drawn that, notwithstanding the expiration of the existing heavy royalties, Bessemer steel may be expected before long to increase rather than decrease in price.

Probably the expiration of the royalties, and the rapid augmentation of the demand for the article will stimulate ingenuity and competition to such a degree, that either new deposits of suitable ore will be discovered, or means adopted for utilizing the cheaper varieties of pig iron. We do not, therefore, share the apprehensions of our British cotemporary. But in any event this country is secure. We have the purest ores in inexhaustible abundance. Every material for the Bessemer process is produced here; and, if need be, can export to the Old World, and still keep enough for ourselves. The significance of the endowments which nature has so bountifully made for this continent is not yet beginning to be understood. We are like the rustic, who, having the purse of Fortunatus, only used it to pay his daily score at the alehouse. But we are learning.

Errors in Formulæ.

The formula for the area of a safety-valve given in our columns last week, read as follows: 13:5 $(p+3)$. In the *American Artisan*, the same formula appeared as $1 \div 13.5\ (p+3,)$ which is the true value, though we preferred to express it in the form of a fraction. The types betrayed us, however; and we take this opportunity to say that we intended to make the fraction $\frac{1}{13.5(p\ +\ 3)}$, or one, divided by thirteen and a-half times the sum of p and 3.

While on the subject of formulæ, we will do a neighborly office for the *Scientific American*, which seems to have no one in the concern from the foremost editor to the hindmost devil, who knows what a chemical formula means. On page 216 of the current volume, occur the following cabalistic equations:

3 Cal. $Po_5 + 2[Ho, no_5] = Cal.\ 2\ Ho.Po_5 + 2[Cal.\ no_5]$ and again:

Cal. 2Ho. $Po_5 + 2[Cal.\ no_5] + 2[Ho.\ So_3] + 4Ho = 2[Cal.\ So_3, 2Ho.] + 2[Ho.\ no_5] + Cal, Ho.\ Po_5$.

The "above improvements," it is announced, have recently been patented by Prof. E. N. Horsford, of Cambridge, Massachusetts. We hope not. In fact, we feel sure that Prof. H's improvements are expressed in the following equations, which we modestly suggest to the *Scientific American* in place of the foregoing:

$3Ca\ O,\ PO_5 + 2(HO,\ NO_5) = Ca\ O,\ 2HO,\ PO_5 + 2(Ca\ O,\ NO_5)$; and $Ca\ O,\ 2HO,\ PO_5 + 2(Ca\ O,\ NO_5) + 2(HO,\ SO_3 + 4HO = 2(Ca\ O,\ 2HO,\ SO_3) + 2(HO,\ NO_5) + CaO,\ 2HO,\ PO_5)$.

The publication of these amusing blunders, indicates more knowledge of comical than chemical symbols. What funny stuff that must be, which consists of one part of number five and one of California [Cal. no. 5.]! We are almost inclined to adopt the new signs ourselves, and cry So? No! Ho! Ho!

Personal.

The editor of the American Journal of Mining has been designated by the Secretary of the Treasury to succeed Mr. J. Ross Browne, as Special Commissioner for the collection of Mining Statistics in the States and Territories west of the Rocky Mountains. Mr. Raymond will leave New York in a few weeks for an extended tour on the Pacific coast, in the discharge of his new duties; but he will retain his editorial connection with the Journal, and our readers may expect regular contributions from his pen, especially concerning the condition and prospects of our great western mining interests. While we anticipate that the value of our paper will thus be considerably increased, we need hardly add that whatever power and influence we have acquired, will be heartily lent to assist the new Commissioner in his plans for serving the government and the mining community.

NEW PUBLICATIONS.

The American Inventor is the title of a new monthly journal, printed in London, and containing twenty-four pages of the size of the American Journal of Mining. It is occupied with illustrations and descriptions of American machines and inventions, and contains also a good deal of sensible editorial and appropriate selected matter. Our own journal is largely drawn upon for miscellany; but as credit is duly given, we are flattered by the compliment, and not irritated at the appropriation. The object of the paper is to make British manufacturers acquainted with the results of American skill and ingenuity; and we think it admirably adapted to accomplish this purpose.

The National Quarterly Review, for March, contains articles on Epicurus and his Philosophy; English Newspapers and Printing in the Seventeenth Century; Progress and Influence of Sanatory Science; The Microscope and its Discoveries; The Venetian Republic and its Council of Ten; Progress made by American Astronomers; Supernatural Phenomena; Impeachment of the President. The Notices and Criticisms at the end are, we regret to say, disgraceful to a respectable Review. There is no "criticism" in puffing one book to the skies and assailing the next with malicious brutality, to make things even. The equilibrium of the scales of Justice is not maintained by causing them alternately to kick the beam.

The Arapahoe, Jefferson and South Park Railroad Company is the title of a neat little pamphlet, about as large as a Sunday school tract, containing the address of Mr. Geo. A. Crofut before the Denver, Col., Board of Trade, in behalf of the above-named railroad enterprise. This company proposes to build a tram-way, twenty-five miles in length, from Denver, via Apex and Mount Vernon, over the most practicable route to Borgen's precinct in Jefferson county, into the very centre of the copper regions of Colorado, eight miles from Idaho. It is also designed to run a branch to Golden City. This wooden railway to the mountains would furnish supplies of lumber, coal and firewood, which are much needed; and it is claimed that it would be from the beginning a most profitable investment. The company proposes to use small but powerful locomotives. The ties are designed to be seven feet long, round timber, the rail, 8in×8in., sawed spruce timber, 16½ feet long, let into the ties and securely keyed; track, four feet wide; car trucks, eight or ten feet long; wheels, eighteen inches in diameter, four inch tread, with square flange; capacity, from six thousand to seven thousand pounds. These rails can be turned and used eight times, or can be strapped with iron when desired by the company.

The whole cost of the road and rolling stock (two locomotives and fifty cars) is estimated at $63,700; and the daily earnings are set down as follows: Freight on

15,000 feet of lumber, at $8	$120 00
Shingles and lath	10 00
Twenty cords wood at $4	80 00
Ten tons of building rock, at $4	40 00
Two tons of quartz, at $5	10 00
Five tons of lime, at $4	20 00
Ten tons of stone coal, at $4	40 00
One ton of charcoal, at $6	6 00
Building timber, posts, poles, etc	10 00
Same material to Golden City	30 00
Freight back from Golden City	10 00
Freight, passengers and mails, up and down, from Central, Black Hawk, Idaho, Georgetown and the Southern mines	50 00
Total earnings per day	$426 00
313 working days	$133,348 00
Estimated expense of running the road per annum	15,000 00
Dednct cost of building and running the road for the first twelve months, leaves a balance of	54,638 00

The project appears to be feasible, and we hope it will be successful. It is not necessary to wait for capitalists to come with their millions and build expensive iron railroads, before attempting to improve internal communications. These wooden tramways were in Pennsylvania, and they may be in Colorado, the precursors of the more permanent ones. They are cheap and easily repaired; and they will do more service than many people, unacquainted with the properties of wood, would think possible.

Scientific Meetings.

POLYTECHNIC BRANCH OF THE AMERICAN INSTITUTE.

At the regular weekly meeting, on Thursday evening last, April 9th, the Chairman, Prof. S. D. Tillman, gave some abstracts from a paper read by J. Anderson Henry, Esq., before the Botanical Society of Edinburgh, on Pure Hybridization, or the crossing of distinct species of plants. The paper stated the rules and means used by the author to insure success. As to fruits, he believed that we are on the eve of a revolution; that by judicious and persevering crossing we may not only transfer the delicious aroma of one to another, and communicate handier and more abundant bearing habits to the hybrid progeny; but further, especially in stone fruits, such as peaches, plums, apricots, &c., we may, in addition to these advantages, increase the size af the fruits and diminish the size of the stones; and among vines, get rid of or greatly diminish the number of seeds.

Prof. Tillman then proceeded to speak of remarkable volcanic peaks, known on Unimak Island, the most eastern of the Altentian group. They rise from the sea in perfect symmetry, to the height of nearly 10,000 feet. Between them is Destruction Peak, which, by an eruption in 1863, destroyed many lives.

There were other subjects brought before the meeting, among which was the good quality of Italian musical strings for violins, harps, &c. The Neapolitan sheep are known to be small and lean, and their small intestines are prepared for musical strings by cleaning and scraping, then steeping four or five days in alkaline lye, containing a little alum; and smoothing is done by drawing them through a ring, after which they are dried, twisted and sulphured. These Italian strings are noted for their strength, clearness, and brilliancy of tone.

Dr. Feuchtwanger read a short paper on the seasoning of wood; and Mr. Sigismund Beer of this city explained his new process for seasoning and preserving wood, by simply treating the wood with a boiling solution of borax in water, which it is said easily and effectually dissolves and removes all pernicious substances without injuriously affecting the wood-fibre. This, on the contrary, becomes harder, impregnable to water, vermin-proof, unaffected by dryness or moisture of the atmosphere, and is almost incombustible. The subject was disussed by Prof. Van der Weyde, Messrs Fisher, Stetson, Blanchard, and Emory.

The meeting then listened to an able paper on Polar Magnetism, written and read by Mr. John A. Parker, of New York. The lecturer spoke of the variations of the compass, and the phenomena observable as incident to the same. He considered the cause of the variations of the compass, which some have supposed to proceed from the oscillations of the earth, to be *the revolution of the Magnetic Pole around the North Pole*. The point necessary to determine, is, that the Magnetic Pole is situated at a considerable distance from the North Pole, and that being proved, we must look for the evidence that it *revolves about the North Pole*. Mr. Parker gave some interesting facts and illustrations in connection with his theory, which evinced much study and research. Prof. Van der Weyde followed up the subject with some explanatory remarks, when the meeting adjourned.

To insure insertion of correspondence in our columns, the full name and address of the writer must be given.]

Correspondence.

Per cent. of Copper in the Lake Superior Mines.

Cleveland, Ohio, April 7, 1868.

Editor American Journal of Mining:

Some months recently, I noticed in your journal a statement of the small per cent. of copper realized from veins producing that metal. In Cornwall, if the total mass of the vein is reckoned in, this per centage would be expressed by a very low fraction, but the precise yield is not known. There are cases on Lake Superior, however, where all the vein matter has been taken into account, and the precise yield is known. In Cornwall the mineral occurs in bunches, with much dead ground between, which is left standing. Under the tribute system the stopers only take down what contains some copper, and before this goes to the surface it is broken and well

selected. After it has been raised, it is again broken and selected by day-light, and from this the per centage is determined by assay. The average yield of the Cornish selected ores in 1849, was eight per cent.; and in 1853, six and a half per cent., with average yearly product of twelve thousand tons. There are no data for applying this calculation to the body of the veins, as there is no reported statement of the quantity of vein matter broken down. At the Cliff mines on Lake Superior, in February, 1854, the entire vein had been taken down as far as the stopers had then gone. Its average width was one and one-half feet, and nine thousand one hundred and eighty-eight running fathoms had been worked up. The average yield per fathom was seven hundred and seventy-six pounds of refined copper. Allowing the specific gravity of the vein matter to be *three*, the weight of a cubic foot would be one hundred and eighty-six pounds, and the per cent. of the *entire vein*, within a small portion, *eight*. At the north west mine the vein matter yielded two hundred and twenty-five pounds per fathom, at the Copper Falls eight hundred and sixty-five, and at the Minnesota five hundred and eighty-two, but the average width of the vein in these cases was not given.

These exhaustless bands, running with the formation and the conglomerate and sandstone beds, which yield copper, are everywhere capable of cheap mining. In many places, the thickness of their metal-bearing parts is very great, reaching to ten and even fifteen feet. Copper-bearing strata have now been observed on the mineral range; from Copper Harbor westerly to the Bad river, a distance of one hundred and fifty miles, showing that the system of parallel bands is as universal as the system of transverse veins and courses. The true veins are very extensive, and there is reason to suppose they are less rich in depth than at the surface, although the cost of mining is greater. On the parallel copper-bearing bands, depth is not attained as rapidly as on the veins, and the cost of working at the same depth is less; on account of their breadth. As the copper of the parallel bands is in general finer than that of the veins, it has not been as well saved, but improved machinery will eventually correct this difficulty.

Probably the Cornish mines do not average one-fourth of one per cent., counting all the vein matter thrown down. Considering the simplicity of copper-smelting here, as compared with the process for the sulphurets of Cornwall, we ought to be able to compete with the Cornish mines, on a double yield, say one-half of one per cent. Our mining ground is much larger than that of Cornwall, so that it will not be so soon necessary to penetrate to great depths. Although our true veins are not as heavy, they are more rich in metal, and we have metal-bearing bands, that are wider and richer than the Cornish veins. If Cornwall is our greatest competitor, where is the cause for a panic in Lake Superior mining? There is an abundance of true veins that will produce two per cent., and of parallel bands that will yield one-half of one per cent. The use of Nobel's blasting fluid, and of the Alligator crushers in these beds, will bring down the cost of getting out the rock to, or even below, that of the Cornish veins. If the holders of Lake Superior mining stock and grounds should imitate the iron manufacturers of the United States, and form an association to protect their common interest, especially to encourage improvements in mining processes, they can certainly hold their own. Nature has done her part, and if man does his, we need not be discouraged by foreign competition.

C. A. W.

Telescopic Measurements—A Correction.

EDITOR OF AMERICAN JOURNAL OF MINING:

In the article on telescopic measuring in your Journal, to-day, the comparison between that method and chaining, was written rather too hastily. Nothing should have been said about the "probable error;" but the precision of very good chaining (one sixteen-hundreth) may fairly be compared with the corresponding precision (one twenty-four hundredth) of measuring a furlong at a single sight with a telescope that magnifies twenty times. The precision of several sights taken together, would increase as the square root of the number of sights; and the precision of a mile measured in eight sights of a furlong each, would be nearly three times the precision of one sight, or within one seven thousandth. With sights of 528 feet, the precision of the mile would be within one seventy-five hundredth; with sights of 264 feet, within one twenty-two thousandth, or less than three inches; for here the shortness of the sight would double the distinctness of visibility. With a telescope magnifying ten times, the exactness would be the same with half the range. The gross errors of reading would be thoroughly checked by reading twice; and errors of this nature cause a good part of the uncertainty of chaining. BENJ. SMITH LYMAN.

PHILADELPHIA, April 4th, 1868.

Manufacturing and Mechanical Notes.

Boiler Explosions—No. XIV.

At the last ordinary monthly meeting of the Manchester Boiler Association in England, the President, William Fairbairn, Esq., C.E., occupied the chair, and Mr. L. E. Fletcher, Chief Engineer, presented his report, of which the following is a brief abstract:

During the past month two hundred and forty-eight visits of inspection had been made, and five hundred and seventy-seven boilers examined; four hundred and fifty-four, externally; thirteen, internally; two in the flues, and one hundred and eight, entirely; while in addition, five had been tested by hydraulic pressure. In these boilers, one hundred and sixty-seven defects were discovered—six of them were considered dangerous. The list of explosions, for the past month, is a heavy one; as many as six having occurred, by which fifteen persons were killed, and fifteen others injured. Not one of the boilers in question was under the inspection of this Association. The causes of these explosions were attributed to the weakness of the boilers; external corrosion; deficiency of water; a defective complement of boiler fittings, and careless or unskilled attendants. The report alludes to the short-sighted economy of purchasing second-hand boilers, for the sake of the low price, as boilers are seldom removed unless there is good reason for condemning them, and there is no economy in working those of old fashioned construction and equipment.

Comparing this account with the list of explosions that have come under our notice, as having occurred in this country, during the month of February last, which were attended with disastrous results, either in destruction of property or loss of life, we have the following:

Febrnary 4th, West Dubuque, three persons killed, several injured;
" 5th, Frankstown Station, one killed, one injured;
" 10th, Ansonia, Conn., no one injured;
" 11th, New York City, no one injured;
" 17th, Norfolk, (propeller Lynn Haven) no one injured;
" 17th, New York City, (steamtng James A. Wright) two killed, two injured;
" 18th, Lowell, Mass., (locomotive William Sturgis) one killed, several injured;
" 20th, Crescentville, Philadelphia, one killed one injured;
" 21st, Cincinnati, O., two injnred;
" 25th, New York City, (steamer Jasmine) none injured;
" 28th, Galien, Mich., two slightly injured.

From the above statement we get the following synopsis:

England, six explosions; fifteen persons killed and fifteen injured.

United States, eleven explosions; eight persons killed and probably not less than twenty-five injured.

The above facts speak for themselves. What will prevent these deplorable accidents, if accidents they may be termed? We reply: the construction of boilers with the best materials and of the strongest form; thorough testing; competent attendance; constant watchfulness and monthly inspection; regular periods of cleaning; reliable safety-valves and steam gauges placed in view, and within reach of the engineer; a feed-pump available at all times and independent of the action of the engine; and especially, a fixed determination by employers, not toengage the services of any person as engineer or fireman who has not passed a thorough examination by a practical and experienced examiner in engineering. Low water-detectors, screaming whistles, safe-plugs, alarums and startling premonitions, are sometimes well enough, but all sink into insignificance before the reliability and fidelity of a steady, watchful, careful and cleanly engineer, who requires neither ingenious fittings norcurious devices, in lieu of attention and the proper performance of his duties.

New Pumping Engine.

Sometime since, the Water Commissioners of Brooklyn, N. Y., invited bids for the erection of a new pumping engine for the Ridgewood water-works. Some of the most extensive manufacturers in the country entered into competition, and the bids when opened showed a considerable diversity of opinion as to the amount for which the work could be done, in accordance with the plans and specifications prepared for the work. The highest bid for the work was that of Rogers & Corryell, and amounted to $185,000; the next highest bid was from James Murphy & Co., at $179,500; and the lowest was that of Messrs. Hubbard & Whittaker, proprietors of the Burdon Iron-works, 102 Front street, Brooklyn, which amounted to only $129,750. The next lowest bidders were the proprietors of the Allaire Works, New York, who offered to do the work for $147,500—an increase of $17,750 over the bid of Hubbard & Whittaker; while between their bid and that of Messrs. Woodruff & Beach, of Hartford, there is a difference of $42,250.

The contract has been given to Messrs. Hubbard & Whittaker, who will commence the work at once. We are happy to find that the good judgment of the Commissioners will enable our neighbors to show their ability to fill large orders in machinery, and that all large and heavy machinery for Brooklyn can be manufactured in Brooklyn.

Steam Pumps, &c.

The firm of A. S. Cameron & Co., have purchased the extensive premises lately occupied by the New York Steam Engine Works, at the foot of East Twenty-third street, New York. They will move thither on the 1st of May, where, with superior facilities for the manufacture of steam pumps, vacuum pumps, blowing engines, and steam machinery of every description, they will be pleased to execute all orders intrusted to them.

Patent Claims.

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

76,087.—COMPOUND FOR WELDING AND REFINING IRON AND STEEL.—Julius Lehmann, Ill.

I claim a composition for welding and refining steel and iron, and for restoring burnt steel, made substantially in the manner and of the ingredients herein set forth.

76,100.—ORE-CRUSHER.—Jacob Reese, Pittsburgh, Pa., assignor to himself and Robert C. Totten, same place.

I claim, 1. The crusning-jaw c' provided with the square opening *d*, in combination with the cam *d'*, friction-roller *m*, and adjustable jaw *c*, all constructed substantially as shown and described.

2. A square head or T-head bolt *s'*, in combination with a correspondingly-shaped groove, *s*, in a stationary-jaw for adjusting the stationary-law of an ore-crusher, substantially as set forth.

76,115.—HYDROCARBON-BURNERS.—James Stratton, Philadelphia, Pa., assignor to himself, William Wallace, and Robert N. Wethcrill, same place.

I claim the downward-projecting straight burner A, its lower end so perforated that the jets will flow in horizontal radial directions, in combination with the vertical pipe B, the said parts being constructed and arranged to operate together, substantially as and for the purpose described.

76,118.—ROCK-DRILL.—James H. Thomas, Lacon, Ill.

I claim, 1. The tube E, having the drill D, when secured to the cross-head F upon one side, by means of the ratchet-wheel *g*, fitting between the horizontal plates, the clamps *m n*, upon the plate H, and the band *h* upon the cylinder-head, as herein described for the purpose specified.

2. The combination, with the drill D and tube E, of the plates *e e*, cams *d d*, pieces *f f*, ratchet-wheel *g*, spring-pawl *i*, and inclined rod J and band *h*, arranged and operating substantially as described.

76,173.—EXPLOSIVE-POWDER.—G. Designoble and John Casthelaz, France.

We claim the application and use, substantially as described, of picrate or carbazote of potassa, as well as the salts formed from picric or carbazotic acid, and also the derivatives from such acid, and the acid itself, in and to the manufacture of powder, under the reservations set forth.

76,188.—EARTH-BORING AUGER.—J. Wilson Heath, Memphis, Tenn.

I claim, 1. The combination of the valve a with the slotted stem b, pin f, hollow shaft s, and inlets t t, all constructed, arranged, and employed substantially as and for the purposes specified.

2. The collar g, when used in combination with a double spiral earth-auger, as for the purposes stated.

3. The coupling h i j j1 j2, constructed and arranged as described and for the purpose specified.

76,189.—STONE-DRILLING MACHINE.—Levi Hermance, Hudson, New York.

I claim, 1. The arrangement of the slotted plates u u, connecting bars T T, and sleeve J, in combination with the wheels E E, having grooved pulleys s s on their inner faces, the whole arranged and operating substantially as specified.

2. The combination of the frame A and its bolts w w with the plates C C, having trunnion-bearings, curved slots D, and recesses e e e, whereby the frame A may be placed at an angle with the frame B, as specified.

Personal.

—THE REV. CHAUNCEY GOODRICH, died in New Haven on Friday night last, at the age of 51. He was one of a race of scholars, and well known as the revising editor of various editions of Webster's Dictionary, especially of the Unabridged, published in 1864. He was son of the late Prof. C. A. Goodrich, of Yale College, and brother of the Rev. Dr. Goodrich, of Cleveland, Ohio, who survives him. He graduated at Yale in 1837, studied theology from 1838 to 1840, preached in various places, until, in 1856, his health forbade. Subsequently he was engaged in various literary pursuits.

—L. J. WINSTON, an old miner and prospector in quartz, having followed it principally since 1851, when he had an interest in the famous quartz mine at Murphy's Camp, Calaveras connty, California, the first of any note developed in that State, prospected last year all through Montana and Idaho. He is now delving in the vicinity of Gold Hill, Nevada, and will undoubtedly be heard from next year in some other quarter. There is no rest for the pioneer prospector.

—MR. EZRA COANELL has just purchased for the Cornell University, at Ithaca, N. Y., the entire library of the late Dr. Anthon, consisting of 7,000 volumes of valuable books in all the departments of science, art, and literature. The library of the Cornell University, when increased as contemplated, will number more than 30,000 volumes.

—SUTRO, the projector of the Comstock tunnel scheme, is now endeavoring, it is said, to get assistance for its furtherance from government, inasmuch as the majority of the mining companies interested, to their shame, have refused to appropriate it.

—THE election of the Hale & Norcross Mining Company in San Francisco, resulted in the following gentlemen being chosen trustees for the following year: Messrs. Bell, Barron, Sunderland, Morganthal, Mann, Wallace, and Hayward.

—GEN. WINCHESTER, one of the '49 pioneer miners of California, and we believe the publisher of the first newspaper issued in that State, recently sailed for San Francisco, on his way to Alpine county and his silver mines there.

—Gov. JOHN EVANS has been unanimously elected President of the Denver Pacific Railway Company. Negotiations are nearly perfected, by which the completion of the road will be assured this year.

—ED. E. FARRELL has in course of publication a pamphlet on the Mines and General Resources of Colorado for gratuitous distribution. It is said that it will be especially valuable for its statistics.

—SIR JAMES SIMPSON, Professor Christison, Sir Alexander Grant and Mr. J. D. Forbes are the chief competitors for the succession to Sir David Brewster in the Presidency of the University of Edinburgh.

—THE DEODELIDES COMPANY of Bankers in the City of Mexico have failed. The liabilities are estimated to amount to $2,000,000. They were connected with the well known financier, Jecker, of Paris.

—CHAS. KELLOGG, late of Detroit, has been awarded the contract for an iron railroad bridge over the Illinois River, at La Salle. The bridge is to be built at Phenixville, Pa.

—PROF. WM. SMYTHE, of Bowdoin College, a distinguished mathematician, died suddenly at his residence, in Brunswick, Maine, on Saturday afternoon last.

—THE HON. ANSON BURLINGAME, and the members of the Chinese Embassy, may be expected to reach this city during the latter part of the present month.

—KAUPP, the great Prussian iron founder, is constructing a hammer, the head of which will weigh 120 tons.

—J. J. ALBRIGHT has been elected President of the Plymouth & Wilkesbarre Railroad & Bridge Company.

—DR. R. P. STEVENS, the well-known geologist, is traveling in South America.

—PROF. EATON, of Montana, is in town, and will remain some little time.

Special Scientific Brevities.

☞ Lebland, the inventor of the process now in common use for making carbonate of soda from common salt, which, after eighty-six years, remains as he left it, remained poor, although he had been the agent of conferring incalculable wealth upon mankind. Cheap soda, cheap glass and soap, light and cleanliness, and their collateral benefits, were due to him; yet he wanted bread, and ended his days in a hospital, having lingered there, when fortune, health, and hope were lost, until reason also failed, and he died by his own hand.

☞ Dr. Tollins gives a cheap kind of cement, which may be used for stopping cracks in metallic apparatus, and cementing glass, crockery-ware and other materials. He mixes equal weights of commercial zinc white and very fine sand, and makes the mixture into a paste with a solution of chloride of zinc having the density 1·26. The mixture sets rapidly, but allows plenty of time for its application. As it resists the action of most agents, it will be very useful in the chemist's laboratory.

☞ A new green color is prepared by M. Wiederhold, by mixing a neutral soap of linseed oil with a salt of copper in solution, or by combining directly the fatty acid of the oil with oxyd of copper. A paste of a fine green color is thus obtained, which may be immediately employed for calico printing, etc. It can be diluted with spirit of turpentine or benzole, until it has acquired the necessary degree of fluidity.

☞ TEST FOR THE PRESENCE OF FREE ACID.—Dissolve chloride of silver in just sufficient ammonia to make a clear solution. If a little of the test be added to ordinary spring water, the carbonic acid present in the latter will neutralise the ammonia and precipitate the chloride. The above forms a good lecture experiment, the test being a very delicate one.—EDWIN SMITH; Nottingham, March 5, 1868.

☞ A lens has recently been made for Mr. Parker, of London, three feet in diameter, three inches thick in the centre, and weighing 212 lbs. In the focus of this powerful lens the most refractory metals are almost instantly fused and completely dissipated in vapor, while unyielding stony substances are as readily vitrified.

All Sorts.

☞ The highest elevation overcome in Pennsylvania, in a single rise, by a locomotive road, is on the Delaware, Lackawanna and Western railroad, from the Delaware river, where it is 288 feet above tide, to the Pocono summit, which is 1,969 feet above tide, making the attitude surmounted, 1,661 feet; Scranton is 739 feet above tide, and 1,249 feet below the summit. The Moosic summit on the Delaware and Hudson Canal Company's railroad, between Honesdale and Carbondale, is 1,888 feet above tide. The summit on the two Lehigh Companies roads near Wilkesbarre, is 1,630 feet above tide; Wilkesbarre is 517 feet above tide; elevation overcome, 1,103 feet, which is accomplished on a grade of 96 feet in the mile. To get out of the Wyoming and Lackawanna coal basins across the water shed to the Lehigh and Delaware rivers, greater elevation is overcome than is encountered at the Allegheny mountain. True, the Allegheny summit is higher above the tide than any other mountain in Pennsylvania, but the Allegheny is twice as many miles distant from tide water as the Wyoming, Pocono and Moosic, which rise between the Northern coal fields and the great markets.

☞ W. S. Hntchings, of St. Louis, has invented a flying machine, with which he expects to navigate the air at his pleasure. He has a model completed, which works satisfactorily, and is now getting up a full-sized apparatus, which is to be twenty-eight feet in height, to weigh 285 pounds, and be capable of carrying 150 pounds. There is a caloric engine, on a new principle, attached; with a quantity of wings, large and small, operated by the engine, and all other arrangements to make the affair theoretically perfect. A parachute, sixty feet in circumference, accompanies the machine. The inventor has so much faith in it that he proposes to make an ascension in a balloon at St. Louis, and jump out at the height of two thousand feet.

☞ Chapman Boroguh, Northampton County, Pa., has assumed a position of no inconsiderable importance within the past few years, owing to the rich bed of slate which is in immediate proximity, and the energy and perseverence of Mr. Wm. Chapman, who has made the quarries and the flourishing little town what they are to-day. It may be interesting to know that these slate quarries were once sold for a pint of gin, about fifteen years ago. A certain party procured a lease on the property from George Edleman, then.

☞ An ingenious fire-alarm was exhibted, last week, at the Mechanics' Fair, in Springfield, Mass. The alarm is sounded when the temperature in a house rises above a given point, and at the same time a door in the roof flies open, and a flag is hoisted bearing the word "Fire," and a gong or large bell set ringing to attract the notice of the police or passers-by.

☞ A block of Granite from Dix Island quarry, near Rockland, has arrived at Washington, for the new north Portico of the Treasury. It is twenty feet long, ten feet wide, two feet eight inches thick, and weighs eighty-five tons.

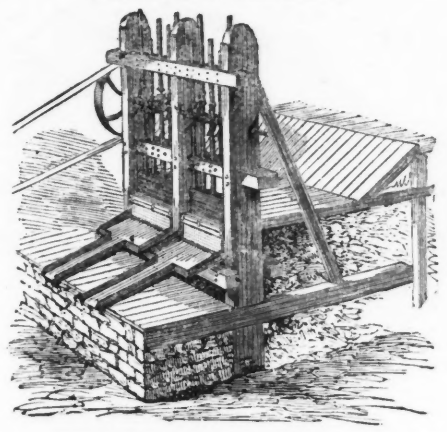
☞ The largest pendulum in existence, is said to be that which regulates a new clock at St. George's church, New York. It is 35 feet long, and vibrates in three seconds. The weight on it is 390 lbs.

☞ Stephen Girard, than whom no shrewder business man ever lived, used to say: "I have always considered advertising liberally and long to be the great medium of success in business, and prelude to wealth. I have made it an invariable rule, too, to advertise in the dullest times as well as the busiest, long experience having taught me that money thus spent is well laid out; as by keeping my business continually before the public, it has secured me many sales that I would otherwise have lost."

METALLURGY.

MOREY & SPERRY,

MANUFACTURERS OF THE MOST IMPROVED



CALIFORNIA STAMP MILLS.

For wet or the dry process.

HEPBURN & PETERSON,

PATENT PAN AND AMALGAMATOR.

BEATH'S REDUCER.

HENDY'S CELEBRATED WET CONCENTRATOR,

ROCK BREAKERS, SEPARATORS,

ENGINES, BOILERS, SHAFTING, &c., &c.,

Will be pleased to give practical information in milling and amalgamating Gold and Silver Ores, can furnish complete plans and specifications for the erection of machinery and buildings.

Agents for the North Carolina tubular Desulphurizing furnace for treating concentrated tailings, complete plans and firebrick for the same furnished; also agents for the Miners' Foundry, San Francisco, Cal.

MOREY & SPERRY, 95 Liberty street, N. Y

WILSON'S PATENT

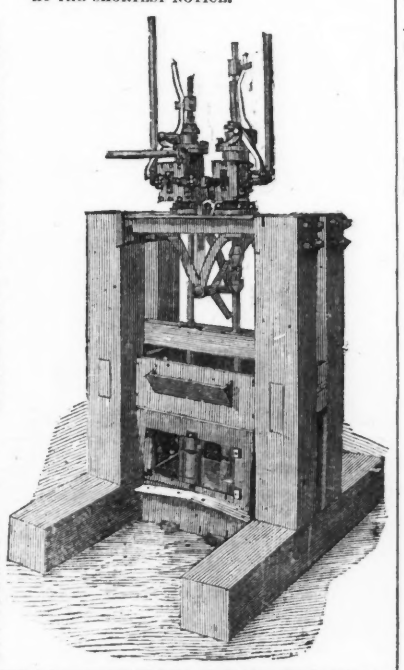
STEAM STAMP-MILL COMPANY,

OF PHILADELPHIA, PA.,

Are now prepared to supply Miners and other parties with their

NEW STEAM STAMP MILLS,

AT THE SHORTEST NOTICE.



These Mills, for durability, efficiency, and facility of transportation, are not excelled by, and are believed to be superior to, any other Mills manufactured. The Valve Gear is of the simplest and most durable construction; readily adjusted by moveable cams on the Piston Rods or Stamp Stems, there by giving the operator absolute control of the length, and velocity of motion and force of the blow. These mills are adapted for both dry and wet crushing, and for the hardest rock or softest cement. For full particulars call on or address

WILSON'S PATENT STEAM STAMP MILL CO.,

325 Walnut St.,

Philadelphia, Penn.

N. B.—One of the above Mills can be seen in operation at Messrs. Cresson & Smith's Machine Works, S. E. corner Eighteenth and Hamilton Sts., Philadelphia. jan11:1y

---

MANHATTAN

METALLURGICAL AND CHEMICAL WORKS,

552 and 554 West Twenty-eighth Street, N. Y.

ASSAYS OF GOLD, SILVER, COPPER AND LEAD ORES.

Special attention given to the Analysis of Ores, Minerals, Clays, Waters, and General Commercial Products of all kinds.

Tests of Gold, silver, and Lead Ores, by smelting, in quantities of One Hundred Pounds to Fifty Tons.

Gold and Silver Ores worked in Parcels of One Hundred Pounds to Fifty Tons, by Amalgamation Process.

Gold Dust, Bars, Old Gold and Silver bought. Jewellers' sweeps worked and refined.

Founders and Metal Workers furnished with Alloys of every description.

Parties requiring plans and specifications for the erection of Smelting Works, can be supplied, and the actual process while working shown.

Plans and specifications furnished for works, and processes for the manufacture of Sulphuric Acid, Soda Ash, and general Chemical produce.

Superintendents: MR. CHARLES F. SECOR, formerly of Nevada and California, and MR. WILLIAM WEST, formerly of Swansea, Wales.

For sale, 1 Hepburn & Peterson Pan, and 1 Bogardus Quartz Mill. Inquire at the Manhattan Metallurgical and Chemical Works, 552 and 554 West Twenty-Eighth street.

Parties shipping Ores to these works for treatment must prepay all freight charges.

For engagements and terms, apply at the Works or to

SECOR, SWAN & CO.,

P. O. Box 1412. m30:1y 66 Broadway, New York.

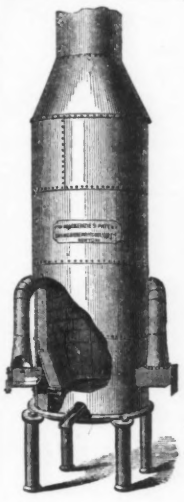
DAVID COGHLAN

MINING ENGINEER,

SCRANTON, PA.

Would undertake to inspect or manage Gold or Silver Mines. Has had a long experience in directing mining concerns and metallurgic works, and has been employed for the last year and a half as Mining and Civil Engineer under some of the principal companies of the Anthracite regions of Pennsylvania, to whom references can be given, as well as to parties of the highest respectability in New York City.

METALLURGY.



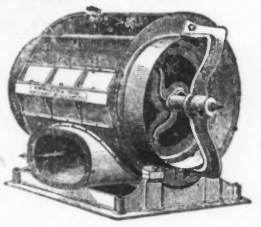
SMITH & SAYRE

MANUFACTURING COMPANY,

PROPRIETORS AND MANUFACTURERS

OF THE

MACKENZIE PATENT



BLOWER and CUPOLA and SMELTING FURNACE.

Also, Mackenzie's Patent GAS EXHAUSTER and COMPENSATOR. Address

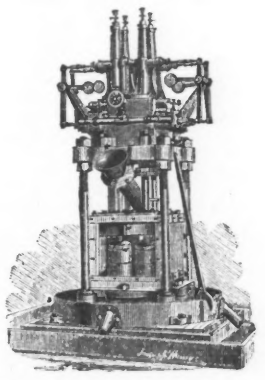
SMITH & SAYRE MANUFACTURING COMPANY.

95 Liberty street, N. Y.

Send for illustrated pamphlet. 13:4:xm:q

NEW YORK STEAM ENGINE COMPANY,

Manufacturers of



STEAM STAMPING MILL,

STATIONARY AND PORTABLE ENGINES,

Engine Lathes, Planers, Bolt Cutters, Upright Drills, and Machinist's Tools of all Descriptions.

OFFICE AND WAREROOMS, 222 PEARL STREET, N. Y feb13:3m

THE WHELPLEY AND STORER METHOD

OF USING

PULVERIZED FUEL.

The undersigned offers for sale Rights and Machinery for employing this method, by which the Slack and Waste Coals are utilized, and made equal to solid coal, and a vastly increased efficiency obtained for all kinds of Fuel in the generation of Steam, in the heating of Furnaces, and in Metallurgic Processes.

Also,

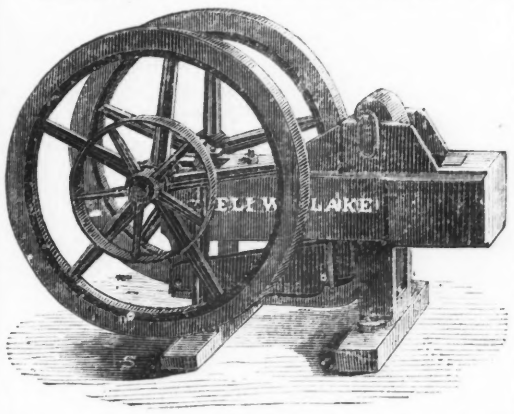
MILLS AND FURNACE RIGHTS,

for working the Ores of Copper, Gold, Silver, Zinc, etc., according to the processes designed and employed by Messrs. W. & S.

JACOB J. STORER,

jan25:3m 105 State street, Boston.

BLAKE'S STONE BREAKER.



The office of this Machine is to break Ores and Minerals of every kind into small fragments, preparatory to their further comminution by other machinery.

The machine has now been in use, enduring the severest tests, for the last ten years, during which time it has been introduced into almost every country on the globe, and is everywhere received with great and increasing favor as a labor saving machine of the first order.

Illustrated circulars, fully describing the machine, with ample testimonials to its efficiency and utility, will be furnished on application, by letter, to the undersigned.

☞ The Patents obtained for this machine in the United States and in England having been fully sustained by the courts, after well contested suits in both countries, all persons are hereby cautioned not to violate them; and they are informed that every machine now in use or offered for sale, not made by us, in which the ores are crushed between upright convergent faces or jaws actuated by a revolving shaft and fly wheel, are made and used in violation of our patent.

BLAKE, BROTHERS,

mar14-1y 351 New Haven, Conn.

W. S. KEYES,

GRADUATE OF SCHOOL OF MINES, FREIBERG,

Having had several years' practical experience in the mines and reduction works of Mexico, California and Montana, offers to mining companies his services as

Superintendent,

Agent,

or **Consulting Engineer**

Will examine and report upon mines, furnish working plans, or practically direct smelting or amalgamation.

Can furnish the highest references. Would not object to go to Mexico or South America. Address, by letter or telegraph, W. S. KEYES, M. E., Helena, M. T. Feb8-3mos.

METALLURGY.

SCHOOL OF MINES, COLUMBIA COLLEGE,

EAST 49th STREET, NEW YORK.

FACULTY:

F. A. P. BARNARD, S.T.D., LL.D., President.
T. EGLESTON, Jr., E. M., Mineralogy and Metallurgy.
FRANCIS L. VINTON, E. M., Mining Engineering.
C. F. CHANDLER, Ph. D., Analytical and Applied Chemistry
JOHN TORREY, M.D., LL.D., Botany.
CHARLES A. JOY, Ph. D., General Chemistry.
WILLIAM G. PECK, LL.D., Mining Surveying.
JOHN H. VAN AMRINGE, A.M., Mathematics.
OGDEN N. ROOD, A.M., Mechanics and Physics.
JOHN S. NEWBERRY, M.D., Geology.

The plan of this School embraces a three years' course for the degree of ENGINEER OF MINES, or BACHELOR OF PHILOSOPHY.

For admission, candidates for a degree must pass an examination in Arithmetic, Algebra, Geometry and Plain Trigonometry. Persons not candidates for degrees are admitted without examination, and may pursue any or all of the subjects taught. The next session begins October 7, 1867. The examination for admission will be held on October 3. For further information, and for catalogues, apply to DR. C. F. CHANDLER,

mar28:1y Dean of the Faculty

JOHN WATERS' SONS,

GOLD AND SILVER REFINERS

AND

ASSAYERS.

ESTABLISHED 1839.

No. 57 VESEY STREET, NEW YORK.

ANALYSES MADE OF ORES, MINERALS, ETC., BY FIRE.

Lead and Copper Ores a Specialty.
Miners are assured of careful and accurate assays.
Gold Dust and Bars Purchased. mar9:3m

HUEPEDEN & WOLTERS,

ANALYTICAL CHEMISTS and ASSAYERS.

AND CONSULTING ENGINEERS,

Central City, Colorado.

Examinations of, and Reports on Mineral Lands and Mines, furnished on application. Analyses and Assays of Ores executed with accuracy. Plans and specifications furnished for the erection of Smelting Works, Desulphurizing Furnaces, &c., &c. 24:4:tf

---

R. P. ROTHWELL,

MINING & CIVIL ENGINEER AND METALLURGIST,

From the Imperial School of Mines, Paris, Member of the Geological Society of France, &c.

OFFICE, WILKESBARRE, PA.

Having had a large practical experience in Europe and this country is prepared to examine and report on all kinds of Mineral property, superintend Mines and Metallurgical Works, Assay Ores, &c. 18:2:qp

---

GEO. W. MAYNARD,

PROFESSOR OF MINING and METALLURGY

AT THE RENSSELAER POLYTECHNIC INSTITUTE,

TROY, NEW YORK.

Reports, Consultations, Assays. ☞ Especial attention given to Metallurgical Operations. Jan 18.1y

---

I. W. SYLVESTER,

ASSAYER & CHEMIST.

Laboratory, 22 Willow street, Brooklyn. To be seen during office hours at United States Assay Office, No. 30 Wall street, New York.

Orders received for HIBBS' ASSAY FURNACE—an invention combining many new and really useful improvements. 8:3:1y

---

ADELBERG & RAYMOND,

MINING ENGINEERS AND METALLURGISTS,

90 BROADWAY, N. Y.

Mines, Mineral Lands, Machinery and Metallurgical or Chemical Works examined and reported upon. Advice given to miners, chemists and manufacturers. Assays and analyses made. Competent Engineers furnished to companies individuals 5:3:qp

---

IMPORTANT TO MINERS.

Every description of Analysis and Assays carefully attended to, and returns promptly made, by

WESTERN & COMPANY,

No. 41 Pine street and No. 37 Park Row, New York City.

NEW YORK BELTING AND PACKING COMPANY,

MANUFACTURERS OF

VULCANIZED RUBBER FABRICS,

ADAPTED TO MECHANICAL PURPOSES.

Patent Smooth Belting, (Patented Nov. 22, 1859,) vulcanized between layers of a patent metallic alloy, by which the stretch is entirely taken out, the surface made perfectly smooth, and the substance thoroughly and evenly vulcanized. This is the only process that will make reliable Rubber Belting

Hose never needs oiling, and warranted to stand any required pressure

Steam Packing in every variety, and warranted to stand 300° of heat.

Solid Emery Vulcanite.—Wheels made of this are solid, and resemble stone or iron; will wear out hundreds of the ordinary wheels.

Directions, Prices, etc., can be obtained by mail or otherwise.

15-4 -qp JOHN H. CHEEVER, Treasurer

Warehouse, 37 & 38 Park Row, N. Y.

AMERICAN JOURNAL OF SCIENCE AND ARTS.

Edited by Professors B. SILLIMAN and J. D. DANA, Aided by Dr. Wolcott Gibbs and Prof. Asa Gray, of Cambridge: and Prof. G. J. Brush, S. W. Johnson, and H. A. Newton, of New Haven, is published at New Haven, Connecticut, in numbers of 140 pages each, every two months, commencing each year with January, making two volumes a year. Price $6 a year in advance. Each number contains original memoirs on various scientific topics, besides extended selections from the Scientific Journals of the other Continent. This Journal is now in its fiftieth year. The forty-fifth volume of the second series began with the number for January, 1868.

Postage prepaid after payment for the year is received.

Orders should be addressed to the Proprietors,

ap11:3t SILLIMAN & DANA.

WATER-PROOF SAFETY FUSE.

Warranted Sure Fire if not Cut in Tamping.

MANUFACTURED BY

UREN, DUNSTONE & BLIGHT,

EAGLE RIVER, KEEWENAW CO., (L. S.) MICHIGAN.

MINERS TRY IT! All we ask is A FAIR FIELD AND NO FAVOR. nov13 1y

---

BENJAMIN SMITH LYMAN,

MINING ENGINEER,

GEOLOGIST AND TOPOGRAPHER,

No. 135 South Fifth Street, Philadelphia.

GOOD INVESTMENT.

FOR SALE.—A very valuable Gold Mine, recently developed, immediately on the main gold belt, in the southern part of Fauquier County, Va. The veins are large and well defined; ores almost entirely oxyds, abounding in free gold, easily mined and reduced. An examination invited. For particulars, address

JULIUS EMBREY,

ap11:2t Morrisville, Fauquier Co., Va

COAL DEALERS & SHIPPERS.

WHITE, FOWLER & SNOW,

Successors to JOHN WHITE & CO.,

Wilkesbarre and Lehigh Coal,

FOR STEAM AND FAMILY USE.

OFFICE,

Room No. 75, 111 Broadway, (Trinity Building),

JNO. WHITE. LINDLEY H. FOWLER dec30 LOUIS T. SNOW.

ENGLISH COAL AND CANNEL.

DESPARD COAL, from Baltimore,

PROVINCIAL COAL,

ANTHRACITE COAL.

For Sale in Lots to suit.

PARMELE BROS.,

AGENCY OF GEORGE WRIGHT & CO., LIVERPOOL,

Office, No. 32 PINE STREET, NEW YORK.

dec30:66:67 Yard, West 22d Street, near 10th Avenue.

HONEY BROOK COAL COMPANY,

Exclusive Miners and Shippers of the Celebrated

HONEY BROOK LEHIGH COAL,

NO. 113 BROADWAY, NEW YORK.

JAS. H. LYLES, Agt.

Wharves, Port Johnston, N. J. Philadelphia Office, 209 Walnut street.

ap20:1y **J. B. McCREARY, President.**

HECKSCHER, BOWNS & CO.,

NO. 111 BROADWAY,

ROOM 79 (TRINITY BUILDING), NEW YORK.

Offer for sale the following Coals at the lowest market rates

GLENDON COAL COMPANY'S

BUCK RIDGE, SHAMOKIN,

BLACK DIAMOND VEIN, RED ASH.

LOCUST MOUNTAIN, WHITE ASH.

Agents for the celebrated "Hartford Co Coal." vol2-5 q

CALDWELL, GORDON & CO.,

WHOLESALE DEALERS IN

ANTHRACITE AND BITUMINOUS COAL,

HENRY HEIL'S

CELEBRATED EAST FRANKLIN COAL,

NO. 35 PINE STREET, NEW YORK.

S. CALDWELL, JR. F. A. HALL, N. P. GORDON, S. B. YOUNG

BOSTON, Office 144 State St. PHILADELPHIA, 112 Walnut St.

jan6:1l

DAY, HUDDELL & CO.,

MINERS AND SHIPPERS OF

HARLEIGH LEHIGH COAL,

And the Celebrated

HICKORY, BROAD MOUNTAIN, EXCELSIOR, SHAMOKIN AND NEW ENGLAND RED ASH.

OFFICES:

Room 51, TRINITY BUILDING, 111 Broadway.

Philadelphia, 109 WALNUT STREET.

Boston, 7 DOANE STREET.

ap20 :1y

W. D. CRANE & CO.,

SHIPPERS OF

ANTHRACITE AND BITUMINOUS COAL.

SOLE AGENTS FOR

SUPERIOR GAS COALS.

Office, 113 Broadway, New York.

W. D. CRANE. m17:1y J. C. BANCKELMANN.

LEWIS AUDENRIED & CO.,

Miners and Shippers of

CELEBRATED ANTHRACITE COALS,

Diamond Vein and Locust Mountain.

FROM PHILADELPHIA AND THE MINES, ELIZABETHPORT AND JERSEY CITY

Also, superior CUMBERLAND COALS.

205 Walnut street, PHILA. 14 Kilby street, BOSTON.

20 Westminster street, PROV. 24 Second street, BALTIMORE

27-tf 110 BROADWAY, NEW YORK.

SAMUEL BONNELL, JR.,

OFFERS FOR SALE

SUGAR CREEK

LEHIGH COAL,

Delivered on board vessels at Pier No. 4, Elizabethport, N. J.

Office, 43 & 45 Trinity Building, 111 Broadway N. Y. 13.qp.y

NEW BOSTON COAL MINING CONPANY,

Office, No. 55 Broadway, New York.

Miners and Shippers of Superior

BUCK MOUNTAIN COAL,

Deliverable at Elizabethport and the Harbour of New York. Supplied to Steamers, Dealers and Manufacturers at market rates.

F. H. DELANO, Treasurer. dec28-67-68 G. WAYLAND, Sales Agent.

REPPLIER, FREEMAN & CO.,

MINERS AND SHIPPERS OF

REPPLIER'S LOCUST MOUNTAIN, DUNCAN RED ASH

AND

CUMBERLAND COALS.

WHARF, NORTH EIGHTH STREET, WILLIAMSBURG.

Office, - - - - - - - 111 Broadway, New York.

mar30:1y

COXE BRO.'S & CO.

CROSS CREEK COLLIERY.

MINERS AND SHIPPERS

of the Celebrated Cross Creek

Free Burning Lehigh Red Ash Coal

FROM THE BUCK MOUNTAIN VEIN

OFFICES:

Philadelphia, Walnut Street. | Drifton, Jeddo P. O. Luzerne, Co., Pa.

Agent in New York SAMUEL BONNELL, JR., Room 43, Trinity Building, 111 Broadway.

Feb. 1-1 yr

RANDOLPH BROTHERS,

SOLE AGENTS OF THE ORIGINAL

SPRING MOUNTAIN LEHIGH COAL,

Extensively Used for Smelting Iron.

ROOMS, 28 AND 30 TRINITY BUILDING, NEW YORK a-1tf

ASHBURTON COAL CO.,

MINERS AND SHIPPERS OF

LEHIGH COAL,

Delivered direct from the mines, or for resupment at Port Johnston.

LOUIS J. BELLONI, Jr., Pres't.

2:4-qp OFFICE, No. 41 PINE STREET, NEWYORK.

WILKESBARRE COAL,

DELIVERED DIRECT FROM THE MINES OF THE

Wilkesbarre Coal and Iron Company,

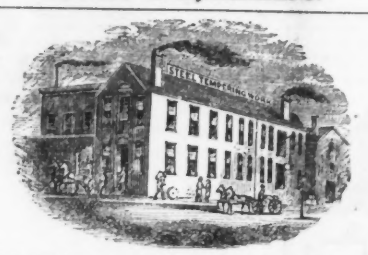
OR, FOR RESHIPMENT AT

HOBOKEN AND JERSEY CITY.

OFFICE—No. 16 WALL STREET, NEW YORK

mar14-1y

IRON DEALERS.



CLOVER LEAF PLANE IRONS.

MANUFACTURED EXCLUSIVELY BY US, UNDER

REYNOLDS' PATENTS

for tempering steel, possesses the following superior qualities:

1. They are tempered the same in the centre as at the edges.
2. They hold a fine cutlery temper until the iron is worn out.
3. There are no soft spots in them.
4. One of these Irons will outwear four to five Irons tempered the old way.
5. They are sold at the same price of other Irons.
6. Every Iron is warranted to possess the above qualities or no sale.

We hereby authorize all Hardware Dealers to allow their customers to try our Irons, and if not perfectly satisfactory, refund price paid and charge Irons back to us.

Every PLANE IRON made by us bears our

CLOVER LEAF TRADE MARK

REYNOLDS, BARBER & CO.,

STEEL TEMPERING WORKS,

mar21-3m-eow Auburn, N. Y.

SLATE DEALERS.

HUDSON RIVER SLATE COMPANY,

25 PARK ROW, NEW YORK,

Supply from their Quarries

SUPERIOR BLUE SLATE,

IN

ASHLER BUILDING FRONTS,	MANTLES & MANTLE STOCK.
HOUSE TILES, of all sizes,	SLABS of any dimensions,
FLAGGING TILES, of any large size,	HEARTHS, of all sizes,
PLAIN FLAGGING of any thickness,	SLATE DUST,
CURBING, plain and fancy,	BILLIARD BEDS,
COUNTERS & COUNTER TOPS,	SILLS and LINTELS.
WAINSCOTING & PANELING SLABS for MARBLEIZING, of any size ordered,	SINKS, CEMENTERY STOCK, SLAB ROOFING.

Any Articles Marbleized to Order in the Most Superior Style.

☞ All orders and communications should be addressed to

ABRAHAM BELL'S SON,

Nov 23,qx.m 25 Park Row, New York.

JOHN GALT,

WHOLESALE DEALER IN ROOFING SLATE.

SOLE AGENT FOR THE

EAGLE SLATE COMPANY OF VERMONT,

Who produce Purple, Green and Red ROOFING SLATE. Sole Agent for New York and the West for the

CHAPMAN SLATE COMPANY OF PENNSYLVANIA,

Who produce a Superior Black or Dark Blue Slate; also Sole Agent for New York and the West for the

LEHIGH SLATE COMPANY OF PENNSYLVANIA.

GENERAL DEPOT,

Cor. Tenth Avenue and Twelfth Street, N. Y. City.

Established in 1850.

BRANCH DEPOTS:

Buffalo: Jas. W. Chatman, Terrace Square.
Chicago: James Parker, corner Franklin and Washington Streets.
Charleston, S. C.: C. J. Demorest, East Bay, near Wentworth Street.
New Orleans: J. J. Leo, 368 Magazine Street.

☞ I am prepared to give parties the prices of Slate delivered throughout the United States at the Railroad Station.

Orders by mail will receive prompt attention. jan1:1y

MACHINERY, &c.

W. D. ANDREWS & BRO., 414 WATER ST., NEW YORK

Manufacturers of Andrews' Patent

OSCILLATING ENGINES,

CENTRIFUGAL PUMPS, AND TUBULAR BOILERS.

Our ENGINES occupy little room, are light, simple, cheap, and economical require no special foundation or balance-wheel pit, and can be run from **150** to **500** revolutions per minute with safety. Sizes from **1-2** Horse to **250** Horse-Power.

Our CENTRIFUGAL PUMPS pass mud, sand, coal, corn, gravel, etc., without injury, and use little power. Sizes from **90** Gallons to **40,000** Gallons per minute capacity. For sewers, canals, cofter dams, condensers, irrigation, and wrecking, they are unequaled.

Our BOILERS are light, strong, and portable, are economical of fuel, burn Wood, Hard or Soft Coal, and CONSUME THE SMOKE. Sizes from **2** to **50** Horse-power.

Awarded First Premiums at the recent Fair of the American Institute—a gold medal to each.

Portables from **2** to **20** Horse-Power. Send for descriptive pamphlets and price-lists Jun1:1qp.q

---

WIRE ROPE.

The Subscribers, agents for

GARNOCK, BIBBY & CO.'S

Celebrated Steel and Charcoal Wire Rope, for Mines, Inclined Planes, Bridges, Derricks, and Hoisting Purposes. Also Galvanized Charcoal and B. B. Rope for Ships' Standing Rigging, Stays, Guys, &c.

A large stock constantly on hand. Orders filled with dispatch. For further particulars as to price, test weight and working strain, apply for Mining Circular to

JOHN W MASON & CO.,

June29:1y 43 Broadway, N. Y

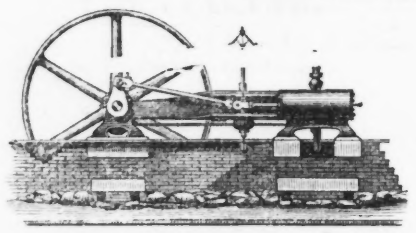
MACHINERY.

SOUTH BROOKLYN

Steam Engine and Boiler Works,

ON IMLAY, SUMMIT AND VAN BRUNT STREETS, BROOKLYN, N. Y

D. McLEOD, Proprietor



Manufactory of the

"Babcock & Wilcox Patent Steam Engines,"

high and low pressure, for Stationary and Marine purposes, up to the largest class. Orders for the above Engines, and for BOILERS, IRON and BRASS CASTINGS, COPPERSMITH WORK, FORGINGS and HEAVY MACHINERY of all descriptions (for which this establishment has unsurpassed facilities), executes promptly, at moderate prices.

The BABCOCK & WILCOX Patent Engines combine the simplest and most durable Valve Gear, the greatest range of cut off, perfect regularity of speed and the highest economy of fuel. The cylinders are jacketed with live steam, and all the parts are designed and constructed with reference to the greatest durability and smoothness of action. They are daily gaining in popularity, and are superseding the best cut-off Engines heretofore built, with a saving of from twenty-five to forty per cent. in fuel.

Send for circulars, containing full description. Address

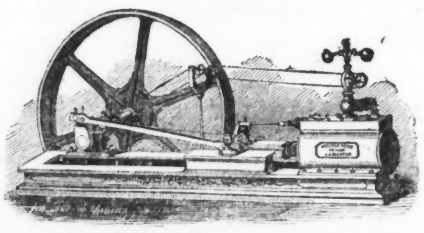
D. McLEOD, Box 2993 New York P. O.,

doc27.67:1y Or at the Works in Brooklyn

TODD & RAFFERTY,

GENERAL

Machinery Merchants, Engineers and Machinists.



Manufacturers of Stationary and Portable Steam Engines and Boilers; also Flax, Hemp, Tow, Oakum, and

ROPE MACHINERY, MILL GEARING, SHAFTING,

Lathes, Planers, Drills, Chucks, &c., Iron and Brass Castings. Judson's & Snow's Patent Governors constantly on hand.

OFFICE AND WAREROOMS, NO. 4 DEY ST, N. Y.

Office and Works, Paterson, N. J.

JOSEPH C. TODD, 17-3:xm PHILIP RAFFERTY.

PORTABLE AND STATIONARY

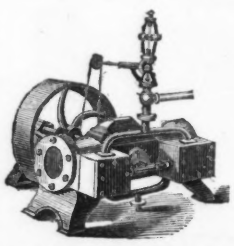
STEAM ENGINES.

Boilers, Circular Saw Mills, Mill Work, Cotton Gins, Cotton Gin Materials,

Manufactured by the

ALBERTSON & DOUGLASS MACHINE COMPANY,

NEW LONDON, CONN. mar16:1y



ALL IN SEARCH OF ENGINES SHOULD EXAMINE

"THE RUDDICK,"

The most compact, simplest and CHEAPEST

in the world.

DEVEREUX, THOMPSON & CO.

82 Cedar Street, N. Y.,

or

A. F. DEVEREUX & Co, Boston,

Sole Manufacturers.

22:4:qx

No Experiment. Old approved methods in all its parts.

THE WATSON MANUFACTURING COMPANY.

RAILROAD AVENUE, OPPOSITE ERIE RAILWAY STATION,

MACHINISTS AND MILLWRIGHTS,

PATERSON, N. J.

Water Wheels, Heavy Gearing, Shafting, Pullies, etc

ALSO, PORTABLE ENGINES.

And all kinds of Machinery for Oil Wheels, etc.

Rolling Mills, Steam Engines, Hydraulic and other Presses,

LATHES, PLANING AND SCREWING MACHINES,

And Tools in general. Iron and Brass Castings, of all sizes and descriptions Patterns made to order. Also, manufacturers of the

Improved Turbine Water Wheel.

oct.12, 67-1 y.

PORTABLE STEAM ENGINES,

COMBINING THE MAXIMUM OF

EFFICIENCY, DURABILITY AND ECONOMY,

with the minimum of weight and price. They are widely and favorably known, more than SIX HUNDRED being in use. All warranted satisfactory, or no sale Descriptive circulars sent on application. Address

nov10-67:6m J. C. HOADLEY & Co., Lawrence, Mass

THE NOVELTY IRON WORKS.

Foot East 13th, 13th and 14th Streets.

BRANCH OFFICE.....79 Liberty street.

MANUFACTURE

Steam Engines and Boilers,

Cotton, Sugar and Rice Machinery,

of the most improved kinds. All kinds of

Brass and Copper Work,

Indicators, Clocks, Steam Gauges,

Gauge Cocks, &c.

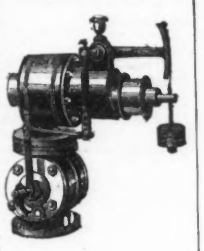
Large stock of patterns of SPUR, BEVEL and MITRE WHEELS, PULLIES, and all sorts of MILL WORK. feb1:1y

MISCELLANEOUS.

HUNTOON PATENT GOVERNOR.

The advantages which these Governors possess, are that the engines to which they are attached, will maintain a

REGULAR SPEED WITHOUT ANY VARIATION,



whatever may be the resistance of the work, or how suddenly it may be thrown on and off. The engine will run unin luenced by the varying pressure of the steam, be it thirty or eighty lbs. In a moment's time the revolutions of the driving wheel can be changed to exactly the speed required,

WITHOUT STOPPING OR CHANGING

any of the mechanism, remaining perfectly governed wherever set.

The proprietors warrant economical results from its use, for in no instance has it failed

TO PROVE ITSELF A STEAM SAVER.

THE CENTRIFUGAL OR BALL PRINCIPLE IS ENTIRELY ABANDONED IN THIS INVENTION,

and the valve lever is sustained with the same velocity in one position as another.

This Governor was illustrated in the JOURNAL OF MINING, August 3d, 1867.
Send for Illustrated Circular.

R. K. HUNTOON,
J. AUGUSTUS LYNCH,
103 State street, Boston, Mass.

13:4:qp

STEPHEN J. GEOGHEGAN & CO.

(Successors to Cameron & Geoghegan,)
199 & 201 Centre Street, N.Y.,
Adjoining Earle's Hotel.
MANUFACTURERS AND DEALERS IN
Wrought and Cast Iron Steam Pipes, Valves, Cocks, Fittings, &c.
FOR STEAM, WATER, AND GAS.
Also,
High and Low Pressure Steam Heating Apparatus applied to
FACTORIES, PUBLIC BUILDINGS, STORES AND DWELLINGS.
Manufacturers and Sole Agents for
STORER'S PATENT LUBRICATORS,
for supplying lubricating matter in bulk to the cylinders of Marine and Stationery Steam Engines, Steam Pumps, Heaters, Steam Traps, Pipe Tongs, Pipes, Vices, Stocks and Dyes, &c., &c.
We make Steam and Gas Fitter's tools a speciality.
Coils for Breweries, Distilleries, Soap Factories, &c., &c
STEAM PUMPS.
Send for Illustrated Circular. 7-4-xm

WALTONS & LEONARD,

MACHINISTS' AND RAILROAD SUPPLIES,
METALS, TOOLS AND HARDWARE,
No. 58 John Street, New York.

AGENTS FOR THE SALE OF
American Bolt Co.'s Bolt, Nut Washers, &c.
Sturtevant, Pressure Blowers, Talt's Smith's Shears,
Packer's and Walworth's Ratchets, Harrington's Patent Tuyere,
Patent Differential Pulleys, Green Works, Patent Wrenches,
Dudgeon's Patent Hydraulic Jacks and Tube Expanders,
Dixon's Crucibles, Wellington Mills Emery and Emery Cloth,
Iron Pulley, Blocks, Twist Drills, Portable Forges, &c.
AND A LARGE ASSORTMENT OF
Stub's Tools and Files and Supplies for Railroads, Engineers, Manufacturers and Machinists.
W. M. WALTON. JOS. J. WALTON. O. W. LEONARD
dec12:1y

CAMPBELL, WHITTIER & CO.,

MANUFACTURERS OF
STEAM ENGINES AND BOILERS.
MACHINERY IN GENERAL.
Manufacturers and sole Agents of
Miller's Patent Safety Elevator, for Factories, Stores, etc.,
ROXBURY, MASS.
J. RUSSELL CAMPBELL. CHARLES WHITTIER. HENRY H. M'BURNEY.
Prompt attention paid to repairing Steam Engines, Boilers and Machinery.
jan25:6m

IRON & WOOD WORKING MACHINERY
TURBINE WATER-WHEELS.
LUCIUS W. POND,
85 LIBERTY ST. N.Y. and Worcester, Mass.
nov2:1y

FRANK B. POLLEY & CO.,

ENGINEERS AND MACHINISTS,
277 & 279 First street, Brooklyn, New York.
Manufacturer of
HIGH AND LOW PRESSURE STEAM ENGINES,
PORTABLE AND HOISTING ENGINES,
Also,
ROSS PATENT BURR STONE GRINDING MILL.
FRANK B. POLLEY. EDWD. W. CLARKSON.
Send for Circular. jan2:1y.q

L. B. TUPPER'S FURNACE GRATE BAR, for Steamships, Steamboats, Locomotives, Stationary Furnaces, &c. This is the only GRATE that has received a SILVER MEDAL in the United States. Patented September 11, 1860. The only original Tupper Furnace. Grate Bar, L. B. Tupper's Patents, furnished at short notice, for Steamers, Locomotives, Stationary Furnaces, &c., either circular or square. Now is your time to purchase. If you wish to save fuel and expense, use L. B. Tupper's Improved Patent Furnace Grate Bar: they are lighter, more durable, and save more fuel than any other Grate in use. Orders giving exact size of Furnace promptly attended to by addressing L. B. TUPPER, 120 West street, between Courtlandt and Dey streets, or at JOHN POWERS' Machine Shop, 434 East 10th treet, New York. jan18:3m

---

OTIS, BROTHERS & CO.,

SAFETY HOISTING MACHINERY,
feb15:6m 309 BROADWAY, N. Y. CITY.

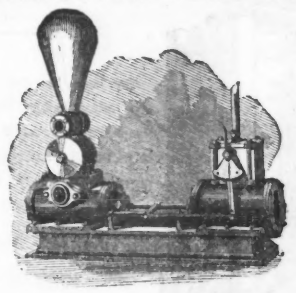
INCRUSTATION OF STEAM BOILERS PREVENTED by WINANS' BOILER POWDER, 11 Wall street, New York

T. S. POST & Co., Benham, Texas, say: "We were burning *two* cords of wood daily; put in a dose of Winans' Powder, and found less fuel necessary each day, until at the end of the week we used less than *one* cord per day, and had better steam than formerly. This may seem incredible to those who have not used these Powders, but we are willing to make oath to the fact. We would not be without the article for ten times its value." mar.21 :tf.

STEAM PUMPS.

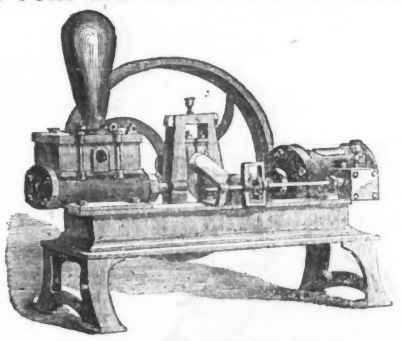
NIAGARA STEAM PUMP WORKS

First Premium AT FAIR. American Institute. 1867.



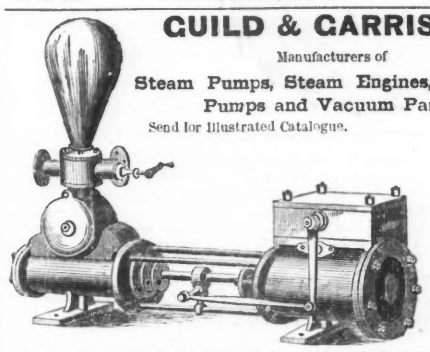
HARDICK BROTHERS,
SUCCESSORS TO
CAMPBELL & HARDICK, BROTHERS,
No. 9 ADAMS STREET, BROOKLYN, N. Y.
Send for circular. 6-4 xm

J. CLAYTON'S
Patent Steam Pumps.
HAND PUMP AND STEAM ENGINE COMBINED.



These pumps contain every desirable quality in a steam pump, are made of the best material, and in the best manner, and are the cheapest first-class pumps in the market. For cut and description see JOURNAL OF MINING, No. 18, Vol. I. Please send for circular.
All sizes of pumps made to order at the shortest notice.
nov18-3m JAMES CLAYTON, 102 Front street, Brooklyn, N. Y.

GUILD & GARRISON,

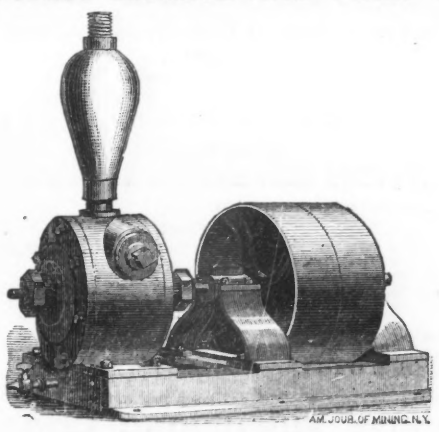


Manufacturers of
Steam Pumps, Steam Engines, Vacuum Pumps and Vacuum Pans.
Send for Illustrated Catalogue.

For sale at the STEAM PUMP WORKS, 26, 28 and 30 First street, Williamsburgh, N. Y. jan1-6m

---

ROTARY ENGINE AND PUMP Co.

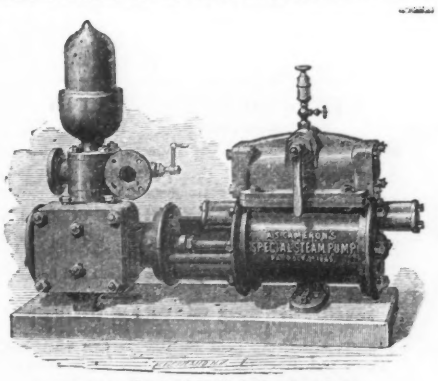


METROPOLITAN PATENT

The best and most effective Steam and Belt Pump adapted for general use. Warranted to form a vacuum of 28 inches. Mine owners should call and examine it as a MINING PUMP.
Offices of the Company, No. 181 PEARL STREET, Room 10, and No. 14 Second Avenue. Send for Circular. 12.3:qp

---

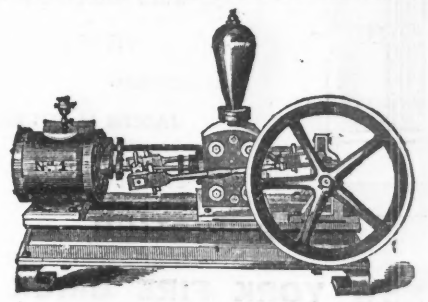
STEAM PUMPS IN EVERY POSSIBLE VARIETY.



A. S. CAMERON & CO.,
22ND STREET, CORNER OF 2ND AVENUE, N. Y.
feb22:6m

STEAM PUMPS.

THE WOODWARD
STEAM PUMP MANUFACTURING COMPANY,
MANUFACTURERS OF THE
WOODWARD PATENT IMPROVED SAFETY



STEAM PUMP AND FIRE ENGINE.

STEAM, WATER, AND GAS FITTINGS OF ALL KINDS.

Also, dealers in WROUGHT IRON PIPE, BOILER TUBES, etc. Hotels, Churches, Factories and Public Buildings, Heated by Steam. Low Pressure.
Woodward Building, 76 and 78 Centre street, corner of Worth street, New York. Formerly of 77 Beekman street.
ml4:1y GEO. M. WOODWARD, President.

HYDRAULIC WORKS,
MANUFACTORY,
BROOKLYN, N. Y

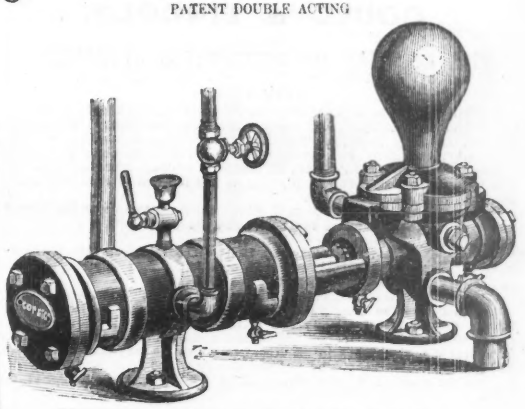
Steam Pumping Engines, Single and Duplex, Worthington's Patent, for all purposes, such as Water Works Engines, Condensing or Non-condensing; Air and Circulating Pumps, for Marine Engines; Blowing Engines; Vacuum Pumps Stationary and Portable Steam Fire Engines Boiler Feed Pumps, Wrecking Pumps,

Mining Pumps,

Water Meters, Oil Meters; Water Pressure Engines; Stamp Mills for Gold, Silver and Copper Ore; Eaton's Patent Amalgamators for Gold and Silver Steam and Gas Pipe, Valves, Fittings, &c.; Iron and Brass Castings.
Send for Circular. E. R. WORTHINGTON,
Feb1:1y 61 Beekman street, New York.

THE
POSITIVE STEAM PUMP,
WILLIAM HARSEN,
PATENTEE AND MANUFACTURER, GREENPOINT, L. I.
Costs one-third less than any other First-Class Pump of the same Capacity;
Send for Circular to
J. W. COLE,
MANUFACTURER'S AGENT, at CARR'S, 45 Courtland Street,
nov2 1y q

COPE & MAXWELL'S
PATENT DOUBLE ACTING



STEAM PUMPS,
FIRE ENGINES, RAILROAD STATION PUMPS, and BOILER FEEDERS,
COPE & CO., SOLE MANUFACTURERS,
No. 118 East Second Street, Cincinnati, Ohio.
Steam Pipe Fittings and General Brass Work.
The right to manufacture in the Eastern States for sale. nov2xm:eow

---

ATLANTIC
STEAM ENGINE WORKS,
IRON AND BRASS FOUNDERS.
MANUFACTURERS OF
Steam Engines, Boilers, Sugar Mills, Tanks, Linseed and Cotton seed Oil Presses, and Machinery used in the Arts and Manufactures.
CORNER WATER AND ADAMS STREETS, BROOKLYN, N. Y.
R. B. DUYCKINCK, Treas. 2:4xm **WM. ARTHUR, Pres.**

CLINTON IRON FOUNDRY,
502 and 504 WATER, and 239 and 241 CHERRY STREETS,
Between Pike and Rutgers Slips, New York.
LEADER PIPES,
PULLYS, HANGERS,
GRATE BARS.
MACHINERY PATTERNS of all kinds,
Also,
LOAM AND DRY SAND CASTINGS
of every description, for mining purposes, made to order at the shortest notice and on reasonable terms.
W. McKINLEY. oct 26-6m R SMACK.

Montana Mining Agency.

WM. Y. LOVELL. JAS. GOSTLING.

We buy and sell every description of mining property in this Territory, examine and report upon mines, adjust mining accounts, procure U. S. Patents for mining property, examine Titles.

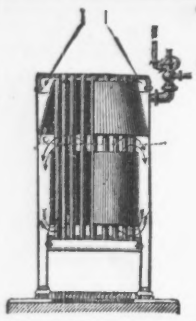
Specimens from any Lode, or Cabinets of the Minerals of this Territory, sent by express to any address.

Charges moderate.

LOVELL & GOSTLING,
ap11:6m Box 200 Virginia City, M. T.

BULLARD & PARSONS,
HARTFORD, CONN.,
Manufacturers of
IMPROVED UPRIGHT DRILLS,
with friction feed. This tool can be used with equal facility for light drilling or heavy boring—is particularly adapted to railroad, locomotive, steam engine, and general machine shops. We also make first class Shafting, and Mill Work, from a great variety of new and improved patterns. We furnish with our shafting, patent self-oiling boxes and friction couplings. Special machinery to order. Send for cut and price list. July 6qp a. 6t.

MISCELLANEOUS.



THE HICKS BOILER,

WILL NOT SCALE,

WILL NOT FOAM,

GIVES DRY STEAM,

Send for Circular to

JAMES M. HICKS,

No. 85 LIBERTY STREET, New York City.

11:3:1qp

B. KREISCHER,

NEW YORK FIRE BRICK!

AND

Staten Island!

CLAY RETORT WORKS.

ESTABLISHED 1845.

OFFICE, 58 GOERCK STREET,

CRNER DELANCEY ST., EAST RIVER,

mar28:1y:q NEW YORK.

1868.

YEAR BOOK OF FACTS.

A BOOK FOR THE PEOPLE.

JUST PUBLISHED BY

GOULD & LINCOLN,

59 WASHINGTON STREET, BOSTON,

THE ANNUAL OF SCIENTIFIC DISCOVERY,

OY, YEAR-BOOK OF FACTS IN SCIENCE AND ART,

FOR 1868.

Exhibiting the most important Discoveries and Improvements in Mechanics, Useful Arts, Natural Philosophy, Chemistry, Astronomy, Meteorology, Biology, including Zoology, Physiology and Botany—Mineralogy, Geology, Geography, Antiquities, &c., together with a list of recent Scientific Publications; classified list of Patents; Obituartes of eminent Scientific Men. Edited by SAMUEL KNEELAND, M. D., with a fine likeness of Prof. WILLIAM B. ROGERS. 12mo, cloth, price, $2.

The present volume of the Annual, which embraces some new features and improvements, will be found the best and most popular of all the eighteen volumes issued.

Volumes of the same work for years 1850 to 1868, (eighteen vols..) with the likeness of some distinguished Scientific or Literary man in each, bound in uniform style, with a neat, substantial box, $32.

☞ Each volume is distinct in itself, and contains entirely new matter.

This is one of the most valuable publications for the mechanic, artist, teacher, and, in fact, for every man in the community. It shows him the annual progress in discoveries and improvements, not only in his own particular line of business, but in all others in which he may take an interest. Each annual volume should be in every family where there is a taste or disposition for reading. Copies sent by mail, postage free on receipt of the price. mar21

TERWILLIGER & CO.,

MANUFACTURERS OF THE

IMPROVED TRIPLE FLANGE

Fire and Burglar Proof Safes,

With Combination and Powder-proof locks, warranted free from dampness.

VAULT DOORS AND BANKERS' SAFES

Made to order of our Patent welded Steel and Iron, and sold subject to test.

WARRANTED THE BEST IN THE WORLD.

Please call or send for illustrated catalogue.

TERWILLIGER & CO.,

PRINCIPAL DEPOT, 100 MAIDEN LANE, NEW YORK. feb 223m

M. BOTTICHER'S

PATENT ADJUSTABLE PRESSURE AND VACUUM

EAGLE GAUGE,

Can be furnished from 10 to 600 pounds pressure. The most simple and reliable Gauge in use.

Every Gauge warranted to give satisfaction. State rights for sale

Address, M. BOTTICHER,

20:4:qx 264 Broad street, cor. Bank, Newark, N. J.

LINDSAY'S PATENT.

The merits of this Wrench are too well known to need comment Go to the nearest hardware store and LOOK AT IT BEFORE PURCHASING ANY OTHER, or send for illustrated circular to

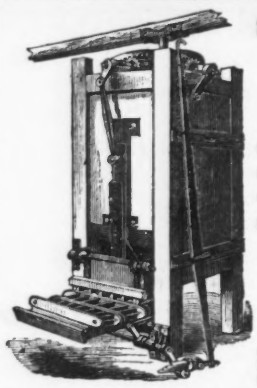
MANVEL & LINDSAY,

15 4qx New York.

FILE-COVERS. FILE-COVERS.
FILE-COVERS. FILE-COVERS.
FILE-COVERS. FILE-COVERS.

For preserving the numbers of the AMERICAN JOURNAL OF MINING. Price $2. For sale by WESTERN & CO., 37 Park Row, N. Y.

MISCELLANEOUS.



STAR BRICK MACHINE

The best, strongest and cheapest in the United States. We warrant it to make more and better Bricks than any other Machine now in use. It takes less power and help to run it.

Manufactured and sold by

JAMES MARTIN,

No. 160 Washington street, Jersey City, N. J.

or, J. H. Rennick, Room 28, No. 71 Broadway.

5:4:qp

IRON AND STEEL WIRE ROPE.

MANUFACTURED BY

JOHN A. ROEBLING,

TRENTON, N. J.

FOR

INCLINED PLANES, MINING,
STANDING SHIP RIGGING,
SUSPENSION BRIDGES, FERRIES,
STAYS AND GUYS ON DERRICKS,
CRANES & SHEARS, ELEVATORS,
TILLERS, &c

A large stock of Wire Rope constantly on hand Orders filled with dispatch.

☞ For strength, size and cost see circular, which will be sent on application. nov3:67 6m

CIRCULAR SAWS

WITH

EMERSON'S PATENT MOVABLE TEETH.

These saws are meeting with unprecedented success, and their great superiority over every other kind, both as to efficiency and economy is now fully established,

ALSO,

EMERSON'S PATENT PERFORATED

Circular, and Long Saws.

(All Gumming avoided.) And

Emerson's Patent Adjustable Swage,

for Spreading, Sharpening, and Shaping the teeth of all Splitting Saws. Price $5. Manufactured by the AMERICAN SAW COMPANY,

Office No. 2 Jacob Street, near Ferry Street, New York.

Send for new Descriptive Pamphlet and Price List 1v4-ps

DUNCAN, SHERMAN & CO.,

BANKERS,

CORNER PINE AND NASSAU STREETS, N. Y.

ISSUE CIRCULAR NOTES AND LETTERS OF CREDIT FOR TRAVELLERS, AVAILABLE IN ALL THE PRINCIPAL CITIES OF THE WORLD,

MERCANTILE CREDITS

For Use in Europe, China, etc. Also Make

Transfers of Money to California & Oregon by Telegraph.

feb3:tl INTEREST ALLOWED ON DEPOSITS.

OSBORN MANUFACTURING COMPANY.

109 BLEECKER STREET.

PATENT BIRD AND ANIMAL CAGES.

No Paint used in their construction.

Vermin Proof!

All Metal!

☞ RECEIVED HIGHEST PREMIUM ☜

at the Fair of the American Institute, and at the New York State Fair of 1867.

TRADE SUPPLIED.

jan25:3m Salesroom, 109 Bleecker street, New York.

BUSH & GANT,

Wholesale and Retail Dealers in

HOUSE FURNISHING GOODS,

BUILDERS' HARDWARE,

WOOD, WILLOW, BRITTANIA AND PLATED WARE.

ALSO,

Universal Patent Wringers, Washing Machines,

PATENT BIRD AND ANIMAL CAGES, METAL TOP CHIMNEYS, AND SHINGLE BRACKETS.

N. D. BUSH,
P. O. Box, 5,969. B. E. GANT.
feb1:tf 429 Sixth Ave. Cor. 26th street.

☞ JOB PRINTING ☜

Plans, Specifications, Bill Heads,
Receipts, Letter Heads Show Bills,
Cards, Circulars, etc.

Executed at the office of the AMERICAN JOURNAL OF MINING.

WESTERN & COMPANY,

P. O. Box 5,969. No. 41 Pine street, New York City.

SCOVILL MANUFACTURING COMPANY.

MANUFACTURERS OF

SHEET BRASS, GERMAN SILVER,

BLATED METAL, BRASS BUTT HINGES,

Gilt, Lasting, Brocade and Fancy Dress Buttons, Kerosene Oil Burners, and Lamp Trimmings,

And Importers and Dealers in every description of

PHOTOGRAPHIC GOODS,

No. 4 Beekman street and 36 Park Row, New York.

Manufactory, Waterbury, Ct. mar.21:6m.

MISCELLANEOUS.

ROOT'S WROUGHT IRON SECTIONAL

SAFETY BOILER.

Has no large sheet iron shell to explode, is composed entirely of wrought iron tubes tested to 300 pounds, water and steam inside of them, offers

POSITIVE SAFETY FROM DESTRUCTIVE EXPLOSION.

Great economy of fuel over other boilers replaced by it,

DURABILITY,

COMPACTNESS,

SIMPLICITY,

GREAT FACILITY FOR EXAMINATION, CLEANING AND RENEWAL,

FREEDOM FROM SCALE AND CORROSION,

HAS NO JOINTS IN THE FIRE,

Lightness, hence low freights, largest Boilers equal in strength to smallest, as parts are uniform in size and strength, and very light, hence largest boilers can be erected in most inaccessible locations, and transported on mules for

MOUNTAIN AND MINING OPERATIONS.

No special skill required in erection or operation, lower cost for setting and reasonable price. Pamphlets, price lists, &c., mailed. Also,

ROOT'S TRUNK ENGINES,

Hoisting Machinery, Steam Pumps, &c.

JOHN B. ROOT,

ROOT STEAM ENGINE WORKS,

ap4:3m Second avenue, corner 28th street, N. Y.

GUNPOWDER SUPERSEDED.

Explosions and accidents from this time counted among the things that were Quarrymen and miners, hunters and soldiers use only

NEUMEYER'S PATENT SAFETY POWDER.

Now in universal use for blasting and mining purposes in England, France and Germany. You can handle and ship this powder with no more danger than you handle oil, sulphur, or charcoal. To explode it has to be confined and ignited by means of a fuse. One feature that specially recommends its use in mines and confined places is that very little smoke results from its combustion, and this smoke is very light, and not at all injurious to the lungs.

NEUMEYER & NIESE, ST. LOUIS, MO.,

Are the Patentees and sole manufacturers for the United States One genera agent wanted for each State. For further particulars address.

NEUMEYER & NIESE,

july:67 67 No. 9 South Third street, St. Louis.

PATENT

INTERLOCKING GRATE BARS,

MANUFACTURED BY THE

Salamander Grate Bar Company.

These Bars have been used and approved in upwards of **4,000** different Furnaces, in Factories, Steamers and Locomotives, and are superior to all others

In Durability and Economy in the Use of Fuel.

OFFICE, No. 32 Broadway, New York.

dec28:3m

DIAMOND POINTED INDIA RUBBER PENS.
DIAMOND POINTED
DIAMOND POINTED
INDIA RUBBER PENS.
INDIA RUBBER PENS.
DIAMOND POINTED INDIA RUBBER PENS.

mar28:4t NO. 164 BROADWAY, New York

CHARLES SCHENCK, a resident of Pah-Ranagat Silver Mining District, and County Surveyor of Lincoln county, Nevada, begs leave to inform the mining public, that he is able and ready to give true and valuable information about mining property in this District.

Address CHARLES SCHENCK, M. E.,
Hiko, Pahranagat District, Nevada

References—Wm. A. Smith, Esq., 25 and 27 Nassau street.
Prof. Harper, New York, etc. oct12, '67:'68

THE FUEL SAVING

FURNACE COMPANY,

No. 205 BROADWAY,

an. 1, '68-1y **NEW YORK.**

E. & H. T. ANTHONY & CO.,

501 Broadway, New York.

Manufacturers of Photographic Materials and Albums,

EXTENSIVE DEALERS IN AND MANUFACTURERS OF STEREOSCOPES AND VIEWS.

Feb 1.1y

E. P. SEARS' WOOD ENGRAVING ESTABLISHMENT.

ENGRAVING, DESIGNING AND PHOTOGRAPHING on Wood, in all its branches, viz.: Portraits, Fine Book Work, Machinery, Maps, Buildings, Illustrated Catalogues, Views, &c. N. B special attention given to Color Work of all descriptions. 48 BEEKMAN STREET, New York. aug14:1y

ASSAY FURNACES.—Pietsch's Improved Kent's Universal Furnace for melting ores, cupelling and distilling. Light and durable, and all that is desired for the laboratory or for dentists' use. Cupel moulds, tongs, &c. Address HERMAN PIETSCH, manufacturer of Chemical Apparatus, 183 Delancey street, N. Y. Reference, EDWARD N. KENT, Chemist, 14th street, formerly melter and refiner at the U. S. Assay Office. ap4:3m

MINERAL LAND in East Tennessee, for sale or exchange. 20,000 acres near Ducktown; shafts were sunk and copper struck; work abandoned in consequence of the war, and not resumed since. Address Box 80, Brooklyn, N. Y. mar28

WM. M. GABB, late member of the Geological Survey of California, offers his professional services to the mining public, especially in connection with Gold and Silver mining. No. 138 Walnut street, Philadelphia. ap4:tl

THOMAS INGHAM,

BROKER IN PIG IRON, AMERICAN AND FOREIGN.

dec7:tf **66 Wall Street, New York City.**

WANTED.—A Mining Engineer to prospect a tract of land in Central Canada. Work to begin 15th May, or earlier if season permits. No humbugs need apply. Address J. B., Drawer 448, Kingston, Canada. mar7:1t

D. P. DAVIS, CONSULTING AND SUPERINTENDING MECHANICAL ENGINEER, Office, 26½ Broadway, Room No. 5. mar21-1m

WANTED.—An Agent for the sale of Iron Ore, on commission. Address, giving references, etc., B, New York Post Office, Box 769. ap4:1t

PUBLICATIONS.

PROSPECTUS.

EL CORREO HISPANO-AMERICANO;

A Journal of Commerce, Agriculture, Mining, Mechanics, Railway Enterprise, &c., especially devoted to the interests of the Spanish American States, issued the 1st, 10th and 20th of Every Month.

The much-to-be-regretted absence of adequate commercial intercourse between the Northern and Southern continents of America is mainly to be attributed to two causes. The first of these is the lack of proper information, among the industrial and agricultural classes of the Spanish American Republics, concerning the facilities and advantages offered by the manufactures of the United States; and the second is the entire absence of direct communication between the producers of this, and the consumers of those nations; while those who are really aware of the favorable opportunities here offered are deterred from availing themselves of such advantages by the fact that the expense of importations is not infrequently tripled or quadrupled by the passage of merchandise through three or four hands before reaching its final destination. England and France have commanded hitherto the markets of South America for all kinds of manufactures, while the United States, excelling in almost every department, and offering in addition the inducement of low prices, have enjoyed but a small share of the trade. Few manufacturers in this country are aware of the vast extent and profitable nature of this commerce; but the conviction of this fact is rapidly making itself felt; and there is urgent inquiry for the proper means turning this tide, which now flows to Europe, towards the shores of Northern Continent. The possible acquisition by the United States, at remote day, of an important foothold among the Spanish American islands gives the subject at the present time great additional importance. Our naval supremacy in those regions should be accompanied by the commercial supremacy which it is chiefly useful to defend.

The best and surest means to this end is to furnish the Spanish American consumer with full and accurate information regarding the commerce, manufactures, mechanical arts, mining, metallurgy, railways, &c., of this country, setting forth in these departments our superiority to the nations of the Old World, and explaining the advantages offered in our markets.

Our conviction of the usefulness of such a step, based upon long and careful examination of the subject, and thorough personal acquaintance with each one of the Republics in question, their resources, interests and requirements, has received, of late, additional confirmation from communications addressed to us, as Publishers of the AMERICAN JOURNAL OF MINING, by prominent and influential citizens of Mexico and the other Hispano-American Republics, pointing out the expediency of either translating our Journal into Spanish, or publishing a periodical in that language for circulation in those countries. These gentlemen have urged us to put the plan into immediate execution, and promised us their influence and personal support.

We have therefore resolved upon the issue of "EL CORREO HISPANO-AMERICANO," for the purposes set forth above; and we feel assured that the nature of the Journal itself, together with the facilities we possess for its publication, and the patronage already spontaneously offered and secured, will render it not only the best medium of publicity for the manufactures of the United States, but one which cannot be superseded in point of universal circulation, efficiency of advertising, and economy of terms.

It will at once be evident, that the "CORREO HISPANO-AMERICANO" will not, like newspapers in general, depend upon partisan or political beliefs for its popularity. Politics having no place in its columns, it will have no rivals, will be free from all shackles of party spirit or interest, and will be welcomed in all circles and by all classes as a real friend, the bearer of useful information on matters of vital interest to all. Hence, it cannot come into competition with political journals of the day.

Besides the matters of value to the Spanish American reader already enumerated, the CORREO will contain the most complete market reports, including the prices of all crude and manufactured materials in the production, exchange, or consumption of which its subscribers are interested. As the day of publication coincides with the sailing of the Pacific Mail Steamer, these reports, corrected to the last moment before going to press, will afford the very latest information which can be obtained, surpassing, in this respect, all other periodical bulletins of prices current.

We would respectfully submit the following facts for the consideration of

ADVERTISERS:

Our terms for advertising are 25 cents per line for each insertion on inside pages, and 40 cents per line for each insertion on the outside.

We feel confident that this tariff will meet the approbation of all concerned; and to those who have already advertised in the columns of South American papers, the difference offered in their favor by the "CORREO" will at once be apparent, especially when they reflect that, in order to secure an adequate advertisement, covering the ground offered by our new Journal, the "CORREO HISPANO-AMERICANO," they must have recourse to the columns of all the principal newspapers in all the chief cities of each Island and Republic. Now, there are no less than *forty-seven* such newspapers, charging at an average rate 5¼ cents in gold (equal to say 7¼ cents in currency, at the present price of gold) per line for each insertion: that is to say, an advertisement of 10 lines costs for a *single time* $26.00 (gold), or $36,40 (in currency). The same advertisement in the "CORREO HISPANO-AMERICANO" costs but $2.50 in currency, and gives, besides, a superior medium of publicity, and also an incomparably wider circulation than can be reached through the above papers; for the "CORREO" will circulate where those, for political reasons, if for no others, can never go, namely, Spain. There too our Journal will be received as the welcome harbinger of useful and profitable information for all classes of society, and chiefly for the mercantile, agricultural and industrial communities.

Need we mention the benefit advertisers will derive also from the considerable circulation the "CORREO" will have in the United States? This we deem superfluous, and so, shall add no more to the incontestable advantages already enumerated.

We hope our friends and the industrial community generally will make all possible dispatch in handing in their advertisements, for the time is now short for translation, &c., before the publication of the first number, January 10th, 1868.

TERMS OF SUBSCRIPTION.

$5 per annum, payable invariably in advance. Single copies, 15 cents.

The above prices are of course exclusive of postage.

All communications relative to the "CORREO HISPANO-AMERICANO" are to be addressed to

WESTERN & COMPANY, Proprietors,
Office 41 Pine Street,
Editorial Rooms. 37 Park Row, New York.

PUBLICATIONS.

American Journal of Mining,

FOR 1868.

The Best and Largest Paper of the kind in the United States.

Of the numerous sources of wealth which this country possesses, none are more important, either in richness or extent, than her minerals. These have added largely to her prosperity, and afford a profitable means of investment for capital, and an extensive field for labor. THE AMERICAN JOURNAL OF MINING is acknowledged by the public and the press to be a faithful and accurate exponent of the important interests dependent on Mining, and to more fully meet the demands of circulating valuable and reliable information it is now increased in size to sixteen large quarto pages, thus making it the largest paper devoted to mining on this continent.

It contains: Illustrated descriptions of the latest improvements in Mechanical appliances used in opening, working and draining mines; crushing and treating the ore.

Original Papers on Geology, Metallurgy, Assaying, Chemistry, and various Scientific subjects, contributed by able Scientists, in a popular style and with scientific method and exhaustiveness.

A Summary of Mining News, collected from all parts of the continent, and classified geographically and mineralogically.

Original Editorials, devoted to a review of the legislation affecting mining, to a denunciation of fraudulent speculation, to an advocacy of such measures as will advance the interests of miners or will increase public confidence in legitimate mining, and to a consideration of all other matters of value to those interested in mines.

Interesting Correspondence, giving the opinions of the public on topics of the day.

Miscellaneous Articles, culled from a selection of the leading scientific publications of Europe and America.

Reviews of New Publications on Science, Statistics, and other subjects immediately connected with the objects of the paper.

Reports of the Proceedings of the Polytechnic Branch of the American Institute, and other Scientific bodies.

Statements of the formation and progress of Mining Companies, of their meetings and dividends, assessments, &c.

A comprehensive and correct Market Review of Stocks and Metals.

Reports on the Slate Trade, now rapidly increasing in importance.

Coal Trade Reports that will be found to surpass in extent and accuracy those given by any other paper, comprising accurate tables showing the shipments of Coal over the principal roads and canals during each week, and the increase or decrease as compared with the same period of the preceding year, the prices of coal, home, provincial and foreign, the rates of transportation, and the various tolls.

Iron Trade reports and statistics, which, in point of completeness and accuracy, deserve the favor they have received. Each week contains carefully prepared statements of Iron imports, and productions in various sections of the country; Market prices in New York, Boston, Cincinnati, Pittsburg, and London; miscellaneous statements of great value, and special items of news invaluable to every Iron merchant or manufacturer, besides a correct and unbiassed review of the Market for the past week.

Reports on the Foreign Metal Markets.

Notices of Patent Claims interesting to Miners and Metallurgists, &c., and lists of Scientific Books.

The advertising columns afford a very full directory of the chief Manufacturers of Machines used in Mining, of Chemists, Assayers, Scientific Publishers, &c.

☞ As soon after the close of every year as possible there is published in the AMERICAN JOURNAL OF MINING a complete and accurate review of each of the various Mining interests of the United States. These reviews comprise carefully compiled statistics, which show at a glance the progress, extent and operations of the whole country in every Mineral during the year past.

Each number of the AMERICAN JOURNAL OF MINING is printed in the best possible manner, on an excellent quality of paper, contains 16 large solid pages, two volumes a year, each containing 416 Pages, forming a valuable book of reference to all interested in Mining, Milling, Geology, Chemistry, &c.

☞ Published every Saturday morning.

TERMS.

SUBSCRIPTION:

$4 00 per annum, in advance. | Single copies Ten Cents.
$2 25 for six months. | ☞ Specimen Copies sent free.

RATES OF ADVERTISING:

25 cents per line of 13 words for each insertion.

☞ Terms invariably in advance

WESTERN & COMPANY, PROPRIETORS,
No. 41 Pine street and 37 Park Row, New York City.

THE MINES OF COLORADO,

BY

ORLANDO J. HOLLISTER,

(Late Editor and Proprietor of the Colorado Mining Register.)

This work treats of the discovery of gold and settlement of the country its geography, chrography, geology, mineralogy and agriculture; its early efforts at self-government, and the progress and present condition of mining industry, including a descriptive list of mining companies, principal improved mines, mills, machinery, and methods of treating ore—in short, it undertakes to give, as concisely and precisely as possible, and without any pretention, all that is known on the subject.

FOR SALE BY

WESTERN & COMPANY,
37 Park Row, N. Y.

PRICE $2 MAILED ON RECEIPT OF PRICE. feb22tf

IVES' PATENT LAMPS,

Give a better and cheaper light than GAS, can be lighted, filled, and trimmed without removing shade, globe or chimney, or unscrewing the burner. We make a specialty of furnishing

SAFE STATIONARY LIGHTS

(in place of those that are movable and dangerous)

AND

PURE, NON-EXPLOSIVE OIL,

In place of bad, unsafe Kerosene commonly used.

Every barrel received from us, with our brand on the head, can be relied on as

PERFECTLY SAFE.

Present price (in barrels), 66 cents per gallon.

Shipped in "hermetically tight" barrels of 44 to 48 gallons, ONLY on receipt of

CASH, WITH THE ORDER.

JULIUS IVES & CO.,
mar7:3m No. 49 Maiden Lane, N. Y.

AN INDUCEMENT.—Any party sending us three yearly subscriptions to the AMERICAN JOURNAL OF MINING, will receive a Craig Microscope free of charge. WESTERN & CO.,
37 Park Row, New York City.

PATTERNS and MODELS

Of every description made by WILLIAM BURROW No; 47 Gold street, near Fulton, New York. dec21:3m

WANTED, a Party who understands Cleaning or Separating American Plumbago from its impurities, in large quantities, either by washing or otherwise. Address PLUMBAGO,
mar21:2t No. 333 Coates street, Philadelphia.

METALLURGY.

KUSTEL'S NEW WORK.—A TREATISE ON THE CONCENTRATION OF ALL KINDS OF ORES,

INCLUDING THE

CHLORINATION PROCESS FOR GOLD-BEARING SULPHURETS, &c.,

BY GUIDO KUSTEL,

(Mining Engineer and Metallurgist, author of "Nevada and California Processes of Silver and Gold Extraction.")

This great work should be in the hands of every mining engineer in the country. It is the only manual in the language containing the latest improvements which Science has made in the important department of concentration, and a full and detailed account of the celebrated and successful Plattner chlorination process. Both parts of the book are illustrated with diagrams and plates, so that every intelligent engineer can erect apparatus or make working drawings for himself.

PRICE TEN DOLLARS.

FOR SALE BY

WESTERN & COMPANY,

(Sole Agents for the Atlantic States, at the office of the AMERICAN JOURNAL OF MINING. feb22 tf

PROFESSOR HENRY WURTZ,

Formerly Chemical Examiner in the U. S. Patent Office, may be employed professionally as a SCIENTIFIC EXPERT. Geological Examinations and Reports, Analyses and Assays, etc., etc. Practical Advice and Investigations in the CHEMICAL ARTS and MANUFACTURES. Invention and Examination of new chemical methods and products. Address 26 Pine street, Rooms 35 and 36. Always in from 12 to 3.

☞ Written communications preferred.

Important to Gold and Silver Miners and Companies

PROFESSOR WURTZ,

Who is the Inventor and Patentee of the new and wonderful uses of SODIUM IN WORKING GOLD AND SILVER ORE AND JEWELERS' SWEEPINGS.

Will furnish at the above address information relating thereto together with experimental packages of

SODIUM AMALGAM.

All preparations and instructions elsewhere obtained are spurious and unreliable.

Working Experiments on Amalgamation of Ores, Etc.

Prof. W. has in operation a large and small Hepburn Pan, for working 1,000 lbs. and 20 lb. charges of material for experimental purposes. 8.4.xm

LABORATORY OF INDUSTRIAL CHEMISTRY.

DIRECTED BY

PROF. H. DUSSAUCE, Chemist.

Advices and consultations on chemistry, applied to arts and manufactures, agriculture, metallurgy, etc.; plans of factories, drawings of apparatus. He can furnish the most recent improvements in chemical fabrications, such as chemical products, petroleum soaps, candles, colors of lead and zinc, varnishes, ceramic glass, wines, liquors, vinegars, matches, inks, dyeing and calico printing, perfumery, colors of coal tar, tanning, etc., etc.

He will give all necessary information to exhibitors to the great Exhibition Address New Lebanon, Columbia Co., N. Y. 8.4.qp

IRON ORE AND SLATE LAND FOR SALE.

188 acres of land, more or less, situated immediately, at Monrovia Depot, the B. & O. R. R., 50 miles from Baltimore; on which there is a vein of magnetic Iron Ore; also a vein of Roofing Slate.

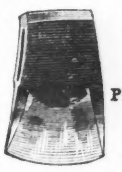
Specimens can be seen at the office of the JOURNAL OF MINING.

Address MARY W. PLUMMER,
jan25:5t Monrovia, Frederick county, Md.

THE ANNUAL OF SCIENTIFIC DISCOVERY.
THE ANNUAL OF SCIENTIFIC DISCOVERY.
THE ANNUAL OF SCIENTIFIC DISCOVERY.
THE ANNUAL OF SCIENTIFIC DISCOVERY.

FOR 1868.

For sale by WESTERN & CO. Sent on receipt of price, TWO DOLLARS.



Ten Eyck Axe Manufacturing Co.,

MANUFACTURERS OF WARRANTED

CAST STEEL EXCELSIOR AXES,

Picks, Hatchets, and Mining Tools of all Descriptions.

FACTORY, COHOES, N.Y.

THOMAS E. GAYNOR, Agent,
jan18:6m 57 Beekman street, N. Y.

ARION PIANO-FORTE.—PATENTED.

Pre-eminently the best Piano ever constructed, unrivalled for tone, durability and elegance of finish. The Brooklyn Daily Times says: "It has in higher degree than any Piano that we have met with, the singing quality or character that musicians so much admire and seek for in a Piano; the bass notes reminding you of the deep-toned notes of a large organ. The middle octaves are more elastic and clear than in most other Pianos, while the upper or treble notes possess that pure, distinct, bell-like clearness that is so necessary to the correct rendering of difficult pieces of music, and that also lends such a charm to melody." Professor J. M. Abbott, organist of the Church of Our Saviour, in Brooklyn, says: "For elasticity of touch, for the singing quality so much sought for by artists, and for richness and purity of tone, it is unexcelled by any Piano I have ever used." Professor John W. Henry Canoll, editor of the American Educationat Montbly, says: "* * * * Listen, however, to one of another class, for example, one of the Arion Pianos, made by Manner & Co.; bow your head as the bass sends forth its riches, clear and unblurred; observe the singing, swelling melody that in its middle octaves so wondrously represents vocal expression, and which predominates above even the silvery brilliancy of the upper treble; then reflect that this is a scientifically constructed and durable instrument." * * *

Is for sale at the Manufactory and Warerooms, 187 and 189 Bowery, second door above Delancey street. MANNER & CO.

N. B.—We have a number of Second Hand Pianos to sell or rent. 12-v:4:qp

PLATINUM APPARATUS, SHEET, WIRE, etc., for all Laboratory and Manufacturing purposes. Platinum scrap and ore purchased. H. M. RAYNOR,
jan4:4m Office, No. 748 Broadway, N. Y.

HALL'S PATENT COMBINED POCKET-KNIFE AND DOOR-FASTENER.

In a locality unknown to us, in a strange house, in a strange bedroom, without any key to the door, how strangely we feel! Uncomfortable is the situation if the linings of our pockets are the only secret safes in our possession,

"When labor's closed,
We gather round our aching breasts,
The curtains of repose."

Instinctively we look for some stray chip which may be transformed into a tightening wedge; or feelingthat "necessity is the mother of invention," we scheme a pyramidical pile of chairs as a blockade to the stealthy entrance of any vexatious intruder. Consoling ourselves, however, with the thought that with this barricade no raid can be made upon our privacy without noise, we gradually sink into the arms of Morpheus. There are few travellers who have not had some unpleasant experience of this description; their slumbers have been disturbed by visions of robbery and assasination, simply because their bedroom door was insecure. But here comes Dr. Hall to our aid, with an effectual instrument—a knife and door-button combined—a weapon of defence.

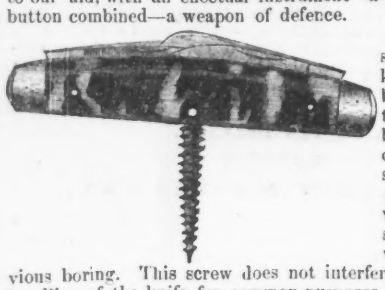


Fig. 1. represents a pocket-knife with the blades closed in the usual manner, but on the back of the handle is seen a finely tapered screw, which can be screwed into the wood without previous boring. This screw does not interfere at all with the handling of the knife for common purposes, nsit can be shut down into the recessed handle, in a similar manner to the blades.

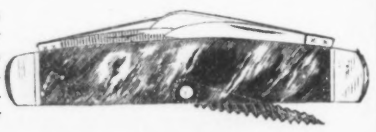


Fig. 2 shows the screw nearly closed, and the manner of hinging it. Our readers will readily perceive that this description of knife can serve as a door-button or fastening, cork-screw, a hook for hitching a horse, etc. The improvement consists principally in rendering the knife a portable door-button, nnd as such will be appreciated by all those who carry pocket-knives.

Dr. A. W. Hall, of 208 Broadway, New York City, is the inventor and sole manufacturer. The improvement was patented on July 23, 1867.

The Assay Office.

A DESCRIPTION OF THE OFFICE AND THE PROCESS OF ASSAYING THE PRECIOUS METALS.

Adjoining the Sub-Treasury in Wall street is a marble building of modest appearance, bearing over its entrance the words "United States Assay Office." In the same building are two bankers' offices; but passing these, and keeping along the passage-way, the visitor finds himself in the receiving bureau of the Assay Office. It is fitted up in the same style as a banker's office, and three or four clerks appear to be able to transact all the business pertaining to this Bureau without ever-exerting themselves. In fact, it would not appear at a first glance that much business is ever transacted there, yet from $14,000,000 to $15,000 000 of the precious metals are received and accounted for during the year. The larger portion of this is in the form of gold dust from California, Montana and Idaho. Much the larger portion of all the bullion received is either in the form of dust, grains, bars or amalgam. A comparatively small quantity comes in the shape of gold and silver plate, watch-cases, foreign coins and ornaments. These are sent in by jewelers or private parties to be remelted, for plate, watch-cases and ornaments change their fashion like other things of less value, and have to be remodeled to be saleable. To the Assay Office, in fact, comes a large proportion of the products of the California gold and the Mexican and Nevada silver mines. Each steamship arriving from the Golden State brings several hundred thousand dollars in gold as remittances for goods purchased here. Most of this, provided it has not already passed the Branch Mint in California, goes at once to the establishment in Wall street. Here also come occasionally "the family plate," and many a golden toy and delicate ornament, gifts, perhaps, of love or friendship, and which caprice has induced, or stern necessity compelled their owners to part with.

Few persons are aware of the actual quantity of gold produced by our mines since their first discovery. In a recent official report, this amount is placed, in round numbers, at $1,000,000,000. Since 1849, California has produced $900,000,000. Her productive powers, however, for the last thirteen years have steadily decreased, and for 1867 the estimate is only $25.000,000. Montana has produced $65,000,000; Idaho, $45.000,000; Colorado, $25.-000 000. The estimated production of Nevada in 1867 is placed at $20,000,000; of Montana, $12,000,000. It is believed that not more than 50.000 persons are now engaged in mining in this country—a considerable falling off from the numbers of previous years.

THE MELTING ROOM.

The deposits received having been carefully weighed and a certificate given therefor, they are numbered and sent at once to the melting room, a spacious apartment, provided with furnaces, and floored with iron tiles. Each deposit is separately melted and poured into iron moulds. If the deposit is of gold, two pieces are cut from the bars and set aside for the Assayer. If of silver, a small portion of the fluid metal is dropped into water, which granulates it, and these grannles are used by the Assayer. The crucibles are carefully scraped after being used, so that not a particle of the metal is lost, for the melter and refiner, it must be understood, has to account for every grain of the metal received. On being taken from the moulds, the mass is stamped with the number it received on being deposited, and is carefully weighed on scales of the most accurate construction, and its weight entered on the books of the office. It is then placed in a vault secured by double doors, the keys being kept by Mr. Mason, the head of the melting and refining department.

THE ASSAY BUREAU.

The pieces of gold and silver taken from the moulds, of which we have already spoken, are conveyed from the Melting Bureau to the Assay Bureau. The apartments in which the bureau is located are fitted up with small furnaces, scales, etc., and an abundant supply of chemicals. About seven and a half grains of gold are used in each assay. This small quantity, with the right proportion of silver, which is estimated by the assayer with an accuracy attained by incessant practice, is placed in a cupel—a cup of calcined bone—and deposited in a small furnace heated to redness. A strong current of air passes over the contents of the cupel, oxydizing the lead. The oxyd dissolves the other oxides of the base metals, which are absorbed by the cupel, and the result is a button of pure silver and gold. This button, after being hammered and rolled, is placed in a bottle partly filled with nitric acid, which is set in a sand bath. The acid dissolves the silver, leaving the gold untouched. When the process is finished, the pure gold left in the cupel resembles tinder. It is then annealed, rendered into a compact coil called the "cornet," and weighed. The weight gives the exact amount of pure gold. For the purpose of weighing, scales of the most delicate construction and the greatest accuracy are required. Those used in this department are manufactured by Becker & Son, Hudson City, N. J. They will indicate a difference of the ten thousandth part of a grain. A fly's wing, or the smallest grain of sand that the human eye can detect, can be accurately weighed in these scales. The lightest breath disturbs their equipoise. Should their accuracy become impaired, even to the extent of the one thousandth part of a grain, the result of the analysis would be seriously affected; for it must be remembered that the assayer has, from a piece of gold weighing originally 7½ grains, to determine the value of a deposit worth, perhaps, $100,000.

Two pieces were, it will be remembered, taken from the metal after it had been melted. Each of these pieces is assayed separately, and the results must, of course, agree. If they should not do so, it is evident that a mistake must have occurred somewhere, and the whole process has to be repeated.

The assaying of silver is a much more simple process than that of gold. Chlorine and silver combine in definite proportions, forming chloride of silver. Upon this fact the process is based. A small quantity of granulated silver, taken from the crucible in the melting room, is dissolved in nitric acid. The quantity of silver is estimated, so that at least one gramme of pure silver shall be contained in the solution. A standard solution of salt, one hundred grammes of which will precipitate just one gramme of pure silver—not an atom more or less—is added to the nitrate of silver and thoroughly mixed with it. The result is a precipitate of chloride of silver. One gramme of a solution of salt, one-tenth of the strength of that first used, is next introduced. If silver is still present in the liquid a cloud is formed, the density of which enables the assayer to determine approximately the quantity of silver remaining in solution. He then adds a sufficient quantity of the weak solution to precipitate all the silver that remains in the liquid. When the assay is completed, by a table of computations the precise amount of pure silver in the specimen is determined, and by a simple arithmetical computation, the value of the deposit is determined. This process is so accurate that one-twentieth of one-thousandth part in fineness can be indicated.

PAYMENT OF DEPOSITORS.

As soon as the assays are completed, the assayer reports to the Treasurer and on this report, after a careful calculation of value, and deduction of charges, the depositor is paid. If he desires to receive gold coin, one half of one per cent. is charged. For gold bars, which are handier for shipment, he has to pay six cents for $100. For every ounce of pure gold which his deposit has yielded, he receives $20.67 2-10, less the charges stated above. Depositors of silver receive payment in silver coin at the rate of $1 22½ per standard ounce. Brittle metal has, however, to be toughened, for which there is an extra charge. The private assayers of California, before the establishment of a government assay office there, used to make no charge for the assay, taking their pay out of the drippings from the crucibles. The government assayers account for the entire weight of the deposit.

WHAT BECOMES OF THE BULLION.

The depositor having received the full value of his deposit, the latter of course becomes the property of the government, and the gold, which always contains more or less silver, now has to undergo a process called "parting" before it is sent to the mint, or used in any way for commercial purposes. In parting silver from gold, enough silver is added to make the proportion about two parts in weight of silver to one of gold. Formerly no account was taken of the silver already in the gold, but Mr. Mason, in charge of the melting and refining department, found that a great saving might be effected if it were first ascertained how much silver the gold bullion already contained. This practice is now carried out, and instead of invariably adding two parts of silver to one of gold, only sufficient silver is added to make the proportions above stated. There is thus a saving by Mr. Mason's method of about 30 per cent., and last year the sum of $22,000 was saved. The mixture of gold and silver is next melted, thoroughly mixed and poured into water, by which it is granulated. The granules are placed in porcelain jars containing nitric acid. Heat is then applied, and as the acid boils, the yellow fumes which our readers have doubtless so often seen proceeding from the chimney of the assay office, are given off. This process goes on for about 6 or 8 hours, when the jars are emplied, and in the bottom is found a brown substance resembling mud or anything else upon earth rather than "gold—glittering gold." It is in fact, however, pure gold, or at least very nearly so. The silver has been dissolved by the nitric acid, and is in solution. It in carefully put aside for future treatment, for in the assay office nothing must be lost or wasted. The brown substance found at the bottom of the jars is placed in large wooden tubs and washed by percolation of warm water until all traces of acid have disappeared, and it is said to be "sweet." The gold is then of 940-thousandths fineness. Formerly it was subjected to a second boiling in nitric acid, which left it about 993-1000 fineness, but by the process at present in vogue it is treated with sulphuric acid, by which a fineness of 998-1000 is attained. This is termed pure gold, although it is not actually so, but to deprive it of the two parts of alloy it now contains would involve an expenditure of time, money and trouble, altogether useless. After its treatment with sulphuric acid, the gold, which still looks more like red mud, than a precious metal, is again washed until "sweet" It has now a reddish yellow hue. After being dried, it is taken to a hydraulic press, where it is made into "cheeses," so called from the color and shape. The cheese made in the assay office is richer far than the most fertile vales of Gloster ever produced. Each "cheese" is but 13 inches in diameter, but it is worth about $20,000. These cheeses are baked in an oven heated by steam until all remaining moisture is expelled, when they are re-melted, cast into bars or bricks, assayed and stamped with the weight, fineness and value. And now they look like gold indeed.

The reader will remember that the nitric acid poured over the gold and silver granules, in the porcelain jars, and now containing a large quantity of silver in solution, has yet to be disposed of. A solution of chloride of sodium—common salt—is first added to the solution, and a deposit of white flakes is the result; this is chloride of silver. The next process is to free the silver from the chlorine, and this is done by placing it in vats with granules of zinc and a little sulphuric acid, to acidulate the water that is present. The chlorine and zinc readily combine and are dissolved in the acidulated water, and the silver is set free in the form of a light gray powder. This, like the gold, is washed, pressed and formed into "cheeses" worth $800 each. These are melted and made into bars, which are stamped and ready to be disposed of as occasion may require. The silver obtained by the above process contains but one part of alloy in 1,000. Some silver is so pure that it requires no "parting," and, after being assayed, is sent at once to the mint.

ECONOMY OF THE DEPARTMENT.

It has been already said the melter and refiner has to account for every grain of the metal that comes into his hands. Shylock was not more determined to have his pound of flesh than are the customers of the assay office to have every grain of the precious metals belonging to them accounted for. There must be no errors, no short weights, no mere approximations to correct balances. If 1,000 ounces of pure gold were sent into the office, 1,000 ounces must be accounted for, no matter what the processes through which the metal has passed. It is evident, therefore, that the greatest care must be exercised in the entire management of the department. The flooring of the rooms is constructed of iron tiles, which can be removed and swept. The filters are made of cloth, so that the minutest particles of the metals are retained. The tanks are cleaned out periodically. Even the crucibles and the cinders from the furnace are broken up and, with the sweepings, triturated in a mill, and afterward, by washing and amalgamation with mercury, as much of the precious metals as possible is recovered. The residue is dried, packed in barrels and sold for about 5 cents per pound to the sweep smelters, for it still has an appreciable value. The acids used in the department cost about $35,000 a year; other materials as much more.

The assay office was established in this city in October, 1854, and since that time over $160,000,000 have passed through the hands of its officers. The present officers of the department are George F. Dunning, Superintendent; H. H. Van Dyck, Treasurer; Dr. John Torrey, Assayer; Andrew Mason, Melter and Refiner; Geo. W. Edelman, Deputy Treasurer; Carl Schultz, Assistant Assayer.

[The above description appeared in the columns of the New York *Times*, but contained many errors, which we have carefully revised and corrected, in order to lay it in a trustworthy form before our readers.]—ED.

Setting Type by Electricity.

Among the many wonderful evidences of the ingenuity of mankind is the machine for setting and distributing type. This is now so perfected that I have before me a book containing 24,993 ems of solid matter—or 34 225 ems of leaded matter—the whole of which was *both "set" and "distributed"* in six hours and thirty nine minutes by this machine. This is truly wonderful; but I want to say that the wonder need not stop here. By means of one of these machines located in the large newspaper offices in the principal cities, and connected by telegraph with the Capitol, *the reporter or operator can set the type himself*, the machine standing in New York or New Orleans and he being in the Capitol! Or, instead of setting the type, he may produce a matrix—by operating a series of arms or levers having type attached, and made to strike upon a suitably prepared and movable plastic surface—from which a stereotype plate may be cast ready for the press, in a few minutes from the time the speech is delivered, or the action had, whatever it may be. Speeches would still have to be reported by short-hand, simply because no one could either write them out or set them up as fast as delivered. The composer, having the short-hand notes before him, could then set the type from them upon the machine at a distance, or, if required, the short-hand notes could be translated, as is now done for the telegraph operator, and then set up by telegraph. In the latter case the same labor of the operator that now sends the message would put it into type ready for the press, thus dispensing with the time and labor now required to write out the message and set up the type. This seems to be the next great step in the electrical progress of the age; and there is nothing to prevent its being done at once. It is simply a question of time and money—that's all.

—*Cor. Am. Artisan.* W. C. DODGE.

A Telegraphic Novelty.

Messrs. J. B. Stearns and J. G. Smith, of the Franklin Telegraph Company, have been for some time engaged in perfecting an apparatus for working in both directions over a single wire at the same time. The method employed is the one originally devised 1854 by Frischen, Inspector of Telegraphs in Hanover, Germany, but has been improved by the addition of a local circuit attachment to the transmitting apparatus. A wire between this city and Boston has been worked in this manner during the past week with the greatest success. The above gentlemen are entitled to much credit for practically introducing this system on the American lines. In many cases it will be found a valuable addition to the facilities of a telegraph company having but a limited number of wires.—*New York Telegrapher.*