

# AMERICAN Journal of Mining,

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

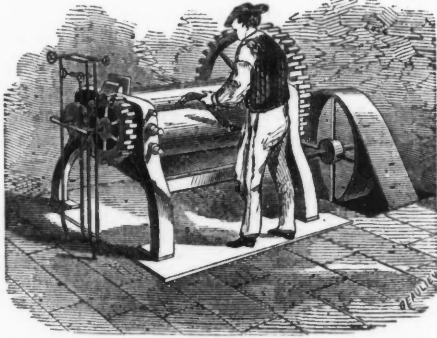
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## CAOUTCHOUC, OR INDIA-RUBBER.

This very remarkable substance is produced from the syringe-tree of Cayenne, and other parts of South America. Some French academicians, who were sent out for the purpose of



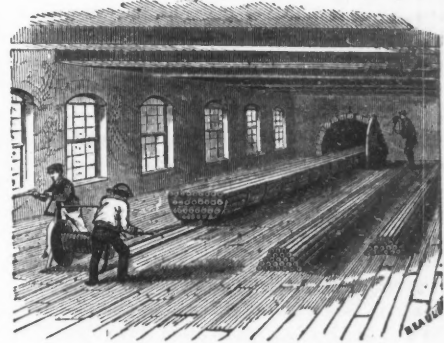
GRINDING RUBBER.

astronomical observation, in 1735, discovered that it was the white, milky juice of certain plants found abundantly in Para, in the Brazils, in Quito, and since found in Asia. Of late years, considerable quantities have been brought from Java, Penang, Singapore, and Assam. The trees grow so abundantly in some places, that hundreds of miles are covered with them. Caoutchouc oozes out as a vegetable milk from incisions made in the tree; it is collected chiefly in wet weather, when it flows abundantly. The juice thickens and hardens gradually on exposure to the air; as soon as it becomes solid, it shows an extraordinary degree of flexibility and elasticity. Since the year 1825, when the first importation of the Para rubber over-shoe was made, inventions have constantly increased, whereby this substance has been made available for clothing of all kinds, boots and shoes, belting, steam-packing for machinery, car springs, balls and tops for children, combs, and an infinite variety of other useful articles. There are now over thirty manufactories of India-rubber goods in the States of Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania and New Jersey, which have a capital invested of nearly \$4,000,000, employ about 4,000 operatives and produce fabrics valued at \$6,000,000. Connecticut alone has thirteen India-rubber factories owned principally by capitalists of New York, and whose products find their chief market in that city. The most noteworthy of these manufactories, and one produc-

attractive, and is the one in which vulcanized rubber was first practically manufactured, under the direction of Charles Goodyear. The building is nearly 300 feet long, 41 feet wide, and five stories high. The machinery on these premises is driven by an enormous water-wheel fifty feet in diameter; there is also a fine steam-engine of three hundred horse power. The goods made here are principally designed for mechanical purposes, and these require rubber of the strongest fibre. The rubber is brought from Calcutta, Penang, and Singapore. It is imported in rude masses about two feet long and one foot thick, and covered with matting, woven in wide meshes, through which the dark rubber is easily seen. A stock of hundreds of tons is constantly kept in the vaults and storehouses of the manufactory, which are built as nearly as possible fire proof.

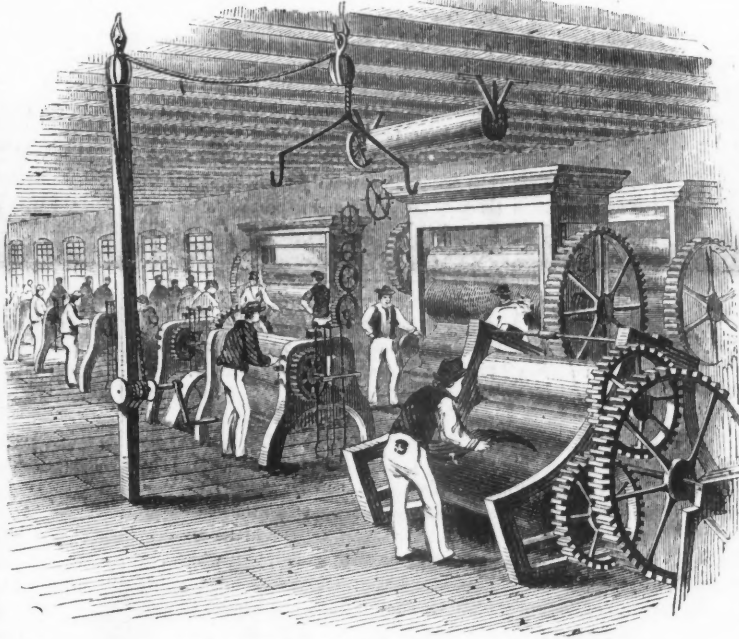
The first process which the imported material undergoes is to cleanse it of foreign matter, the masses of native rubber as they are gathered in the East Indian forests being so mixed with dust, and bark and leaves, that in cleansing they lose over twenty per cent. of their weight. The rubber is first placed in a large vat filled with hot water, where it remains for some time, until the exterior is partially softened and the workmen are enabled to strip off the basket-work that is woven around the original bales, and which adheres so closely

merous sharp knives which revolve under the water, and where it undergoes a kneading and washing process, very much like the process of preparing the pulp in paper-making. By this process all dirt and foreign substances are per-



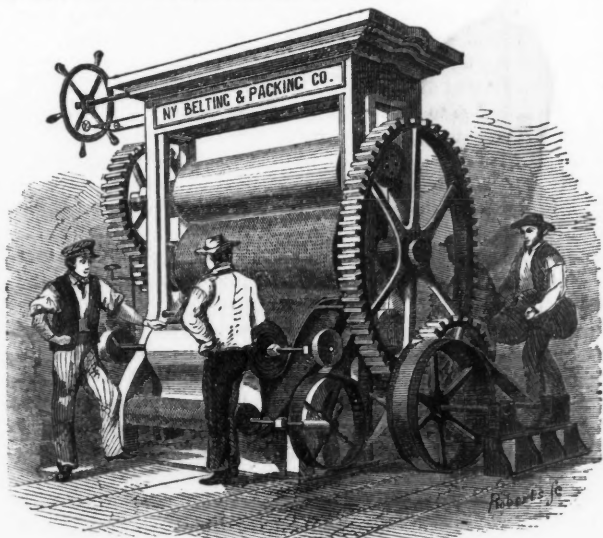
BOILER FOR VULCANIZING HOSE.

fectly expelled, and the pure rubber alone is left. From the washing-machine the rubber is taken to powerful grinding-machines, which consist of large hollow cylinders of cast-iron. These cylinders revolve in opposite directions, and here the rubber, which is brought from the washing-machine in small fragments loosely adhering to each other, is pressed or kneaded into thick sheets or mats. At this stage the process is suspended for some time, in order that the rubber may be thoroughly dried and cured by the action of the air. For this purpose those mats are suspended in long drying-rooms, where they are allowed to hang for many months before they are thought fit for use. Of course, a large stock of this cured rubber is kept on hand. The rubber thus cleansed and dried is first taken to the mixing-machines. This is the first important process, as it is here that the rubber is combined with the metals and minerals to which metallic rubber owes its peculiar properties. The mixing-machines, like most of the machines employed in the factory, are hollow iron cylinders, and it is necessary that they should be kept at high but regulated degrees of heat, as the tough masses of rubber would otherwise resist the action of machinery, however powerful. These cylinders are of great size and strength, and are heated by steam, which is let into the ends. Two are placed near together, which, as they revolve towards each other, knead the substances placed between them like dough. The rubber is placed in the machine, and as the heated cylinders



INDIA-RUBBER GRINDING MILL.

that it can be removed only in this way. The masses of rubber are then cut into slabs of about an inch in thickness, by means of a large circular knife, between three and four feet in diameter, which is driven by machinery and revolves with great speed, cutting the tough mass as easily as if it were clay. The slabs of rubber are then taken to the "crackers," as they are called. These crackers are large deeply-grooved iron cylinders, invented for this purpose, which revolve in pairs, slowly and heavily, grinding the tough rubber between, and driving out much of the bark and dust. These machines are so skill-



GREAT CALENDER MACHINE.

ing a very large product is that of the New York Belting and Packing company which we select to illustrate the modes and processes adopted for manufacturing India-rubber goods.

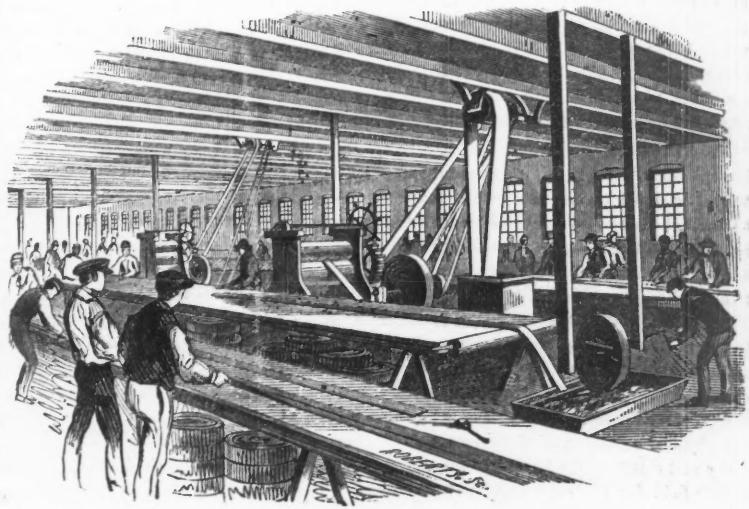
The factory is located on the Potatook River, in Newtown, Conn., a place that nature and art have combined to render

fully arranged that the long slabs of rubber are stretched as they are drawn through, and much of the dirt and bark drops out and falls beneath the machines.

From the crackers the rubber is taken to the "washing-machine," a large vat, where it is cut into small pieces by nu-

slowly revolve, the tough rubber is twisted and kneaded, and torn between. This is accompanied by a constant succession of sharp explosions as loud as pistol-shots which are caused by the air being forced through the rubber. As the rubber is folded over and over, air is confined in the

CONTINUED ON PAGE 153.



THE BELT ROOM.

## Original Papers.

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

## ON THE VENTILATION OF COAL MINES—IV.

By J. W. HARDEN, C.E., Wilkesbarre, Penn.

Continued from Page 98.

Natural ventilation, or that which takes place unassisted by artificial means, is due to the atmospheric currents resulting from unequal temperatures of different strata of air. This difference of temperature is caused in mines by the increasing heat of the earth as we descend, together with the heat generated in the mine by the burning lamps and the exhalations of men and animals. When there are two shafts in a coal-pit, a current may be formed by the rise of the heated air through one (the upcast) and the fall of colder air to take its place through the other (the downcast), which may be conducted through all the workings of the mine, but is liable to interruption or derangement at any moment. A rise of temperature on the surface, or the least atmospheric disturbance, will alter its action. The nearer the temperature of the external atmosphere is to that of the mine, the less will be the rate of the current, and assuming the shafts to be on the same level, and in all conditions alike, the moment the temperature of the atmosphere becomes that of the pit, momenta being exhausted, that moment ventilation ceases.

In natural ventilation, and in all systems of artificial ventilation no less, the arrangement of the shafts and air-courses is of the greatest importance. It is possible that by multiplying the means employed, you may get an additional quantity of air through courses ill adapted, but the multiplication of effect will bear no comparison with the increase of force. A fort is as strong only as its weakest place: an air-course is effective only as the capacity of the smallest part of it through which the whole body of air has to pass; that is to say, if the drift through which the main body has to travel is at any one place less in area than at another, no more air can be got through it than is permitted by that place of smallest area. By employing more powerful means of extraction, you increase resistance by increasing the friction and drag of the air on the sides of the mine; you bring into action its tensile property; in other words, you "wire-draw the air." The result does not meet the expectation, the end not justifying the means.

Making the upcast shaft smaller than the downcast; using a pumping-shaft, or one dripping with moisture, as an upcast; employing as a downcast a shaft which is kept warm by the conveyance of steam for an engine underground; are all inappropriate measures to any system of ventilation. They may be unavoidable, but they are not desirable. Reverse the order of things, and the conditions are right; the pumps and falling water will assist in the downcast, and the heated steam-pipe in the upcast. Nor should the exhaust steam of an underground engine be discharged into the upcast shaft, loading the ascending current with moisture, when it should be as dry and rare as possible. The exhaust steam neither acts as a steam jet, nor gives enough heat to the air to compensate for its increased weight.

In passing air through a coal-pit, it is common to conduct the current by means of doors, curtains, &c., by one continuous route from one division to another, and finally out by the upcast shaft. On this plan, each succeeding set of men in the order of their distance from the downcast shaft, receive the air, loaded with all the foul gases it has accumulated in its passage through the mine. Another plan, which is slightly better, is to divide the current, passing a portion through one division, and then reuniting it with the main current, which has been conducted by, uncontaminated. The impurities taken up by the ventilating stream are thus, in fact, carried on to other workings as before, though the evil is somewhat mitigated, especially when a large quantity of air is passed through the pit. In fact, these methods allow a larger current than almost any other, and this is their chief merit. They are not to be recommended, when the extent of mining operations demands and justifies the employment of better system.

Much of the ventilation practiced or attempted in our mines, is apparently without any plan, more than the vague notion that there must be one hole for the entrance and another for the exit of the air, its struggles through the tortuous windings between the two being regulated by chance conditions, once adopted (perhaps in a moment of necessity) and always retained.

Of course systematic ventilation is easier in regions where the coal measures lie nearly horizontal, or at a regular and uniform inclination, as is the case in many bituminous fields of vast area. In the disturbed basins of anthracite, the case is somewhat altered. The lack of uniformity in the position and physical condition of the strata necessitates more originality and constructive faculty in the engineer, and gives him a wide field for the exercise of these qualities. The principles of ventilation, however, remain the same in all cases; and in their application no better and more effectual method of taking air through a coal pit is at present known than that called by the practical miner "splitting the air."

Splitting the air is that system of ventilation which separates the pit into districts, and divides the column of air into branches, each proportional to the extent and nature of the district it is intended to traverse. By means of doors and

stoppings, with or without regulators, the necessary quantity of air is conducted into and through each district, and then conveyed by the return air course to the upcast shaft, without being used on the way by any other division of the pit.

Many years' experience has shown the writer that in passing air through a pit in one continuous stream, it is attended with so much resistance that, even where the air courses are capacious, it is impossible in an extensive mine to obtain a sufficient quantity. The resistance of a current of air being directly as the length of the course it has to traverse, and the square of the velocity at which it travels, it follows that the shorter the run, the less will be the resistance, and the less therefore the motive power required to get it through. The advantage of splitting the air then is very obvious. The current being shortened, the resistance is diminished in the ratio of the reduction in the length of the run, and the current being divided, the velocity is also reduced. This diminishes the resistance in the ratio of the squares of the current, before and after being split; so that against resistance by friction on the sides of the mine, we gain not only in shortening the run, but immensely in the reduction of velocity.

Too much attention cannot be paid to the proper distribution of the air, so as to have the shortest possible currents, and the largest area of air courses, consistently with the requisite quantity of air in each current, and with economy, and the practicability of obtaining spacious drifts. At the same time, it requires judicious management to direct the proper quantity of air to each division; for while the more splitting is practised, the stream will be more pure, yet when done too much, the smaller columns will be so much weakened that they cannot, without difficulty, struggle through any but very smooth and even courses. To give something like an idea as to how far the principle may be carried, the writer has in his own practice, constructed and worked with satisfactory results, both coal and ironstone pits, with from four to fourteen splits of air, and he has seen as many as twenty-three splits in one pit, but in the latter case the air courses, and the motive power employed were very large.

More complete discussion of the details of the subject will be found in the writer's articles contributed to the Wilkesbarre *Record of the Times*. The limits imposed upon the present series of communications do not admit of entrance upon those details which are nevertheless of the highest importance to the practical miner.

The artificial means employed to assist ventilation now demand attention. Among them there are two, the steam jet and the furnace, which have been found under proper conditions and intelligent management, extremely useful. I propose to discuss in my next article the steam jet, reserving the furnace, as perhaps the most effective and important of all ventilating motive powers, for subsequent consideration.

TO BE CONTINUED.

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

## 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. VII.—Continued from Vol. IV., Page 50.

The fossil shells of the mighty family of infusoria, which have existed during countless ages, and are heaped up in astounding quantities, have added much more to the mass of materials composing the exterior crust of our globe than the bones of all mammoths, hippopotami, whales, etc., which ever existed. Startling and incredible as this assertion may appear to some, it is none the less a fact, established beyond all question by the aid of the microscope.

Besides the localities mentioned in my former article, others are almost daily discovered, of which the soil has the same constituents. Even some of our most gigantic mountain ranges, such as the mighty Andes, towering into the air more than 25,000 feet above the level of the sea, their base covering a vast area of land, our massive limestone rocks, the sand that covers our wide-extended deserts between the Rocky Mountains, the soils of our boundless prairies—all these are principally composed of portions of invisible animalculæ, so small that one cubic inch, weighing about half an ounce, contains not less than forty thousand millions of flinty shells, each one belonging to an individual living being. The same is the case at the extreme southern portion of our continent.

DARWIN writes of Patagonia, that along the coast for hundreds of miles we have a great tertiary formation, including the well-known extinct shells of that period, among them the famous gigantic oyster of one foot or more in diameter. The beds composing this formation are covered by others of a peculiar soft white stone, resembling chalk, but largely composed of infusoria, among which EHRENBURG recognized thirty marine forms. This bed which extends for 500 miles, and probably much further, along the coast, is more than 800 feet in thickness at Port St. Julian. EHRENBURG discovered in rock of the volcanic Ascension Island many silicious shells of fresh water infusoria, and the same indefatigable investigator found that the immense oceans of sandy deserts in Africa were in great part composed of the shells of such animalculæ.

The hazy and injurious atmosphere found near the Cape Verde Islands, and hundreds of miles distant from the coast of Africa, is caused entirely by a brown dust which, upon being examined microscopically by EHRENBURG, was found chiefly

to consist of the flinty shells of infusoria, of which sixty-four were fresh-water species, and two marine. This dust is nothing but the finer portions of sand of the deserts in Africa, driven over the ocean by the periodical winds. The mighty deltas and other deposits of large rivers are also found to be filled with the remains of this vast family of minute organizations. Some of their deposits are at present still in the process of formation; as, for instance, not only the deltas of the Mississippi, Nile, etc., but also the annual valley-deposit of the beneficent Nile, that fertilizes so large a tract of country, consists, as far as its nutritive principles are concerned, of fossil infusoria. EHRENBURG, with his keen, scrutinizing research, found these infusoria so diffused in it, that he could not detect the smallest particle of the Nile deposit, that did not contain their remains. He also found on examining the immense amount of mud at the harbor of Wismar, in Germany, that the yearly deposit there, contained a mass of animal remains, amounting in bulk to 23,000 cubic feet, and weighing forty tons. The chalks and flints of the English coast, contain in every cubic inch about one million distinct shells. The Paris basin, one hundred and eighty miles long and ninety in breadth, abounds in infusoria and other silicious remains; and the towns of Richmond and Petersburg, in Virginia, are built on myriads of skeletons of marine animalculæ, contained in a flinty marl twenty feet in thickness and many miles in extent.

The well-known hone used for sharpening razors and tools, and found in Turkey and in Missouri, and many paving-stones, all contain and are sometimes entirely composed of such organic remains.

The white variety of so-called mountain flour, found in Tuscany and Bohemia, resembles fine magnesia; it consists entirely of flint-shells of a species called *campilodenus*, and is at present exported to confectioners in all parts of the world, being found better adapted for their purposes than common flour, as it produces a harder and less fragile article, and one which also better endures drying and baking, without losing its shape. The digestibility or nourishing quality of the product is, of course, of no account to the confectioner. Two years ago the New York *Tribune* contained an account of the importation of such mineral flour into New York city for this purpose.

When used in moderate doses, it cannot be considered directly injurious, as the human system requires lime, and minute quantities of silic, for its development; and these constituents are contained in our bread and other food, although, it is true, in a more digestible form than that of minute shells.

How vast, how utterly inconceivable, then, is the number of once living beings, whose remains have accumulated in the lapse of time! But they are not only discovered in these remains; they are found present and living in all climes—at the poles and at the equator—still alive sixty feet below the surface of the earth, and in the mud brought up from a depth of sixteen hundred feet in the ocean. They are found in the fluids of the animal body, in plants, in strong acids, in poisonous solutions.

What are the functions of these animalculæ in the economy of Nature, besides the incidental fact that they have built up such large portions of the earth's surface? This question I propose to discuss in the next article.

TO BE CONTINUED.

## Color of the Clouds and Sky.

A short time ago the German periodical, *Poggendorff's Annalen*, contained a paper, by M. Lommel, on "The Evening Glow and Similar Phenomena," somewhat too mathematical for our purpose; but before the appearance of that paper, M. Sorby had discussed the same subject in a more popular form. Extending it to the colors of the clouds and sky, which he explains on the principle that the clear transparent vapor of water absorbs more of the red rays of light than of any others, while the lower strata of the atmosphere within no great distance from the surface of the earth, offer more resistance to the passage of the blue rays. This is especially the case at sunrise and sunset, and very perceptible in the case of dark-colored fogs, through which the sun appears red. This is often due to only a few hundred yards' thickness of such a fog, and it is highly probable that the same effect will be produced by a thickness of as many miles of pure air containing watery particles very thinly disseminated. It is thus M. Sorby explains nearly all the phenomena connected with the question.

The blue color of the sky is due to the absorption of a considerable amount of red light by aqueous vapor, far from the earth's surface; but if minute particles of liquid water form a thin mist, the blue of the sky will be diminished, as is the case in winter and in cold countries. If the air be much charged with transparent vapor, the blue color will be deeper, and will thus become an indicator of rain. At sunrise and sunset the light of the sun has to pass through about two hundred miles of atmosphere within a mile of the surface of the earth, in order to illuminate a cloud a mile from the ground. In passing through this great thickness the blue rays are absorbed to a far greater extent than the red, and much of the yellow is also removed. Hence, clouds thus illuminated are red; but when the sun rises higher, the yellow light passes more readily, and the clouds become orange, then yellow, and finally white. Clouds in different parts of the sky, or at different elevations, might show these various colors at the same time, as indeed is often the case.—*Galignani*.

Mining Summary.

GOLD AND SILVER.

Nevada.

The Comstock.—The San Francisco Commercial Herald, Feb. 10, thus reviews the Mining Share market for the ten days ending at that date: We report an active market for the period under review, and the usual line of stocks dealt in was somewhat extended. Speculative feeling is tending towards a very decided advance in spring, and the prospects of such a rise are considered very favorable by the best informed. Information from the Nevada mines is meagre, though prospecting continues to be quite extensively carried on. Several companies that have been idle for a long time past will resume work within a few months, and a more general activity than usual may be anticipated throughout the whole extent of the Comstock lode. With this in view, assessments are at present levied quite freely, and an increase in this respect may be looked for. No dividends of claims on the Comstock lode have yet been declared for the present month, though dividends are expected from the Kentuck and Savage companies. At the close several prominent stocks show a decided improvement. We present below a very interesting condensed tabular statement relative to the product of bullion and dividends paid by the most prominent mines on the Comstock lode during the year 1867, together with all the assessments levied during the same period by the various companies of which public announcement had been made:

Table with 4 columns: Company, Bul. Prod't., Dividends, Assessm'ts. Lists various mining companies like Alpha, Baltimore American, Belcher, Bullion, Chollar-Potosi, Confidence, Crown Point, California, Dancy, Empire, Exchequer, Gold Hill Q. M. & M. Co., Hale & Norcross, Imperial, Justice and Independent, Kentuck, Ophir, Overman, Savage, Segregated Belcher, Sides, Sierra Nevada, White & Murphy, Yellow Jacket, along with their respective production, dividends, and assessments for 1867 and 1866.

In 1867... In 1866... Increase... Hale & Norcross has been less active, receding from \$3,300 to \$5,100, and closing at \$29 25 seller 60. This company has now about 1,000 tons of ore on hand, said to average from \$40 to \$45 per ton. The superintendent has been telegraphed to start two mills, and it is thought that by the 10th they will be in running order. Crown Point was dealt in to a moderate extent and at fluctuating rates, rising from \$1,100 to \$1,265, declining to \$1,175 and \$1,140, then jumping to \$1,330, and closing yesterday at \$1,280. The 600 level at present produces nearly all the ore that is extracted from the mine. It continues to look well in going east, and the whole "raise" below this level is said to be in good ore. The west body of the same level averages four feet of ore. In drifting north, thirty-five feet below the 500 level, they continue to find good pay ore, and a cross-cut west from the same, it is reported, is leading into the same character of ore as that found in raising on the west body of the 600 level. The drift on the 800 level is running in soft ground, and has reached a distance of 60 feet from the shaft. It is not yet decided whether they will at present sink to another level. The receipts of bullion for January, so far as advanced, reached \$37,000, and the total for the month will aggregate about \$50,000. Savage was less active early in the week, but sales increased at the close, advancing from \$135 to \$142 50, declining to \$136, and closing at \$142. The ore extracted during the week ending February 1st amounted to 1,728 tons, showing an approximate value of \$36 62 to the ton. The north and south mines on the third station produced 1,548 tons of this amount. In the face of the north mine on the fourth station no improvement is noticeable; however, in the south mine, same level, quite a large chamber has been opened at the foot of the winze, and they are now ready to open the fifty foot level above. The ore in the locality is said to be good, but very hard and coarse. On the fifth level the south drift has been run some eighteen feet, and the ground is getting softer; the north drift is going forward in good ground, and is in twenty-five feet. The almost impassable condition of the road has interfered with the reduction of ores from this claim, but the roads are improving, and teams will be able to pass regularly. Chollar-Potosi has been quite active under an advance, improving from \$172 to \$196, receding to \$177, and closing at \$187 50. The product of the old mine, during the week ending January 30th, amounted to 400 tons; the various mills took 557 tons, leaving 2,283 tons on hand. The average yield of the mills during January is reported not to be over \$16 per ton. The sinking of the new shaft is said to be progressing rapidly; the rock is getting harder. On the 3d instant the shipments of ore amounted to 104 1/2 tons. The bullion product during the month of January aggregates \$41,000. Yellow Jacket was active at the close, selling within a range of \$735 to \$845, and closing at \$840. Our information concerning this claim is quite meagre. It is reported that the south shaft had bulged considerably early last week, and work was suspended until the same is repaired. Alpha suddenly rose to \$1,100, then sold at \$1,000 @ \$1,050, and at the close \$1,050 is bid. This claim lies west of the location of the Imperial Empire shaft, and this advance is based upon the expected favorable developments through it in that direction. Imperial was less inquired for than last week, receding from \$205 to \$196, then selling at \$199, seller 30, and at the close obtaining \$200, buyer 30. On the 4th inst. the shaft contained 160 feet of water, with the pumping machinery in good running order. At present the teams are carrying twenty-five tons of ore to the Rock Point and thirty-five tons to the Gold Hill mill. This amount will soon be increased. Seventy tons is at present the daily product of the Alta mine. The receipts of bullion in January amounted to \$43,883. Kentuck sold at \$257 50 @ 285, and closed at \$275, buyer 30. The bullion receipts of January, so far as advised, reach \$47,782. Overman advanced from \$70 to \$85, then sold at \$77 @ \$86, and closed yesterday at \$90, buyer 3. Bullion sold at \$34 @ 32. Gold and Curry is quiet, small sales having been made at \$410 @ \$425, closing at \$430. The ore product of this mine during the month of January amounted to 1,389 1/2 tons, and bullion yield to \$14,476. Empire is also quiet, realizing \$195 @ \$200. In January the bullion yield aggregated \$16,050. The ore has been running low of late, nevertheless this company has been able to defray all its expenses out of the lessened product. Belcher rose from \$170 to \$195, buyer 30, and at the

close sold at \$190. Gold Hill Quartz has been steady, selling at \$90 @ 94. In January the bullion product amounted to \$6,837 44. Confidence at \$52 50 @ \$60. Exchequer declined from \$28 to \$25, and closed at \$26. The assessment now due on this stock will be applied to the mine, work upon which will be resumed in a month or two. Dancy advanced from \$6 to \$16, and at the close \$10 is bid. An assessment of \$2 per share, or \$8 per foot, was levied on the 1st inst. Sierra Nevada sold within a range of \$15 50 @ \$12. An assessment of \$10 per share was levied on the 5th inst. Amador continues to be firmly held; it can be had for about \$200. This claim produced \$43,500 in bullion during January, and the expenditures amounted to \$10,500. Deducing the dividend of \$6 per share, amounting to \$22,200, payable since the 7th inst., they have a surplus of \$13,000. The sales in the Board during the past week have been as follows: Regular sessions, \$1,577,296; Open sessions, \$379,070—total, \$1,956,366.

QUARTERLY RETURN OF BULLION IN LANDER COUNTY.—Following is a tabular statement of the returns from mines in Lander County which produced bullion during the quarter ending December 31st, 1867. The statement was compiled from the books of the County Assessor, and is a faithful exhibit of the product of bullion in the county, as specified in the record, excepting those mines which produced less than one ton of ore:

Table with 4 columns: Mine or Company, Tons, Lbs., Av. P.T., and another set of columns for another company. Lists mines like Aurora, Buel North Star, Black Hawk, Bell, F. M., Chase, Chimborazo, Chayusa, Chicago, Diana, Dreyfus, East Oregon, Emerley, Florida, Fortuna, Frank Muncey, Great Eastern, Gem, Gilkey, Hatfield, Indiana, Jones, A. J., Jewett, J., Jacob, J. P., Jewett Bros., Langton & Casey, Lady Eaton, Manhattan Co., Manhattan Co. (chloride), Magnolia, Mettacom, McPherson, Niagara, Neighbors, Navarette, North River, Patterson, Perkins, Patriot, Revenue, Rock Curry, Reed, W. H., Ross, S. B., Savage Consol., South American, St. Louis (Cortez), Semanthe, Sumpter, Sam Brannan, Statesman, Timoke, Troy, Tipperary, Twin Sisters, Tatt, W. S., Thomas Collins, Vineyard, Whitlatch (Y), Washington, Yankee, Yosemite.

There is a slight difference only in the number of tons of ore produced in the last and the preceding quarter—the figures being 2,111 tons for the quarter ending December, 1867, against 2,001 for the preceding quarter. It is worthy of note that the present table embraces a greater number of mines in the county which yielded bullion than any previously published. The average yield of the ore is high, and fully equal to that of the preceding quarter, it being borne in mind that the computations are in currency. A remarkable uniformity in the product and value of the ore produced by the Manhattan Company's North Star mine will be observed by comparing the last two quarters: the yield for the quarter ending December, being 721 tons, which average \$248 62, against 760 tons averaging \$251 20 for the preceding quarter. The Diana and Timoke, particularly, show great improvement; the product of the Timoke for the last quarter being 332 tons averaging \$161 84, against 52 tons averaging \$292 31 for the preceding quarter; and that of the Diana for the same period being 200 tons averaging \$192 27 for the last quarter, against 82 tons averaging \$209 40 for the preceding quarter. The product of the Florida, Magnolia, Troy, Great Eastern, South America, and Savage is largely increased over the preceding quarter; the increase of the Florida is notable, with its 155 tons averaging \$274 49 for the last quarter, against 63 tons averaging \$199 37 for the preceding quarter. The report of the Assessor shows more than ordinary care. It is defective, however, in that it does not contain the returns from the Centenary Company, in the Newark district, nor those from the Social and Steptoe Company at Egan canyon. Both of these companies are in this county, and both of them produced bullion in great or small quantity during the quarter ending last December. Why are they allowed to disregard the law?

California.

Kern County.—The Havilah Couriers of Jan. 11th, contains the following: The Piute and New El Dorado mining districts are situated in the southeast corner of Kern county, and have already attracted attention by the richness of the gold-bearing veins found within their limits. In the Piute district, in the Big Indian lead, of which Oapt. Hotelling is the owner, shafts have already been sunk to the depth of 200 feet, and the lead on which work is now being prosecuted is nine feet wide. In the same district are also the Bright Star and Hope leads, worked by W. M. Rains and H. C. Grafton. These gentlemen were getting along quite smoothly until interrupted by the late rains; but it is expected that they will resume work at an early day. Some of the rock from these claims yields as high as \$200 per ton. The mines in the Clear Creek district, in which the town of Havilah is situated, are progressing fluely. After a somewhat prolonged cessation of operations, Rand's mill, on the Relief Claim, will commence again in about 20 days. The company have made a heavy outlay in sinking on the principal shaft, which is now down to a depth of 300 feet, where a ledge of two feet wide, and of surpassing richness has been struck, the rock from which will certainly yield not less than \$50 a ton. Hugh McKeadney, of the Delphi, has made another rich strike, which promises a richer yield than anything heretofore obtained in this district. McKeadney's mill escaped the peril of the late flood without injury, and is running constantly. The New York and Clear Creek Mining Company are still taking out rich rock. The Rocheford claim opens richer and wider than before. The mill is kept at work night and day. At the Joe Walker mine, in Walker's Basin, the main shaft is down 200 feet, and very rich rock is being taken from a ledge six feet wide. The Beaver, Hurd and two or three other adjoining claims in the New El Dorado district were purchased one day this week by Thomas Bridger, C. W. Keeny and Rodgers, for \$11,000. A superior article of salt, equal to any imported, is obtained in Tehachebi Valley in the summer season from a dry lake, some forty-five miles from this place. The salt bed is owned by Narbo Bros. & Johnson. The process by which this necessary article is obtained is interesting. It seems that on drying up, the alkali in the water of the lake sinks to the bottom, forming a kind of crust. Next to this the salt is found. Before the water of the lake has entirely disappeared, workmen wade into it and carefully scrape up the salt, and by their dexterity avoid getting any of the alkali. The supply is inexhaustible and the quantity is No. 1.

Nevada County.—The Transcript, Feb. 6, says: On Tuesday last a rich body of ore was struck in the Pittsburgh mine. About last July, a break occurred in the mine, and since that time they have been running for the ledge. The rock appears to be better than any ever taken from the mine, and it is estimated that it will

yield fully \$200 to the ton. The Pittsburg mine is what was formerly known as the Wigham mine. It is located on the ridge above Gold Flat, and is under the supervision of S. D. Merchant. It has ever been accounted one of the leading mines of the county. It is now thoroughly opened to the depth of four hundred feet below the surface. Since Mr. Merchant has taken charge of the mine, excellent hoisting works and a first rate mill have been erected, and the company may now be accounted ready for steady and efficient work, with the best prospect of a large return for their enterprise and energy. Frank Fisher has been engaged for some time in fitting up and overhauling machinery for Palmer & Everingham's quartz mill, which is to be erected at Graniteville. And that of Jan. 31, says: The Cornish mine, situated on Deer Creek, about a mile below town, is yielding some first rate rock, and one of the owners informs us that it is paying well. In about two weeks the company are going to put in a new battery of six stamps, and fix up the machinery generally. Messrs. Neece & West cleaned up from their cement claims, after a week's run, the sum of \$2,000. These claims are looking splendid. The cement claims in Little York township will soon give a good account of themselves. The Scandinavian company struck some splendid rock, and the ledge is 2 ft. 3 in. thick. They are taking out a large quantity of rock. It is the intention of the company to erect a fine mill in the spring.

The Grass Valley National, Jan. 30th, says: The New York Hill company commenced running their 10-stamp mill a week since, and finding it insufficient to work off the rock taken from the mine, are about adding 10 additional stamps. The rock continues to turn out as rich as heretofore, and in addition to the daily amount taken out, the company have 900 loads of rock on hand awaiting crushing facilities. McCauley & Co.'s mill, at Boston ravine, is engaged in crushing a large quantity of rock from the Spring Hill mine. The rock will come up to the general average of rock heretofore crushed from this mine. The Inkerman company are at work prospecting, and have a whim for hoisting in operation. The character of this as a paying ledge will shortly be ascertained. Some handsome specimens have at times been taken from it. The Gazette says: We were shown by Mr. Tisdale, a lot of fine specimens of ore from the Banner mine, some of them containing free gold in abundance, and others being rich in sulphurets. The most of the ore in the mine is of the sulphure variety, in which the gold is not visible; but three separate shoots have been found, in which free gold is interspersed in seams through the rock. The work in this mine, which was partially suspended about the first of January, is again in full blast, and the new hoisting and pumping apparatus is working to perfection. During the month of January, the New York Hill company raised 600 loads of rock, averaging a ton and one-fourth per load. The clean-up, after the first three days' run of the new mill, yielded \$1,600, while a considerable amount must have been taken up by the new machinery. At the North Star mine, 1,200 tons of rock were hoisted from the mine, on the 1st of January to the 1st of February, which is yielding an average of \$33 per ton. The yield of the Empire mill, at Ophir Hill, at the clean-up of the middle of January was \$19,300.

Alpine County.—The Monitor Miner, Feb. 1, says that the shaft on the Morning Star mine is now down about 70 feet; the pump works splendidly, keeping the water out without difficulty, and the work goes on in good shape. The same paper, Jan. 25, says: The Pennsylvania company, who have been running a lower tunnel on their claim on Silver Mountain district for some time past, are getting well on towards their lode, and are meeting very encouraging symptoms of late. One day this week a small feeder of quartz was cut which shows ruby silver largely, and is of the character to "set up" all the owners of Pennsylvania stock if a vein of sufficient size can be found. No doubt is entertained that this is a feeder to the main lode, pitching rapidly towards it, and as an indication of the quality of ore which may be expected in the lode, is of great importance. This tunnel will strike the lode at about 400 feet depth, and it is thought three or four months more, at farthest, will see them into it. The Consolidated Mining company have decided on a point for the immediate opening of one of their lodes by running a lateral tunnel, in the lode or casing, from a gulch above their present works. This change was rendered the more imperative by the extremely obstinate character of the rock recently encountered in the main tunnel, and the fear that it would continue for some distance, causing slow progress and consequent discouragement to the stockholders. It is moreover advised by the best of mining experts and fully justified by recent operations on Boulder Hill, which place the lode from which the rich boulders came, higher on the hill, farther east, than heretofore supposed, and consequently crossing the Consolidated, farther from the mouth of the tunnel than was calculated. The Consolidated M. M. Co. is now in funds, and anxious to have something turn up to justify the erection of their mill; in fact estimates were recently sent from here at the request of the Eastern stockholders, on the cost of putting up for trial the mill the company now have on the ground. A new location, comprising about 2,000 feet of the lode from the foot of Boulder Hill—Eagle Gulch—to the starting-point of the new tunnel, has been made for the company, and work will be started on Monday, for the purpose of proving its value.

Amador County.—The Ledger, Feb. 1st, says: The Kearsing mill in this place, which has been idle for some time, has been put in good condition, and is now pounding away. They are now working the tailings from the Coney & Bigelow mill for the purpose of saving the sulphurets—using the Ambler process. Mr. James Tullock, one of the lucky quartz miners of Amador county, last week struck a vein of rich quartz at Central Hill, about four miles northwest of this place. The company have named their location "Central City Claim," and are making arrangements for sinking a shaft upon the lead. The surface croppings prospect rich in free gold.

Butte County.—The Oroville Record, Feb. 1st, says: The owners of the Jennie ledge, in Granite Basin, have been running the mill of Messrs. Halstead & Sparks, with rock from their ledge. Some 65 or 70 tons of ore were worked, producing amalgam to the amount of \$12 50 per ton. We understand that the Jennie has paid Halstead & Sparks for crushing 300 tons of ore, with the proceeds of which they will erect a 16-stamp mill.

Calaveras County.—The Chronicle of February 1st says: The Palomo mill has been started to work. Everything works as smoothly and nicely as though it had been in operation for months. The battery is composed of eight stamps, weighing 600 lbs. each. Morion & Co. are engaged in sinking a shaft on their claim. They will erect a mill in the spring. The San Andreas Register of February 1st says: A great deal of excitement has been created in our town within a few days over the discovery recently made by B. K. Thorn. It now appears that the lode is much wider and richer than it was at first supposed to be, and recent prospecting discoveries have established the fact that both sites of Thorn's first location is equally as rich, if not richer, than the claim upon which he has planted himself. We have examined a great deal of rock, said to be from the main lode, and have seen it carefully crushed and washed, and all we have to say about it, is the like thereof we have never before seen. Business at Cat Camp is fast improving, and mini-g is very brisk there at this time.

Inyo County.—The Virginia Enterprise of January 30 says: Mr. C. F. Duval arrived in this city yesterday from Cerro Gordo district. He brings some rich and beautiful specimens of silver ore from the mines of Cerro Gordo; also a small amount of bullion in bars. Not much bullion will be taken out before next

summer. Most of the Mexican miners have left for the new placer mines in the Coso country, where they can do very well during the winter and the wet months of spring.

**Los Angeles County.**—The *News*, Jan. 17th, says: The main Delphi ledge has been struck in the tunnel, which has been run through hard rock for the last six months, at the depth of 2,100 feet, and the ledge is full 15 feet in width, and of its accustomed richness. The mine has always been the richest one in the district. The new mill of the Delphi company is now completed, with roasting furnaces for the working of sulphurets. The Relief ledge has been sunk to a great depth, and is producing rock of extraordinary richness. Col. Rand, the superintendent, returned yesterday by way of Cisco. He says the weather has been intensely cold in that region, and the snow is some 10 or 12 feet deep on the level, but in some places has drifted to much greater depths. Only 30 or 40 persons are now stopping at Meadow Lake and vicinity, the remainder of the population having left, to spend the winter in a warmer climate.

**British Columbia.**—The *Victoria Morning News*, Feb. 1, in an editorial on the condition of the colony, says: It will be seen by the statement furnished by Wells, Fargo & Co., of the shipment of gold for the year ending December 31, 1867, that \$235,339 85 more gold has been shipped out of the country last year than during the year 1866, which is a very gratifying result as far as our mines are concerned. The *British Columbia Examiner* has the following news from Cariboo: Late arrivals report that times are brisk on William creek. Every one has employment; flour has gone down to 22 cents, and there is a large stock on hand. All the claims tapped by the Red Rock drain are being worked, but they have not been got in the same condition as they were when the accident to the drain occurred, so that no gold up to January 3d had been taken out. It was reported at William Creek that a rich strike had been made on Keithley creek. It is expected that at least 400 miners will be located on Mosquito gulch next summer. The Minehalah claim was paying well.

**Nevada County.**—The *Transcript* of Jan. 21, thus speaks of mining operations in its locality: The present season has thus far been exceedingly unfavorable to mining. Especially is this so in regard to hydraulic mining. In nearly every section of the county miners have been deprived of water in consequence of the breaking of ditches, caused by the floods or by land or snow slides. When ditches are broken by slides it is difficult to repair damages so long as the weather continues bad, and for this reason miners are deprived of water for weeks at a time. In several mining localities in this county, work has been suspended for several weeks for want of water, and in other places the great depth of snow prevents men from working. The damage to ditches, flumes and other works necessary to carry on mining has been great, but the delay consequent upon repairing of damages has been a very much greater loss to miners. The same paper of the 23d, says: While in many localities in this county mining has been suspended in consequence of the breaking of ditches, the miners in the vicinity of San Juan have had abundance of water, and the extensive hydraulic claims have been worked without interruption. The yield continues to be excellent, and the town of San Juan enjoys its accustomed prosperity. The *Gazette* thus mentions operations at the Banner mines: The mill of the Banner company, which suspended operations for a week or two, was started up again on Monday. The suspension was caused by the flooding of the lower levels, during the late heavy rain storm.—the rock taken from the upper levels not being sufficient to keep the men constantly employed. The company have lately put down a new incline shaft, which will be used exclusively for hoisting ore. They anticipate no difficulty here after to keep their twenty stamp mill in constant operation, and in addition will probably furnish a large supply of ore for custom mills. The *Grass Valley Union*, Feb. 7, says: At Graniteville matters are rather dull, owing to the winter season. The Birchville company made the banner clean up. After a four and half days' run they cleaned up \$2,377, their rock paying \$54 per ton. They have recently let a contract to run a tunnel 600 feet in length, which will strike a point where the ledge will have backs to the depth of 125 feet. Black & Young are running their mill on some very fine rock, and will run the greater part of the winter. They have one of the finest mills in the district.

**Placer County.**—According to the *Herald* of January 11, McCarty has sued McGonigle, of the famous Green Emigrant mine, for \$50,000. The suit grew out of financial complications connected with the mine.

**Plumas County.**—Hardscrabble is the name given to the new mining camp at Mohawk Valley. About twenty claims have been located at that place. The claims all prospect well, and the new mining camp bids fair to be one of the most prosperous in the county.

**Sacramento County.**—The ditch of the Natoma Water and Mining Co. was considerably injured by the late storm, several flumes being blown down and washed away on the line.

**Sierra County.**—A La Porte correspondent writes: The late snow storm has done some damage about La Porte in the way of blowing down flumes, breaking ditches, washing out water pipes, etc. All of which is more than compensated for by the abundant supply of water which has set all the miners at work. A Howland Flat correspondent writes in the *Downville Messenger* of January 11, that the storm was very severe at that point. Dams and reservoirs in the creeks were swept away like paper castles in a gale of wind. Flumes, dumps, and fixtures of mining companies were entirely swept away in the least exposed situations. The Union Co. had its large timber house unrooted, a second partly, and waste track covering demolished. The Monumental company lost its reservoir and considerable flume, besides suffering some, but not very great damage to buildings. Mining presents nothing new. The Uni-on company is driving business at rather a brisker rate than usual, owing to the plentifulness of water for hoisting and washing purposes. The Down East, Shirley and Lone Star companies are doing reasonably well. The Monumental company, by a mishap, was compelled to run 700 feet of new tunnel to get around a piece of its tunnel that began caving and settling, which was caused by water breaking in overhead, following the tunnel back and setting it. The workmen are progressing rapidly, and expect to strike the tunnel above in March next. Good progress is being made in the El Dorado tunnel.

**Siskiyou County.**—The *Yreka Union* of Dec. 28, says: J. H. V. Barry, of Humboldt, informs us that he has run a tunnel in on a spur of his quartz ledge on Punch Creek till he has finally struck the main ledge. The ledge is about two feet thick, and exhibits rock of very fine quality. He has heretofore crushed from this ledge some very rich rock, and he feels confident that it will be exceedingly valuable.

**South-ra Districts.**—We find the following items in the *Los Angeles News*, of the 17th ult.: We hear from Clear Creek that the main Delphi ledge has been struck in the tunnel, which has been run through hard rock for the last six months, at the depth of 2,100 feet, and that the ledge is full four feet in width, and of its accustomed richness. This mine has always been the richest one in the district. The new mill of the Delphi company is fully completed, with roasting furnaces for the working of sulphurets, and its enterprising owners, Messrs. McKeady and Co., are about to reap a rich reward for their enterprise and outlay of capital for the last year. The Relief ledge, owned by Colonel A. A. Rend & Co., has been struck at a great depth, and its produc-

ing rock of an extraordinary richness. Colonel Rand the superintendent, suspended active operations under the mine, except in the way of sinking for the purpose of proving the richness of the vein at a great depth. This work has now been accomplished, and after sinking through hard rock to a distance of over three hundred feet from the surface, the mine has proved rich and the vein substantial and permanent. This proves the permanency of the mines of the Clear Creek district. The mines of the new El Dorado district, near Sageland, thirty miles east of Havilah, are yielding rich returns. The St. John company is now crushing ore from the mine continually, and the average yield is about \$40 per ton. A fourth interest in this mine was lately sold to J. C. Birdseye for the sum of \$20,000. An undeveloped mine, known as the Phoenix, in the same district, recently sold to Bridger and Kearney, for \$13,000.

### Colorado.

O. J. H. communicates to the *Central City Mining Register* of Feb. 13, the following interesting account of the North Star mining company: "This is an organization formed in Chicago on the Tohin property, Illinois lode. At the invitation of George R. Mitchell, their agent, we recently made a cursory examination of the mine and what is being done. An old shaft, near the west end of the property, has been straightened down and timbered, of ample size for pump, ladders, and hoisting, some 160 feet. Thence a level has been run a long way east, in some places through an average vein of fine ore. It communicates with another shaft, about 100 feet east of the hoisting shaft, and ventilation is further secured by taking out the ground some twenty feet in depth, and putting in one stull, making two compartments of the level. A wooden track, strapped with iron, is being laid for running the dirt out to the shaft. Mr. Mitchell's plan for developing the mine, is, to sink his two shafts, alternately, keeping communication open between them, hoisting water from one while sinking the other. In this way expecting to get down to a considerable depth without being obliged to invest in a pump, which, when all is said, is very expensive and troublesome. About a cord of ore per day is coming out of the level, some of it as good, to all appearance, as any we have ever seen. The very first quality in small quantity is being saved for the smelters. The rest is hauled round to a 12-stamp mill, head of Leavenworth gulch, which crushed perhaps six cords a week, getting seven to eight ounces per cord. A road has been built on a level grade from the mine to said mill, at a cost of \$150. On the mine a new building has been erected within a few weeks, and hands are now placing a 75-horse engine, bought of the old Continental company, the boiler for which is supposed to be on the way out from Chicago. The little old engine was traded off for \$1,500 worth of lumber. There are two batteries, six stamps each, on the ground, in running order, and Mr. Mitchell hopes to have them in use before long. The company have been operating about 15 months, and we think have reason to be satisfied with the management of their affairs, with their progress and prospects. A good deal has been done, at a comparatively small cost. We forget precisely the figures, but they are near \$12,000. More has been done and can be shown for this sum than can be by many companies we know, or perhaps we should say, have known, for twenty times as much. The number of hands employed at the mine, the improvements, etc., going on, the look of everything, reminded us vividly of two or three years ago; the quality, and quantity and nature of the work done for the money, on the contrary, reminded us of most anything else. Mr. Mitchell thinks it will be due to unusual and now unseen causes if he does not make the North Star a dividend paying company. And we think so too. The expense on account of construction will soon cease; the mine furnished water enough to run the engine; the skip will unload at the batteries, and there seems to be a good deal of rich ground being opened in the mine, and the weekly results of the stamps now running on the ore show it to be worth about \$160 per cord in currency. In regular mining, with everything so economically arranged, one-half of that ought to be profit. Again, should the twelve stamps not be able to keep up with the ore mined, the new engine will have ample power, and as many more can be cheaply put up. Of course twelve stamps can't return a very great profit, because they can only crush 300 cords in a year, which at \$80 per cord, profit, would be but \$24,000. Double the number of stamps, triple them even, and it begins to loom up as a good thing. The Black Hawk company have for the last fifteen months kept eighty stamps employed on no more ground than is owned by this company—300 feet. Three times \$24,000 would be \$72,000, a profit of 36 per cent. per year, on a capital of \$200,000 which ought, if it did not, have bought this company's property, opened the mine, built and put in operation a 36-stamp mill, or even a much larger one. So that if the company are not satisfied with the profit on their investment, with a 12 stamp mill, let them remember that such a mill is only a one-horse sort of plaything concern, hardly worth the while of a whole company to bother with, and act accordingly. The *Central City Herald* of Feb. 21, has communicated the following notes on a recent examination of the mine of the Narragansett Gold mining company, the property consisting of 300 feet on the Gregory lode, Nos. 10, 11 and 12. The main shaft is 317 feet deep from surface, on the eastern line of claim No. 11. We will say nothing about the timbering and pump works, neither shall we say there is no show of skill and workmanship exhibited in making the ladders, the rounds of some of which are 15 inches apart while others are only 10 inches, and as it is not our intention to criticize in any way the connection of plunger pump, the stays for bucket rod, even the two sets of catches must pass almost unnoticed for want of space and time. As we descend by long and short steps, (thanks to our conductors or we should never have found the bottom,) we reach the first (or upper) level which is 250 feet from the surface. The east drift is 150 feet from shaft; lode in present drift is four feet wide, with vein of ore on south wall 12 inches wide; six feet from drift (west) a winze has been sunk and holed to bottom level. We are almost afraid to give our opinion in regard to this lode after bearing so much on the streets about the large body of ore exposed here, but the truth must come out. In sinking this winze, report told us considerable ore, and very rich in gold, had been taken out which did not save in stamp mill, but unfortunately we could not see it standing in the ends, neither does it warrant such a statement when examining the back of bottom level, as our report will show in due time. Ten feet from the winze (west) and near No. 10, the old shaft is a magnificent body of ore, 2½ feet wide, of beautiful yellow sulphuret of copper. The lode is going east, has split in two branches, the south branch is the one drifted on, but after a thorough examination, we concluded the north branch is the main lode. The back has been stoped out for 20 feet high, and being out of our reach we could not examine it. There is a track in this level—the ore is taken to the shaft in a car, which is of no further use since the winze is holed. 260 feet drift west, is 132 feet from shaft. About 60 feet in this level, considerable underhand stoping has been done. A rope ladder took us to the bottom of this stoping, which we had to descend before we could reach the drift, or end. After careful examination we found 20 feet from the end, a lode two feet wide, with 12 inches of very lean ore and flint—there is no lode in the present drift. 317 feet east, is 155 feet from shaft; lode 2½ feet wide, ore 12 inches. This drift has been run, or driven, 15 feet beyond the winze; the ore is of the same class and character as that in the level above, only the vein is much smaller. There is a track and car in this level also. We shall say nothing about the stulls in this level,

and those of our readers who are curious about timbering a mine had better see it. 417 feet drift west, is 164 feet from the shaft; lode, two feet wide with 12 inches of very lean ore and flint. This level is a masterpiece of systematic mining, although in many places a person must be careful he does not bark his knuckles when travelling it. However, we managed by some means to crawl in and out without leaving any seals against the stull pieces as evidence of our visit. About 30 feet from the shaft is a cross-course, which has troubled this company considerably—in fact, the six inch pump now in the shaft could not handle the water, and they were obliged to abandon the sinking of the shaft during the last working. Since the Bobtail Drainage company have started to sink their shaft, it has drained this mine perfectly dry, and should this company start up the mine, their stamp mill must lay idle for want of water to crush the quartz, and water must be hauled from elsewhere to run the engine; 20 feet has been driven on this cross-course, and more water making every day; finally a dam was put in to keep it back which proved a failure. There is a good-looking vein of ore in the cross-course and it is easily managed. We shall be proud to see this mine start up again, and we are informed a gentleman from this city has gone East for the purpose of leasing the mine, or to impress on the company the importance of working such rich property. The same paper thus speaks of the Wm. B. Astor lode in Griffith mining district, Clear Creek county: This lode is situated on Democrat Mountain, about two miles from Georgetown. It was discovered in the summer of 1866, and has been opened in a number of places, showing a continuous vein for a distance of eleven hundred feet. The ore taken from the various shafts is good. The discovery shaft shows a crevice of eleven feet between the walls, with a five foot paystreak. Garrett, Martine & Co. have treated two lots of the Astor lode, one of four and the other of five tons. The four tons which was second class ore, yielded \$440 15, and the five tons yielded \$1,146 68 coin value according to Martine's calculation, but the bankers who purchased the bullion, estimated it at \$1,221 48, and paid in currency, after deducting internal revenue tax, bank charges and expressage, \$1,593 70. Although this property is on a high elevation, it is favorably situated for working. The company which is now working the Muscovite lode intend erecting works on Silver creek this season. This property is owned by Messrs. Fisher, Cooper & Adams. And thus of the Nuckolls lode: A few days since we visited this fine property, situated on Columbia Mountain. The Nuckolls is one of the first silver-bearing veins discovered here, and known to be such. The lode has been opened at discovery to a depth of thirty-five feet, disclosing a crevice eight feet in width. Forty feet east of discovery a shaft has been sunk to the depth of eighty-five feet, the most of the way through a fine vein of argentiferous galena and sulphuret ore. The crevice in the bottom of this shaft is five feet in width, carrying an ore vein two feet in width. This shaft is well timbered, eight and a half by three and a half feet in the clear, with a ladder way off the east end. This ladder way is partitioned off from the main shaft, and has platforms every twelve or fifteen feet. An excellent shaft house has been erected over this shaft, and this is partially filled with first class ore. An open cut was made between these two shafts, through a large body of the finest sulphuret ore we have ever seen in the district. A large amount of this ore still remains standing, and will be extracted as soon as there is a market for it. This portion of the vein belongs to the original discoverers, Messrs. Packard & Scott, and the west end to the Washington Mining Association. This company is now driving a tunnel to strike the vein on No. 5 west. The Nuckolls is considered one of our very best silver producing veins. It possesses every characteristic of a true fissure vein, solid, smooth walls, with a large crevice and ore vein. The last ore run from this lode, 3,700 pounds, gave an average assay of \$430 in silver to the ton of ore. The Munsell lode, which was discovered last September by Mr. Munsell, situated on Leavenworth Mountain, about 500 feet from the Compass and Square, is now being opened by the owners. A contract for sinking a shaft has been let, which is down 35 feet. The lode is claimed two thousand feet west of discovery, and one thousand east, or just down to the creek. The character of the ore has gradually improved as the shaft has been deepened, and the ore now found in the bottom of the shaft cannot be excelled by any in the country. It contains from one dollar to a dollar and a half to the pound as ascertained by fire assay. This rich ore is carefully saved in sacks, and will be stored away for the present. This is absolutely necessary, as there are so many men who want silver buttons, and this ore being so rich, it has been gobbled to an alarming extent. The crevice is about three feet and a half, with a good strong vein of ore. The same paper of February 19 has the following items: Warren Hussey & Co. bought this morning a retort weighing 36 ozs. 9 dwts., of very fair gold, which was taken by Messrs. Hawley & Whiteside from one and three quarter cords of ore from the Aurora lode in Russel gulch. At the present premium, this is at the rate of \$450 in currency to the cord. After this, who says that miners can't make money by working their own properties? At the present low prices of labor, every man owning a genuine quartz vein ought to be able to work it to a benefit. Wm. Roach & Co. are still prosecuting work on the Ex-President lode, Gregory District. We understand that they have had a heavy "cap-rock" to go through, and are on the eve of striking rich pay. Messrs. Tomlinson & Lynn have their new whim on the Bates & Baxter claims on the Bates lode about completed, and will be in condition to raise ore from this mine by Monday next. Col. Tannatt, agent for the Rocky Mountain Company, commenced work on the Bates or Hunter lode on Monday of this week. This claim has lain idle for the past two years. Mr. Beach is running 15 stamps of the Briggs Company's mill on Burroughs ore for the Ophir Company, and 35 stamps on ore from the company's mine on the Briggs. John Sanderson and others have commenced work on the Hunter lode, just south of the Bobtail wagon road at Mountain City. We take the following items from the *Georgetown Miner* of February 20: The tunnel commenced by Cyrus C. Marble & Co., on Columbia Mountain, close by the Nuckolls trail, is progressing favorably. This tunnel will cut the veins on that mountain at a great depth. The Brown tunnel has reached the lode. Monday last they passed through twenty-two feet of crevice, and still the north wall had not been reached. Think of this, ye knife-blade croakers. The New Boston lode tunnel is rapidly progressing. It will probably be completed by the 1st of April next. Work on the Munsell lode is progressing favorably, and the vein is increasing in width and richness. Next week we intend to give a detailed report of this mine. The Georgetown tunnel, last Thursday, had reached the distance of forty-six feet, the last ten feet through a fissure vein. The north wall of this vein is the finest we have ever seen here, it being perfectly enslackened and polished. This vein shows no ore, but quartz in abundance. Work was resumed on the Henry Clay lode, on Saxton Mountain, last week. This is one of the best veins here and should be worked. The Monticello lode, situated on Columbia Mountain, is still being actively worked by Messrs. Gray & Archibald, its owners. The shaft is now fifty feet in depth, the crevice being eight feet wide in the west end of the shaft, and fourteen wide in the east end. All of the lodes on that mountain, and in fact throughout the district, show immense crevices when worked to any depth. The *Denver News* says: A topographical survey and geological examination of the Terrible lode, Georgetown, has recently been made by Professo

Schirmer; also an analysis of its various minerals and ores, which prove conclusively that it is one of the richest lodes in this territory. The true silver ores contained in it were found to be pyrrhotite (dark ruby silver), brittle silver ore (stephanite), vitreous silver (silver glance), and tetrahedrite (fablerz). The principle ores are argentiferous galena and zinblend. This very full report will be accompanied by maps and sketches. One very peculiar feature of this lode, which Prof. Schirmer says he has never before observed in this country, is the parallel arrangement of the various mineral layers, which is explained in detail in the report. From assays which this gentleman made upon the occasion of his observations, it is shown that the average yield of the last ore taken out is about one thousand dollars to the ton of two thousand pounds. This celebrated lode is situated in Griffith District, Clear Creek County, near Georgetown. The report, which we have the pleasure of examining, is one of the most elaborate articles of the kind that we have ever seen in this country, and reflects great credit upon Prof. Schirmer.

**Dakota.**

The Sweetwater mines continue to create considerable excitement in many of the Western mining districts, and from all accounts there will be a great rush there from all quarters as early in the spring as the roads will permit travel. We have recently published several glowing descriptions of these mines. We take the following additional and later information from the Nevada *Reveille*, which paper, by the way, cautions its readers in regard to highly colored accounts from too sanguine and enthusiastic writers. Says the *Reveille*: Edward Gilman received a letter from his partner, William Rose, under date of January 26, from South Pass City, Dakota territory, from which we extract as follows: "The last six weeks have been quite stormy, enough so to prevent prospecting. Two new districts have been formed, west of this, toward the head of Sweetwater, since you were here; and many new quartz locations have been made in this and California districts. The gulches, as far as prospected, have proved better than we thought they would. Fifty claims of 200 feet each have been located in Atlantic Gulch; and these 10,000 feet are below the ledge, all of whom it is thought will pay to claim No. 20 as much as \$10 to \$15 per day; but up near to the ledge the pay will be better. There is a small gulch on Atlantic creek, opposite where we camped, which has all been located and prospected, and which the owners believe will pay 25 to 50 cents to the pan. There are three to four feet of dirt. The Bridger company's claim has been opened 40 feet deep, and the ledge has been cut through and proves to be 20 feet wide, with pay rock all the way. The decomposed part, next to the foot wall prospects 75 cents to \$1 to the pan. The Atlantic stands No. 1 in the whole country, and we are going over in a few days to put up a house and do two or three weeks' work on that and the mammoth ledge. We opened the latter west of our old shaft, and found an eight feet ledge looking better than in the old shaft. For both quartz and placer mines the country looks more favorable to me than when we were both here; the quartz ledges certainly look better as they are prospected, and the gulches are proving better than we anticipated. There will be a big rush here in the spring, and it will be necessary for us to do the full amount of work on all our claims, in order to prevent jumping, litigation, shooting, etc. The road from here to Oregon Springs, 25 miles distant, is impassable for animals at present on account of snow drifts, but I think it will be passable by the first of April. Freight from there to this place is 15 cents a pound, and is brought in on hand sleds. Our letters now cost us \$1 each to have them brought from Bridger, and 50 cents out. Tell our friends to inclose a \$2 greenback when they write, as that will pay the expense of their letter and our answer, and one drink. Parties writing should direct to Sweetwater mines, via Fort Bridger, Utah. South Pass City contains about 75 houses, most of which are situated on the north side of Willow Creek; and it is supposed there are from 600 to 700 people in the several districts. Our stock is in Wind River valley, where they will do well if the Sioux and Cheyennes do not get them in the early spring. There are two stores here, but prices are very high; for instance, flour is 30 cents a pound, bacon \$1, nails \$1, butter \$1 50, sugar \$1 50, wool shirts \$10, boots \$20, picks \$15, and everything else in the same proportion. No new hats in market; old ones are worth \$10, and scarce at that figure."

**Idaho.**

The Owyhee *Avananche*, of Feb. 8, says that many more quartz mills are wanted to work the mines in its locality. Enough quartz could be taken out of those now being worked to supply double the number of stamps running in Owyhee. There are a great number of rich mines here that will remain idle next summer, because of the scarcity of means for working them. It is a good chance for enterprising capitalists to bring in machinery and build more mills. The same paper has the following: Rich gold and silver ore was struck in the bottom of the Potosi shaft last Tuesday. We noticed on the dump about a couple of tons just taken out, and it was truly a goodly sight to look at. In much of it could be seen pure crystallized silver, and also gold. The rich streak is from twelve to fourteen inches in width, besides broken veins on each side that indicate a large ledge of solid quartz at a greater depth. The boys are in luck, and they deserve it. For over two years they have labored with untiring energy, and under many disadvantages, confident that a fortune was in store for them. If the present degree of richness of the vein holds out, they are all right. Work will be continued and ore taken out, but we understand none of it will be worked till spring. Calling at McDonald & Co.'s assay office yesterday, we saw two gold and silver bricks, of the value of \$10,900. This was extracted from Ida Elmore ore, worked at the Lincoln mill, and was the result of five days' straining, leaving by far the richer portion of the amalgam in the battery. The bullion melted and assayed by McDonald & Co. now amounts to from fifteen to twenty thousand dollars per week.

**Arizona.**

**Hassayampa District.**—The Prescott *Miner*, of Jan. 18, has the following mining intelligence from this district: At latest accounts from the "Chase," the ledge was five and a half feet in thickness, and the rock as good as ever. During the past week, the shafts have been roofed in, and a couple of houses built for the workmen. The Plumas lode is still being worked. The Coloradans who found it are engaged in taking the rock out and working it, and the results obtained by them are really flattering and pleasing. We are reliably informed that every ounce of metal taken out by them is worth \$5. Young & Rodick, owners of the "Chance" lode, were down upon it about sixty feet, when the water drove them out. They have commenced to sink another shaft, and have made arrangements with Mr. Reed to have several tons of the "Chance" ore worked by him at the "Sterling" mill. Pierce & Taylor are still working on their mammoth wheel, which will be thirty feet in diameter. They expect to be able to run six arastras with it. Last week Mr. Reed worked, in a Moore pan, four tons of tailings of "Sterling" rock, out of which he got \$140, or \$35 to the ton. A party of placer miners, who have been to work in the Hassayampa for some time past, struck pay-dirt recently, out of which they picked pieces of gold weighing from one bit to a dollar.

**Utah.**

Samples of ore from the North Star ledge, situated in Little Cottonwood canyon, in the Wasatch range of mountains. Utah

Territory, says the Austin (Nevada) *Reveille*, were deposited at the office of Boalt & Sletefeldt for assay, the average yield of which was \$110 of silver per ton. The ore was a fine-grained, compact galena, of which the ledge is said to produce great masses. A small smelting furnace was erected in the vicinity of the mine, and a sample of the lead produced by it was also brought in, which yielded by assay at the rate of \$411 of silver to the ton. This apparently valuable property is lying idle for want of proper management.

**Canada.**

The Toronto *Monetary Times'* Madoc correspondent writes from Belleville, Feb. 10, as follows: The following is an abstract of the sworn return from the reduction works at Eldorado, Madoc, for the month of January, 1868, as delivered to A. A. Campbell, Esq., Gold Inspector of the Quinte mining district:

TURLEY & GILBERT.			
Name.	Township.	Quantity.	Per Ton.
Confederate	Madoc	1 ton	\$13 00
do.	"	1 "	29 60
Bay State	"	1 "	19 50
John Tossie	"	1 "	8 00
David Barker	"	1 "	27 00
Flam & Horton	"	1 "	20 00
Excelsior	"	2 " \$40	20 00
E. Gunyeon	"	1 "	19 50
Toledo	"	3 " 50	62 10
Dean & Gilbert	Lake	3 " 15	20 00
James Jackson	Madoc	3 " 85	21 66
Toronto & Whitley	"	14 " 30	20 00
A. F. Wood	"	1 800 lbs. 6 90	7 66
D. Allan	Belmont	1 ton	8 00
Anson Ross	Madoc	"	5 00
Royal Canadian	"	1 "	40 00

And 9 lots under \$5 per ton; 7 lots blank.  
DANIELS, SCOTT & TAYLOR.  
1 ton from Tudor ..... \$14 50  
1 " Rawdon ..... 5 50  
1 " Honolulu Mine, Madoc ..... 12 52  
1 " back of Kingston ..... 12 75  
5 lots under \$5 per ton; 5 lots blank.

On analyzing the above statement, it will be observed that out of ores operated upon from 45 distinct localities, 19 yielded gold in paying quantities, 14 in smaller quantity, and 12 showed blank. That is, of the mines from which samples have been sent to the mills, 42 per cent. will pay to work from the first; 34 per cent. are, at all events, worthy of further trial, and only 26 per cent. give no evidence of the presence of the precious metal; and when it is recollected that none of the shafts have been put down below 70 feet, and many of the samples tested are from a very small depth below the surface, we may conclude that the district is one of very great promise, as respects gold alone, without taking into account the other valuable metals and minerals with which it abounds. The proprietors of the Empire mine are pushing their work forward with spirit. They have three gangs of men employed, so that the work goes on continuously, and they intend to put up, as soon as possible, a reduction work of the capacity of 20 tons a day. In the meantime they will have a quantity of somewhere about 50 tons reduced at Daniels & Co.'s mill. The Richardson company directors are contemplating a change in their arrangements, and in the meantime their mill will be stopped. I am informed that they intend to send a sample of their gold to each of the Eldorado mills to try the comparative merits of the Wyckoff amalgamators and the Wheeler pans. Some of the rock from the Honolulu mine, village of Madoc, which had been laid aside as not very promising in appearance, was assayed by Mr. W. C. Smith, and produced, by fire assay, \$24 to the ton. The Caledonia mine, also in the village, on a similar assay, yielded at the rate of \$24 44 to the ton. One ton of ore from the Merchants' Union mine, reduced at Turley & Gilbert's mill, yielded \$11 40 in gold. Two pounds of rock from the Breckinridge lot, on the town line of Huntingdon and Rawdon, assayed at Turley's, yielded at the rate of \$133 per ton. Mr. S. D. Ross, who owns a mine near the village of Queensboro, has had two tons crushed, one of which, from near the opening of the mine, yielded \$6; and a second, from a few feet deeper, gave \$14. The Union Company, of Toronto, have advanced their tunnel 30 feet into the rock, and have contracted for the sinking of a new shaft on another part of their property. Mining is being briskly carried on in Tudor, and speculation is extending to the more remote townships of Limerick, Cashel and Wollaston, where the prevailing metal seems to be silver, though gold also appears in the assays of ores from these townships.

**Mexico.**

A correspondent writing from Vera Cruz, under date of Feb. 2, says that "the discovery of gold placers in Oaxaca and Chihuahua is creating much excitement among all classes of citizens, and thousands are flocking to the golden lands. A few days ago a placer was discovered concerning which a person writes that from one pan of earth \$3 worth of gold were extracted at the first washing. Ten dollars a mule-load of earth is paid for earth brought to the river from only half a mile distance, and pays well at that. We have a second California. All that is needed is hands and machinery to work it properly. Very many of the Americans who, since the fall of the Empire, have been without means, have in this found a Godsend and are hurrying forward to the promised land."

**COPPER.**

**Michigan.**

The Houghton *Gazette*, of the 20th ult., has the following items: After trying the experimental cylinder sent by Mr. Ball to the South Pewabic, and not succeeding in making it work, it has been discovered the original cylinder could be easily repaired, and it has been done and now at work again. The new rock house elevated tram-ways and skip shafts are nearly completed at the South Pewabic; it is expected the rock house will commence work the first of the week. The stamps engine was started again last Friday, and the mill has been running splendidly all the week. There is a full of water now, and we shall expect there will be some big work ere long. As far as the lower openings of the Pewabic are extended, our prediction that better ground would be met with, is being verified. The 170, between No. 5 and the winze south, has been connected, and a stope started in a splendid looking lode. The two new heads of Ball's stamps are working admirably this winter, averaging daily, month after month, one hundred and forty tons of rock, or seventy tons per head. The average amount stamped per cord of hard wood consumed is a trifle over nine tons. By a despatch received just as we commenced printing our edition last week, we were enabled to state the Huron had been reconstructed, and that orders to resume work might be soon expected. In our opinion, but a comparatively small force will be worked for the first three months, and production of copper from rock already out of the mine will be the main feature of operations. But little money will probably be paid in by the new company, the idea being to make the mine pay its way from the start.

**IRON.**

**Michigan.**

The Negannee *News* of the 13th inst., describing a district in the Washington mine, says: The company has about 7,000 tons of ore in the stock pile. A tunnel, running in a southwesterly direction, is being cut, and is now about 100 feet. This tunnel is very substantially built, and is being lumbered as fast as excavated. At a distance of 200 feet this tunnel will connect with a shaft, which is already started, and further on it is intended to sink other shafts at intervals, all connecting with the tunnel, so as to load the cars from the shafts, instead of raising the ore to the surface and hauling it to the railway. All of the work is done by contract, and very little if any reduction of force has been made. A portion of the ore will be mined under ground, the surface in many places being too heavy for stripping—in some cases 30 feet in depth, and in one test-pit the men went through 42 feet of surface before striking ore. The vein—magnetic—has been traced, with occasional breaks, some 2,000 feet—indeed as far as surveyed it is found. The ore dock at the side track is found insufficient for its intended use, and an addition is being built. The work is confined principally to getting ready for business in the summer, and as soon as a good working face is obtained it is left and operations commenced on another. There are now eleven openings about ready for working, and by the time the shipping season commences the Washington will be prepared to render a good account to its owners. The *Marquette Mining Journal* of the 15th inst., has the following concerning the furnaces: The Collins furnace went into blast in June, and present appearances indicate that its hearth will hold out till May, at least. Its product at this time is something over 3,000 tons, and its weekly average about 100 tons. The company are issuing sight drafts, of small denomination, on its treasurer, C. A. Trowbridge, of New York, in payment to its men. The Michigan went into blast on a new hearth on the 19th of December. It is working two-thirds Washington ore and one-third Lake Superior hematite. Its average daily product is 15 tons. The Champion is producing about 12 tons a day, from the ore of the new mine adjoining it, and a small proportion of Lake Superior hematite. The comparatively small yield is owing doubtless to not understanding just how to flux their new ore, as we understand that a large amount of iron passes off with the cinder. Experience will no doubt soon correct this, and we shall be able to report better things of the Champion. The work of taking down the old stack of the Greenwood is about complete. The worst fears with regard to its condition were fully realized in taking it down. The interior of the mason work was so decomposed as to resemble a bed of ashes more than anything else. Work upon the new stack will be commenced as soon as the railroad opens, so as to get up the stone and lime.

**OIL.**

**Pennsylvania.**

The Titusville *Herald*, of the 8th ult., gives some interesting facts in its monthly review concerning the oil business. We make the following extracts:

**THE PRODUCTION.**

Within the past month there has been a slight decrease in the production, and it is now ten thousand eight hundred barrels per day. The decrease has been quite large in some districts, while in others there has been a considerable increase. The decrease has been going on all the month in most of the localities, while the greater part of the increase has taken place within the past week, so that the average daily production for the month will not exceed ten thousand six hundred barrels. The decrease has been greatest in proportion to the development in the Tidioate district. There are now two wells on the Shamburg district and one on Shaffer Run, near Reno, that are producing from three hundred to four hundred barrels per day, and there are some fifteen or twenty in different parts of the region, the production of which averages from one to two hundred barrels per day; but nearly two-thirds of the wells that are being pumped produce but from fifteen to seventy-five barrels per day. The number of new wells struck during the month was smaller than during any previous month since July last. There is but little probability of any farther increase in the production during the remaining winter months, unless the wells that will be completed will produce more oil than those that have been struck thus far. A large portion of the old territory is now unproductive, and on that which has been found recently the wells are but just starting, and will not be drilled to a sufficient depth within the next seventy or ninety days.

**THE DEVELOPMENT AND THE TERRITORY.**

The low price of oil and the cold weather have been operating adversely on the development, and there has been a farther decrease in the number of new wells being drilled. The decrease has been thirty-two, and the whole number of new wells being drilled is one hundred and fifty. About one-third of the wells are located on territory that has been known to produce but little, or on territory that, as yet, has not been tested. Nearly one-half of the wells now being drilled will be completed within the next sixty days, but the most of these are located on poor territory. In several localities where large wells have been found, there are preparations being made to drill a large number of wells as soon as spring opens, but it is probable that, as the development extends in these districts, the limit of the oil-bearing sand rock will be found, and in two of these districts new wells have been tested in the immediate vicinity of large producing wells, and have proved unproductive.

**STOCK OF OIL IN THE OIL REGION.**

The stock of oil in the oil region, on the 7th inst. was 541,100 barrels. This amount includes all that is in iron tanks and wooden storage tanks, and on the hands of producers, brokers and shippers. The amount of oil on the hands of producers is very small, and it has been set down at four days' production. As compared with last month, the total stock shows an increase of but 6,500 barrels, and a falling off of 89,900 barrels, as compared with that held at the same time in December last. At no time, probably, within the past year, has the stock on the hands of brokers, shippers and producers been as small as at present. The increase in the total stock has been caused by the filling of iron tankage. There are, at various points in the oil region, about 14,000 barrels of oil in wooden storage tanks.

**THE PRICE OF OIL.**

For the past month the price of oil in the oil region has been firm, with something of an advance over the early part of January. The advance of oil here at this time, with a slight advance in the outside markets, was unlooked for by many of the oldest dealers in the trade. Several causes have led to the advance, the most prominent of which is, probably, that the amount on the hands of the retail dealers throughout the country was overestimated at the commencement of the season, and consequently no provision was made to supply a demand from this source so late in the consuming season as January. The easier condition of the general money markets, by causing a larger storage demand and heavy foreign shipments, has also assisted materially in bringing about an advance. In the oil region the advance has been sustained through the railroad companies, having made concessions in freight charges. At present there is a moderate demand, and oil is scarce and firm at \$2 10 at points along the Oil Creek Railroad, and at \$2 50 at Oil City. Owing to the advance

there has been but a slight demand for storage in the oil region during the past two weeks, and the amount purchased for this purpose during the month will reach about 60,000 barrels.

MARKET REVIEW.

FRIDAY EVENING, March 6, 1868.

Gold and Silver Stocks—are moderately active. Smith & Parnclee has gained in strength, and now demands \$2 90: New York gold has declined to 60c; Edge Hill continues to advance, and this afternoon, sales were made as high as \$3 60; Montana is also stronger, selling at 67; Quartz Hill, \$1 15; Manhattan Silver is held at \$100 00, an advance of \$10 since our last issue; Twin River has declined during the same period, to \$75 00. At the Stock board, this afternoon, prices were quoted as follows:

Table with columns: Bid, Asked, Stock Name, Bid, Asked. Includes Alameda Silver, American Flag, Atlantic and Pacific, Bates & Baxter Gold, Boston Gold, Black Hawk G., Bobtail Gold, Bullion Consolidated, Columbian G. & S., Combination Silver, Consolidated Gregory, Corydon Gold, Edgely Hill Mining, Gold Hill, Gannell Gold, Gannell Union, G. N. G. & S. Co., Harman G. & S. Co., Holman, Hope Gold, Kipp & Buell Gold, Keystone Silver, La Crosse Gold, Liberty Gold, Manhattan Silver, Midas Silver, Montana Gold, New York, New York & Erie, Nye Gold, Owyhee Mining, Ophir Gold, People's G. & S. of Cal., Rocky Hill, Reynolds Gold, Rocky Mountain Gold, Smith & Parnclee Gold, Sensesenderfer, Symonds Fork Gold, Texas Gold, Twin Riv. Sil., Vanderburg G.

Copper Stocks—Rockland finds purchasers at \$4 00. The market is thus quoted: Caledonia C., Canada, Davidson, Gardner Hill, Central Copper, Copper Falls, Evergreen B. Copper, Franklin C.

Petroleum Stocks.—Quotations range: Bid, Ask'd. Bannehoff Run, Brevoort, Buchanan Farm, Central, Clinton Oil, Manhattan, National.

Miscellaneous Stocks—Cumberland Coal, Pref., 34; Del. & Hudson Canal, 147@147 1/2; Quicksilver Mining, 22; New York Central, 129 1/2; Erie, 74 1/2; Reading, 94; Michigan Southern, 91 1/2; Northwestern, 67 1/2; Northwestern Preferred, 74 1/2; Ohio and Mississippi Certificates, 81 1/2; Canton, 62 1/2; Pacific Mail, 110 1/2; Western Union Telegraph, 34 1/2; Adams Express, 72 1/2@72 1/2; American, 69 1/2@70; United States, 70 1/2@71 1/2; Wells, Fargo & Co., 40@40 1/2; Merchants' Union, 35 per cent., 33@33 1/2.

Government Stocks.—The tone of the market is weak. Quotations range: U. S. 6s, 1851, reg., 111 @; U. S. 6s, 1851, coupon, 111 1/2 @ 111 1/2; U. S. 5-20s, 1862, regular, 107 1/2 @; U. S. 5-20s, 1862, coupon, 107 1/2 @ 107 1/2; U. S. 5-20s, 1864, coupon, 107 1/2 @ 107 1/2; U. S. 5-20s, 1865, coupon, 108 1/2 @ 108 1/2; U. S. 5-20s, July, 1865, coupon, 106 1/2 @ 107; U. S. 5-20s, July, 1867, coupon, 101 1/2 @ 101 1/2; U. S. 10-40s, reg., 101 1/2 @ 101 1/2; U. S. 10-40s, coupon, 101 @ 101 1/2; U. S. 7-30s, June, large, 105 1/2 @ 106; U. S. 7-30s, July, large, 105 1/2 @ 106.

Foreign Exchange is dull and heavy. The market is well supplied with bills, and the demand being quite limited, leading drawers are asking 109 1/2 for 60 days' sterling, which may be considered a full rate. We quote: London, (prime bankers) 60 days, 109 1/2 @ 109 1/2; London, (prime bankers) sight, 109 1/2 @ 110; London, prime commercial, 109 1/2 @ 110; Paris, (bankers) long, 5.17 1/2 @ 5.16 1/2; Paris, (bankers) short, 5.16 @ 5.13 1/2; Antwerp, 5.20 @ 5.17 1/2; Swiss, 5.20 @ 5.17 1/2; Hamburg (bankers), 36 @ 36 1/2; Amsterdam (bankers), 41 @ 41 1/2; Frankfurt (bankers), 41 @ 41 1/2; Bremen (bankers), 79 1/2 @ 79 1/2; Berlin (bankers), 71 1/2 @ 72.

Gold is quite firm and was quoted this afternoon at 141 1/2 @ 141 1/2. The export movement of specie in February was less than the shipments in January, leaving a small balance of the receipts in favor of the market. The following will show the changes at this port since the beginning of the year:

Table showing Gold Movement at New York in 1868. Columns: Received from foreign ports, Received from California, Total supply, Exported to foreign ports, Loss since January 1st, Gain in February.

Statement of business at the United States Assay Office at New York, for the month ending February 29th, 1868. Deposits of Gold: Foreign coin, \$3,000 00; Foreign bullion, 6,000 00; United States bullion, 284,000 00. Deposits of Silver, including purchases: Foreign coins, \$5,000 00; Foreign bullion, 7,000 00; United States bullion, 3,200 00; Montana, 1,500 00; Colorado, 3,500 00; Lake Superior, 500 00; Nevada, 19,000 00. Total deposits, payable in bars, \$285,000 00. Gold bars stamped, \$36,081 02. Transmitted to U. S. Mint, Philadelphia, for coinage, 120,077 00. American silver sells at 6 1/2 @ 7 1/4 cents below the price of gold. Mexican dollars are quoted at 102 1/2 @ 103 1/2 in gold. There seems to be a general increase in the demand for capital, and all the surplus offering is freely taken at full rates of interest. For the best recurrences 6 @ 7 per cent. is the customary range, and only first class borrowers find ready accommodation. Business paper, strongly endorsed, or with the most undoubted single names, is taken at 7 per cent., with occasional transactions at a fraction less. Very good signatures are offered at 9 @ 10 per cent. per annum, and do not find ready currency.

Tin.—In Straits we have had no wholesale transactions, and the quotation of 23 1/2 to 24c. is nominal. Banca is quoted 27c. and 30 tons English were sold at 23 1/2c. all gold. The importations for February amounted to 2,200 slabs Straits, and 30 tons English. From the Straits there are 32,000 slabs on the way. The stock is estimated at 9,500 slabs Straits, and 20 tons Eng. equal to 600. Total, Boston and N. Y. 11,400 slabs against 28,900 slabs on the 1st. Mar. 1867. The English Market is firm at sb. 80 to 90 for Straits, and the Amsterdam market at fl. 52 1/2, for Banca, on the strength of a rise in prices in the Straits owing to disturbances among the miners.

Speitler's quiet and nominal at 6 1/2 to 6 3/4c. for Silesian. The importations during the last month were 180 tons, and the stock is 450 tons against 900 tons on the 1st of March, 1867.

Copper has been steady, and under cable advices of a firm market in England there has been during the last few days speculative purchases to the extent of 11 to 120,000 lbs. The quotations to-day are 23 1/2c. to 24c. for Detroit, 23 1/2c. for Portage Lake, and 23 1/2c. for Baltimore, and the market firm. A resolution has been introduced into Congress to raise the duty on Ingot Copper from 2 1/2c. to 5c. per lb., and on ores from 5 per cent. ad valorem to 3c. per lb. of pure copper; should this be passed it will enhance the cost of production to the Atlantic smelters.

50 tons Detroit Copper have been shipped to the Continent. In the European markets the low price of copper begins to attract attention, and the condition of the trade seems to have improved materially. The quotation for Chili was £70.

Lead is 6 1/2c. to 6 3/4c. for ordinary foreign. The importations for February amount to 2,200 tons, and the deliveries for consumption to 1,700 tons. The stock is 4,300 tons against 2,500 tons on the 1st of March, 1867.

Petroleum is only in moderate demand, but prices are firm. We quote: Crude (40@41 gravity) in bulk, per gallon, 13c.; crude (40@41 gravity) in bbls. 11 1/2c.; refined, in bond (110 test) prime light straw to white, 25c.; refined in bond, (110 test), standard white, 25 1/2c.; residuum, per bbl. \$3 50. Receipts for the week ending March 3: Exports for the week, 730,629 galls. from Jan. 1st, 6,912,170; same time last year, 4,095,247.

THE SLATE TRADE.

Since the first of January there has been little or no business done in roofing slates here, and advices from the West tell of a similar state of affairs there. The Southern market is also woefully dull and the indications for a better state of affairs this spring are not very flattering. At the Pennsylvania quarries, work is almost entirely suspended, as the workmen refuse to work for the wages offered by the proprietors. The principal deposits all have a supply of slate, and it is thought that the requirements of the spring trade will compel the resumption of operations soon, at whatever cost. In consequence of the lamentable state of affairs at the quarries, it is thought that prices must open at about last year's figures. The Vermont districts suffer from dull trade, the principal deposits retain large quantities of slate, especially green and intermediates, which can now be bought at low figures, but little work is being done in the quarries.

THE IRON TRADE.

The market in Pig Iron this week is very quiet, even more so than at the date of our last report. There is no demand for American; what little would under ordinary circumstances manifest itself being repressed by the last advance in prices. We hear sales of 1,000 tons Allentown at \$39; 1,000 tons Scotch, \$11@42; and 2,000 tons new rails, on private terms. In manufactured iron the market experiences a better feeling. There is more demand, which the present low prices probably has influenced. We have no change to note. Card prices are steady.

Weekly Statement of New York Imports.

Table showing Weekly Statement of New York Imports. Columns: Quantity, Value. Includes Chains and Anchors, Iron, hoop, tons, Iron, pig, tons, Iron, Railroad bars, Iron, sheet, tons, Iron, tubes, Iron, other, tons, Steel.

Table showing Boston Imports of Pig Iron from January 1 to February 29, 1868. Columns: From Great Britain, tons; Coastwise Ports; San Francisco Iron Imports from January 16 to Feb. 1, 1868.

Market Prices.

Table showing Market Prices. Columns: Description, Price. Includes DUTY—Bars, 1 to 1 1/2c. per lb.; railroad, 60c. per 100 lbs.; boiler and plate, 1 1/2c. per lb.; sheet, band, hoop and scroll, 1 1/2c. per lb.; pig, \$9 p.r.t.; polished sheet, 3c. per lb. Payable in gold. Anthracite, No. 1, best, \$39 00@38 00; Swedish Iron, 1 1/2x3/4 to 3/4 and 1/2 in sq., 155 00; Grey Forge, 31 00@33 00; Scotch Pig, from yard, 41 00@43 00; Charcoal, coal blast, 50 00@60 00; Old Wrought sc'p, fm. yd. 47 50; English rails, gold, 52 00@53 00; American at works, 75 00@78 00; Old Railroad Iron, 46 00@48 00; JOBBERS' PRICES: Hoops, 1/2 per ton, \$185 00; 3/4 per ton, 155 00; 1 per ton, 145 00; 1 1/4 to 2 per ton, 130 00; Scroll Iron—3/4x14, per ton, 170 00; 10, 150 00; 3-16, 140 00; 3-16, 132 50; 3/4x14, 150 00; 12, 147 50; 10, 142 50; 3-16, 132 50; 3/4x14, 127 50; 10, 137 50; 3-16, 132 50; 10, 127 50; 3-16, 125 00; Swed'n Iron, ord'y sizes, 3/4 to 2 in. sq., per ton, 150 00; Swedish—common ass'd., \$150@155; English—com., 85 00; dc refined, 95 100; dc sheet, per lb., 6 1/2@10c; Russia, sheet, 15@16c.

Table showing Market Prices. Columns: Description, Price. Includes Do. railway, Wales, £5 5 0@£5 10 0; Do. Swd. in London, 10 5 0 to 10 10 0; To arrive, 10 5 0 to 10 10 0; Stafford in Lond., 7 6 8 to 8 10 0; Bars, 7 6 8 to 8 10 0; Hoop, 7 6 8 to 8 10 0; Sheet, single, 9 2 6 to 10 0 0; Fig. No. 1, in Wales, 3 15 0 to 4 5 0; Refined metal, ditto, 4 0 0 to 5 0 0; Bars, common, ditto, 5 7 6 to 5 10 0; Do. merch. Type or Tees, 6 10 0; Swed., kegs (rolled), 14 5 0 to 15 0 0; (hammered), 15 0 0 to 15 10 0; Swed., in faggots, 16 0 0 to 17 0 0; English, spring, 17 0 0 to 23 0 0.

Iron Items.

The iron business has been somewhat dull in this as in other sections of the country, but the iron men are making extensive preparations for the spring and summer trade. It is proposed to erect from twelve to fifteen furnaces during the coming season, and new stocks are about being erected in addition to those already in operation, at the following places: Two at Bethlehem, one at Hellertown, one at Glendon, one at Allentown, one at Alburtis, one at Cataqua, one at Hokendauqua, and one at Whitehall.—[Allentown Dem.] Wm. Firmstone, Esq., of the Glendon Iron Furnace, and a number of others, are endeavoring to lease a large tract of land in Williams township, and work the iron beds supposed to exist in it, in large quantities. Three new furnaces are to be built in Danville, during next summer. One will be erected by the Pennsylvania Iron Company, one by the National Iron Company, and one by Grove Brothers.—[Salisbury Times.]

THE COAL TRADE.

New York, March 6, 1868.

We find the market in a very excited condition this week, consequent upon the scarcity of Coal and the difficulty of delivery, in consequence of the blockade at all the shipping ports, Philadelphia is frozen in tight as a drum—Elizabethport is only open for large vessels, while Port Johnston is in little better condition, besides being without supply, no Coal having passed over the Morris and Essex Railroad during the past few days. There has been an active inquiry for stove Coal, but none could be had, and many of our city retailers and hosts of the Eastern men are loud in their clamor for it. We learn that only one ton has reached this city from the Port during the past ten days.

Freights rule high in consequence of the scarcity of vessels. As high as \$2 50 and \$3 50 have been offered to Eastern ports, and none to be had at that. Dealers are offering 70c. from the Port to New York, and we understand that private parties who must have a supply have paid as high as \$0 and 90c.

There is no telling the turn of the trade during the next month. The prospects of heavy freshets and a general drowing-out stare us in the face, while we may say all the Coal at tide-water at the present time has been "twice sold." We must trustfully, then, say that those who are in short supply, and have not contracted for their Coal, will have to pay high prices for what they must have, and many will have to do without. By reference to our table of shipments it will be seen that the increase of this year over last has been reduced to some 3,000 tons, while there was a heavy decline in the shipments for the last week.

The prominent Lehigh dealers of this city met in council on Monday last, and organized what they call a New York and Lehigh Coal Exchange, the objects of which are the regulating of prices, reporting of freights, and discussion of the thousand and one questions which arise relative to demurrage, insurance, &c., &c. This body is entirely composed of Lehigh Coal miners and shippers—those having shipping facilities and shipping to tide-water. We understand there will be no Lehigh Coal for sale in this market during the coming month, the whole quantity mined having been sold on the line. The Miners' Journal of last week gave what they supposed to be the prices of "Pittston Coal" for the coming season. The Pennsylvania Coal Company have not promulgated any such rates.

The following table exhibits the quantity of Coal passed over the following routes of transportation for the week ending February 29, 1868:

Table showing quantity of Coal passed over various routes for the week ending February 29, 1868. Columns: 1867 (WEEK, YEAR), 1868 (WEEK, YEAR), INC. OR DEC.

Schuylkill Coal Trade.

Table showing Schuylkill Coal Trade by Railroad for week ending March 5, 1868. Columns: Location, Quantity, Value.

Table showing Report of Coal Transported over Lehigh Valley Railroad for the week ending February 27, 1868, and previously this season, compared with same time last year. Columns: Location, Quantity, Value.

Prices of Coal by the Cargo.

Table showing Prices of Coal by the Cargo. Columns: Location, Price. Includes Schuylkill R. A. choice, \$...@...; Lehigh Broken, 5 25; Ordinary, 5 25; W. A. Lump, 6 00; Steamboat, 4 75; Broken, 5 00; Eg., 5 50; Stove, 6 00; Chestnut, 4 75; Lehigh White Ash Lump, 6 75; SPECIAL COALS—DEALERS' QUOTATIONS: Diam'd Vein R. A., Sch'kill, Broad Mountain, 4 75; Locust Dale W. A., Back Ridge W. A., Sh'kin, 4 75; Hazy Brook, Lehigh, H. Heils, E. 5'kin, Lorb., 4 75; Harleigh, New England Red Ash, 5 00; Spring M'n, 6 00; Wyoming, 5 00; Sugar Creek, 6 00; Locust Mount'n (Reppler), 7 00; Ashburton, Duncan Red Ash, 8 00; Fulton White Ash, W'barro Coal & Iron Co., 5 50; Stout, Newburgh Orrell Gas Coal 9 00; Old Co's., Despard Gas Coal, 9 00; Mt Pleasant, 6 00; Dealers in these Coals may be found in our advertising columns.

At Philadelphia, March 6, 1868.

Table showing prices of coal at Philadelphia, March 6, 1868. Columns: Location, Price. Includes Lehigh Lump and St'm't., \$...@...; Broken and Eg., 8 1/2c; Stove, 4 00; Chestnut, 4 00; Schuylkill R. A. Prepared, 4 25 @ 4 50; W. A. Lump and Steamboat, 4 00; Broken and Stove, 4 00; Eg and Stove, 4 25; Broad Top, 4 75.

Scranton Coal at Elizabethport, March 6, 1868.

Table showing prices of Scranton Coal at Elizabethport, March 6, 1868. Columns: Location, Price. Includes Lump, \$4 00@...; Steamer, 4 25; Grate, 4 75; Egg, 4 75; Stove, 5 50; Chestnut, 4 25.

Prices for Pittston Coal at New York, March 6, 1868.

Table showing prices for Pittston Coal at New York, March 6, 1868. Columns: Location, Price. Includes Lump, per ton of 2240 lbs. \$5 40@...; Steamer, 5 40; Grate, 5 40; Egg, 5 40; Stove, 5 60; Chestnut, 4 90.

Lackawanna at New York, March 6, 1868.

Table showing prices of Lackawanna coal at New York, March 6, 1868. Columns: Location, Price. Includes Lump, \$4 10@...; Steamer, 4 10@...; Grate, 4 10@...; Lehigh Coal at Elizabethport, March 6, 1868: Lump, 5 00@...; Steamboat and Broken, 5 00; Egg, 5 00; At Baltimore, March 6, 1868: Wilkesbarre & Pittston W. A. by car, \$5 50@5 75; Lykens Valley R. A. by car, 5 80@...; Sunbury & Shamokin R. W. A. by car, 5 50 @ 5 75; At Havre de Grace, Md.: Wilkesbarre or Pittston, W. A., on board, \$4 85@5 10; or W. A. on board, 5 00@5 25; Lykens V'y. R. A. on b'd., 5 60@5 85; The above rates are only nominal. Shipping at this port is suspended for the season. At Georgetown, D. C.: George's Creek and Cumberland on board, \$...@ 4 50.

Wilkesbarre Coal at Elizabethport, March 6, 1868.

Table listing coal prices for Lump, Steamer, and Broken grades, with prices per ton and additional charges.

Prices of Provincial Coals.

Table listing prices for Block House, Gowrie, Lingan, Sydney, and Pictou coals, with prices per ton.

Prices of Foreign Coals.

Table listing prices for Liverpool Caking, Liverpool House Cannel, Liverpool Orrel, and Liverpool Orrel, screened, with prices per ton.

Coal Freights.

Table listing coal freights from Elizabethport to various destinations like Albany, Boston, Bridgeport, etc., with prices per ton.

Foreign Freights.

Table listing foreign freights for New Castle and Ports on Tyne, and Liverpool, with prices per ton.

SAN FRANCISCO STOCK MARKET.

A telegram from San Francisco, dated February 29th, to Messrs. Liss & Walker, Bankers, 33 Pine street, this city, quotes Nevada silver and other stocks as follows:

Table listing stock prices for Gould & Curry, Savage, Chollar Potosi, Ophir, Hale & Norcross, Crown Point, and Yellow Jacket, with bid and ask prices.

Weekly Coal Trade Circular.

New York, March 6, 1868. The extreme cold weather which continues to prevail has materially curtailed the receipts of coal at the shipping points on the waters of the New York Bay, whilst the consumption of coal continues large, and the stock of coal in dealers' hands is very light.

The British Copper Trade.

The imports of copper ore into the United Kingdom, says the London Mining Journal, appear to have slightly declined last year, the total receipts to Nov. 30th, having been 64,723 tons, as compared with 62,497 tons in the corresponding eleven months of 1866, and 67,248 tons in the corresponding eleven months of 1865.

London Copper Trade Circular.

Messrs. Vivian, Younger, and Bond, Feb. 14, write:—Although business in the West Coast produce has only taken place to a limited extent, this is rather the consequence of the small quantities offering than of want of buyers, and the transactions which have occurred have been at rather improved prices.

California Ore Shipments.

Commenting on this trade the San Francisco Bulletin of Jan. 13 remarks:

The first full cargo of copper ore dispatched hence for several months was carried by the Pasithea, which sailed for Swansea last Saturday (Jan. 11). Of late this branch of our export trade has been measurably neglected, owing to the depressed condition of the Eastern and English markets.

Table showing copper ore shipments for 1867 and 1866, with columns for tons, value, and profit.

The unspecified descriptions consisted largely of manganese ore. The valuation of ores shipped from this port during the last year was \$501,510, against \$1,480,711 in 1866, and \$1,944,500 in 1865.

A Floating City.

One of the most wonderful cities in the world is Bangkok, the capital of Siam. Did you ever witness such a sight in your life? On either side of the wide, majestic stream, moored in regular streets and alleys, extending as far as the eye can reach, are upwards of 70,000 neat little houses, each house floating on a compact raft of bamboos, and the whole intermediate space of the river presents to our astonished gaze one dense mass of ships, junks, and boats of every conceivable shape, color and size.

can see, are three stately pillars, erected to the memory of three defunct kings, celebrated for some acts of valor and justice; and a little beyond these, looming like a line-of-battle ships amongst a lot of eckle-shells, rise the straggling and not very elegant palace of the King where his Siamese Majesty, with ever so many wives and children, resides. Right ahead, where the city terminates, and the river making a curve flows behind the palace, is a neat looking fort, surmounted with a top of mango trees over which peep the roofs of two houses and a flagstaff, from which floats the royal pennant and jack of Siam—a flag of red groundwork, with a white elephant worked in the centre. This is the fort and palace of the Prince Chou Fau King Siam, and one of the most extraordinary and intellectual men in the East. Of him, however, we shall see and hear more, after we have bundled our traps on shore and taken a little rest. Now, be careful how you step out of the boat into the balcony of the floating house, for it will recede to the force of your effort to mount, and if not aware of this, you lose your balance, and fall into the river. Now we are safely transhipped, for we cannot as yet say landed; but we now form an item, though a very small one, of the vast population of the city of Bangkok. We take a brief survey of our present apartments, and find everything, though inconveniently small, clean, and in other respects comfortable. First we have a little balcony that overhangs the river, and is about twenty yards long, by one and a half broad. Then we have an excellent sitting room, which serves for a parlor, dining room and all; then we have a little side room for books and writing, and behind these, extending the length of the other two, a bedroom. Of course we must bring or make our own furniture; for, though these houses are pretty well off, on this score the Siamese have seldom anything besides their bedding materials, a few pots and pans to cook with, a few jars of stores, and a fishing net or two. Every house has a canoe attached to it, and no nation detests walking so much as the Siamese; at the same time they are all expert swimmers, and both men and women begin to acquire this very necessary art at a very early age. Without it a man runs a momentary risk of being drowned, as, when a canoe upsets, none of the passers by ever think it necessary to lend any aid, supposing them fully adequate to the task of saving their own lives. Canoes are hourly being upset, owing to the vast concourse of vessels and boats plying to and fro; and owing to this negligence or carelessness in rendering assistance, a Mr. Benham, an American missionary, lost his life, some twelve years ago, having upset his canoe when it was just getting dusk, and though surrounded by boats, no one deemed it necessary to stop and pick the poor man up.—Springfield Union.

Curious Discoveries.

The Naples (Italy) Journal says that a more remarkable discovery than that of treasure boxes at Pompeii, is announced in the island of Antiparos, in the Grecian Archipelago. A vast cavern has been found, containing an infinite number of marble sculptures, representing with wonderful fidelity all sorts of plants and trees. It is a subterranean garden, where every stone projection or festoon represents a petrifed vegetation—the whole is of transparently white, crystallized marble. The most striking object in the collection is a pyramid about a metre in height, perfectly straight, and crowned with foliage. It constitutes the most beautiful marble tree that can be imagined. All the details have preserved a finish and freshness as exquisite as if they had just come from the hand of the sculptor. This grotto is certainly destined to become an important rendezvous for tourists. Still another discovery—this time from the eastern coast of Africa. Here, according to Greek traditions, the home of the Pigmies, certain voracious travelers profess to have discovered a Lilliputian race, who are not more than half a metre high, about a foot and a-half. These little people are black, extremely intelligent, and social and amiable in their behavior toward their neighbors. They are designated among these latter by the name of Cineelli, which means wonderful. L'Univers, which relates the discovery of this surprising people, recommends such of its readers as wish to obtain a vivid idea of them, to study, at the museum of the faculty of medicine, the wax statue of Nicholas Bebe Fersi. This was the dwarf, who in the last century was the darling of King Stanislaus of Poland, and who was accustomed to be put to bed in a good-sized slipper.

Nine Colorado Mines.

Results of actual working of nine mines in Colorado during the past year, taken from authentic sources and tabulated:

Table showing results of nine Colorado mines, including Name of Mine, No. of Stamps, Tons of Ore, Value, Costs, and Profit.

—Philadelphia Register.

Steel Capped Rails.

The tendency of the iron rail to wear out has long been known, and has been demanding for some time a change for the better. On the other hand, the liability of the Bessemer steel rail to break, which is attributed to its hardness, was, apart from its expense, an objection to its adoption as a substitute, though otherwise desirable. This difficulty is said, however, to have been some time since solved by Mr. A. J. Hindmeyer, of Pennsylvania, who has patented a method of firmly welding a hard steel cap or surface upon the iron rail. He claims to have discovered a material, which enables him to weld in the strongest manner; and which, unlike the borax commonly used for the same purpose, is very cheap, as the materials entering into its composition may be had anywhere. Rails of this patent have been manufactured at the Lochiel works in Harrisburg, at the Cambria works, and at Allentown, and have been subjected to the severest tests under the forge hammer, and in every case, it is said, the weld remained unbroken. The test of use has also been applied on the Pennsylvania Central Railroad, and the result stated to be quite satisfactory. It is calculated that these steel capped rails will last at least twenty-seven years, or three times as long as the

iron rails, and that their manufacture will cost only twenty-two per cent. more than the common rail, their construction requiring no new machinery. If these calculations be not too hasty the dividends of our railroads will be increased threefold, and far greater security be obtained for passengers, which is a far more important result.

Mineral Land Titles.

DEPARTMENT OF THE INTERIOR, GENERAL LAND OFFICE, WASHINGTON, D. C., Jan. 31, 1868.

A. P. K. Safford, Esq., Surveyor-General, Nevada:

STR—In reply to your letter of the 7th instant, inquiring whether a person relocating an abandoned mine can receive the benefit of the \$1,000 of improvements made by a prior locator in making application for a patent under the act of July 26, 1866, I have to state that the improvements placed upon a lot or tract of Government land by a person who subsequently abandons the same, inure to the benefit of the next settler or occupant, whether the lands be mineral or agricultural, unless such improvements were removed by the prior occupant before the premises were relocated or reoccupied. But whether a relocater of an abandoned mine can make the improvements of a prior occupant the basis of his application for a patent under the second section of the act of July 26, 1866, is an entirely different question. Such applicant is required to show that he has previously occupied and improved the vein or lode according to the local customs or rules of miners in the district where the same is situated, and that he has expended, in actual labor and improvements thereon, an amount of not less than \$1,000.

To patent the mining lands to non-residents or other persons manifesting no intention to improve them or develop their mineral resources, would not only retard the settlement and prosperity of the new States and Territories, but would operate injuriously upon the general welfare. Hence the policy of the law in requiring reasonable evidence of intention to improve and develop the mine on the part of the applicant before investing him with an exclusive ownership to the same. Would such intention be evidenced by merely appropriating the labor and expenditures of another? It is believed not, and that such improvements would not bring the applicant within the spirit and intention of the law referred to. As the information has been requested, it is supposed, to assist you in the performance of your own duties under the act, the rule of the office in not furnishing opinions upon hypothetical cases has in this instance been departed from. Very respectfully, your obedient servant,

Jos. S. Wilson, Commissioner.

An Improvement in Oil Manufacture.

We notice, says the Cleveland Leader, that Dr. Clark has made an important improvement in the manufacture of petroleum oil which will immediately work a radical change in this branch of industry. The present manner of distilling and treating oils is wasteful, dangerous and disagreeable, and tends to impair the illuminating properties of the oil. The Doctor proposes by the use of steam and a vacuum still to produce a burning fluid white and free from all impurities, needing no treatment by acids or alkalis. By an ingenious arrangement of a series of receivers attached to the worm of the still, the oil, benzine, gasoline and rhigaline will be deposited each in its appropriate receiver, as in the whole process of distillation there is not a particle of the oil or gas brought in contact with the air, making the works perfectly free from danger by fire. By this mode of distillation the entire product is utilized; no part is wasted. In this respect it would be for the interest of the city to have this plan adopted, as it would remedy the oil water nuisance, and the disagreeable stench that afflicts the nostrils of our citizens every summer. The Doctor further proposes from a still of the capacity of thirty barrels to distil from one hundred to three hundred barrels per day.

The Tin Mines of Missouri and California.

Col. Morrill, U. S. A., recently paid a visit to the newly-discovered tin mines of Missouri, when he gathered up about forty pounds of the average ore, and subsequently assayed it. The result of three of these assays is minutely given. No. 1 gave 1.55 per cent. of tin; No. 2, 2.41 per cent.; No. 3, 2.62 per cent., or an average of 2.19 per cent. This must be considered a very low average yield, if much expense is incurred in mining the ore, with regard to which no data are given in Col. Morrill's report, which, by the way, was made to Lieut. Gen. Sherman, as his commanding officer. An average yield of 2.19 per cent. would give but about \$11 for the product of 2,000 pounds of ore (43.80 lbs. of tin), delivered in New York city. The Temescal mines, in the mountains to the east of Los Angeles, will yield from three to five times that percentage. The latter mines will be actively, and no doubt profitably worked, as soon as the title to the same is fully settled. Such a settlement, we understand, has already been or soon will be effected.—San Francisco Mining Press.

Cement.

A cement particularly adapted for attaching the brass work to petroleum lamps, is made by Puscher, by boiling three parts resin with one of caustic soda and five of water. The composition is then mixed with half its weight of plaster of Paris, and sets firmly in half to three quarters of an hour. It is said to be of great adhesive power, not permeable to petroleum, a low conductor of heat, and but superficially attacked by hot water. Zinc white, white lead, or precipitated chalk may be substituted for plaster, but hardens more slowly.

Cement for Iron and Other Substances.

A correspondent asks, "What is the best known substance for sticking sheepskin to iron?" We reply, that any fibrous material can be "stuck" to metal, whether iron or other metal, by an amalgam composed of glue dissolved in vinegar, hot, with one-third of its volume of white pitch pine, also hot. The composition will give a sure and certain return.—N. Y. Druggist's Circular.

Improved Insulator.

A new insulator for telegraphic purposes has been brought out in Philadelphia, which consists in giving the ordinary sulphur and glass insulator a coating of paraffine; this being a thorough repellent of water, is found to make the insulator more perfect in wet weather.

# AMERICAN Journal of Mining.

WESTERN & COMPANY, PROPRIETORS.

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NEW AGENCY.—MESSRS. M. A. LATHROP & BRO. have been appointed our sole agents in the New England States for the AMERICAN JOURNAL OF MINING and our new Spanish paper EL CORREO HISPANO-AMERICANO. Their address is 11 Court street, Boston, MASS., where all information respecting communications, subscriptions and advertisements for these papers will be gladly given to those who may wish to favor us with their patronage.

NEW YORK, SATURDAY, MARCH 7.

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### THE DUTY OF CONGRESS.

If there is one advantage of our position as a purely professional, commercial, and scientific journal, on which we felicitate ourselves more than on any other, it is that we are relieved from the necessity of discussing the party politics of the day. As individuals and citizens, we have a deep interest in everything that goes on in Congress. When one honorable member calls another honorable members a Knight of the Golden Circle, and the latter retorts that his colleague has seventeen relations in the pay of the government; when one distinguished statesman denies to another the attributes of a gentleman, and that other replies with dignity that his accuser is not competent to judge what are the attributes of a gentleman, since neither he nor his ancestors ever dealt in the article,—our blood is thrilled by their indignant eloquence, and we realize that the fate of the nation hangs trembling in the balance. But we are not obliged by our duty as journalists to throw our weight into either scale; and we watch the issue only as spectators.

Even the impeachment of ANDREW JOHNSON stirs no ripple in our quiet sanctum, though individually we boil with indignation at \* \* \* \* \* and demand, with that able journal, the \* \* \* \* \* a speedy \* \* \* of the accused. Such is also the opinion of all right-minded men. But when we speak from our editorial chair of the duty of Congress, we do not refer, strange though it may appear, to impeachment, nor reconstruction, nor the Supreme Court, nor the next President, but to that intelligent legislation which the industrial and commercial interests of the country demand, and thus far, demand in vain. It is no doubt intensely exciting to watch the progress of the game that is being played at Washington. Just so we reclined one summer day beneath the shadow of an umbrageous elm, by the side of a sylvan lake, and watched, with much amusement, two urchins of the family "skipping pebbles" over the water, in eager emulation. The discovery that the pebbles employed were silver quarter-dollars from a secret store of our own (sacred to old associations) curdled our pleasure into wrath. Yet the young Americans were scarcely to blame. They knew not the uses of silver coin, and only predicated of it that it was "ever so much better than rocks, to shy."

Can it be that this is also the spirit of innocent mischief that possesses our legislators? They skip money with skill,

and the game is not destitute of fun; but it happens to be the people's money, and the people cannot therefore fully enjoy the sport.

To drop both simile and sarcasm, let us ask plainly, how long this state of things is expected to last. Is it true, as business men are daily asserting around us, that we can hope for no improvement in trade and industry until after the presidential election? Must we see this year pass and close, like the last, in universal despondency, gloom, and destitution?

Men say that the excitement of a presidential election will paralyze business. This may be true to a certain extent; but the evil is greatly augmented by the intrusion of the presidential question into the very places from which it should be as far as possible excluded—the legislative and executive chambers of the nation. If the servants whom we choose and pay to manage our affairs, spend every fourth year (not to say the greater part of the intervening three) in intriguing as to their successors, what is to become of our affairs? Somebody must remain cool and attentive to daily duty. But both parties in Congress, instead of devoting themselves to the work before them, are adding fuel to the flame of popular excitement. The congressional library is diligently used, not for the sake of information as to the resources and necessities of the country, the principles of true political economy, or the proper sphere of government in its relations to education and science, but for the sake of parliamentary precedents, and historical illustrations from the reign of Charles I., the French Revolution, or the story of Balaam and his ass.

Meanwhile, the lobby fixes the tariff and the taxes; the caucus rules the public policy; corruption infests the governmental bureaux; and on questions of great internal improvements or measures affecting decisively our future prosperity and power, there are apparently but two classes among our legislators,—those who oppose everything and those who advocate everything; and these classes compromise by sacrificing whatever is merely of national importance, and accepting what is local and immediate in its effect. Every man secures his own constituents—but the great constituency, the people of these United States, has neither champion nor representative.

The bill for the establishment of a National School of Mines is precisely of that class of measures to which we have alluded. It is certainly a very serious and important measure. It is demanded, as we think and have endeavored to show, by every consideration of justice and wisdom; and it should be opposed, if opposed at all, on grounds as earnest and dignified as those on which it is advocated. We beseech the members of Congress not to vote *either way* on such a question, except upon due examination and deliberate decision; not to defeat this bill, merely as a salvo to their consciences for having yielded to some other claim; and, above all, not to be influenced in the matter by any sectional or partisan considerations whatever. Let the interests of the miners of California and Nevada be, for once, safe in the hands of the men of New York and Maine; and such a proof of generous justice will find ample reward in the stronger confidence and mutual good-will which will make us in spirit, as in law and fact, an undivided country.

Neither statesmanship nor its opposite are bounded by the lines of state or party. That member who objected, the other day, to the appropriation to preserve the scientific collections of the Smithsonian, on the ground that "it would make a man or a woman sick to look at them," is not merely the representative of one locality. He represents a class, as ancient as THESITES and as wide-spread as the circus or the pantomime. Our only prayer is that common sense may rise above all petty local distinctions as completely and sublimely as does folly.

### THE CONCENTRATION OF ORES—III.

It is one of the merits of KUSTEL's new work, that it does not dogmatically pronounce this or that apparatus the best, but seeks to furnish the engineer with the rational grounds upon which, governed by circumstances, he may make his own decision. He lays down at the outset the following general rules: *First*—Each constituent of the mass must be brought to the highest value which can advantageously be given to it. *Second*—The useful minerals must be concentrated only to the most advantageous degree of purity. *Third*—All loss of the quantity and value of the useful mineral must be avoided as far as practicable. These rules, it will be seen, are not at all definite, nor, in the nature of the case, should they be so. They serve merely as a statement of the objects to be kept in view, not as maxims which can be directly applied to special cases, without due intelligence and study on the part of the engineer.

The first rule is based upon the fact that many minerals are not commercially valuable when not separated from foreign admixtures, and cannot be advantageously purified by separate and subsequent processes. A ton of iron pyrites, for instance, has its value for the manufacture of sulphuric acid or coppers, or for mixing with other ores for certain metallurgical purposes. But a ton of pyrites mixed with a ton of zinc-blende has, under ordinary circumstances, no value at all. No one will buy it; for it will not bear the expense of the necessary preparation to make it fit for use. If, however, the separation is effected incidentally, as it were, during the treatment of a copper ore containing pyrites and blende, it is possible, under favoring economical conditions, to utilize both the pyrites and the blende.

The second rule condemns a common mistake to which we alluded in a previous article—the mistake of over concentration. As KUSTEL wisely points out, a mistake in sorting, such as throwing a piece of rich ore on the wrong heap, is not a serious one, since the valuable mineral will, partly at least, be saved in subsequent dressing. But a mistake in concentration is likely to be a dead loss; and nothing is more likely than such a loss, resulting from the attempt to concentrate too closely. In the case of silver ore, a loss of fifteen per cent. in concentration is considered a minimum; and this item may rise, under unfavorable circumstances, such as finely disseminated, brittle silver ore, with much clay or heavy spar as gangue, to fifty, sixty or even ninety per cent., in which case concentration is not to be thought of. Between these limits, however, there is much room for close calculation; and the engineer should bear in mind that it may be for wiser to obtain the valuable part of the rock from a mine, still mixed with a considerable amount of baser ore or gangue, than to sacrifice a large part of the valuable mineral in attempting to raise it to a higher degree of purity. It is therefore not the only, nor the best, recommendation of a method of concentration that it dresses the ore "very high." It is important to know at the same time how much loss is entailed by the process.

The third rule is self-evident. The loss here referred to, however, may be due to some other cause than that of over-concentration. Insufficient concentration, for example, deteriorates the value of the product, and too much pulverizing, or too much handling, diminishes its quantity.

To sum up this sketch in a single proposition: it is evident that there must be loss in the reduction and concentration of ores. Too much of this this or causes a loss in one direction; the correction of this evil opens a leakage somewhere else. To adjust measures to conditions, in such a way that the resultant loss will be a minimum, is the business of the mining superintendent or engineer; and we need not add, after the outline we have given of the difficulties of the question, that it is one requiring the exercise of the highest skill and discretion.

To say that KUSTEL's book, put into the hands of an inexperienced or uneducated man, would enable him to solve this complicated problem, would be to utter an absurdity. It is high praise of that work to say, that it contains a clear and comprehensive statement of the principles which must be known and followed, and of many facts without which these principles would lack illustration and fruitful force.

We do not intend to traverse the book in detail. It is so condensed and arranged that we could scarcely do it justice in that way without reprinting the whole of it. The great importance of the subject, however, and the respect due to this first attempt to lay it clearly before the American public, justify us in continuing our remarks upon it, so far as to give a definite idea of the scope and value of KUSTEL's manual.

### THE REESE RIVER MINES.

The returns of the Assessor of Lander county, Nevada, for the quarter ending Dec. 31st, 1867, exhibit a gratifying improvement in Reese River mining enterprise. From the tabular statement, which will be found in our mining summary, it appears that both the total product and the average quality of the ores sent to mill are somewhat in advance of the preceding quarter. But this is by no means the most encouraging feature in the case. Much more significant is the fact that those mines which have produced the most bullion, show also the most satisfactory uniformity and richness of ore treated. The splendid North Star, of the Manhattan Company, for instance, which sent to mill, during the quarter ending with September, 760 tons of ore averaging \$251.20 per ton, is set down in this report with 721 tons, averaging \$248.62. The Diana, Florida, Buel, North Star, Timoke, and others, make a very creditable show. The Great Eastern, with its 60 tons, yielding \$313.14 each, improves on the previous quarter. We congratulate our Anstin friends on their evident progress in the direction of regular and profitable mining.

At the same time, there is no denying that much remains to be accomplished in this respect. Out of sixty-one mines enumerated in the Assessor's list, only sixteen have sent to mill more than ten tons in three months; four have exceeded one hundred tons; two go beyond two hundred; and but one touches seven hundred and twenty. This is due to three circumstances: the narrowness of the Lander Hill lodes (at such depths as have been reached in most of the mines), the limited extent of development thus far attained, and the fact that only the first class ore is sent to mill.

It would certainly be a mistake, in view of the latter fact, to attempt, by casting up the sum of the average yield of the ores reported to the Assessor, and dividing it by the number of the mines, to ascertain the real average value of the rock extracted in the Reese River District. Hence, it would be equally a mistake to calculate the profits of mining in that district by comparing the yield of ores in mill with the estimated cost of mining and reduction per ton. We sometimes hear men talk of an ore yielding, say, two hundred dollars per ton by actual mill-process, and costing only sixty or seventy to mine and reduce. Seventy dollars, as the cost of extracting, crushing, roasting and amalgamating a ton of material, may be a fair estimate; but if five tons are mined, and only



one sent to the mill, the real cost per ton of the aforesaid two hundred dollar ore is very nearly the aforesaid two hundred dollars. Practical miners know this by experience, and are not led away, by the mere sight of the bullion bars, into extravagant estimates of profit.

While this should operate as a check upon too sanguine prophecies, it should also be an encouragement to the men of Reese River that the obstacles with which they have hitherto contended are for the most part temporary in their character. The experience of the Manhattan Company goes far to show that the best veins of Lander Hill will be found richer and wider and more permanent than ever, beneath the barren and broken zone, in which so many enterprises have buried their fortunes. The gradual enlargement of workings will facilitate a steady and copious extraction of ore, and the cheapening of all the items of expense will enable the miner to send to the reduction works a much larger production of the crude product of his labor than has hitherto been economically possible.

When fifty-dollar ore shall pay a profit in the Reese River District, the day of prosperity will have come.

**A Remarkable Mine.**

An exchange, speaking of the occurrence of fine specimens of native silver and black sulphuretted iron in the Buckeye Mine, in Nevada, adds, that the "mine is apparently a deposit, and the ore occurs regularly in irregular bunches." According to that, the value of the mine must be uniformly variable, or, at least, certainly doubtful. But we have heard better reports of the Buckeye ore, and we hope the regularity of its occurrence may counterbalance the irregularity of its bunches.

**A Geological Poem.**

The following poem, from one of the English journals, deserves a place among the curiosities of literature. The theme is a new fossil discovered in the limestone at Stonefield, near Oxford:

Hail to the patriarch Phasciotherion!  
Owen has had him to found a new theory on;  
Grant did the same to build many a query on.  
Living at Stonefield, where limestone so shelly is,  
There he's embedded, and looking right well he is;  
Look at his jaw, and you'll know what his belly is!  
Near him there lived on the primitive river a  
Similar species of small Insectivora,  
Free from the then uninvited Carnivora.  
Hail to the first of the British Mammalia,  
One of the order of Marsupialia,  
Nearly at present confined to Australia!

**Our Original Papers.**

We believe our readers have no cause to complain of want of variety and ability in the original papers contributed to the AMERICAN JOURNAL OF MINING by many scientific men. Our only regret has been that we could not afford more space for this department; for we are convinced that it is equal in interest and permanent value to any other. Our contributors and subscribers will understand that we are sometimes obliged by the crowded condition of our columns to omit for a week or two the instalments of serial scientific papers, although, for the sake of both author and reader, we should prefer to make every such series consecutive and continuous. It is not always our fault, however, when such articles are intermitted. Sometimes the authors themselves are obliged by circumstances to suspend their labors, and leave us in the lurch. In this category falls the interesting treatise of Dr. VAN DER WEYDE, on the history and uses of the microscope, which is resumed, after an interval of many months, in this week's JOURNAL. We should roundly scold the Doctor for his long silence, did we not so sincerely rejoice that he has taken up again the thread of his discourse. If he plays us any more tricks, however, he may look out for signal punishment. Probably the severest penalty we could inflict would be to supply the missing articles ourselves, continuing the discussion in his name, but in such a manner as to ruin his reputation forever.

**NEW PUBLICATIONS.**

THE AMERICAN NATURALIST, (Salem, Mass.) for March, appears for the first time as a publication of the Peabody Academy of Science, a new institution which owes its origin to the munificence of GEORGE PEABODY, already displayed in so many illustrious instances. The endowment amounted to one hundred and forty thousand dollars, given "to promote, among the inhabitants of the county of Essex, the study and knowledge of the natural and physical science, and of their application to the useful arts." The trustees have wisely avoided any collision with other scientific associations already existing, and, by coalition, to a certain extent, with the Essex Institute, have not only strengthened that admirable society, but obtained its valuable scientific collections, which, together with the museum of the East India Marine Society, are to be arranged in a suitable hall, and made more than ever accessible and useful to students. The American Naturalist, under its old management, but enlarged and improved, will be issued hereafter by the Academy instead of the Institute. We congratulate our friends, who so ably conduct that periodical, on this auspicious advance, placing them, as it does, on the footing of assured success. The present number is an excellent one, containing Mr. HARTT's article, "A Naturalist in Brazil," SIDNEY J. SMITH's on "The Geographical Distribution of Animals," and Dr. PACKARD's on "The Hairy Mammoth," with the usual reviews and miscellany.

THE LOCOMOTIVE, a handsome little sheet, issued monthly at Hartford, Conn., by the Hartford Steam Boiler Inspection and Insurance Company, is intended to serve at once the interests of that association and those of the public, by recording the circum-

stances attending steam boiler explosions, and spreading information as to their causes and the necessary precautions against their occurrence. A company which insures boilers has of course the same interest in the carefulness and skill of mechanics and engineers, as a fire insurance company has in good architects and builders, sober tenants and watchful patrols. But the public has really more at stake in both these cases than any individual; for carelessness, slovenly workmanship, reckless handling of dangerous materials, are epidemic, not to say contagious. We would do all that we can, therefore, to encourage such publications as the Locomotive, tending to the promotion of general intelligence and caution. It would not be a useless measure for every manufacturing or railroad company to put this sheet into the hands of its engineers. The mere sight of its monthly list of boiler-explosions would sober many a man into realizing the dangers with which he daily deals, and which familiarity too often deprives of their salutary terrors.

THE CENTRAL PACIFIC RAILROAD Company, of California, has published a neat pamphlet containing a description of the route, the progress and character of the work, its resources and business prospects, with the foundation and advantages of its first mortgage bonds. The text and the map contained in this pamphlet impress anew upon the mind of the reader the importance of the great steam route to the Pacific, and the splendid energy with which its construction has been pushed forward, especially at the California end, in the face of great natural obstacles. The bonds of the Central Pacific were advanced to 98, and are now still further advanced to par and interest from Jan. 1st., in currency. Even this enhanced price leaves them nearly a nine per cent. investment, while the security is more than good—it is constantly bettering.

THE ROCKY MOUNTAIN HERALD, of Denver, Col., is one of the handsomest papers in our exchange list. We should like to know what GOLDRICK puts in his printing ink. His splendid typography makes his journal, in a double sense, very readable.

THE WEEK, A Reflex of Home and Foreign Opinion, has reached its seventh number, and fully vindicated its fitness to supply the need, the existence of which its establishment may be said to have revealed. As we glance over its pages, and find gathered for our convenience the best utterances of all the journals, representing both sides of the questions in agitation, and saving us at once the trouble of reading a great many newspapers, and the lamentable ignorance resulting from not reading them,—we feel that this is the thing we wanted when we knew not what we wanted.

**Scientific Meetings.**

**POLYTECHNIC BRANCH OF THE AMERICAN INSTITUTE.**

The regular weekly meeting of the Polytechnic Branch of the American Institute was held last Thursday evening, Prof. Tillman in the chair. The attendance was as full as usual.

**AGRICULTURAL ENGINEERING—STEAM PLOUGHS.**

Mr. J. A. Whitney read a paper on "Agricultural Engineering," which reviewed the history of the plough, and detailed the various attempts at constructing an available steam plough. Mr. Fisher spoke of the feasibility of steam ploughing; but his views differed in no manner from those proclaimed on several other occasions, and which we have sufficiently set forth in these columns. The discussion became very general, though the remarks of most of the speakers respected the economy, rather than the practicability, of steam ploughing. On this occasion, as on every other when the same subject was agitated, the conviction of some of the speakers was proclaimed that it would be but a short time before we should have a steam plough which would answer all demands. During the debate, Dr. Bradley caused no little merriment by suddenly announcing that he had just then discovered a feasible plan of construction. But however original the idea may have been with him, it was certainly old, as stated by Prof. Tillman, and its exposition was in consequence indefinitely deferred. The subject of the steam plough occupied the whole evening, but the debate was rather loose and did not admit of any definite conclusion. Some of the members evidently regard the steam plough as a precious project, and fondly view its every progress as evidence of an early future success; while others, admitting the benefits to be derived, seem doubtful about its actual practicability.

**Puddling.**

The rationale of the puddling process is at present well understood by scientific metallurgists, and excellent descriptions of this operation have been given in our standard works of metallurgy. We refer most particularly to the chapters on the "Puddling Process" in Dr. Percy's celebrated work on iron and steel, and we also refer to the investigations of this subject made by Dr. Grace Calvert, and published in the Philosophic Magazine for September, 1857. We cannot bear an equally favorable testimony to the knowledge of those who practically carry out or manage the working of the puddling process in the majority of ironworks in this country; and we believe that no branch of metallurgy shows such a wide gap between theory and practice, between the knowledge arrived at and the practical use made of that knowledge, as the manufacture of malleable iron by the puddling process in this country. We are acquainted with the chemical changes which the iron undergoes from step to step, and we have analytical records of referring to the composition of the metal under treatment; yet the iron master or forge-manager look to anything but the analysis of his pig iron, and the workman has only one thought, viz., the rise of wages per ton of iron, or, what is the same to him, a diminished quantity of puddled iron per shilling of his earnings. We think it will not be superfluous to reproduce some of the analytical results which bear upon the theory of this process, before we point to the conclusions to be drawn from them in practice. Messrs. Calvert and Johnson have followed a charge of iron in the puddling furnace by taking out samples in intervals of five or ten minutes and carefully analysing these samples. The pig iron used on this occasion was good cold-blast Staffordshire iron, of the quality usually employed for wire manufacture (a grey No. 3). Its composition was as follows:

Carbon	2.575
Silicium	2.720
Phosphorus	0.645
Sulphur	0.301

After being melted in the puddling furnace in the usual way, an operation for which about forty minutes were re-

quired, the sample of iron had a white crystalline fracture, and its contents of carbon and silicon were, carbon 2.726, and silicium 0.915. A second sample taken out of the furnace twenty minutes later—the iron being still white and silvery in its appearance—contained 2.905 per cent. of carbon and 2.127 of silicium. With this moment the first period of the puddling process closed and its character is shown by a remarkable decrease of the contents of silicium, and still more remarkable increase of the contents of carbon from 2.275 per cent. in the pig to 2.905 per cent. in the iron freed from silicium. The question naturally arises, how this increase in the percentage of carbon is possible under the influence of an oxidising process such as the iron was exposed to. The hypothesis started by Dr. Calvert himself in 1857, that carbon may be taken from the flame or gases in the furnaces, is contrary to all that is now known on this subject, and cannot be maintained; yet the analysis shows such an increase, amounting to about 25 per cent. of the original quantity. There is only one way to explain this result. If we look at the manner in which the silicon disappears from the iron, we find that it becomes transformed into silicic acid, which again combines with a certain quantity of oxide of iron for forming a slag. The oxide of iron may be obtained from the fettling of the furnace, but at the early stages of the operation it is much more likely to be formed by the oxidation of the iron itself. Every pound of silicium requires at least one pound of iron for its conversion into slag; but, as a rule, slags richer in iron are formed in puddling. The removal of 2.5 per cent. of silicium, therefore, corresponds to a simultaneous oxidation of from 2.5 to 7.5 per cent. of iron, which will bring the total loss of material during this operation to about 10 per cent. Considering further that there is a certain quantity of sand adhering to the natural pig iron, that the carbon contained in it is principally graphitic, while in the whole metal it is principally combined, we would have sufficient further causes for explaining the apparent increase in the contents of carbon during the first stage of the puddling process; but we at the same time arrive at a conclusion of greater importance than that, i. e., the realisation of the great danger to economy which the pressure of silicium has for the puddling process. The majority of pigs used in this country for puddling are grey, and the majority of grey pigs made in this country is very rich in silicium. The result is an enormous waste of material, labor, and time in the puddling furnace. On the Continent, the iron used for puddling is mostly white; it is poor in carbon, and, what is more important, poor in silicon as well. The result is an economy in puddling, which astonishes every English visitor to Crenset, or Burbach, or other Continental works. The puddler makes ten and even twelve charges per day, with furnaces and charges similar to those known in England; his work is less exhausting, and his wages go further to satisfy his wants; the yield is greater, the consumption of fuel smaller; and all that from one simple cause easily attended to anywhere, viz., pig iron comparatively free from silicium.—Engineering.

**Cacutcheon, or India-Rubber.**

Continued from First Page.

When that portion of the mass is forced between the cylinders, the air is driven through the tough material with an explosion like an air-gun. When the rubber is somewhat softened, the workman mixes slowly the various substances which are to be incorporated with it; these consist principally of sulphur and of the oxides of various metals, zinc, lead, iron, etc., which are combined in various proportions, according to the uses for which the rubber is destined. It is in this department that the greatest science and experience are required, for different qualities of rubber require different compounds, and every difference in the compound makes a different treatment necessary in the subsequent stages of the manufacture. When the rubber is thus prepared it is ready to be molded and shaped into the various forms in which it is to be finally perfected and used.

As every distinct manufacture requires a different process and different manipulations, we will only describe the process of making "machine-belting," as that is of most importance, and is the article for which this company are so celebrated. The rubber, which, after it is compounded as above described, resembles a dark slate-colored dough, is then taken to another department to the "calendering-machines." These somewhat resemble the other machines, but they are composed of more cylinders, and are of much larger size, and of a perfectly polished surface. Upon these calenders the prepared rubber is placed, and after passing between the cylinders it is rolled out in a perfect and even sheet, upon a web of powerful cotton or linen duck, which has previously been coated with rubber, driven through and through its meshes by powerful machinery. This duck is somewhat similar to the heavy duck used for sails, but it is woven expressly for the New York Belting and Packing Company, in a factory which is exclusively employed for the purpose and it is woven in a mode which gives it double the usual longitudinal strength.

The "bolts" of duck covered with rubber, after this process is completed, are taken to the belt-room; here the long webs are taken by the skillful workmen and unrolled upon tables 100 feet long, and in an incredibly short time are cut into strips and folded together into machine-belting. In order to give the required strength to the belt, folds upon folds of the heavy duck are placed one upon the other, and then forced together by the tremendous power of the rolling-machines, until a belt is formed, more tough and solid than the best sole-leather.

From this room the belts are taken to the heaters. These are immense steam-boilers, with a long iron frame or railway, which can be thrust in or drawn out from the boilers at pleasure; the goods are placed upon the railway and rolled into the boilers, which are then closed, and steam is admitted. This part of the process is the most remarkable of all; for the rubber, which, when placed in the heaters, is like a tough, inelastic dough spread upon the various fabrics for which it is used, becomes wholly changed into the new and peculiar substance called metallic or vulcanized rubber. All the attempts of the most scientific chemists in this country and in Europe to discover the cause of this change, or to produce it in any other manner, have been wholly baffled. The causes, and even the manner of the change, are mysterious. All that is known is, that after the rubber has been heated at a regulate temperature from eight to twelve hours, it becomes a new substance, with properties unlike any other. The rubber-paste, which was soft and sticky, and but slightly elastic, becomes firm and dry, and ten times more elastic than the best native rubber. Heat and cold, which destroys the value of native rubber, have no effect upon it; the solvents in which

the native rubber dissolved like gum have no influence upon it whatever; in fact, it becomes, as it has been well called, an "elastic metal."

This company make belts and bands of all sizes and lengths, from an inch to a yard or more in width, and adapted to all kinds of machinery. In their warehouses in Park Row there was recently a belt of seven plies thick, over a yard wide, and nearly 300 feet long. Such a belt, if made in the old-fashioned way, from leather, would have required the hides of 120 oxen, and would have been fastened together by thousands of copper rivets; but here the great rubber belt was made in one operation, without joint or seam or imperfection. With regard to the comparative merits of leather and rubber belting, a writer, to whom we are principally indebted for these facts, says he saw the ends of a leather and rubber belt of equal size firmly clamped together, and when power was applied to tear them asunder the tough sole leather parted with a loud explosion, but the rubber belt was unharmed. He also witnessed an experiment to test the comparative value of these belts in driving machinery, and says that the peculiar elastic and tenacious surface of the rubber belt enabled it to hold much more firmly upon the iron drums and pulleys than the hard leather. "An accurate measurement showed that it took fully 25 per cent. more power to slip a rubber belt on a smooth pulley than in did to slip a leather belt on it. A large iron pulley, such as is used in driving machinery, was placed upon a shaft, and a piece of rubber belting was passed over it. Heavy weights were then placed on each end of the belt, in order to bring it down firmly and with an even bearing upon the pulley. The question to settle was, whether leather or rubber belting would bear the greatest weight without slipping, for this would prove which had the most perfect friction-surface and would drive the machinery with least loss of power. To test this, weights were slowly added to one end alone until the belt slipped on the pulley. The same experiment was then tried with a leather belt of the same width and under precisely similar circumstances, and it was found that the rubber belt greatly economized the power. Repeated experiments showed the same result in the most convincing and satisfactory manner."

Another article made exclusively by the company is Steam Packing. Rubber, it is said, is the only substance that can counteract the expansion and contraction of metal and make a joint so tight that steam cannot escape through it. It is made into sheets and plates of different sizes and shapes, or cast into rings or hollow ellipses of all imaginable forms, and is used to pack around the piston rods, to place between the iron plates in steam pipes, and in fact wherever a joint is formed.

Another article manufactured to a great extent at this establishment is their celebrated "Croton Hose," and hydraulic hose of all sizes from a 1/4 of an inch to 8 and 12 inches in diameter. A large force of workmen is employed in this department. The tube is formed by means of long metallic pipes, around which a sheet of carefully prepared rubber is first neatly folded; but the rubber alone has not sufficient strength to resist the pressure of water, which would swell and finally burst the elastic hose. To prevent this, and give additional strength, the outer covering is formed of webs of strong cloth, saturated and coated with prepared rubber. This is folded carefully around the hose until the requisite strength and thickness are obtained, and it is then finished by covering it with a final sheet of pure rubber. The hose, when formed, is taken to a steam boiler of great length, where, while still remaining upon the iron pipes, it is heated and cured by a process similar to that before described; after which the rubber is drawn off from the pipe, and it is ready for the market.

Hose designed for steam fire-engines, which this Company manufactures largely, is tested by turning the whole force of the vast water-wheel upon two large force pumps, through which the water is forced into the hose and driven in jets over the factory and high above the summit of its lofty tower. Unless the hose resists this trying test it is not considered fit for market. Besides these leading articles, the company manufactures a large number of others for household convenience or mechanical purposes,—for instance, carpets for halls, and stairways, and billiard-rooms; sinks without joint or seam; door springs that can be adjusted either to hold the door open or to close it; bed-springs, spittoons, and clothes-wringers;—of which hundreds are made daily. Of their minor manufactures, however, perhaps the most ingenious is the solid emery vulcanite. It is a novel combination of emery and rubber, and used for grinding and polishing wheels, an J which is destined to produce a revolution in many workshops where metals of any kind are ground and polished. The soft rubber when combined with emery makes wheels which will cut an inch-file in two in a few minutes.

The following is a description of the Patent Solid Emery Vulcanite Wheels, as manufactured by this company, and the manner of using them.

The wheels are designed as a substitute for small grindstones, and the old style of emery wheels made of wood, and covered with a coating of glue and emery.

They have been in successful use for the past seven years, for the grinding and polishing of castings, wrought iron, and steel, and are invaluable for "gumming" saws, and for a great variety of small work about a machine shop, commonly done with files by hand-labor at a great expense.

They are a compound of india rubber and the celebrated "Wellington Mills" London Emery—the latter imported through the house of GEORGE H. GRAY & DANFORTH, of Boston—making a uniform substance of the nature of stone throughout; and can, like a grindstone, be used until the size is so worn down as to be insufficient. These wheels are highly recommended for their great economy, efficiency, and convenience, and hundreds of the most successful establishments throughout the country attest their value by having them in constant use.

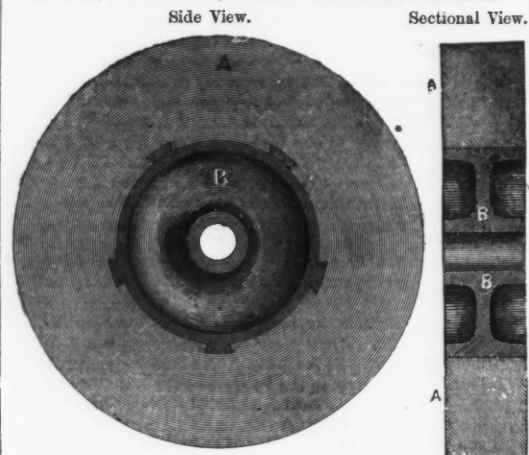
The wheels should be mounted so as to run perfectly true, and driven at a velocity of about 5000 feet per minute, which will give a six-inch wheel 3200, or a twelve-inch wheel 1600 revolutions per minute. They may be used either wet or dry, but by allowing water to drip on them while in use, sufficient to keep them wet, their cutting properties will be somewhat increased, and all dust and offensive odor from them avoided.

When by long use a wheel becomes uneven on the face, or "out of true," it can be turned off in a lathe, running at very slow speed, a bar of red-hot iron, or small pan of lighted charcoal, being first placed just under the wheel—to soften the surface as it revolves—when it can be easily cut by a square-pointed tool, ground so as to cut clean and throw off the chips

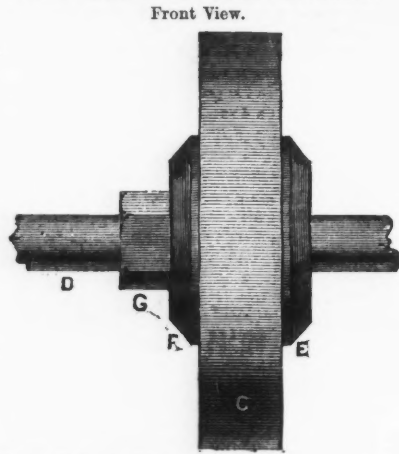
freely. Should the hole in a wheel require enlarging, it can be done by passing a red-hot bar of iron through it.

This age has been prolific in wonders, and among them few are more marvellous than the product of the india rubber fac-

WHEEL, 20 IN. DIAM., MADE ON CAST IRON CENTRE.



SOLID WHEEL, 10 IN. DIAM., MOUNTED.



- A—Emery Vulcanite Rim.
- B—Cast Iron Centre.
- C—Emery Vulcanite Wheel.
- D—Mandrel.
- E—Fixed Flange.
- F—Loose Flange.
- G—Nut to screw against Loose Flange.

ories of America. We desire, however, to place upon record our settled conviction that the application of vulcanized rubber in the useful arts is as yet in its infancy, and that our ingenious mechanics and manufacturers will discover hundreds of new uses for this wonderful "elastic metal."

**Whipple's Combined Taper Holder and Match Safe.**

All advancement in civilization, commerce and art is due to inventors and inventions. What would be the state of man if the saw, the chisel, the anvil, plane, &c., had not been devised? There is no state of existence above that of the brute which could be maintained, or even attained, by man without an exercise of the inventive faculty, either by each individual, or by some leading minds. Nevertheless we frequently hear the thoughtless, the ignorant, and the stolid, ridicule inventors, and hold up every invention they meet with to contempt; which action, however, only exposes their want of appreciation. The real test of true invention is the success in adapting means to an end without any unnecessary complexity. We have here a case in point, viz. an ingenious device which combines usefulness, simplicity and portability in an admirable manner, in the shape of a taper and holder connected with a match-safe. It was patented in the United

Fig. 1.

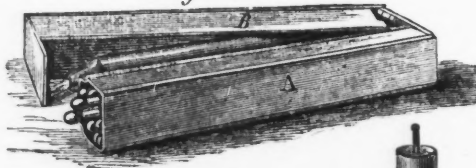
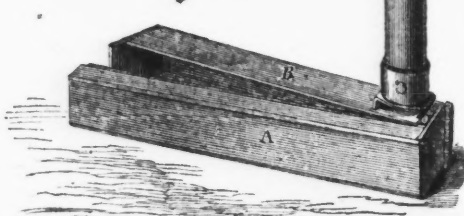


Fig. 2.



States, May 28, 1867, by John A. Whipple, 297 Washington street, Boston, Mass.; and is also the subject of several foreign patents. Fig. 1 represents an oblong case and box of sheet-metal, partially open. A is a receptacle for lucifer matches; B, the outer casing, into which the match-box folds by means of a hinge at the junction of the casing and match-box as seen in Fig. 2. Upon the hinged end of the match-safe is a socket, C, for a taper or a candle; this socket has an independent hinge allowing the taper D to lie horizontally in the cavity of the case, or to stand vertically, as seen in Fig. 2. When closed, this combined taper-holder and match-box is safely and easily carried in the pocket. When a light is required, it is simply unclamped, the socket holding the taper

turned up, a match ignited, and the taper at once lighted. The casing and match-box can then be folded close together again, and thus a handle is furnished for carrying the lighted taper. The contrivance can be made suitable for either candle or taper; the taper size being about three-quarters of an inch by half an inch, by three and a half inches long. The reader will easily comprehend that this handy device will furnish instantaneous light on all occasions, and that the comparatively cumbersome lamp and lantern can frequently be dispensed with.

Mr. John A. Whipple was the first to successfully introduce photography into this country, and many excellencies in that art to-day are due to his patient and unremitting exertions during the past eighteen years; while the useful invention illustrated above is but one of the numerous mechanical improvements he has introduced *pro bono publico*.

**Lake of Boiling Water.**

An explosion occurred at the artesian well that has been sunk to the depth of 280 feet, and situated about midway between the river and the bluffs. The workmen at the well became sensible of a remarkable change going on within the bore; the drill had been working through a substratum of dark porous rock for five hours, and had been making rapid progress, when suddenly the machinery stopped, the rods became violently agitated, and a deafening explosion ensued, followed by a stream of boiling water, gushing with mighty force through the tube from the depths below. The startled workmen were blinded by clouds of steam. William Marks was badly scalded about the feet and ankles. Patrick Cox, Andrew Parkman and Karl Snyder were slightly injured. The horses became panic-stricken, reared and plunged violently, and extricating themselves from the harness, rushed madly over the frozen prairie in the direction of the bluffs. The upward pressure of the water is very great, certainly not less than two hundred pounds to the square inch. The mean temperature is about 133 of Reaumur's thermometer. Hugh Miller mentions a similar case at Inverness, in Scotland, where boiling water has flowed for over seventy years, and also the famous hot well at Stuttgart, in the Hartz Mountains, in Germany. The Geysers, or boiling springs of Iceland, are no doubt operated by the same natural cause. Dr. Percival, late State Geologist, was of the opinion that far beneath the bed of the Mississippi there existed another stream flowing in the same direction, of much greater magnitude, and whose waters were of a much higher temperature than the waters of the river.

The well has been visited this afternoon by crowds of citizens, and the singular phenomena has given rise to much speculation and wonder.

The extensive vineyards of Hon. Edwin Flint and George A. Metzgar are in imminent danger of being submerged by the boiling flood. The snow for a space of about six acres has entirely disappeared, and the brown grass of the prairie, swollen by the heated element, has assumed wild and fanciful shapes. —*La Crosse Democrat, Feb. 15.*

**Manufacturing and Mechanical Notes.**

No. IX.

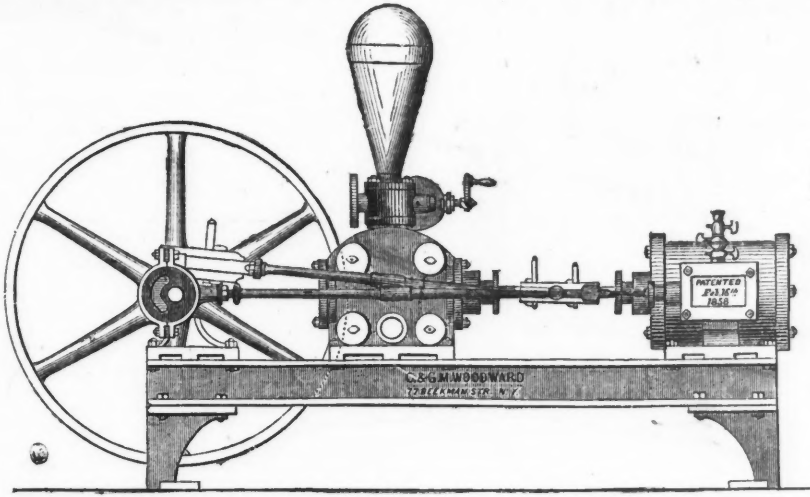
**Steam Pumps.**

A well constructed and reliable pump is the engineer's pride whether he happens to be at sea or on land. If we visit that important personage in his own department—the engine room—we find that he regards the pumps as most important adjuncts, and bestows upon them extra notice and attention. We may as novices glance at the massive engine in all its finished lustre and excellent proportions, making its rapid strokes with noiseless energy; we may observe with pleasure the engine room swept and garnished; we may admire the artistic beauty of the decorated walls, and praise the taste that placed the plants and flowers to thrive in the genial warmth and steady temperature of the engine-room windows, but with the engineer, these things are of minor importance compared with the utility of the pump, which is generally placed in some obscure corner, and there steadily pursues the even tenor of its way. This is the engineer's best servant, and the more reliable and prompt it is in the discharge of its duties, and the less noise it makes in the performance of those duties, the greater commendation and recommendation will it receive from those who know and appreciate the value of so excellent a servant.

Fuel and water are the food that the steam engine feeds upon, and so long as it is in motion the demand for sustenance is incessant. Fuel is easily supplied by human labor, but the large quantity of water required for the production of steam, must be constantly injected or pumped into the boiler where the necessary steam is generated. Should the supply of water fail even for a short time when a boiler is worked, the fire has to be immediately drawn and the whole of the machinery stopped. Hence the value of a strong and reliable steam pump which, in addition to its other useful qualifications, will always keep a boiler well supplied with water. Now what mechanical man does not know that there are pumps of all descriptions made for various purposes, constructed in different shapes, and manufactured by numerous makers? There is great rivalry among pump makers. We have seldom talked to one who did not inform us, naturally enough, that he had got the best pump, and therefore we might be led to suppose that all engineers and manufacturers wherever they may select, cannot fail to secure one of the best machines. But on the other hand engineers are constantly complaining of these essentials giving out, and that frequently when they are most wanted, manufacturers likewise have their mills stopped from the breaking or choking of the pumps, and fires break out and burn up property, when a powerful pump in order might have checked the flames. When we hear of ships, and steamers, mills and manufactories, warehouses and stores, theatres and museums, institutes and churches &c., being suddenly destroyed by the devouring element, we cannot but encourage our pump builders to multiply and increase, design, invent, build and sell as many strong, reliable, effective and powerful pumps as possible.

The Woodward Steam-pump Manufacturing Company have for the last ten years given especial attention to the making of first-class steam pumps. They have erected large and handsome works, containing every facility for an extensive manufacture of pumps, fire-engines, steam-heating apparatus, &c., and the fitting up of wrought iron pipe, iron and brass fittings. The manufactory is located in Centre street, New York city, and consists of a main building, 100 feet by 66 feet, five stories

high, and an adjoining building 50 feet by 22 feet, three stories high. There is a fine basement to the building, where the engine and boilers used for driving the machinery are placed. Our space will not permit us to describe the work in each room and compartment, and the excellent tools employed in the manipulation of the various materials, but we can confidently state that throughout the entire building there is an excellent system maintained in the division and arrangement of work, the disposition of the tools, and the cleanliness of all the rooms. We shall now endeavor to explain the mechanism of what is known as the "Woodward Steam-pump and Fire-engine," of which the annexed cut is a representation. This



machine was patented by Calvin Woodward and George M. Woodward, of the city of New York, on Feb 16th, 1868, and is designed for supplying steam-boilers, mills, and public buildings with water. In case of fire, it is arranged to discharge any quantity of water, according to size, by simply opening a valve connected with the discharge outlet. For all mining purposes, whether in pumping water, or draining lands, or washing ore beds, it has been used with entire success. The annexed engraving represents a longitudinal elevation of one of these steam-pumps. The different parts are simple in character and few in number. An ordinary steam-cylinder, with piston, piston-rod, connecting-rods, eccentric, &c., as seen in the engraving, require no explanation. The piston of the steam-cylinder, and the pump-plunger, are in the same horizontal line; a double connecting-rod passes on each side of the pump, and is connected with a single stub end at the crank-pin. The body of the pump is formed of cast metal, having a longitudinal cylinder through it, which receives the plunger in the ordinary manner. Above and below this cylinder are two circular openings, or smaller cylinders, cast at right angles with the pump cylinder, and in these transverse openings are placed tubes having ports and valves, for suction and discharge. The advantages of this arrangement are, that the tubes serve as bushes for the passages, and when the valve-seats become worn, the tubes may be removed and replaced by new ones. The valves may also be constructed with the greatest facility, and fitted perfectly to their seats without difficulty; for, being segments of a tube, they can be turned in a lathe, and, consequently, fitted very accurately. The valves are easily seen by the removal of the circular caps. A No. 6 pump of this description, placed in the basement of Messrs. Woodward's manufactory, will throw a vertical 1 1/2 inch stream 150 feet high. There are different sizes of these pumps made from No. 0, with 2 1/2-inch steam-cylinder, and 1 1/2-inch water-cylinder, up to No. 12, with a 26-inch steam-cylinder, and 20-inch water-cylinder. No. 0 will discharge from three to five gallons, and No. 12 from 2,000 to 2,500 gallons per minute. Many of these pumps can be seen in operation on board the several steamers in this and foreign ports, and in many public institutions, factories, hotels, &c. In short, they may be said to be in general use throughout this country, Canada, and the Island of Cuba. From this fact, it may be inferred that the Woodward steam-pump and fire-engine is one which gives good satisfaction to manufacturers and engineers. We think that its extreme simplicity, good proportions and durability, are very great recommendations.

Patent Claims.

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

- 74,775.—MANUFACTURE OF TIN-LINED LEAD PIPE.—John Farrell, Pittsburgh, Pa. 1. The die e' in a plunger, c, in combination with a cylinder, a, and a mandrel, d, in a machine for making tin-lined lead pipe, constructed and operated substantially in the manner and for the purposes hereinbefore set forth. 2. The method hereinbefore described of constructing a compound ingot of tin and lead, in the manufacture of tin-lined lead pipe. 3. The use of a flange, f, attached to the tin part of a compound ingot of lead and tin, for the purposes and in the manner substantially as above set forth. 4. In the production of a compound tin and lead ingot by the method hereinbefore described, the use of a cover, g, for protecting the tin pipe or tin ingot from the heat of the molten lead, substantially as and for the purposes hereinbefore set forth. 74,791.—PREPARING FINELY-DIVIDED IRON, AND THE SEPARATION OF COPPER, SILVER, AND OTHER METALS FROM THEIR SOLUTIONS.—Gustav Bischof, Jr., Swansea, Great Britain, assignor to himself and John L. Kidwell, Georgetown, D. C. 1. Claim, 1. The preparation of finely-divided metallic iron, in the manner and by the process substantially as described. 2. The combination and arrangement of the receiver, F, with the furnace, for deoxidizing the ore or oxides of iron, and securing the product from the oxidizing effects of the atmosphere, as set forth. 3. The precipitation of metallic copper from its solutions, by the use of finely-divided iron, prepared as described, and in the manner set forth. 4. The use of the finely-divided metallic iron, produced in the manner set forth, for the manufacture of steel, and for other manufacturing purposes. 5. The use of finely-divided metallic copper, produced in the manner set forth, for separating silver from its solutions.

On-dit about Minerals, &c.

The Superintendent of the work of the Hoosac tunnel, has reported to the Massachusetts Legislature. He says that had a railway been laid for eight miles only up Deerfield River, to a vast lumber region at that point, the saving in cost of lumber and supplies thus made, would have paid the whole cost of the road. The progress in boring last year with the Burleigh machine was highly satisfactory. With the aid of nitro glycerine, 150

feet per shaft recently destroyed by fire has not been resumed, and the Chief-Engineer says "more trouble is anticipated from water at the west end." On the first of last November, the bearing had reached a total of 4,382 feet. From the east opening, and 1,004 feet in the western shaft. On the whole, confidence is expressed in the future rapid progress of the tunnel, in spite of past obstacles and delays, and the Chief-Engineer, who has been inspecting the Mount Oenis tunnel, asserts that the machinery employed on the Hoosac is superior to that used in the European work.

An experienced gentleman, largely engaged in the lead business, estimates the product of our lead mines this year at 225,000 pigs, at seventy pounds each. At an average of nine cents per pound for lead, the value of the product would be \$1,367,500. About one-ninth of this lead is supposed to have been raised west of the Mississippi.

The coal fields of Alabama are attracting attention. They are three in number; the Coosa River district, covering about two thousand square miles, the Cahawba River district covering some five thousand square

miles, and the Warrior River district, which is said to embrace no less than fifty thousand square miles. The quality of the coal produced from the first two is very fine; the third is rather inferior and less accessible. A very little has hitherto been done in developing these districts.

In 1860, 4,000 barrels of salt were made in the Saginaw Valley, Mich.; in 1867, 474,721 barrels. It is proposed to unite all the different salt companies so as to control the price of the whole product.

Special Scientific Brevities.

The porosity of cast-iron is a well-known fact. Many years ago Mr. Perkins forced water through thick plates of glass; hence it is not astonishing that gases pass with ease. A few days ago a physician of Chambrey was struck with the circumstance that an epidemic of fever occurred in Savoy every winter; and he fancied that he had traced the cause to the use in the cottages of cast-iron stoves, which allowed the gases of combustion to pass into the atmosphere of the rooms. The subject has been investigated by MM. Devill and Frost, and they find, by a very carefully conducted experiment, that hydrogen, carbonic acid and carbonic oxyd do actually pass through the walls of a cast iron stove. The fact is worth knowing here, for such stoves are often used in this country, and most frequently in ill-ventilated apartments. The amount of gases which pass is certainly not large, but carbonic oxyd is an exceedingly poisonous agent, and most of the discomfort experienced in rooms heated by these stoves is no doubt attributable to that gas. The subject deserves the attention of manufacturers, who might possibly devise a tile or clay lined stove that would diminish the inconvenience we mention, and at the same time economize fuel.

The new observatory at Neuchatel, in Switzerland, has rendered good service to chronometer makers by enabling them to regulate their watches with more exactness. Prizes are now given to those makers whose watches approach nearest to perfection. A marine chronometer lately tested for two months gave 0.164 of a second as the mean variation from day to day. The improvement in common watches during five years will be seen by the following table of mean variations in 24 hours:

Table with 2 columns: Year, Mean variation in 24 hours. Data: 1862: 1.61 sec., 1863: 1.28 sec., 1864: 1.27 sec., 1865: 0.88 sec., 1866: 0.74 sec.

More than three-quarters of the chronometers observed in 1860 gave a mean variation per day of less than half a second. The experiments now in progress at Woolwich Arsenal on the manufacture of gas from a mixture of Trinidad bitumen and coal remind us, says the London Mechanics' Magazine, of the recent use of various waste materials for the purpose in Germany. Among these are the residues of the manufacture of paraffine, and the refining of petroleum oils. With each of these materials a large quantity of permanent gas of a high illuminating power was procured. Another substance experimented with was the waste grease from the woolen manufacture, which yielded a smaller amount of gas. From a review of all the experiments, however, it is concluded that the use of bituminous oils, in combination with coal or peat, for the production of gas, offers no advantages as regards price over ordinary coal gas. In small works it may be profitable when manufacturers use up their own waste products.

At the Paris Exposition an instrument was exhibited designed for testing the relative hardness of steel rails. This "durometer," as it is styled, is virtually a small drilling machine, working by hand or machine power, which registers the number of revolutions of the drill spindle and also the amount of lead, the latter being given by the application of a known weight to the back of the drill spindle. The friction of the machine and the state of the cutting edges are supposed to be constant quantities, and as such are thrown out of the calculation. The hardness of any rail is considered to be inversely proportionate to the depth of feed obtained with a given number of revolutions.

A process for the extraction of indigo from rags dyed with that substance has lately appeared. The rags are first saturated with a weak solution of caustic soda, then placed in a boiler with a double bottom and exposed for some time to steam at forty-five pounds pressure. The indigo in the rags is reduced and may be washed out. It may afterward be precipitated from the soda solution, and recovered in a state equal to the best commercial sort.

Although protection of wood against burning cannot be entirely brought about, a very great approach to it is made by giving to the wood two coats of a solution of chloride of calcium, to which fifteen per cent. of calcined lime has been added. The chloride of calcium is a secondary product of various chemical manufactures, and can be had at a cheap rate.

All Sorts.

The following shows the population and imports of the Central and South American States:

Table with 3 columns: Country, Population, Imports. Data includes Venezuela, New Granada, Ecuador, Bolivia, Brazil, Argentine Republic, Buenos Ayres, Paraguay, Uruguay, Peru, Guatemala, Salvador, Honduras, Nicaragua, Costa Rica.

The distances at which different sounds are audible, are thus given:

Table with 2 columns: Sound, Distance in Feet and Miles. Data includes human voice, musket, drum, cannon, etc.

A doctor's wife attempted to move him by her tears. "Ann," said he, "Tears are useless. I have analyzed them. They contain a little phosphate of lime, some chlorate of sodium and water."

Nothing is equal to thoroughness. A writer upon projectiles commences the history of shot from the "stone which whistled from David's sling."

Probably the reason why the way of the transgressor is hard is that it is so much traveled.

Iron Passenger Cars.

The New York Tribune, speaking of some reforms necessary for securing greater safety in railway operation, says: "Our passenger cars must be made from iron—of cast-iron plates, firmly held by wrought-iron rods. These cost but little more than first-rate wooden cars, will last far longer, and are worth twice as much when worn out. There is economy in the substitution of iron for wooden cars; while the former are almost proof against calamity. They do not burn in case of accident; they do not splinter; they do not crash into oven wood; their general use would save three-fourths of lives now lost by railway casualties. No more wooden cars should be constructed, and those now in existence should be superseded by iron ones so fast as the latter can be completed." For the cast-iron plates spoken of above, substitute boiler plate, and the suggestion is a very proper one. A boiler-plate car, sufficiently braced with iron, wood-work and other easily burned material left out of the inside finish, is as safe a structure as can be devised.

WANTED.—A situation as a Machinist, Mining Engineer, by one who has had experience. Address S. O. M., 18 Harvard Place, Boston. mt:ly

COAL.

DAY, HUDDALL & 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. mt:ly

W. D. CRANE & CO., SHIPPERS OF ANTHRACITE AND BITUMINOUS COAL. SOLE AGENTS FOR SUPERIOR GAS COALS. Office, 113 Broadway, New York. W. D. CRANE. mt:ly J. C. DANCKELMANN.

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. 29 Westminister street, PROV. 110 BROADWAY, NEW YORK. 27-4

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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. 1:3:4p

NEW BOSTON COAL MINING COMPANY, 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. dec23-67-68 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:ly

COXE BROS.'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, 341 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. mt:ly

ASHBURTON COAL CO., MINERS AND SHIPPERS OF LEHIGH COAL, Delivered direct from the mines, or for reshipment at Port Johnston. LOUIS J. BELLONI, Jr., Pres't. OFFICE, No. 41 PINE STREET, NEW YORK. 2:4-4p

**BOILERS.**

**THE HICKS BOILER,**

WILL NOT SCALE,  
WILL NOT FOAM,  
GIVES DRY STEAM,

Send for Circular to

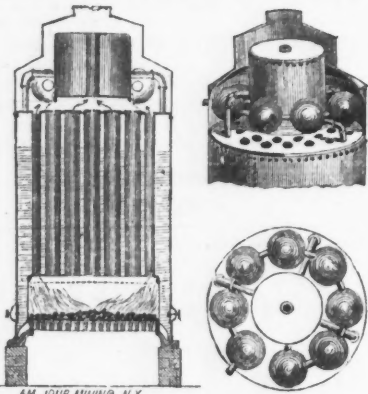
**JAMES M. HICKS,**

No. 55 LIBERTY STREET, New York City.

11:3:19p

**DAVIS' PATENT**

**STEAM SUPERHEATING BOILER.**



AM. JOUR. MINING N. Y.

**GREAT SAVING IN FUEL.**

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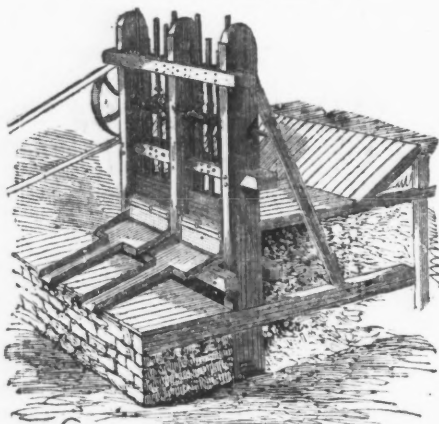
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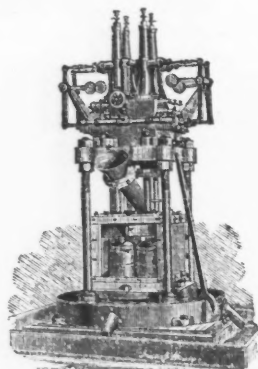
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**STEAM STAMP-MILL COMPANY,**

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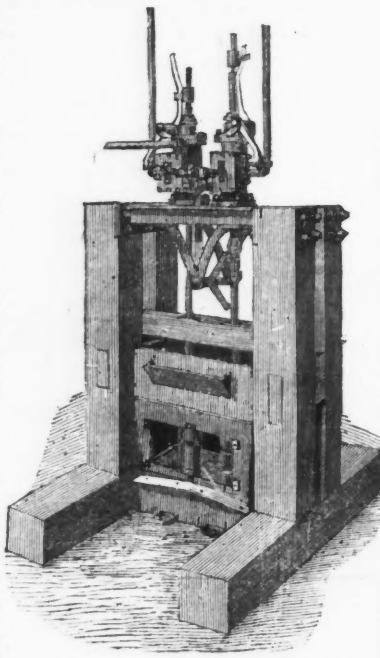
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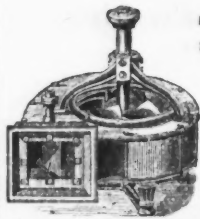
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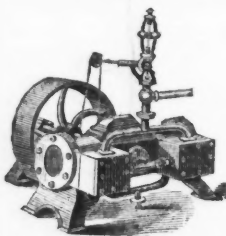
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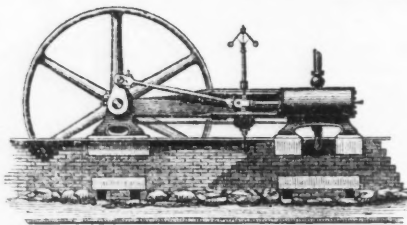
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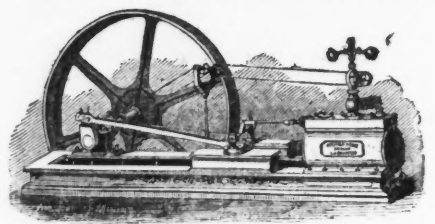
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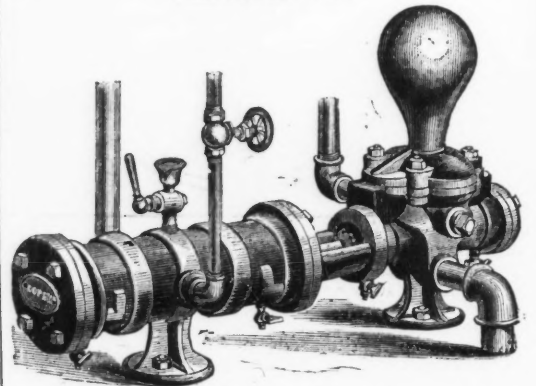
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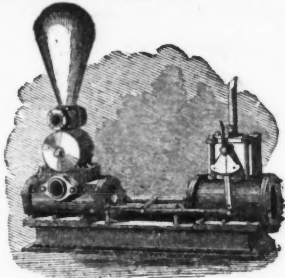
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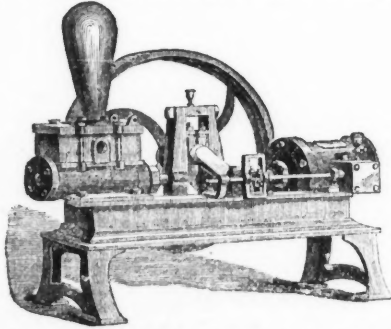
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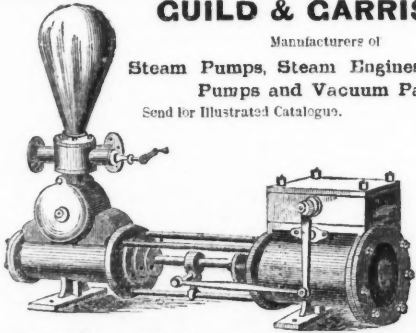
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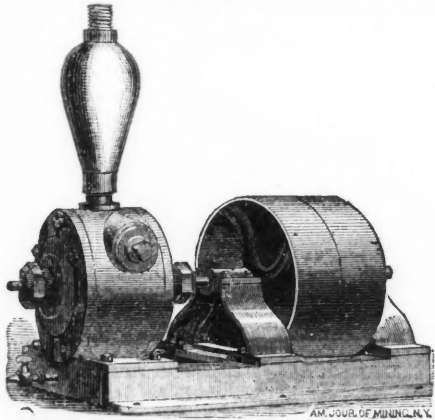
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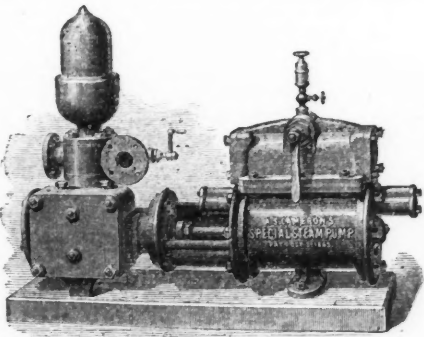
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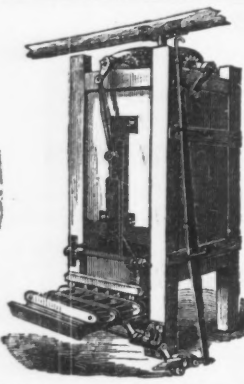
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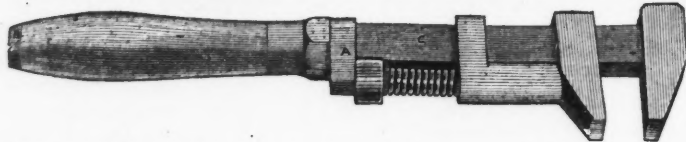
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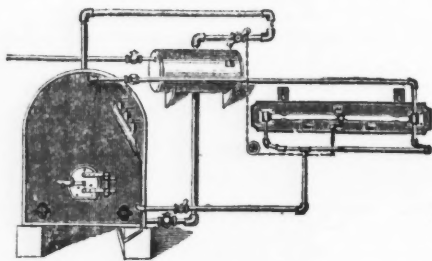
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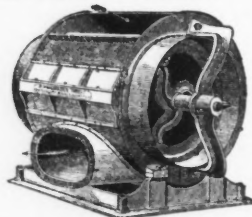
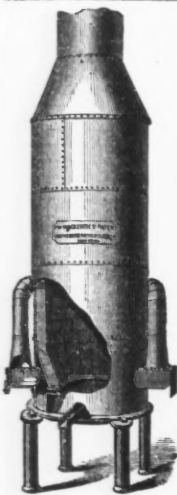
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References—Wm. A. Smith, Esq., 25 and 27 Nassau street. Prof. Harper, New York, etc. oct12, '67:69



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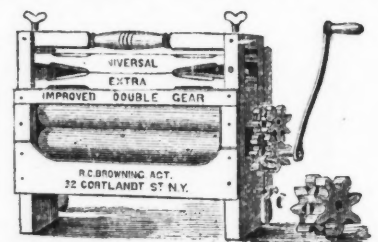
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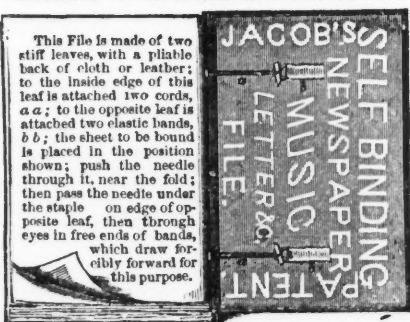
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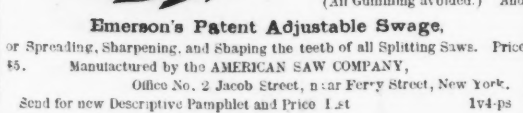


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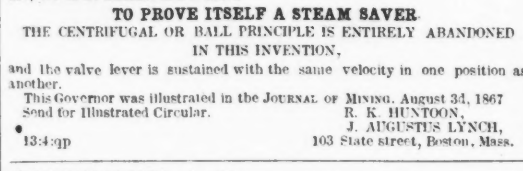
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