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## MACHINE TUNNELLING.

In a late number of the JOURNAL OF MINING we gave expression to the idea that before long there would be a substantial cheapening of the process of cutting tunnels, adits, etc., in mining operations, thereby rendering it possible to work mineral veins that must otherwise go undeveloped. We alluded, moreover, to the fact that by the use of machine drills in the cutting of the Mont Cenis tunnel the cost was only about one-third what it would otherwise have been, and that in the case of the construction of the Hoosac tunnel it cost only \$8.00 to remove a cubic yard of rock, while by the ordinary methods of hand drilling the outlay was \$28.00. We make no doubt that ere long machine drills of a smaller

by the summit line is far greater than that which will be taken up by traversing the tunnel when the latter is completed.

It is now sixteen years since, in 1852, the Chevalier Maus proposed to construct the Mont Cenis tunnel by means of a machine of his invention, which he estimated as capable of boring a mile and a half per annum. It is almost needless to say that such expectations were never realized, and the whole scheme was abandoned until the autumn of 1857, when a commencement was made with the present works.

The Mont Cenis tunnel, although commonly supposed to traverse Mont Cenis, does not really do so, but passes some distance to the west of that summit, the highest point of the mountain chain directly over the line of the tunnel being

in the event of a large influx of water taking place; but hitherto no such event has occurred, nor from the experience already gained of the nature of the material passed through, does it appear likely that it will occur, and the tunnel might, therefore, have been as readily constructed with an uniform gradient throughout, falling from the southern to the northern side. This, however, could not have been foreseen when the works were commenced, and the adoption of a falling gradient towards the southern end may even yet prove to be a useful precaution.

The materials to be traversed by the tunnel are schist, quartz, and compact limestone, and hitherto the points at which the various strata have been found to commence and terminate have agreed very closely with the positions assign-



BORING THE MONT CENIS TUNNEL.

pattern will be at work cutting the galleries and adits of our numerous mines. The accompanying illustration of the Mont Cenis machine will give our readers an excellent idea of these drills and the manner of working them. The following interesting account is compiled from our English and other exchanges:

With the single exception of the Suez Canal, the Mont Cenis tunnel may probably be considered to be the grandest engineering work at present in progress, and it is, moreover, undoubtedly the boldest work of its kind which has ever been carried out, either in ancient or modern times. By its completion the railways of France will be united to those of Italy, and a continuous railway communication, without break of gauge, will be established between Calais and Brindisi, a distance of 1,390 miles. Considering the growing importance of the latter port as a point of departure for the Eastern mail steamers, the value of such a system of unbroken communication can scarcely be overrated. At present the Mont Cenis Railway forms the connecting link between the French and Italian lines; but this, although affording far better accommodation than the old diligences, is still open to the objection of causing a break of gauge with all its attendant evils, and, moreover, the time occupied in crossing the Alps

about 9,700 feet above the level of the sea, while Mont Cenis rises to upwards of 11,400 feet above that level. The tunnel is being constructed in a straight line from Forneaux, a village in the valley of the Arc, about one and a half miles from Modane, on the French side, to Bardonnèche on the Italian side of the mountain, the total distance to be traversed being 12,200 metres, or about 7 miles 1,020 yards. At Bardonnèche the nature of the ground did not allow of the tunnel being conveniently commenced at a less elevation than 1,335.38 metres, or 4,381 feet above the sea level, while at Forneaux the entrance has been made at a point 1,202.82 metres, or 3,946 feet above the same datum. The difference of level at the two ends of the tunnel is thus 132.56 metres, or 435 feet, and the difference of level alone would have necessitated a gradient of about 1 in 92 throughout its length. It having been expected, however, that during the execution of the work a considerable quantity of water would be met with, it was deemed advisable to construct the tunnel with a rising gradient of 1 in 2,000 from the Bardonnèche end, this gradient being met near the middle of the length of the tunnel by a gradient of 22.2 per 1,000, or about 1 in 45, rising from Forneaux. The fall of 1 in 2,000 towards the Italian entrance was, of course, intended to give good drainage to the works

ed to them by the geological surveyors. Commencing from the French end, the schist was found to extend for a distance of 2,346 yards, and this was bored through at the average rate of 1.26 metres, or rather more than 4 feet per day, a small portion of this length having been excavated by hand labor alone. Next to the schist came 550 yards of quartz, which was traversed at the rate of scarcely 2 feet per day; and this was followed by the compact limestone in which the work on the French side is now being carried on at the rate during the month of April last of 2.08 metres, or about 6 feet 10 inches per day—a rate far greater than was at first anticipated. It is expected that the limestone will extend for a thickness of 3,008 yards, and that between the point where it terminates and Bardonnèche, nothing but schist will be met with. So far the workings from the Italian end have been made in schist only, and during the month of April last they were carried on at the rate of 1.55 metres, or a little over 5 feet per day.

At Forneaux the compressed air is led through lines of cast iron pipes from the buildings containing the air compressing machinery to the engineering workshops, and thence to the tunnel itself. The workshops are situated on the hill side above the level of the air-compressing machinery, but con-

siderably below that of the mouth of the tunnel. They are fitted with good plant of ordinary engineer's tools, most of them made by English makers, and in the smiths' shops there is a 12-cwt. hammer, which is worked by compressed air. The machinery in the workshops is ordinarily driven by a turbine, which is sunk 9 metres, or 28 feet 8 inches below the floor of the machine shop; but in winter, when the supply of the water for the turbine is stopped by the frosts, the shafting is driven by an engine worked by the compressed air. The torrent of the Aro, from which the water power for working the air-compressing machinery is obtained, is, we may mention here, never frozen even in the most severe seasons.

The general appearance of the machines will be seen from the perspective view. The frame of each machine is formed by a pair of bars about 6 feet 6 inches long, these bars having placed between them the 3 inch cylinder by the piston of which the boring tool is actuated. The cylinder is not fixed to the frame bars, but is capable of sliding on them, motion being given to it by a large worm at its hind end, which gears into racks formed on the inner sides of the frame bars. The cylinder is 3 inches in diameter, and its piston has a rod about 2 inches in diameter, there being thus but a comparatively small annular area on the front of the piston on which the air continually presses. At the hind end of the frame bars of the machine is placed a kind of miniature horizontal engine worked by the compressed air; this engine driving, through a bevel gear, a square shaft which extends nearly the whole length of the machine above the boring cylinder. This shaft carries a cam which gives the necessary motion to the slide valve which governs the admission of the air to and its release from the boring cylinder; and from the same shaft the intermittent rotary motion is given to the tool, and also the necessary advance as the hole is bored. The manner in which the advance of the tool, or rather of the cylinder, is regulated, is as follows: The cylinder is free to slide longitudinally on the frame bars, these bars having on their inner slides racks into which a worm, carried on a spindle projecting from the hind end of the cylinder, gears. On this same spindle there is a clutch, which is driven by gearing connected to the square shaft already mentioned, and when this clutch is in gear with the worm, the cylinder is advanced along the frame towards the face of the rock. As, however, the rock is of unequal hardness, the rate of the advance is made dependent upon the rate at which the borer penetrates, in the following manner: The clutch by which the worm is driven is embraced by a fork formed on a bar which extends forward past the boring cylinder, and which has at its front end a finger, which is bent so as to catch on ratchet teeth formed on the tops of the frame bars. Supposing the clutch to be in gear, and the machine to be at work, the cylinder will be gradually advanced along the frame bars; but the clutch being held by the bar just mentioned, and the front end of this bar abutting against one of the ratchet teeth cannot follow the cylinder, and consequently after the worm has made a couple of turns or so, the clutch is worked out of gear and the cylinder becomes stationary. As the boring goes on, however, the piston makes a longer and longer stroke out of the cylinder, and eventually a projection on its end raises the front end of the finger bar out of gear with the ratchet tooth, against which it abuts.

As soon as this takes place a spring behind the clutch forces the latter forward into gear with the worm, and the advance of the cylinder again goes on until the end of the finger bar coming against the next tooth, the forward motion of the clutch is again arrested until it gradually works itself out of gear. Each boring machine weighs about 6 cwt., and as the wear and tear to which they are exposed is very severe, it is found necessary to keep from three to four machines in reserve for each one at work.

The boring bars employed are of various forms and of various diameters. The Z and double Z or crown borers are those most used, but for some kinds of rock other forms are found preferable. The holes generally bored are about one and a quarter inches in diameter, but some are much larger. In working through some of the very hard quartz it was found that the shots flew back from the ordinary holes without producing any disruptive effect on the rock, and the plan was therefore adopted of first boring several holes 4 inches or 5 inches in diameter and then disposing some ordinary holes around these. When the charges in the ordinary holes were fired the portions of the rock between them and the central hole were blown out, and a cavity thus formed around which other shot holes were bored. The borers used for the 4 inch and 5 inch holes are of similar form to smaller bars, and, like them, they are worked by the boring machines, but at a slower speed.

A new atmospheric break for railways, invented by Chas. Kendall, has been successfully tried in England. It acts as a simultaneous as well as instantaneous break upon all the wheels of the train. Its great advantage is that the driver and guard have it equally under command, so that if the first should perceive imminent danger ahead he can apply the break himself instead of losing time by signalling. A part of the contrivance consists of a means of communication between driver and guard running through all the carriages, so as to be accessible also to passengers. The first stop was made on an incline of one in one hundred, while the train was going thirty-five miles an hour; and the space in which the engine driver managed to pull up was three hundred and twenty-three yards. The second stop was on a level, when the progress of the train at forty miles an hour was checked and brought to a stand-still in two hundred and twenty yards. In the third trial the engine driver's practice began to tell, as he succeeded in stopping within two hundred yards, the speed then being fifty miles an hour, and the place an incline of one in one hundred.

## Practical Letters.

[[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]  
ON THE VENTILATION OF COAL MINES—NO. XIII.

BY J. W. HARDEN, M. E.

RELATIVE VALUE OF POWER USED.

But we are reminded that there is a limit to the power of the furnace, and an economical limit in its working. In practice—and then only on extraordinary occasions—either limit is seldom attained. The power increasing in arithmetical ratio with the temperature, and the resistance to it in a geometrical ratio to the velocity of the air, it is clear that there is a line somewhere, at which the latter will reach the former when the limit of the power of the furnace is arrived at. Of its economical limit, there have been tables of calculations published by mathematical authors, an extract from one of which your contributor has given; but I will put the matter in a practical shape.

On page 98 I have told you that the every-day working of the Hetton Colliery, before the experiments alluded to, was 170,000 cubic feet of air per minute, calculated at a cost of one pound of coal for each 13,676 feet of air; and we have seen, by the experiments made, that 225,176 feet of air per minute was obtained at a cost of one pound of coal for each 11,940 feet; the increased consumption of coal being in the ratio of 51 per cent. to 32 1-2 per cent. increase in the quantity of air circulated, leaving a large margin for favorable comparison with any of the mechanical powers said to be so much superior. Neither is there a limit said to apply to the furnace that does not equally apply to any one of those powers. Moreover, your contributor tells us that "when most required after accidents"—explosions, I take him to mean—"the furnace is capable of a very slight increase in its work." If in its daily work it is necessary, in a given case, to urge it to the extent of its power, no more can be obtained from it. Just so with any other machine. But it would hardly be consistent with good management in its adaptation to limit it to that necessity. Of its capacity of increased work, when constructed to meet such necessity, we have just cited a case; but in assuming that any ventilating power in daily use will be available after an explosion, is to make an assumption on very uncertain grounds. Yet a well built furnace will be likely to suffer as little under such circumstances as any other power applied, and of the rapidity with which the current can be set in motion by it and made to reach its maximum velocity, the following experiment, made by Mr. Wood, at Hetton, will show the best.

The furnace and boiler fires being extinguished, they were allowed to remain so until the temperature of the upcast shaft was reduced to 74°, when the quantity of air passing through the workings was 80,182 cubic feet per minute. (Here, in passing, let me remark the great difference between these figures and those of from 100,000 to 127,000, given by your contributor as being the amount of air due to the natural ventilation of this pit.) The fires having been built up of old tar barrels and such like quickly combustible material, at 3 hours, 48 minutes and 47 seconds, time was noted. At 3 hours 50 minutes the anemometer showed that the air had traversed 1,000 feet in two minutes and three seconds. At 3 hours 56 minutes 55 seconds, the air had traversed 4,000 feet in eight minutes and three seconds. This was before the fires were lighted. At 4 hours 3 minutes fire was applied, and at 4 hours 12 minutes 55 seconds, the air traversed 4,000 feet in 4 minutes 3 seconds, so that in 9 minutes 55 seconds after the furnace had been lighted, the velocity of the air had been nearly doubled—namely, 4,000 feet in 4 minutes 3 seconds, instead of 8 minutes 3 seconds. At 4 hours 16 minutes 46 seconds, the velocity amounted to 4,000 feet in 3 minutes 48 seconds, and at 4 hours 20 minutes 30 1-2 seconds, it amounted to 4,000 feet in 3 minutes 34 seconds. So that in 17 1-2 minutes after the fires had been lighted, the velocity of the air had increased from that of 4,000 feet in 8 minutes 3 seconds, to 4,000 feet in 3 minutes 34 seconds. The above shows the very great facility with which the air can be set in motion and increased in a mine, and that, too, from the remotest corner of a pit, with more than 97 miles of roads and air-courses in it; and how much your contributor is mistaken in the value of the furnace properly applied. The water-gauge showed the great increased resistance under which the quantity of air was doubled. Before the furnaces were lighted, it stood at .45 of an inch; in 17 1-2 minutes afterwards, it stood at 1.75 inches—the resistance having increased from 2.34 lbs. on the square foot, to 9.10 lbs. It showed, also, with what great rapidity, in case of an emergency, the increase of heat in the shaft will more than double the quantity of air, and quadruple the power. Add to the above the weight of the increased volume of air generated and lifted by the furnace, the impactive resistance of the

air occasioned by increased velocity, and the power of inertia exercised by 39,600 feet of shaft surface—none of which the water-gauge at the bottom gives any account of, and which, in measuring the drag on the fan, is included in all the examples given—and we get a resistance equal to 21.64 lbs. on the square foot, or 8.64 lbs. higher than the furnace is said by your contributor "never" to exceed. Reduce that due to the 74° of temperature, at which the shaft stood when the experiment was commenced, namely, 2.34 lbs. per square foot, and we have 199,254 cubic feet of air, with a drag upon it of 19.30 lbs. per square foot, lifted out of the shaft at a velocity of 1,294 feet per minute, or 116.54 horse power utilized, and this power is, too, accumulated in the short space of 17 1-2 minutes.

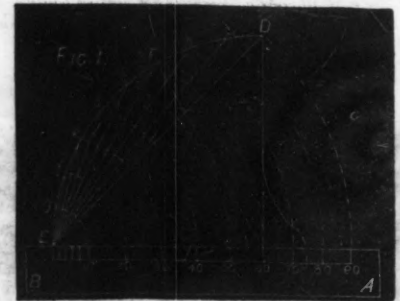
[[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

LESSONS ON MECHANICAL DRAWING—NO. XV.

BY T. P. FEMBERTON.

SCALES (Continued.)

There are certain scales of proportions, which serve commonly for geometrical calculation or illustration, and are, generally speaking, more valuable for educational than for practical purposes. To describe them fully would occupy space beyond my limit, and would be superfluous, as the subject has been completely studied and written upon a century past, and retailed and detailed in every diversity of form. I will, however, speak of some of the principal lines upon mathematical scales. On the plain scale or Rectangular Protractor, which is generally made of ivory, and is 6 inches long, can be noticed a series of divisions, marked "CHO," or Line of Chords. This is used to protract angles. It is, perhaps, the most useful of what are termed mathematical scales. The student will remember that a chord is a straight line joining the ends of an arc; it divides a circle into two unequal parts, called segments, and is a chord to them both. The scale of chords is constructed in the following manner, as shown in Fig. 1.



At the point, C, erect the perpendicular, C, D, and then from the point, C, with the radius, C, E, describe the arc, E, D. The arc, E, D, contains 90 degrees; and consequently, by dividing this arc into nine equal parts, each of these parts will contain ten degrees. From this point, E, to the several points of the division in the arc, E, D, draw straight lines, which lines will be the chords of the several measures. To transfer these chords to the scale: From the point, E, as a center, with the radius, E, g, which is the chord of the first ten degrees, describe an arc to the edge of the scale, from which draw a short vertical line, and mark it with the number ten; proceed in like manner with the chord, E, f, and mark it twenty on the scale, and so on to E, D, which will be ninety on the scale. E, ninety, is, therefore, the chord of a quadrant whose radius is equal to C, D, or C, E.

TO CONSTRUCT AN ANGLE OF A GIVEN NUMBER OF DEGREES BY THE SCALE OF CHORDS.



Let G, H, (Fig. 2) be a straight line upon which the required angle is to be constructed, and let it be an angle of forty-five degrees. From the point, G, with a radius equal to the chord of sixty degrees, describe an arc, cutting the given line, G, H, in the point, n; then, from the point, n, with the radius of the chord of forty-five degrees, intersect this arc in the point, K, and join G, K. The angle, K, G, H, is an angle of forty-five degrees, as required.

To measure an angle by means of the scale of chords, an arc must be described from its vertex with a radius equal to the chord of sixty degrees, and the chord of the intercepted arc applied from the point, E, to the scale, which will give the number of degrees in the angle.

On the Plain Scale, or Rectangular Protractor is also found a protracted line, which is divided into degrees, and is carried along the edge of one side and of both ends. The figures are

in two lines, and read from 0 to 180, proceeding from the base or centre line both to the right and left, thus bringing the two 90° to the centre of the protractor. Upon the base a line is drawn, the outer end of which is the centre from which all the angles are set off. The inequality of the degrees at the edge, and the shrinkage of material after division render this, as a protractor, unfit for exact purposes; the principal use made of it is for sketching perpendiculars, which is done by placing the centre and 90° on a horizontal line, and drawing the perpendicular or vertical line by the base; for this purpose, however, it is less expeditious than the straight edge and set-square. Although the rectangular protractor is generally supplied in cases of drawing instruments, it is now seldom used, except in schools, and occasionally by architects, who have little use for any kind of protractor.

**Natural Wells in Slate Quarries.**

A Poultney (Vt.) correspondent of the Albany Express writes:—"In excavating the Tucker, Crawford & Knapp quarries a phenomenon is presented which has excited the interest of geologists as well as lovers of the marvelous. After blasting and excavating many feet deep, the workmen have frequently come to a smooth, flat or table rock; when this flat rock was removed, wells, or what the miners call 'pot-holes,' were discovered. Some of these wells were found to be from fifteen, twenty to forty feet in depth, and from six to eight, ten and fifteen feet in circumference. These wells are perfectly round, and as smooth as though they had been bored out. They were filled with round stone, ranging in size from a cannon-ball to a grape-shot, and so on down to bullets and marbles—most of the wells being entirely dry. This phenomenon is supposed to have been produced by currents of water being forced through the crevices of the rocks above, taking up particles of gravel, and depositing them wherever an opening occurred, and then coming down with such great velocity as to form eddies or whirlpools, taking up, revolving round and round—for no telling how many ages—those particles, which continued to increase in size till the well becomes filled, and the water creates another opening. Many of these wells can now be seen, and are daily visited by the curious, who take away with them any quantity of the pebbles taken from these wells. Geologists will find in these quarries, which extend for many miles on either side of the valley, ample material for study and experiment."

**Coal and Iron Statistics of Great Britain.**

The mineral statistics of Great Britain for the year 1867, have just been published, and from them we derive many valuable facts and figures relating to the production of coal and iron in that country. The quantity of coal mined exceeded that of any preceding year, amounting to 104,500,480 tons, valued at £26,125,145. Of this quantity England produces 78,785,987 tons, Wales 11,463,550 tons, Scotland 14,125,948 tons, and Ireland 125,000 tons. Of this coal, 9,761,827 tons were exported, leaving over ninety-five million tons for home consumption.

The production of iron ore was also unusually heavy, amounting to the immense total of 10,021,058 tons, valued at £3,210,098. The locality of its production was as follows:

England.....	8,169,244 tons.
Wales.....	545,298 tons.
Scotland.....	1,204,500 tons.
Ireland.....	42,016 tons.

The make of pig-iron from this ore, and some comparatively small quantities imported, was as follows:

**ENGLAND.**

Counties.	No. of Ironworks active.	Furn's built in Dist.	Furn's in blast.	Tons of Pig-iron made.
Northumberland.....	2	18	3	31,027
Durham.....	11	71	39	477,834
Yorkshire—North Riding.....	14	67	504	640,892
Yorkshire—West Riding.....	12	36	25	109,002
Derbyshire.....	14	43	30	160,028
Lancashire.....	4	25	19	318,801
Cumberland.....	3	18	8 3-5	109,839
Shropshire.....	11	29	22	123,604
North Staffordshire.....	6	35	23	202,332
South Staffordshire.....	49	177	914	515,638
Northampton.....	4	9	5	25,184
Lincolnshire.....	3	6	5	25,579
Gloucestershire, Wiltshire and Somersetshire.....	3	10	6	71,186
<b>Total.....</b>	<b>138</b>	<b>550</b>	<b>331 5</b>	<b>32,810,946</b>

**WALES.**

North Wales—Denbighshire.....	3	9	5	32,843
South Wales—Anthracite furnace..	4	25	11	35,506
<b>Bituminous Districts.</b>				
Glamorganshire.....	13	76	49	403,050
Brecknockshire.....	1	15	5	29,443
Monmouthshire.....	14	71	50	418,325
<b>Total.....</b>	<b>35</b>	<b>196</b>	<b>120</b>	<b>919,077</b>

**SCOTLAND.**

Ayrshire.....	8	45	34	.....
Lanarkshire.....	14	96	69	.....
Fife.....	3	13	3	.....
Linlithgowshire.....	1	4	2	.....
Stirlingshire.....	2	7	5	.....
Haddingtonshire.....	1	1	1	.....
Argyleshire.....	1	1	0	.....
<b>Total.....</b>	<b>30</b>	<b>167</b>	<b>112</b>	<b>1,031,000</b>

Total, England.....	Tons, 2,810,946
Total, Wales.....	919,077
Total, Scotland.....	1,031,000
<b>Grand total.....</b>	<b>4,761,023</b>

**Mining Summary.**

**GOLD AND SILVER.**

**Nevada.**

**LATEST NEWS FROM WHITE PINE DISTRICT.**

We take the following account from the Anstin *Reveille*, October 3. It says:—"The district of White Pine still continues to be the chief attractive point of the 'Great East,' to which the attention of all is directed, and from which most glowing accounts of marvellous discoveries of silver ore constantly emanate. From those who have recently visited this most wonderful region and whose observance of the condition of affairs there enable them to speak understandingly, we are led into a belief that another year will witness upon that spot a city second to none in the State. At present there are three towns, or hamlets, in the district, named respectively Hamilton, Treasure City and Shermantown. These each number in houses about equal, but the village of Treasure City (why do the inhabitants not leave the 'City' off, and if need be subjoin 'town'—Treasuretown—for a tall to the name of their place) in inhabitants double either of the others, owing to the fact that it is situated immediately upon the spot whence the rich ore is being taken and is packed and hauled to mill, where a major portion of the miners are compelled to live, and where the great bulk of incidental business and the retail trade attendant upon mining must always be carried on. It is located upon a high, bald and black-looking hill nearly midway between its neighbors—Hamilton northward, Shermantown southward—both of which places it towers above many hundreds of feet. Though it is compelled to draw its supply of water from these two places, there being none there, and quite likely never will be even in the deepest shaft, Treasure City will in spite of all disadvantages doubtless be the great town or city of the district, unless in this single instance an exception should happen to be made in the history of this community as compared with that of all kindred places. It already numbers many stores, restaurants, shops, and as usual, scores of the, in an American frontier town, ever present and almost indispensable saloons or whisky shops. And of all these, more are each day being erected, while all seem alike to thrive and flourish. A banking house will soon be established there by Mr. M. W. Kales, formerly of the First National Bank of this city. It is scarcely possible to do justice to the mines of Treasure Hill, and at this time we will not attempt their description. One alone—the Eberhardt, owned by Captain Frank Drake, Spronl, Applegarth and Crawford—is producing immense quantities of ore, the second class of which by mill process, and which class is at present alone worked, yields a sum exceeding \$1,000 per ton! Considerable quantities of this has already been reduced, and none as yet has been worked which has not greatly exceeded that sum. The first-class, of which there is an amount in sight at the mine beyond calculation, will produce from \$10,000 to \$12,000 per ton! One small pile of dirty-looking matter is shown to the visitor. It could easily be piled upon an ordinary-sized wagon, and yet one is told that its value in gold coin is near \$100,000. A close observation shows it to be horn silver, mixed with a little silica, and were one not inclined to believe before that it was of such extreme richness, the observation removes all skepticism. And such ore as this comes from the body of a vein thoroughly explored to a depth of about seventy feet, more than one hundred feet in width, and with smooth and solid walls encasing it upon either side! Such, in brief, are the Keystone and Eberhardt—both upon one vein—showing without doubt the most remarkable and by far the greatest body of chloride ore ever yet discovered in this or any other country upon the globe. More than one hundred miners are constantly at work upon the Eberhardt, while all around in close proximity are numerous parties of miners delving for treasures, which they seem to find a few feet below the surface in veins of lesser magnitude, and whose constantly exploding blasts make it exceedingly lively as well as dangerous for those visiting and working in the locality. At Hamilton there is a plentiful supply of water, and there is a magnificent ten-stamp quartz mill now in course of erection by Mr. Jeremiah Miller. Just at the lower suburb, Mr. Hendrie has also recently erected his saw mill, which is now manufacturing lumber rapidly, and which commands ready sale at \$90 per thousand. Here also are many good stores, restaurants, dwelling houses, etc. It is at one of the former places that the jolly countenance of Red Wheeler can be seen presiding at a bar in one corner, always ready with a "smile" for every body. Hamilton must of necessity become a place of considerable importance, being the point of arrival and departure of all the stages, etc. A good graded wagon road for a distance of two miles connects the place with the city upon the hill. Shermantown, southward on the hill, presents the scene of greater bustle and activity than Hamilton—there being more building just now. Page's ten-stamp mill is located here, and there are also several smelting furnaces in progress—these latter for reducing the argentiferous galena, which is found in such abundance upon the hills adjacent. This branch of business will probably rank as one of the first importance in the district ultimately. Page's mill raised steam for the first time last Tuesday, and for a while made the hills re-echo the sound of its shrill and welcome whistle. Here are situated also two saw mills—those of Sanford Hall and A. H. Rutherford—both as busy as they can be kept in supplying building material at \$100 per thousand. The trees suitable for lumber are mostly fir, of good size, though upon the higher mountains in which they are located, grow many magnificent pines. Howell's mill, situated upon the same range of mountains, sixty miles south, also furnishes its medium of lumber for buildings of White Pine District. Shermantown is more abundantly supplied with fuel than either of its neighbors, excellent water is abundant; its citizens are fully as enterprising as those of the other towns, by which it is connected by good graded roads, and it, too, must become an important place in the district; a fine graded road also connects the place with the valley upon the west. Pack trains are now delivering ore at Page's mill from the Eberhardt and other mines, and soon, the stranger, as he approaches Shermantown will be greeted by the clattering stamps, and at Tom Luther's assay office and smelting works, now ready for business, can feast his eyes upon great piles of bright silver bars, produced from richer ore, with less labor, and more rapidly than at any other region in the world."

**Washoe.**—According to the Virginia *Enterprise*, October 2, the Sierra Nevada Company continues to work its ore at a cost of \$2 per ton. Says that paper: "We were yesterday shown a bar of gold from the mine of the Sierra Nevada Company, at the North end of the city. The bar contained \$2,118 47 in gold, and \$102 65 in silver—total, \$2,321 12. It is the product of 280 tons of ore, worked by the process common in California for gold quartz; that is, no amalgamation pans are used. The lot of 280 tons was run through the batteries in 7 days, being at the rate of 40 tons per day. The whole cost of working does not exceed \$2 per ton, whereas the yield per ton is nearly \$8, leaving a clear profit of \$240 per day for the mill. The ore crushed is taken from a sort

of basin upon the side of the hill. It is a deposit of broken quartz and dirt resting above the regular lead, and there is apparently an almost inexhaustible supply of the same in the hill, the deposit being some 60 feet in depth and of an unknown horizontal extent. Some of the jokers about town say that the reason this last clear-up paid better than former ones is because Mr. Apple, the Superintendent, put more pine stumps and sage brush through his batteries than before. It will be remembered that in early times a process was in use in this State for the working of silver ores that was known as the 'Sage Brush Process.' Perhaps Mr. Apple has taken an extension on the original process, adding pine stumps on account of some hidden virtue they may contain. Who knows but the whole of Cedar Hill may yet be run through the batteries of quartz mills built upon the same plan as that of the Sierra Nevada Company?..... The annual report of the Yellow Jacket Company shows that their total receipts for the fiscal year ending June 30, including a balance of \$116,087 on hand at the commencement, were \$1,240,585. Three assessments were collected during the year, amounting to \$390,000. The amount of bullion produced was \$676,861 from 24,719 tons of ore, showing an average yield of \$15 50. The disbursements for the year amounted to \$1,191,330, leaving a balance to the credit of the company over all liabilities of \$49,249. Only one dividend of \$90,000 was disbursed. The amount expended for labor at the mine was \$294,833, and for reduction of ores \$517,643, of which \$254,228 was paid to outside mills. The liabilities of the company were stated at \$56,823 and the assets at \$116,071, showing, as already remarked, a surplus of \$49,240. Included in the assets was \$104,724 cash in the Bank of California.

**Humboldt.**—Mr. Kelly informs the *Winnemucca Argonaut*, Oct. 1, that the new Golconda tunnel, now in seventy-five feet, south of the old shaft, has developed a four foot rich vein in mineral. Holt's mill is progressing, and will be finished some time this Fall. From the *Unionville Register*, Sept. 26, we learn as follows: "W. H. Davids, managing agent for the Seminole mine, owned in New York, commenced work yesterday on the company's mine above town. An agent of the company, who came out with Mr. Davids to examine and report on the property, was highly pleased with the prospects, and advised the company to push its tunnel in until the ledges are reached. The company has abundant means, and the work will now be prosecuted until the veins are out."... Also, that "The Monroe Series Mine, in Sierra District, has passed into new hands, and is now under the control of Mr. Smythe, as local managing agent. It is his intention, he says, to push work with renewed vigor. He has now several men employed taking out ore, which pays a handsome profit above the cost of milling and mining. The Monroe is one of the very best mines in the State, and we hope to see it, under the management of Mr. Smythe, worked up to a first class paying mine, as we have every confidence it will be."

**Bullion Shipments.**—Wells, Fargo & Co. from their Gold Hill office, shipped, during the month of September, bullion to the value of \$470,065 60. The amount shipped from the office of Wells, Fargo & Co., Silver City, during the month of September, was \$23,570. The amount of bullion shipped through Wells, Fargo & Co., from Austin, during the month of September last was \$289,638 74, weighing 18,338 pounds.... The amount of bullion shipped during September last, by John A. Paxton & Co., was \$144,357 02.... The Manhattan Company shipped during the month of September bullion to the amount of \$130,776 91.

**Colorado.**

The Central City *Register*, October 8, has the following on bullion shipments:—"The gold and silver shipments for the month of September, from this city, foot up larger than during any single month for several years. The shipments by express of gold and silver bullion foot up \$175,000, and there are the best of reasons for believing that at least \$25,000 more have gone by private hands from this and Clear Creek Counties, raising the total shipment of bullion for the month to \$200,000. To this is to be added fifty thousand dollars in silver ore which has been shipped from Georgetown, and the matte shipped by Prof. Hill, which will make the total product very little, if any, short of \$300,000, for the month, from Clear Creek and Gilpin Counties. This is a result highly satisfactory to everybody. If continued during the year, the gross sum of three millions and six hundred thousand dollars would be the aggregate."... Also the following items of mining news:—"There are ten stamp mills in operation in Nevada Gulch. At the head of the Gulch is the Beverly Mill, of eight stamps, and an eight or ten-horse power engine. The mill looks somewhat antiquated, but is vigorous yet. Just above this, Mr. Beverly is erecting a new mill, 30x40, for twelve stamps. Both of these mills will be able to run during the winter. Below these is the Clayton Mill, which commenced operations about two weeks ago, having been idle since '64 till that time. It contains nine stamps, an eight-horse power engine, and crushes about three quarters of a cord of ore per day. The next is the Quartz Hill Mill of twelve stamps and three Bertola pans, with an engine equal to six or eight horses as motive power. The stamps drop about thirty times per minute, and there is an abundant supply of water to keep them running all winter. Across the Gulch from the above is the Whitcomb Mill, containing twelve stamps and an engine of fifteen-horse power. Below the Clayton is a large building, called the Waterman Mill, in one part of which are twelve stamps, driven by a twelve-horse power engine. In another part of the building there is an engine of sixty-horse power, for driving other machinery, which is now idle. A little below this is the Philadelphia Mill, a large stone building, with twenty-five stamps and a double engine of eight-horse power. The stamps in this mill are large, and drop about twenty times per minute. These mills are under the superintendance of Mr. Waterman, but have not water enough to run during the winter. The Ophir Mill contains twenty-four stamps, and a thirty-horse power engine. It will be able to run nearly all winter. Below this is the Gilpin County Mill, with eighteen stamps and a twenty-five horse-power engine. It has not a sufficient supply of water to enable it to run during the winter. The last one visited was the La Crosse Mill, just below the Gilpin County, which has twelve stamps, driven by a fifteen-horse power engine. Near Mr. Churches', at the foot of the Gulch, is another mill in operation, which will be noticed at some future time. In the nine mills spoken of, there are about one hundred and thirty stamps running, crushing, on an average, about eleven cords of ore per day.... Wm. M. Lynn has leased, for a short time, the Foot & Simmons Lode, on Gregory Hill. He is down some two hundred and sixty feet, and has taken out some thirty cords of fine-looking ore, which yields, under stamps, \$150 per cord. Mr. Lynn has also leased and is working the Bates & Baxter claims on the Bates Lode. He has run a drift about one hundred and fifty feet below the surface, in ground that was passed over by the company as worthless, in which he has a pay vein two feet in width, that yields, under stamps, \$300 per cord. He has about fifteen cords of ore out at the shaft, waiting reduction."... The *Herald*, October 8, has the following news from Nevada District:—"Mr. B. C. Waterman has some very fine specimens of gold-bearing quartz, which were recently taken from one of the claims which he is working on the Flack Lode. After having been in the cap-rock for a distance of some

50 feet, the indications are that the crevice will soon open out into good pay. He is running his own mill—12 stamps—and 12 stamps of the Philadelphia Colorado Co.'s Mill on ore from the above mentioned lode. . . . John Beverly has his new mill building enclosed, and will have it in shape for running by the first of the coming month. . . . The Stoner Mill—12 stamps—has been started up, after having lain idle for a length of time, on surface ore from a lode on Quartz Hill. . . . The Ophir Company's Mill, formerly the 'P. D. Casey,' is kept in motion on ore from the Barron Lode, which lode, by-the-by, is now affording more than an average quality of ore. . . . Mr. Conlee is running the Mansur Mill on ore from the Barron Lode, which he is working on the east end of the lode. . . . Mr. Whitecomb's mill has all the custom work it can do, and more too. . . . Mr. McLanghlin has a fine show for a fat steak on the Illinois Extension; is having his quartz run in the Whitcomb Mill. . . . It is rumored that the Commonwealth Company's property, on the Prize Lode, is to be more fully developed shortly. . . . The Georgetown Miner says that "Mr. Remine is erecting a 20-stamp mill on North Clear Creek, which will be supplied with ore from the Pierce. He has a good water power, and will be able to greatly increase the profits of mining when this mill is completed. . . . The Nuckolls Lode is undergoing active development. Messrs. Scott, Packard & Moore are working the east half, and the Washington Mining Association are driving a tunnel to cut the west half. The east shaft is now a hundred and seven feet deep, well timbered, and a ladder-way partitioned off from the east end. They are now drifting and stopping west. The drift has only been driven about twenty feet, and is in a good body of ore, from 24 to 36 inches in width. There is no vein of solid mineral, it being disseminated throughout the gangue. Greater depth will in all probability develop a solid mineral vein free from gangue. A fan blower has just been erected for the purpose of clearing the drift from the smoke caused by blasting. A good shaft house containing conveniences for sharpening tools has been erected. The mine is producing three tons of ore per week, only one shaft being employed. . . . Hnepeden, Wolters & Co. are now engaged in excavating for the foundation of another chloridizing cylinder, which will make their works double their present capacity. . . . The shaft on the Munsell Lode, situated on Leavenworth Mountain, is just coming into mineral again. The last 15 feet passed through has been barren. . . . At the Brown Company's works they have commenced smelting ore from the Brown Lode."

**Montana.**

A correspondent who signs himself "N," gives the Post an interesting item concerning the new silver smelting furnace which recently commenced operations at Jefferson. He says: "Mr. Holloure, well known throughout the country as the person who erected and worked the smelter at Argenta with so much skill and profit, was, some time since, induced by the Messrs. Rutan to come and examine some of the quartz ledges in this vicinity. The result was that he felt assured that they surpassed in every respect those in the Rattlesnake District, and found several lodes so well developed that he is confident of their durability. He at once attached himself to the Rutan Mining Company. This Company, without pecuniary means, but with unlimited faith and a strong determination to accomplish their object, resolved to build a smelter without loss of time or regard to impediments. Some three weeks ago they completed the smelter and cupel furnaces. After some days' delay for coal, they began testing its efficiency, and this is the veritable statement given, viz.: from seven tons of ore they procured by smelting and cupelling, some sixty-five pounds of silver, mixed with some gold. This we are positive is no humbug, as all their work has been done openly, and without that mysterious ostentation which often characterizes quartz operations. We feel then that we have good reason to congratulate them on their triumph. For their enterprise in the development of this region they are deserving of great credit. May they find an inexhaustible fortune in the famous Alta Bank lode. There are other lodes in close proximity to the one mentioned, with quartz so like it in appearance that the distinction can scarcely be marked. Upon these other ledges we hope soon to see other smelters at work; at least we are inclined to believe no better field could be entered for active mining than Colorado District. . . . Mr. Alfred Metcalf, just from Diamond, reports that the claim in which he is interested in Confederate Gulch in one week yielded the enormous sum of twenty thousand dollars in gold, five thousand of which was obtained in one day. The ground above Diamond is paying well, and that camp still retains its reputation of being the best in the country. . . . From Mr. Ingersoll we learn that Henderson Gulch is still yielding good pay to all who are working in it. He also says that Harvey Creek, situated eighteen miles above Emmetsburg, shows signs of better days. Two bed-rock flumes are in course of construction. . . . Several fine silver ledges are said to have been discovered on Boulder Creek, a tributary of Flint Creek, by Messrs. Brown, Chisholm and Wabas. Cabins have been erected in the vicinity of these discoveries, and the parties named propose to work on the new mines during the winter. . . . A shaft has been sunk to bed-rock in Confederate Gulch, about 800 feet below the head of King & Gillette's flume, and prospects of 25 and 80 cts. to the pan obtained. It is thought that the ground will pay \$20 per day to the hand. A water-wheel and pump are at present brought into requisition for the purpose of keeping it clear of water. . . . During the month of September, Messrs. F. Bohm & Co. smelted \$196,695 45 of gold dust, all of which was transformed into beautiful gold bars, and sent East, to be coined. . . . For the day and a half ending Oct. 1st, noon, Messrs. F. Bohm & Co. smelted \$21,640 worth of gold dust. This was run into three bars and shipped East. . . . Among the recent arrivals in New York from Montana, we notice L. H. Hurshfield, the banker; Cole Sanders, part owner of the Poor Man's Joy Mine; E. E. Walker, and W. A. C. Ryan.

**Oregon.**

Our news from this State, taken altogether, has never been more hopeful. True, we have a rather dispiriting account of the Stein's Mountain "Mines," but the cheering news from Marysville, Bohemia and Little Pine Creek afford ample compensation for this bit of distasteful intelligence. Writing from Caouon City, a correspondent of the Dalles Mountaineer, August 23, says:—"Within the past few days several of our prospecting parties have returned, and from their downcast looks it is quite evident that success did not crown their efforts; and the rich gold fields that lay around Stein's Mountain faded from their view, and nothing was to be found but vast sage plains. They all join in pronouncing Stein's Mountain a humbug. From Malheur nothing definite is yet known. The reports are so conflicting that it is impossible to arrive at anything conclusive, yet it is believed good diggings exist in that locality. Rumor says that rich diggings has been struck on Selvage and Crooked Rivers. The new mines recently struck on Little Pine Creek are creating a sensation. At Marysville there has been some very profitable runs made this season, which is quite encouraging. Mr. Hare & Co. cleaned up after seven days' run—working but 11 men—near \$12,000; Thompson & Co. have also been quite successful. . . . The Roseburg Ensign says:—"Jesse N. Barker has presented us with the first

silver brick taken from the Bohemian Mine. It is a nice specimen of pure shining silver, taken from quartz first roasted, then crushed and separated from the rock with quicksilver. The yield, in accordance with this assay, would be \$1,600 to the ton, and is easily gathered and saved. There is no doubt now but that Bohemia is one of the richest districts yet discovered on this coast. We were also shown by him some fine lumps of gold from the same rock."

**Arizona.**

Mining news to the 5th ult. is cheering. According to the Prescott Miner: "At Wickenburg, the mills are turning out plenty of gold, and preparations were being made for the erection of a new 20-stamp mill. The new pans recently set up in the Vulture Mining Co.'s 20-stamp mill were working sulphurets with good satisfaction. The Vulture was yielding plenty of first-class ore, and were it not for Indians and ague, Wickenburg would be as happy as it is prosperous. . . . In Yuma, Mohave, and Pima Counties, the miners are busy at work, and a prosperous season is anticipated. . . . Judge Fowler and Mr. Bradshaw, returned from Black Canyon, report that they left some ten or eleven men on the creek, who were preparing to go to work. The party was lucky enough to find a lot of slince-boxes left there over a year ago. They had prospected and located several bars, which they thought would pay well. The pack-train that carried their tools, provisions, etc., has also returned, so that they will not be bothered with watching animals, and need not fear the Indians. . . . Work is going on in Walker's, Big-Bug, and Hassayampa mining districts. . . . Mr. Solomon Shoupe, of the Excelsior Hydraulic Mining Company, Lower Lynx Creek, reports that the claim pays first-rate, three men having taken out nearly \$300 in one week recently. . . . As soon as Mr. Borgen arrives from San Francisco he will commence on the Sterling. He has shipped a supply of chemicals and other necessary articles for working the ore by chlorination."

**Virginia.**

In Smith County it is stated by the Lynchburg Virginian that an extremely rich plaster hed has been discovered. It says:—"The main hed is situated in what is called the 'Cove' (on Cove Creek, a branch of the north fork of Holston River), about twenty miles north of Wytheville, and fourteen miles east of Saltville, the present terminus of the branch of the Virginia and Tennessee Railroad. The route from thence to the Cove is up the valley of the Holston, a most favorable line for a railroad—the grades would be about fifteen feet to the mile—descending with the export tonnage. The quality of this plaster is superior to any now known on this continent. Such as have had a fair opportunity of testing it with the Nova Scotia, fix their relative value at fifty to one hundred per cent. in favor of the Virginia—that is to say, one ton of the Virginia is equal to one and a half to two of the Nova Scotia. In quantity it is enormous—it underlies hundreds of acres in a compact body. A well, or shaft, ten feet in diameter, has been sunk at one point. Within four feet from the surface plaster was reached, and continued (with the exception of a few diminutive seams of clay) for the depth of five hundred and eighty-two feet, and operations suspended without reaching the bottom of the vein or deposit, so continuous was the plaster—no water came in—the plaster continuing of a uniform superior quality throughout."

**Utah.**

Through a correspondent of a Nevada paper, we have later encouraging news from the mines in Brigham Canon. Says the writer:—"Times are improving here very much, although there are not so many miners here as there were a few months since; yet those that are here have good claims, and know how to work, and, consequently, are taking out considerable gold. One person, who is working just above Spencer & Co.'s claim, took out, last week, nearly \$500. He has four men employed, and is working a drift claim."

**Dacotah.**

Later news from Sweetwater Mines is more encouraging still. A little mill there is doing splendid work. A Salt Lake paper, of September 1, has the following account:—"Cozer, Roberts & Co.'s Mill, at Sweetwater, made another clean-up yesterday. One hundred and eighty tons of rock from the Miners' Delight Ledge were crushed, realizing \$13,000, being over \$120 per ton. The first lot of rock crushed yielded a very fair quantity of gold, but this last lot caps the climax."

**Mexico.**

A correspondent of the San Francisco Times, in a lengthy letter describing the State of Sinaloa, mentions the mines of the District of Fuerte. The following extracts will undoubtedly be read with interest:—"The State of Sinaloa is divided into nine 'Districts.' Fuerte is the most northern of the nine, and extends across the State from the sea to the State line of Chihuahua, and with an average width of about forty miles. Its line of coast being from the bay of Agiabampo to Point or Cape San Ignacio, and includes the harbors of Agiabampo, Ahome and Topolobampo. It is the largest, and without doubt, one of the most fertile districts of the State, having a large proportion of good, arable land on both sides of the Fuerte River, which runs through the center of the district from the mountains to the sea, and it is from this district, principally, that the supplies of corn, beans, paoche, (unrefined Mexican sugar, resembling maple sugar in taste, color and granulation) and beef, used in the rich mining districts of Batopilas, Urique, Teracahu, Gnasapares and Bahnerachi are taken, as well also as the Mescal—a distilled liquor from the Maguery or Agave plant, and which is made here in abundance. The principal town in this district is Fuerte, or more properly La Villa del Fuerte, situated on the left bank of the river of this name, about eighty miles from its mouth, and about the same distance from the eastern boundary of the district. This is a rather regularly laid out town, and contains a population of about two thousand souls, who, although surrounded by Indian tribes, are principally or in fact wholly *de raxon*, or not Indians. It is the county seat or *Cabeceira*, where resides the Prefect, an officer unknown to our system of government, but as every Californian knows what his rank is, I will not describe it here. Here, also, is the judicial head, a Judge of first instance holding Court. Then there is a Mining Court here, *Tribunal de Mineria*. As from Fuerte to the coast, and also through the State south, the country is almost perfectly level, the roads are good and communication easy. There being good roads, there is quite a lively business carried on at this place, as may be supposed, as it is the commercial head for the twelve Indian towns down the river, and for the mining towns in the State of Chihuahua. The merchants buy at Mazatlan or Guaymas, principally at the former port, and ship to Topolobampo, eighty miles distant, thence by mules or the above mentioned cars to their stores. Chois, the second town in the district, is about forty miles northeast from Fuerte, on the left branch of the Fuerte River. It is a pretty little town of some eight hundred inhabitants, situated on a small table, about one hundred feet above the level of the surrounding extensive valley. This town, being still nearer the mining dis-

tricts, also has considerable trade, and the farmers in the vicinity get ready sales for their produce. The river that flows at their feet contains gold; many people work on its banks and bars during the dry season, who make by their rude, primitive process of working from fifty cents to one dollar per day. In this vicinity are the mining districts principally. At Rosario, Tora Nacimiento, Tasayera, Cajcencito, Puerto and Platanos, are silver mines, which are at present being worked by the natives, not very extensively to be sure, but enough to pay the proprietors, who have a working capital of from ten to five hundred dollars. On the road to the rich silver district of Batopilas, and but forty miles from Chois, is the celebrated copper mine of Bahnerachi, in Chihuahua, formerly owned and worked by Jacker & Co., of French-intervention notoriety, but now owned by Messrs. Nega & Buena of Fuerte, who are taking out considerable ore at present. The only other silver mine in the district is that at or near Silbirizoa, twenty-two miles from Terte, down the river. This mine is owned and worked by a San Francisco company, and although it was yielding good ores when last heard from, it does not appear to be extensively worked. This mine, if half as rich as reported, should pay well, for being in the midst of a fertile valley, grain and all edibles are very cheap, compared to the prices in mountainous mining districts generally, while labor, too, is quite cheap, and hands to be had in abundance. There is a town being built near the mouth of the river called "Higuera." A company of Americans have just purchased the land about the Bay of Topolobampo, and are making arrangements for the establishment of a port of entry if possible—a way port at least for the present."

**New Mexico.**

The Mazatlan correspondent of the San Francisco Times, says:—"The mines are in a little better condition than a few months ago. Several miners are doing well in this State. I speak of foreign miners—the Mexican miners almost always do well. The Tayo, at Rosario, is probably the best at present; the Cosala S. M. Co., at Cosala, is doing well; and the Alcarau, at Copala, and the mines at S. Dimas and Ventanas very well. These are silver mines. There are no gold mines in this State yet known, that would pay to work. Those that have been worked at Cohorbatito, Arapahoe, Metates, Aloys, and Cosala, proved very well on the surface, but worthless at a very little depth."

**Canada.**

The news from Madoc is again depressing. The Belleville correspondent of the Toronto Monetary Times writes, under date Oct. 12:—"The confidence which was beginning to be partially reestablished in our gold region, has suffered another severe shock in the failure of the Anglo-Saxon mill. After six weeks' work, with thirty stamps, three pans and thirty Wyckhoff oscillators, the quantity of gold collected amounted to a mere trifle, while a loss of over 600 lbs. of mercury was sustained. This denouement has all along been predicted by most of our practical men, who have constantly averred that the company had no indications of the existence of a mineral vein in the locality where they chose to erect their works, and from the cursory examination I had the opportunity of making, I must say that I quite concur in that opinion. How the managers happened so far to be misled, I cannot explain, but no doubt they must have had some "hig" assays to induce them to spend their money so freely as they have done. The effect of these disappointments is, that the opinion is rapidly spreading among our mining men, that the amalgamating process will not answer for the successful treatment of the ores of this region—that the gold is not in a form in which it can be collected by the use of mercury, and that some other method must be applied in order to get a remunerative return from our mines. It is also currently reported that the actual result of the crushing lately done at the Caldwell (Severn) mill was only \$8 per ton, instead of \$19, as given out, and that the latter figures were taken from a calculation as to what the return would have been if the work had been done upon clean veinstone, instead of a mixture of wall rock and other dead matter with the gangue, of which the auriferous quartz constituted only one-third. The Fiegel mine, from which the above return was obtained, is now under an injunction, a suit in chancery having been entered on the subject of title. The Richardson Company have raised money to set their works in motion again, and are about to make another trial as to whether they can recover their best lode. The Merchant's Union Company have had a meeting, and have determined to make some additions to their machinery, and to give their ore a practical trial. Messrs. Jones & Robbins are pressing forward their reduction works to completion. When finished, we shall have a fair trial of the effect of the much-talked-of Stevens flux. Much doubt is expressed by the initiated in mining matters as to the result, both practically and financially, but the gentlemen principally interested are quite confident in the efficiency of the material, as well as the quantity of gold contained in the ores they are about to work, which are chiefly of the pyritic class. I sincerely hope they may be right, and that the spirit they have shown may be suitably rewarded. If this process fails, there is only one other which can be brought into operation with any hope of success, and that is Chlorination, which has not yet been tried here, but which, if used in connection with good concentrating machinery, and an efficient desulphurizing apparatus, such as Whelpley & Storer's water-furnace, may yet enable our miners to remunerate themselves for their labor and outlay in developing the mineral riches which exist in the rocks of the district; from the mills, as at present constructed and worked, we have little to hope."

**COPPER.**

**Michigan.**

A Boston Stock Circular thus summarizes by months the products, in mineral, of the various Lake Superior Copper Mines for the present year, from January to August:

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.
Calumet. . . . . Tons.	97	155	184	128	189	—	—	—
Copper Falls. . . . .	67	80	73	101	69	69	—	68
Evergreen Bluff. . . . .	7	11	19	24	28	19	22	26
Franklin. . . . .	88	92	92	92	80	75	75	88
Hancock. . . . .	24	31	31	32	23	20	—	—
Hecla. . . . .	—	—	—	—	810 3/4	183	204	—
Huron. . . . .	—	—	—	—	—	—	—	100
Iskwitawit. . . . .	—	—	—	—	15	17	17	16
National. . . . .	22	22	24	28	41	39	27	31
Ogima. . . . .	12	13	17	17	13	8	—	10
Pewabic. . . . .	50	56	58	60	67	65	67	60
Pittsburgh and Boston. . . . .	58	80	115	129	100	81	74	80
Quincy. . . . .	61	68	70	70	66	62	48	—
South Pewabic. . . . .	70	78	86	91	85	110	112	101

**COAL AND IRON.**

**Illinois.**

**IRON-MAKING COALS OF ILLINOIS.**

The Chicago Tribune, Oct. 6th, makes the following report on the Chester and Chicago Branch Junction Railroad Company, in connection with the development of the Chester Coal fields in

Southern Illinois. It says: "The coals of Northern Illinois, it is well known, contain a large amount of water, ash and sulphuret of iron, which unfit them for iron making, where a strong concentrated heat is required, and where sulphur would act injuriously on the products of the furnace. Recent explorations in Southern Illinois show that we have there a seam of coal which has all the strength and purity of the Brier Hill and Ormsby coals, and the determination of this fact will lead to the creation sooner or later of an immense manufacturing industry in that region. The county of Randolph is surrounded on the west by the Mississippi River. Lying outside of the great lines of communication, little is known of its resources; but it is one of the best counties in the State. Originally settled by Scotch-Irish, they have, in the course of forty years, surrounded themselves with well-tilled farms and substantial farm-houses, and altogether the region shows an air of thrift indicative of an old and prosperous community. The choicest brands of flour are manufactured here, and are contracted for in advance, by the dealers, for family use, in Boston, Hartford and New York. The whole country, except a belt about twelve miles in length skirting the river, is underlaid by the coal measures, and a vertical range of 119 feet. There are three beds, respectively about seven feet, four feet, and six feet in thickness, making nineteen feet of workable coal. The first seam, according to the report of Colonel Foster, lies about thirty feet below the surface, and is covered by a firm and durable limestone roof. The thickness of the seam, as measured by him, is seven feet five inches, and is made up of five distinct layers, divided by thin partings of shale, and each layer has distinctive characters. Two of the layers (one and four) give upwards of sixty-two per cent. of fixed carbon, and less than four per cent. of ash, which is pure white, thus showing the absence of sulphur. The whole thickness of these two layers, which are iron making, is thirty-eight inches. The second layer, twelve inches, contains forty per cent. of volatile combustible matter, and less than two per cent. of ash, and affords a gas coal superior to Pittsburgh coal. All of these layers yield a firm, compact coal, which will bear long transportation, which does not crack in handling, nor slake on exposure to the weather. The third and fifth layers have a combined thickness of thirty-two inches, and give an average of seven per cent. of ash, which is white. While they are not sufficiently rich in fixed carbon to make iron, they are well fitted for steam and household use. With such excellences in the first seam, it has not been deemed necessary to explore the second and third seams. To develop this coal field and make its products available, it is necessary to construct a railroad, thirteen and one-half miles in length. The route is perfectly feasible and the grades do not exceed sixteen feet to the mile. With this road constructed, it is estimated that there will be a daily demand in supplying steamboats, and Southern and St. Louis markets, of not less than 2,000 tons a day. To effect a union between these coals and the Iron Mountain ores of Missouri would involve a railroad transportation of sixty-three miles, and a river transportation of fifty miles, costing, say \$1 75 a ton. To effect a union between the iron ores of Lake Superior and the coals of the Mahoning Valley, involves a railroad transportation of 151 miles, and lake transportation of 600 miles, costing, say \$6 75 a ton, making a difference of about \$5 per ton. Besides, regarding Western Pennsylvania and Northern Ohio as the competing points, the products turned out from this region would be a thousand miles nearer the Southern and Western markets, which would be equivalent to an additional \$5 per ton. No one can examine these natural resources without arriving at the conclusion that soon the banks of the Mississippi, in Randolph County, must become the seat of a dense manufacturing population."

## Michigan.

FEAT FOR IRON SMELTING.

The Marquette Mining Journal, Oct. 3, says: "The Lake Superior Company having resolved to test the properties of peat for the reduction of iron ore, has purchased one of Leavitt's machines, and is making all necessary arrangements for putting it in operation. The works are located a short distance west of Ishpeming, where a yard is cleared off, buildings erected, and the necessary roads constructed. The machine is now on the ground, and we learn that it is the purpose of the company to erect a small furnace in which to test the peat after it has been prepared. The works are under the immediate supervision of B. M. Peirce, a gentleman of great scientific attainments, who has made the peat question a special study. We sincerely hope the experiment may prove successful."

## New Mexico.

THE SURVEY OF THE NORTHERN BOUNDARY—DISCOVERY OF RICH IRON MINES—PECULIARITY OF THE REGION.

The Commissioner of the General Land Office has received advice from United States Astronomer Darling, designated by the Secretary of the Interior to determine the survey and mark the northern boundary of New Mexico, stating that the party had reached the Rio Grande, one hundred and forty-eight miles west of the initial point, on the 6th ult. The eastern part of the line passes over a region of country which has never been traversed by white men. It was generally supposed that it was a beautiful rolling prairie. Col. Darling represents the first twenty miles of the line west of the initial point as a rolling plain, covered with a luxuriant growth of nutritious grass, but destitute of wood or water. The next fifty miles of the line is over an exceedingly rugged region. The general character of the country is comparatively level, but it is intersected by numerous canons, with almost perpendicular walls, in some instances twelve hundred feet high. Deposits of iron occur in great abundance over all this distance, and was sufficient to cause a change of twenty-six degrees in the magnetic needle in going the distance of a quarter of a mile. The Cimarron River, which the party had occasion to traverse for over one hundred and fifty miles, is almost dry during the summer season, the water standing only in stagnant pools. The valley of that stream is from one-half to five miles wide, and will become a most valuable agricultural region, while the uplands are clothed in a fine growth of good grass, and will become valuable as grazing lands. Approaching the head waters of the Cimarron River, water becomes more plentiful. For six weeks the party were compelled to supply themselves with water from pools formed in the ledges of rocks, collected by rains; but in coming near the Raton Mountains, an abundant supply of pure cold water was found in the small mountain streams, which resemble those in Pennsylvania. The line crosses the summit of the snowy range of the Raton Mountains 125 miles west of the initial point. The party crossed the summit August 30th, and it was then covered with snow. The line passes through the town of La Costilla, leaving the greater portion in New Mexico. It is a Mexican town—constructed of adobe, or dried, unburnt clay blocks, about three times the size of common brick—and contains some 1,000 inhabitants. It is situated on the eastern border of San Louis Valley, watered by the Rio Grande and its tributaries, one of the finest agricultural and grazing districts in the United States. This valley contains a large number of settlers, who engage in agriculture to a limited extent, but are chiefly interested in raising sheep and cattle, a branch of industry which proves highly remunerative, from the fact that stock graze

in the valleys throughout the year, and require no feeding. Notwithstanding the reputed hostility of the Indians in that quarter, the party was not molested beyond being compelled to divide supplies with a war party of Kiowas. The astronomer has pursued his labors with energy, and expects to complete his work by the middle of November. The whole length of the line is 320 miles.

## OIL.

### Austria.

ANOTHER OIL CREEK IN EUROPE.

The New York World says:—"By the foreign accounts we are told of newly-discovered sources of mineral oil in Europe, which are being worked to a large extent. The latest and most important found are in Galicia. In the Western part of this province, it is said, petroleum abounds, principally in the mountains enclosed by Limanowa, Neusandee, Grybow, Cleskowiec, Gorlice, and Sbuszyce. The superficial area covered by the basins discovered probably amounts to about 50,000 acres. The soil is represented to be so impregnated with the oil that it frequently issues in the form of small springs, and it is only necessary to bore a few feet below the surface soil to reach an ample deposit. Sufficient importance has been attached to the discovery to induce the employment of several American geologists and engineers for scientific investigations, and, according to the accounts received from these parties, the little stream known as the Dunajec is in a fair way to become the Oil Creek of Europe. The authorities who have examined the article produced and the country, consider that the petroleum found in Eastern Galicia is like that obtained in Canada, and that the article found in Western Galicia is almost identical with that found in Pennsylvania. It is stated that in the latter section there are sources which, for purity and abundance of yield, are not equalled by the wells of any portion of this country; and that if they are intelligently and enterprisingly worked they will open the way to magnificent fortunes. The matter appears to be exciting much interest and activity in commercial as well as scientific circles, and under the stimulus it is quite certain that whatever sources may exist there will be promptly developed, and their real extent become known. Petroleum has become so important to Europe in a multitude of ways, that any prospect of a supply from her own soil will receive proper attention. It remains to be seen how far the production of oil there is destined to affect the trade of the United States. That the article abounds there, and of good quality, it would be idle to doubt, in presence of the information sent here by entirely competent and trustworthy persons, regularly commissioned to look into the matter. But the extent to which it exists is not shown, nor even satisfactorily estimated, and everything, excepting alone the fact of oozing oil having been found in a few spots, is entirely too indefinite in character to be worth anything at the present moment. During the whole year 1866 the total quantity of Gallician petroleum brought to market only reached 268 tons. It may be said that this was the product attained under the disadvantages of commencement, and of crude appliances for working the wells; but let the fact be contrasted with the product of a like starting period in this country, and what inferences are to be fairly drawn from the comparison but that petroleum inexhaustibly abounds here, and that Galicia enjoys but a limited supply, which must be reached only by patient labor. We see no good reason to apprehend any interference with our export at present. With the single exception of the Rangan wells on the banks of the Irawaddy, in the Burman empire, there is really no region that produces petroleum to any great extent but our own. And the yield attained by these wells has been reported at 600,000 barrels in one year, of which all that are not taken up for home consumption are sold to the Price Candle Company, of London, which corporation holds the exclusive right of purchase of all petroleum shipped from the country. Oil is known to exist in many parts of the world, but the question is, can it be obtained and sent to the general market? There are very respectable deposits in Japan and in China. Also in the mountains of Zarka, in Tartary, and in the entire region about the Caspian Sea, as well as along the Tigris, on which river the oil has been known to flow and float in large quantities. The Assyrians took oil from the wells of Is, on the Euphrates, to cement the stones in building Babylon. These wells flowed then and flow now and will flow in *omne volubilis ævum*. Their fame in the days of the ancients attracted Alexander the Great and the Emperors Trajan and Julian to the spot. British capitalists have been drawn to the shores of the Azof and Black Seas, and a petroleum company from this city has carried skilled workmen from Oil Creek into Peru. But out of all the numerous oil localities known, there is not one that stands the smallest chance of successfully competing with us in controlling the markets, for reasons of a commercial character; not one that possesses the facilities for turning out 2,500,000 barrels a year as we do, and sending to foreign shores a yearly average of 30,000,000 gallons, or 800,000 barrels, placing to our credit abroad a sum varying from \$15,000,000 to \$20,000,000 a year. Until very definite information to the contrary is received, we shall place Galicia in the same category with the many other places that have put forth a claim as abundant producers of petroleum. That section, like Canada, will probably want all that it can produce for its own use, and it may find it necessary to import a small balance. The production of the United States is worth \$50,000,000 a year. Let any other country approach that, and it will then be time to believe our own interest is in danger."

## Scientific Meetings.

### POLYTECHNIC BRANCH OF THE AMERICAN INSTITUTE.

ARTIFICIAL TEETH—TESTING STEAM ENGINES.

The regular weekly meeting of the Polytechnic Branch of the American Institute was held on Thursday evening, Oct. 22, Professor TILLMAN in the chair. The first invention to which the attention of the Association was called, was specimens of Artificial Teeth exhibited by Dr. A. PRETERRE, the well known dentist of 159 Bowery. Two plates were handed around for exhibition, one of which was made of Aluminum, cast in molds, and the other was made of a preparation of Collodion, prepared in thin sheets, and then shaped into the required form by heat and dried under pressure. This plate was subjected by the Doctor to severe usage, with no apparent injury, such as throwing it upon the floor and across the room, etc. Much admiration of this plate was expressed by experts and others, and a long debate ensued about the defects of old plates, and the injurious effects of the hard rubber plates in the mouths of some persons. Dr. Rich remarked

that rubber was going out of use, and that the gold plate was being employed.

Mr. C. E. EMERY then took the stand and read a paper upon "The Best Modes of Testing the Power and Economy of Steam Engines." The chairman, Prof. TILLMAN, explained that Mr. EMERY had been engaged for a long time with the United States Commission, and in this paper had united his own experience with theirs. The extent to which the mechanical interests is expanding in this country made the subject of economy in steam power a very important one. The systems in use at present were not as perfect as they might be made. The present indicator is most deceitful and unreliable, and Mr. EMERY illustrated by a diagram a plan of applying a pencil to the engine, whereby the irregularities of its motion and the consequent loss of power might be indicated on an attached piece of paper. It showed very perfectly whether the valves were adjusted properly and often, when applied to an engine working improperly, would reveal the difficulty and suggest the remedy; but it failed to actually determine the power of the engine in certain circumstances. No allowance was made for the weight and friction. Until recently it was supposed these inaccuracies were too small to attract consideration. The ordinary indicator cannot be depended upon to accurately measure the power of high speed engines, working expansively. A good dynamometer was the only instrument that could be depended upon to accurately measure the useful work which an engine was capable of performing. Still the best of this kind had many disadvantages for every day practical use. In the matter of direct economy in fuel, oil and attention, the steam engine was very defective. Some of the defects were inherent and could be pointed out, but not remedied without changing the general principles of construction. The majority of the practical loss had never been satisfactorily explained. The paper, whose contents were illustrated by diagrams on the blackboard, was full of practical suggestions for the remedy of the defects alluded to, and created deep interest for those who listened to it.

A vote was taken to renew the discussion at a future meeting, and at a late hour the Association adjourned for one week.

### Improvement in the Manufacture of Zinc.

A. G. Hunter, of Flint, Wales, has recently, according to a contemporary, patented some improvements in the manufacture of zinc. The process is thus described: "The zinc ores, after having been subjected to the usual preliminary treatment, are intimately mixed with the usual quantity of carbonaceous matter, and placed on the hearth of a reverberatory furnace, in which the mixture is acted on directly by the heat and flame from the fire. In order to effect the reduction of the zinc from its ore, care must be taken to prevent the presence of any free oxygen in the flame, or heated gases passing over the zinc ore mixture. This may be accomplished either by keeping a thick mass of burning fuel in the fire-place, or by introducing carbonic oxide, carburets of hydrogen, or hydrogen gas, or other deoxidizing agent, at the fire bridge, so as to be mixed with the flame from the fire before it reaches the zinc ore mixture, care being taken to prevent the admission of air at any other part of the furnace except through the grate bars of the fire-place, which must be well filled with fuel while the zinc ore mixture is under treatment. By the reducing action of the heated gases and flame, and of the carbonaceous matter mixed with the ore, the zinc the ore contains is liberated in a metallic state, and distills off as a vapor, mixed with the heated gases and flame from the fire. The zinc vapor is condensed to metal by causing the heated gases, flame, and zinc vapor, previous to their reaching the chimney, to pass through a pipe or condenser surrounded with water, which cools the gases sufficiently to allow the zinc to deposit. In this pipe or condenser, suitable recesses or cesspools are provided to receive the melted zinc as deposited, from which it may be run off into molds; also suitable openings, through which the pipe may be cleaned out. Either a stationary or a revolving reverberatory furnace may be used to heat the zinc ores in, and the condenser may be either vertical or horizontal, or both alternately, and the sizes of the furnace and condenser may be varied, to suit the amount of work required to be done. The inventor has found a furnace hearth eight feet square, and a condenser twenty inches in diameter and sixty feet long, a convenient size; but these proportions may be varied."

### A Compound for Separating Manurial Matter from Sewage Water.

The large amount of wealth which our great cities annually throw away through their sewers has been a subject of consideration to economists for a long time, especially since Liebig called particular attention to it. In China, the inhabitants of towns and cities are compelled to send their fecal matter to the country, and restore to soil what had previously been drawn from it. The great difficulty has been to separate the solid from the fluid matter, as the sewage matter of towns in its ordinary state is worth only four or five cents per ton. Messrs. Sillar & Wigner have recently patented in England a compound, the purpose of which is to separate the solid manurial matter from the sewage water. It consists of animal charcoal, blood, clay, alum, and some other materials. By means of this compound the solid matter may be precipitated in a flocculent mass, which, being dried, will serve as an excellent manure.

### The "Hissometer."

One of the most peculiar arrangements in connection with gas has been christened the "hissometer." By driving gas under pressure through a long but fine burner, a very slender flame some two feet high is obtained. This is sensitive to the slightest sharp or sibilant sound, even at long distances. Jingle a bunch of keys at the other end of a long room, and the flame will dodge as if shot, lowering to only eight or ten inches in height. If you stand near and talk to it, it will remain perfectly quiet till you pronounce S, when down it goes. As yet, it is an unexplained curiosity.

MARKET REVIEW.

FRIDAY EVENING, OCT. 23, 1868. Gold and Silver Stocks.—The animation in the Mining Stock Market noticed for a few weeks past, still continues.

Table with columns: Bid, Asked, Bid, Asked. Lists various gold and silver stocks such as Klipp & Buell Gold, American Flag, Bates & Baxter Gold, etc.

Copper Stocks.—Prices continue with but little change. The principal stocks being quoted: Davidson \$67.70; Flint Steel Iron, \$1.75; Minnesota, \$2.00; and Mendota, \$1.75.

Petroleum Stocks.—Sales of Buchanan Farm are reported at 48c, and of United States at \$2.25. Prices are quoted:

Table with columns: Bid, Asked, Bid, Asked. Lists petroleum products like Bennehoff Run, Brevoort, Buchanan Farm, etc.

Miscellaneous Stocks.—Wallkill Lead is quoted at 11@14; Del. & H. Co., 130; Western Union Tel., 36; Quicksilver Mining Co., 24; Pacific Mail, 123; Wells-Fargo Express, 30; Adams Express, 50; N. Y. Central R. R., 123; Erie, 47; Hudson R. R., 136; Reading, 93; Mich. S. & N. L., 57; Cleve. & Pitts., 58; C. & N. W., 91; Milwaukie & St. Paul, 104; Tol. W. & W., 64; Chi. & Al., 155; Chicago & Alt. Prof., 156; Ohio & M. R. R., 31; Lake Shore R. R., 100; New Jer. Cen. R. R., 124; Ft. W. & C., 115; Toledo W. & W. Prof., 78.

Government Stocks.—The market for Governments is steady at the following quotations:

Table with columns: U. S. 6s, 1861, coupon, U. S. 5-20s, 1862, coupon, U. S. 5-20s, 1864, coupon, U. S. 5-20s, 1865, coupon, U. S. 5-20s, 1868, coupon.

Foreign Exchange.—Foreign Exchange, though quiet is firm, the leading drawers generally asking 1/2 per cent. advance. We quote:

Table with columns: Lon. (pr. hks.), sight, London, prime coin, Paris (bankers'), long, Paris (bankers'), short, Antwerp.

Gold.—Gold is weak, the price ranging from 135 1/2 to 135 3/4. Cash gold loans are made from "flat" to 1/2 per cent. per annum.

Petroleum.—The market for crude is inactive, but prices are well sustained; 300 bbls. sold at 12 1/2c, and 1,000 bbls. at 12c.

Table with columns: Amount, Price. Lists petroleum products like Cowing, Johnston & Co., Geo. D. Arthur & Co., etc.

Copper is very dull, and the business is small, with sales of 400,000 lbs. Detroit, Baltimore and Portage Lake, at 23@23 1/2c.

Zinc.—French Zinc, Metallic, is 5 1/2c, gold. American Zinc, 12 1/2c, currency.

Tin.—The continued rising tendency of the European markets has at last induced purchases here. Sales, 3,500 slabs, Straits, in Boston, to arrive, at 27 1/2c, 1,500 here at 27 1/2c. It is now quoted at 25c. Banca, 17c. English, 25c, all gold.

Spelter is in small stock but dull. Silesian 60@60 1/2c. Gold. Lehigh is steady at 11c, currency.

Lead is steady, with decreasing stock. Ordinary foreign, \$6.40@6.40 1/2c, gold. Sales have been made of 150 tons Common German, 150 do. Spanish, here, and 50 do., to arrive, all at \$6.42, and 50 do., in lots, \$6.50, gold. Bar, 10 1/2c. Sheet and pipe, 12c, less 6 per cent. to the Trade, and Tin-lined Pipe, 18c, net cash.

Plaster Paris.—We note sales of 350 tons White Nova Scotia Lump, at \$4.75, cash.

Regulus Antimony.—We note further sales of 5 casks at 14 1/2c, gold.

THE IRON TRADE.

There has been no movement in American iron since our last weeks report. No. 1 iron remains very quiet, and with extra scarcely remains very firm in price. We have no sales of importance to note. Forge irons remain quiet with but little inquiry. Sales at Allentown has been made for December viz. at \$42.

Bar is quiet but firm at our quotations. American Refined is held at \$92 50 currency from manufacturers' hands. Common sheet is in small supply, the Pittsburgh makers being sold ahead—some parcels have been sold here to go to Philadelphia, which is an uncommon occurrence.

The demand for iron is moderate, but prices remain about the same. Small sales at \$42@45 per ton, for Garttscherrie and other brands. Scotch and American Pig averages from \$40@45 per ton as to quality. In Bar Iron there is no change, with moderate sales; and for Russian Sheet Iron the market is quiet, and prices are nominally 18@14c per lb., gold.

Imports of Pig Iron from January 1 to October 17, 1868:

Table with columns: From, Tons, Total. Lists iron imports from Great Britain, Lehigh Valley Iron Trade, etc.

Imports of Foreign Iron and Steel at New York. For the week ending Oct. 23.

Table with columns: Railroad iron, Hoop, Sheet, Pig, etc. Lists foreign iron and steel imports.

Market Prices. NEW YORK, Oct. 23, 1868. 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 1/4c. per lb.; pig, 9/8 per ton, polished sheet, 3c. per lb. Payable in gold.

Table with columns: Bar, Eng. and Am., rfd., White and Mottled, etc. Lists market prices for various iron and steel products.

The Commercial says: The market since our last was firm, with a fair demand for the various descriptions. The stock on hand is not large. Prices remain about the same as last week.

Table with columns: 250 tons Coke, 90 tons Foundry, 110 tons Mottled, etc. Lists Alleghany Coke prices.

Table with columns: 150 tons Gray Forge, 100 tons Medium Gray Forge, etc. Lists Anthracite prices.

Table with columns: 50 tons No 1 Foundry, 16 tons Cold Blast, etc. Lists Charcoal prices.

Table with columns: 25 tons, 50 tons No 1 Foundry, etc. Lists Blooms prices.

Table with columns: Hanging Rock H. B. Mill, Hanging Rock H. B. Foundry, etc. Lists Lehigh Valley Iron prices.

MANUFACTURED.—There is a fair trade, though the advanced rates are not fully maintained.

Table with columns: Buffalo Union, A. 1., Buffalo Union, B. 1., etc. Lists Lehigh Valley Iron prices.

Table with columns: Bars, Welsh, in London, Bars, Welsh, to arrive, Nail Rods, etc. Lists London Iron prices.

Table with columns: Pig, f o b in Tyne or Tees, Pig, Nos 3, 4, f o b in Tyne or Tees, etc. Lists iron prices from Tyne or Tees.

IRON.—The orders given out for rails, says the Mining Journal, have had the effect of imparting a firm tone to the market, and enabling ironmasters to command increased rates.

LONDON WEEKLY METAL REPORT. Nos. 1 and 2 East India Avenue, Leadenhall Street London, E. C., October 23, 1868.

The Metal Market has been quiet during the past week, but prices are well maintained.

COPPER.—Market quiet, but steady. India Sheets, £78; Tough, £73 to £74; Burma, £70. 10s.; Wallaroo, £78. 10s. to £79; Chill, sales of Urmetta Bars to arrive at £67; good brands, £67. 10s.

TIN.—The whole of the 90,800 Slabs Bar offered by public sale in Amsterdam, on the 30th ultimo, found ready buyers at 54 1/2, equal to £24. 10, laid down here. Telegraphic messages have since informed us of an advance to 55 1/2, buyers, equal to £26 here. A good business has been done in Straits from £28 to £24, at which the market closed with firmness.

LEAD.—Market quiet, but firm; good soft English, £18. 15s.; L. B., £19 to £19. 2s. 6d.

SPELTER.—A small business has been done, the best prices paid £20. 9s. 6d. for spot; outport Spelter not wanted; Common Brands, £20; Specials, £20. 10s.; V. and S. quite nominal, £19. 15s.

THE COAL TRADE.

NEW YORK, October 23, 1868. No change has been experienced in the state of the markets since last week, and our expression then of "Brisks and bars" is still applicable.

We learn that Messrs. Guiterman, Beddall & Co have taken leases on the Lykens Valley, the 80 ft. Buck Mountain, and other south side veins adjoining the town of Helfenstein, and commenced work vigorously for large shipments next season.

We observe that the Lehigh Valley Railroad Company have acquired, by purchase, the coal lands of the Locust Mountain Coal and Iron Company, the coal lands of the Coal Ridge Company, and one half the coal lands of the Trevelton Company.

The following will show the exports of coal from the port of New York for the week ending October 20, and for the season to that date, also the amount exported last year for the same period:

Table with columns: Do. from January 1, Do. same time last year. Lists coal exports from New York.

English Cannel has been in fair demand at \$17@18 per ton for large and small lots. In Picton and Sidney there have been Cargo sales at \$5.50 per ton.

There is rather more doing, and prices are well maintained.

The following table exhibits the amount of Coal that was passed over the various routes of transportation from the Pennsylvania Coal districts for the week ending Oct. 17, 1868, and for the season to that date.

Table with columns: COMPANIES, WEEK, TOTAL, WEEK, TOTAL, WEEK, YEAR. Lists coal transportation data.

Schuykill Coal Trade. BY RAILROAD AND CANAL, FOR WEEK ENDING, OCT. 16, 1868.

Table with columns: St. Clair, Port Carbon, etc. Lists Schuykill Coal Trade data.

Lehigh and Susquehanna Railroad. Report of Coal shipped for week ending Oct. 17, 1868.

Table with columns: WYOMING REGION, Newport Coal Co., Albright, Roberts & Co., etc. Lists Lehigh and Susquehanna Railroad data.

Table listing coal shipments from various regions including Wyoming, Upper Lehigh, and Hazleton, with columns for shipper, quantity, and price.

Report of Coal Transported over Lehigh Valley Railroad

Table showing coal transport statistics for the week ending October 17, 1868, and previously this season, categorized by where shipped from.

Lehigh Canal Coal Trade

Table detailing coal trade statistics for the Lehigh Canal, including tonnage and value for various regions.

Cumberland Coal Trade

Table listing coal trade statistics for the Cumberland region, including shipper names and quantities.

Prices of Coal by the Cargo

Table providing prices for various types of coal (e.g., Schuylkill, Lehigh, W.A. Lump) and special coals, including dealer quotations.

At Philadelphia, Oct. 23, 1868.

Table listing coal prices at Philadelphia, including items like Lehigh Lump and Broken Egg.

Scranton Coal at Elizabethport, Oct. 23, 1868.

Table listing coal prices at Elizabethport for Scranton coal, including Lump and Steamer.

Prices for Pittston Coal at Newburgh, Oct. 23, 1868.

Table listing coal prices at Newburgh for Pittston coal, including Lump and Steamer.

Lackawanna at Rondout, Oct. 23, 1868.

Table listing coal prices at Rondout for Lackawanna coal, including Lump and Steamer.

Lehigh Coal at Elizabethport, Oct. 23, 1868.

Table listing coal prices at Elizabethport for Lehigh coal, including Lump and Steamer.

Wilkesbarre Coal at Hoboken, Oct. 23, 1868.

Table listing coal prices at Hoboken for Wilkesbarre coal, including Lump and Steamer.

At Baltimore, Oct. 23, 1868.

Table listing coal prices at Baltimore, including Treavor R. A. and Wilkesbarre.

At Havre de Grace, Md.

Table listing coal prices at Havre de Grace, including Patapago River and Wilkesbarre.

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

Table listing coal prices at Georgetown and Alexandria, including George's Creek and Wilkesbarre.

Prices of Gas Coals

Table listing prices for gas coals, including Block House and Westmorland.

Prices of Foreign Coals

Table listing prices for foreign coals, including Liverpool Gas Caking and Liverpool House.

Coal Freights

Table listing coal freight rates, including Rates of Freight from Newburgh.

Freights on Coal Sea-borne from Port Richmond, Philadelphia.

Table listing sea-borne freight rates for coal from Port Richmond to various ports.

From Elizabethport and Port Johnson.

Table listing freight rates from Elizabethport and Port Johnson to various destinations.

Provincial Freights

Table listing provincial freight rates to New York and Boston.

Foreign Freights

Table listing foreign freight rates for various ports like Liverpool, Australia, and Vancouver.

Rates of Transportation to Tide Water.

Table listing rates of transportation to tide water, including Philadelphia and Reading Railroad.

To Elizabeth.

Table listing transportation rates to Elizabeth, including L. V. Railroad and Shipping Expenses.

To Port Johnson.

Table listing transportation rates to Port Johnson, including L. V. R.R. and Shipping Expenses.

To Hoboken.

Table listing transportation rates to Hoboken, including L. V. R.R. and Shipping Expenses.

To Philadelphia!

Table listing transportation rates to Philadelphia via canal, including From Schuylkill Haven.

To New York.

Table listing transportation rates to New York, including From Mauch Chunk to New Brunswick.

To New York via Morris Canal.

Table listing transportation rates to New York via the Morris Canal, including Lehigh Canal.

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

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

The Specie Market is thus quoted:

Table listing specie market quotations, including American Gold, Old Coinage, and various foreign currencies.

SAN FRANCISCO STOCK MARKET.

Table listing San Francisco stock market data, including a telegram from San Francisco dated Oct. 19.

Dividend—Kentuck, M. Co. \$20 in gold per share, payable 10th inst.

Assessment—Hale & Norcross, M. Co. \$10 in gold per share. Delinquent 14th November; delinquent sale 15th December.

Assessment—Belcher M. C. \$25 in gold per share. SAN FRANCISCO, Oct. 17, 1868.

Assessment—Hale & Norcross M. C. \$10 in gold per share. DELINQUENT—14th November, Delinquent sale 5th November.

The English papers contain interesting accounts of the ceremonies in honor of the coming age of the Marquis of Bute, and his entry upon the enjoyment of his vast possessions.

M. DeCandaine is the largest farmer in France. His farm in Touraine is valued at two million francs, and the income which he derives from it is considerably above five hundred thousand francs a year.

The amount of coal consumed by the South Jersey Glass Factories last year, which found its way to the works over the West Jersey Railroad, was twelve thousand tons.

A Reading, Pa., paper, says:—Quite an excitement has been created in Heidelberg township, Berks County, by a discovery of a vein of pure anthracite coal.

Prof. G. F. Brush, at the meeting of the National Academy of Science, held at Northampton, Mass., last week, read a paper on "A new Bore from the Mine Hill, Sussex Co., N. J."

# AMERICAN Journal of Mining.

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T. P. PEMBERTON is Corresponding and Traveling Editor.

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

Correspondents, exchanges and others addressing us should be extremely careful to write "JOURNAL OF MINING," instead of "MINING JOURNAL," and to give the number of our Box at the Post Office, which is 1690, to ensure safe carriage. Communications intended for publication should be plainly written, and on one side of the paper only.

NEW YORK, SATURDAY OCTOBER 24, 1868.

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## THE PACIFIC RAILROADS—HOW ARE THEY CONSTRUCTED?

"A shrewd observer once said to us, 'The active public of the Pacific Slope is divided into two classes—those who have 'got a good thing,' and those who haven't got it, but wish they had. These two classes are always at feud with each other.' Whatever truth there was in our friend's remark was equally applicable to the Atlantic Slope; and certainly it finds one confirming illustration in the history of the Pacific Railroads.

The opportunity to build a Pacific Railroad went a-begging for years. Nobody was sure it would pay, even with Governmental assistance. After the present bill was passed by Congress, the parties who undertook the enterprise were virtually unable to put it into active form. They could not sell bonds; they could not find responsible contractors who would undertake the unknown difficulties of the work—except at exorbitant prices. In fact, it seemed as if no amount of national aid and encouragement would ever bridge the weary plains from the Missouri to the Rocky Mountains, and the desolate wastes beyond. The croakers were as numerous as grasshoppers of a summer night. The road would never be built; it was a mere political trick, a catchword for the people, etc., etc. Even its warmest friends talked about ten years as the period required for its construction.

But men of energy and foresight, who saw there was money in it, took hold of the great work at both ends. The difficulties vanished, or were surmounted. The whole world looked on with admiration, and took new lessons in the art of doing things. By a well-contrived system of emulation, the two companies were stimulated into a sort of race; and while English journals were still saying, "The Americans are a fast people; but this laying two miles of track in a day is a little too big a story," the iron rails were shooting towards their central junction, like needles of ice over a freezing lake, at the rate of three, four, five, six miles in a day.

Now, those who were afraid to take up this enterprise have found out that it is a very profitable thing for those who did take it up. No doubt it is. We hope that every man of them will make a handsome fortune, as he deserves.

It is not often that men seek and find wealth in ways so thoroughly and permanently beneficial to the whole community. We have no sympathy with the outcry proceeding from demagogues, stock speculators and disappointed capitalists.

But the case would be widely different, if the railroad were being built in a shabby, temporary style, and the money of the people were being pocketed without any adequate return. We are in favor of the most severe inspection of the work as it proceeds. If the present sworn

commissioners—General BLAIR and the rest—are unreliable, then let new ones be appointed. The interest of the country should be fully protected. Meanwhile, however, the clamor of the opponents of the two companies, that the road, especially at the eastern end, is a flimsy, swindling affair, is not based on any careful examination or responsible opinion. Numerous respectable and competent men have declared (some of them on oath) that it is well built. Who has ever pledged his name to the contrary opinion? All that the croakers' aim is that their assertions are "notoriously true." We have a much better right to say, from personal experience, that they are notoriously false.

We rode over the whole line of both roads a month or two ago. The worst piece of track was on the Humboldt Valley, on the Central Pacific. The best was in the Sierra Nevada, on the same road. The Union Pacific strikes the traveler instantly as one of the smoothest roads in the country. This is probably due to three things. The ties are more numerous than those of most railways; the rails are united by the new fish-plate, instead of being loosely held by the old fashioned chair, and the road-bed, even where it has not yet been ballasted, is (at least in the summer season) very firm. The durability of pine ties is a matter of some uncertainty; but judging from the experience of the mines of Nevada, where pine is used for timbering, they will last a long time.

The road-bed of the Central Pacific is very good in the Sierra, of course. Tunnelling through granite has at least this advantage; it leaves a floor at which nobody can carp. So far as we could see, the Central Pacific people have taken no more pains with their grading than the others. The bad piece of road to which we alluded, was laid in a great hurry, and the section-men, whose business it was to follow along and complete it, had not yet got to that point. The Union Pacific seemed to do better work the first time, for we rode over a portion of its track not two days old, and found it as solid as the rest. But this is a difference of method merely. Comparing the completed tracks of both companies, we should not know which to prefer.

We thought the culverts of both companies, but especially those of the Central, too small. Mentioning this to a fellow-traveler, we received the reply that no one had ever observed the exact amount of water coming down the gorges in the time of rains; and, in his opinion, the appearances we observed were produced by a little water, working a great while. Any man who has seen the gulfs by the overland road, near Austin, produced by the melting of the snows of a single winter, or the channels cut by the Truckee and the Humboldt in their respective valleys, will appreciate the above remark. The culverts on the Central are of stone, and quite good enough, if they are large enough.

As we were riding over the Union road, we fell into conversation with one of those knowing people who delight in displaying their information. "It is an outrage, sir," said he; "the company gets \$48,000 per mile for this part of the road; and I would be willing, sir, to contract to build it for \$36,000!" Next morning, we handed our knowing companion a paper, containing the news that the company had just received \$32,000 per mile for that very part of the road; and he "subsided." People talk very smartly about what it costs to build a road, but they do not know much about it. The Union Pacific Company bridged the Missouri last winter at Omaha, to facilitate the crossing of material. The bridge cost them some \$30,000, and was carried away and totally lost (as they expected it to be) in the spring; yet the mere saving in handling of rails and other supplies paid the whole cost of it. High prices, high wages, long distances from base of supplies—these things mean money spent.

Next week we shall consider the prospects of the Pacific Railroad as a working road.

## THE TWIN RIVER COMPANY.

The announcement that the Twin River Company, by its Trustees, has formally gone into bankruptcy, is certainly a piece of astounding information. No one can be more surprised at it than we, who very recently visited the Twin River mine, and left it, after a careful examination, in the firm belief of the future success of the Company. It is true, we foresaw that the mill must be stopped, in order to secure (what the Company, with all its laudable endeavors never yet attained) adequate reserves of ore, and ground opened extensively in advance. But the Rigby Company at San Antonio, the Combination at Belmont, and every other enterprise in which, for the sake of encouraging stockholders, the premature production of bullion has been undertaken, found themselves sooner or later in the same position. The best mine in the world cannot supply a mill until it is fairly opened; nor can mining be carried on with true economy until the mine is so far ahead of the reduction works that it can be worked according to the rules of prudent engineering, free from the hampering necessity of supplying any day a certain quantity of ore. The

stoppage of a mill for such a cause may or may not be just ground for discouragement, according to the appearance of the mine.

It would lead us too far to discuss at present the reasons of our opinion concerning the Twin River Mine. Suffice it to say that the extraordinary hardness of the rock, the cross-course and "break" in the second and third levels, the temporary inability to supply the full capacity of the mill—all these put together do not justify the unmanly panic which seems to have seized the stockholders.

It is a repetition of the old, old story. Men pour out money like water when their imagination is touched by stories of fabulous wealth, which their reason should tell them are not trustworthy; and they will not listen to reason when fancy shrieks despair. The Twin River stock sold at par when nobody knew whether the mine would be permanently valuable or not. It goes begging at five cents on the dollar when the mine has produced three-quarters of a million, and there is ten times as much proof as there was in the beginning of the permanency of the vein.

This "bankrupt" company owes, we are told, some sixty thousand dollars, and its supplies on hand cost about the same amount! To pay the floating debt, and provide means for thoroughly opening the mine, while the mill stands idle, bonds for three hundred and twenty thousand dollars are authorized to be issued at fifty cents on the dollar. Parties taking the bonds receive therefore either fourteen per cent. on their capital, or the whole property for a hundred and sixty thousand dollars—this sum, moreover, going to develop the mine. It is virtually an offer to give the property away to any one who will buy the supplies on hand at cost, and put in the capital necessary to carry on the mining work until next summer.

We do not know which to regard with the greatest astonishment—the timidity shown in offering the bonds at such a rate, or the apparent disinclination of the stockholders to take them. They would be eagerly taken by outside parties but for two reasons. One is, that outside parties know very little about the mine, and have not had the offer distinctly made to them. The other is, that the spectacle of disgraceful demoralization presented by the company would naturally lead shrewd capitalists to wait, in the hope that, in the event of a forced sale in bankruptcy, the prize might fall still more cheaply into their hands.

We have no interest in the fortunes of the company, and look upon its present condition with some pity and much scorn. No doubt, if this state of things goes on to the threatened result, we shall be doomed to hear these men whining about the deceitfulness and unsoundness of mining as a business, when the truth is, that as long as mining is a speculation, they follow it with furious hope and zeal, but as soon as it really becomes a business, and they are called upon to make a safe investment for business reasons, they show nothing but pusillanimous despair.

The officers of the company are not wanting in confidence, but they fail to inspire it. We understand that they are ready to do their part hereafter as heretofore. The declaration of bankruptcy was merely made, it is said, *pro forma*, to gain time for future measures; and if the property is really to be sacrificed by the apathy of the stockholders, to put all creditors on one footing, and prevent sudden attachments in Nevada. This is all very well; but the mill of bankruptcy is one which grinds, though slowly, yet surely, and "exceeding small." Once put into that hopper, the grist must be speedily rescued, or it will come out only fit for dough. Let the Twin River stockholders smoothe their bristling polls, brace their rattling knees, and consider for once what it is that they are offered, in the purchase of bonds, and what it is that they are wildly throwing away.

## PETROLEUM IN EUROPE.

The New York World, of October 19, contains an editorial article on the subject of the petroleum springs of Galicia, which mistakenly considers these deposits to be a recent discovery. The readers of the AMERICAN JOURNAL OF MINING will find an account of the localities in Galicia and other Austrian provinces, where petroleum is obtained, in Vol. IV., p. 161, Sept. 14, 1867. We copy the World's article in our Mining Summary, but we think it a mistake to attribute either novelty or wide commercial importance to the Galician oil fields. In point of fact, the naphtha, mineral tar, mineral wax (*Erdwachs*) and petroleum of that province are not new discoveries, nor do they admit of deep wells at all. The whole production is obtained from shallow pits, in the slow, uncertain manner formerly so common at Enniskillen, in Canada. It was estimated in 1867 at 162,735 cwt. of oil, and 45,000 cwt. of mineral wax per annum, and the value of the product of thirty-six refineries (consisting of paraffine candles and cakes, naphtha, petroleum, benzine, asphaltum, solar oils, heavy oils and wagon-grease) is put in the report of the Lemberg Chamber of Commerce at about eight hundred and forty-six thousand dollars of our money (coin).

Neither do the Burman wells seriously compete with



America. We ship to Calcutta from this country all the petroleum consumed there. Probably our market for petroleum abroad is limited, not by other supplies of the same substance, but by the competition of other oils.

Petroleum did the country a good service at a critical period, and its career is not over yet. With improved lamps and greater care in refining and inspecting, the objections to its domestic use are disappearing.

ANSWERS TO CORRESPONDENTS.

T. H. P., Conn.—A pipe filled with water, having its upper end closed and its lower end open, and not more than 82 feet long, will retain the water, however large be its diameter, provided the lower opening is so contracted that it does not allow a stream of water to run out and bubbles of air to enter at the same time.

N., of Y., asks—"Is there any depth in the ocean in which an iron weight or bar will sink no further?" As a body cannot float except in a medium which is heavier than the body itself, and as water is, by the greatest power, only compressible to a very slight degree, and does not solidify by pressure, this common idea is entirely erroneous.

S. PEAK, N. Y., asks—"Can you inform me of the standing of the New York and Silver Peak Mining Company? Is it a rich district in which it is located, and is the company in operation yet?" This company is at present, we believe, developing its mines, situated in Palmetto District, some 20 miles from the scene of its first operations.

A. M. L., of MINN.—To find the amount of horse-power required to raise the water, reduce the amount to be raised every minute to pounds, multiply it by the height to which it is to be raised in feet, and divide the product by 33,000.

C. W. M., of N. Y.—To coat iron with zinc, dilute sulphuric acid and the scratch brush are insufficient, but hydrochloric acid is indispensable. The iron, plunged into this acid, only slightly diluted, and then into the melted zinc, takes the zinc coat very readily.

T. F. R., of Pa.—Eggs, when packed in salt in order to preserve them, as sometimes is done, acquire a disagreeable salt taste, and lose all their peculiar flavor. The better way is to put them in lime water, and leave them in it till used.

NEW PUBLICATIONS.

RECOLLECTIONS OF A BUSY LIFE—Including Reminiscences of American Politics and Politicians from the opening of the Missouri Contest to the Downfall of Slavery; to which are added Miscellanies, etc., by HORACE GREELLY. New York, J. B. Ford & Co., Printing House Square, 1868.

MR. GREELLY'S public career and personal characteristics are, perhaps, as well known to the people of this country as those of any other man in it. For many years he has been an active, prominent politician; and his record upon the questions which have arisen at successive periods of our national history has been clear and generally consistent, if not always wise.

noble!" and feels a righteous anger at the man (SEWARD, for instance, or RAYMOND, or WEBB, who could entertain resentment toward this gentle Christian sage; but there is often a little sting hidden even in the honeyed phrases of his compliment; and one rather mistrusts the lofty affectation of fair play.

Aside from this peculiarity, the book is a delightful one, interesting on every page to the young Americans, for whom it was especially intended. Who does not know how dry and dusty is the labor of extracting from files of newspapers or contemporary records that political history of the country which has not yet assumed its final form on the rolls of Clio?

MR. GREELLY'S opinions on tobacco, wine, Graham bread, vegetable diet, religions creeds, spirit-rappings, poetry—in fact, most things, outside, perhaps, of politics and farming, are shrewd but narrow. He arrives even at right conclusions by wrong methods, perpetually arguing from some petty experience of his own to broad general principles.

The reader will see that this style of reasoning on all subjects, while it may be sufficient to guide the action of the individual, does not qualify him to instruct others. For it shines through Mr. GREELLY'S translucent naïveté, that if his first cigar had not made him sick, if he had been expert at games and social recreations, if he had never chosen Sandy Hook as the place for a picnic, if he had had only the Bible and not the Greek Reader to give him ideas of the Divine character, all these personal opinions of his would have been directly the opposites of what they are.

Intensely individual and independent, judging the things which he does not understand as deviously as those which he thoroughly knows, swayed considerably by personal and partisan associations, MR. GREELLY is not a leader to be blindly followed; but his "Recollections" are to be read with respect for his undoubted virtues; and this much we can certainly say, even the errors of his judgment are not of the kind likely to injure the young.

ON ANILINE AND ITS DERIVATIONS.—A Treatise upon the Manufacture of Aniline and Aniline Colors, by M. REIMANN, P. D., L. A. M. To which is added, in an Appendix, "THE REPORT ON THE COLORING MATTER DERIVED FROM COAL TAR, SHOWN AT THE FRENCH EXHIBITION, 1867," by DR. A. W. HOFFMAN, F. R. S., and MM. G. DE LAIRE and CH. GIRARD. The whole Revised and Edited by WILLIAM CROOKES, F. R. S., etc. New York, JOHN WILEY & SON, 2 Clinton Hall, Astor Place, 1868.

Every dyer knows that the aniline colors are, and will continue to be, "the rage." It is not likely that they will ever be surpassed in brilliancy by any other products of the ingenuity and taste of man. Within the short period of ten years their manufacture has grown to immense proportions, and given rise to a special literature. But an art so new, and so rapidly advancing in every branch and detail, demands constantly the latest manuals and textbooks; and even if the work before us were not characterized by extraordinary ability, it might still plausibly claim to be the best in this field, because it is the newest.

Practical chemistry, as exemplified in chemical manufacture, must always be in advance of the science, because in practice so much attention and energy is brought to bear on one point to produce a given result. It is the function of an abstract scientific chemistry to investigate the progress made, and to correlate the new observations with those previously known. Practical chemistry can only advance by paying full regard to theory, and scientific chemistry can only progress by devoting proper attention to practice.

The value of the two treatises in the volume is enhanced by a complete index, and the whole is edited worthily by DR. CROOKES. The typography of the book betrays that, although it bears the name of a New York house, the sheets were printed in England. Every one acquainted with books will understand that they are decidedly none the worse for that!

Original Papers.

[FURNISHED THE AMERICAN JOURNAL OF MINING BY THE HON. HUGH McCULLOCH, SECRETARY OF THE TREASURY.]

OFFICIAL REPORT OF HON. J. ROSS SNOWDEN, UPON THE MINERAL RESOURCES OF COLORADO.—NO. I.

TREASURY DEPARTMENT, October 13, 1868.

EDITOR AMERICAN JOURNAL OF MINING:

I transmit herewith, as suggested by you, for publication in the JOURNAL OF MINING, that portion of the report made to this Department on the 18th ultimo, by HON. J. ROSS SNOWDEN, devoted to the mineral resources of Colorado.

H. McCULLOCH, Secretary of the Treasury.

SIR:—In pursuance of the suggestion contained in your letter of instructions, of June 17, 1868, I visited and examined the principal mining districts of the Territory of Colorado. Setting out from Denver, the commercial and political capital of the Territory, on the 14th of July, I visited Golden City, Black Hawk, Central City, Nevada, Idaho and Georgetown, and examined the mines and reducing works at and in the vicinity of these places.

Buckskin, Mosquito and other places, which I will hereafter notice. Within the region first named, and extending up one branch of Clear Creek to the Baker Mines, fourteen miles above Georgetown, are embraced the most valuable and productive mines of the Territory. The distance between the points named is about 57 miles.

GOLDEN CITY.

Golden City, at the foot hills of the Rocky Mountains, on the banks of Clear Creek, which traverses the whole region I have named, has no mines of gold and silver in its vicinity, but it is a point of great interest in view of its valuable mines of coal, iron, copper, galena, limestone, gypsum, fire-clay, &c. These minerals are of excellent quality, and can be abundantly produced.

CENTRAL CITY.

Next to Denver, this is the most prosperous and important place in the Territory. It is the centre of the gold-producing mines. It is surrounded on all sides by mines of great value, many lodes of which are now being extensively worked. This region, and, in fact, all Colorado, have experienced a back set, by reason of the formation of fancy companies established in the Eastern States, the capitals of which were generally expended in useless buildings and mills, and in other outlays unconnected with the opening and developing of the mines, or reducing the ores.

The following statement of shipments by the banks at Central City for the months of January and July, 1866, 1867 and 1868, will show the increased production of the precious metals in that vicinity:

Table with 2 columns: Year and Amount. 1866, January: \$50,000; 1866, July: 73,000; 1867, January: 99,500; 1867, July: 97,000; 1868, January: 112,000; 1868, July: 160,000.

It may be proper to remark that the surface ores, reduced by stamp mills and amalgamation, sometimes extend to 50 or 60 feet below the actual surface; beyond that depth, the oxidizing influence of the atmosphere and water do not penetrate; and here are found the sulphurets of iron and copper, equally rich in gold, and frequently much richer, but requiring a different and more elaborate process.

Messrs. NOBLE, GRAY & Co. are erecting near Central City smelting works to reduce the ore directly in reverberatory furnaces, without previous treatment. It is at present impracticable to estimate the effect on the production

of gold by their methods of reducing ores. I witnessed their experimental trials with a small furnace, which were successful. Whether it will be so on a larger working scale remains to be demonstrated. They are now constructing works to give it a fair trial.

I visited many of the lodes, namely: the Gregory, Briggs, Mammoth, Bobtail, Burroughs, Alps, Gardner, Illinois, Bates, German, and others. These lodes are being actively mined, with profitable results. The average width of the "pay ore" in most of these mines is about three feet. Some of the shafts are sunk to the depth of 500 feet. With the present means of reducing the ores, those of the second quality are chiefly worked, because these can be reduced by the ordinary stamp mills and by amalgamation. Many companies are cording up their first quality of ores, which are more difficult to reduce, for future operations. The second class ores yield from \$25 to \$60 per ton; the first class yields several hundred dollars per ton, dependent upon the combination of other metals with the gold and silver contained therein. Messrs. SMITH & PARMLEE are operating upon ores from the Gregory and Briggs' lodes; their mills run 25 stamps. They have produced, as shown by the books of the Superintendent, Mr. BELDEN, 15,208 ounces of gold, the coin value of which is about \$250,000. The average production per ton of the ore reduced at their mills is about \$30. The depth of one shaft in the Briggs' is 470 feet; another on the same is 400 feet. In the Gregory there are three shafts, two of 160 feet, and one of 100 feet. The Black Hawk Gold Mining Company are operating upon the Gregory Mines with 60 stamps, with profitable results. Their shafts are at the depth of 476 feet.

As a general thing, the mines become more regular and uniform as the depth increases, and there is less "bad ground," as the miners term it.

[TO BE CONTINUED.]

#### The New Road Steamer.

The London (Eng.) Railway News says: "The advantages of drawing loads on common roads by steam, instead of horse-power, are, under certain circumstances, so great that efforts have been frequently made during the past few years to produce a good and practical traction engine for this purpose. All these attempts have been to some extent frustrated by two difficulties, which until recently appeared almost insuperable. The difficulties consist in the facts—first, that the jar caused by a rough road is so injurious to the machinery and wheels of the engine, that they require continual repair and renewal; secondly, that if this evil be counterbalanced by making the locomotive of great size and weight, the injury to the road becomes proportionally great, and an objection of a very formidable nature thus becomes established. Until the beginning of this year it seemed as though the choice must lie between carts and horses on the one hand and the cost of constant repair of engines and roads on the other. But Mr. Thomson, a civil engineer of Edinburgh, Scotland, has at last succeeded in producing an engine which, to judge from the success which has already attended some very remarkable trials of it, promises a solution of the difficulties. Mr. Thomson was requested by some friends in the island of Java to obtain for them a road locomotive for the conveyance of sugar from some of the large estates to the port of Tonraba. The result of his inquiries after such an engine was not satisfactory. All those which he inspected appeared to fail in the important respects of durability and non-injury to the roads. The idea then occurred to him of fitting India rubber tires to the wheels of the engine, to overcome the jar and injury alike to the road and locomotive. The application was but the development of a principle which Mr. Tomson had already applied to the wheels of the platform trucks at railway stations with good results. The preliminary trials of the traction engine fitted with these tires were eminently successful. It was at once perceived that the machinery and road became by this simple device exempt from injury. The 'steamer' practically runs along on a self-laid tramway of India rubber. The Java engine was of three-horse power (nominal), but the bite of the wheels was so excellent, and their smoothness and ease of motion was so great, that it was found possible to take some liberties with the engine of a very curious nature. Among other things, it was made to cross a field of soft grass, to run through a field covered with loose earth to the depth of about two feet, to travel over beds of broken flint, and to drag a huge boiler, which weighed, with its truck, nearly thirteen tons, up an incline of one in twelve. These feats were accomplished with the greatest ease, the locomotive appearing to float along without any symptom of distress. The trials were continued for several weeks with uniform success, and in the end some other 'road steamers' were in course of construction.

"Two of these were recently tried, as we stated some time since, in Edinburgh and Leith. One of the engines is intended for carrying coals in Derbyshire over nine miles of road, with inclines of one in twelve; the other is designed for the transport of coffee in Ceylon. The former is of ten-horse power (nominal), weight eight tons, and has India rubber tires fifteen inches wide and five inches thick. It was built to draw weights of only fifteen tons, but the following are among its actual performances: It was run out to a colliery twelve miles from Edinburgh, drawing a train of four wagons, each weighing 2 tons 3-4 55 cwt. At the colliery each wagon received a load of five and one fourth tons of coal, so that the whole train (including the engine) weighed forty tons. With this load, the steamer—looking like some luggage train which had escaped from a station—traveled with perfect ease along a road having inclines of one in sixteen until it reached the city. There it threaded its way deftly and surely between the streams of omnibuses, cabs, carts, &c., which form the staple of the ordinary traffic, and which were more numerous than usual, in consequence of some games which were going on, and because it was a Saturday afternoon. The train sped its way satisfactorily along beds of broken flints, through barriers put up for road mending, down steep streets and round sharp corners, the train of ninety feet following the engine as surely and implicitly as the tail of a serpent follows its head. In some cases the curves were so sharp and close together that the train assumed the form of the letter S. Passing from Junction into Bonnington road, the angle was so acute that the train had to double back upon itself. Leith street has a steep and

crooked descent, down which the train passed with ease; and finally the train had to pass into a very narrow lane and enter the gates of the works where it was to deliver its coals. The whole performance was a very conclusive one as far as the tractive powers of the engine and the control of the train were concerned. There only remains to notice the remarkable way in which the India rubber tires pass over obstacles without injuring them—without even displacing them, and without injury to themselves. Thus, a potato and carrot, which were purposely laid in the paths of the engine, were passed over uncrushed; beds of loose flints were undisturbed; nor was any incision or permanent dent made in the tires by the sharpest stones. Professor Archer, in a paper which he read upon the subject before the British Association, aptly compares these tires to the cushioned feet of an elephant or camel, and it is probable that the tires would prove scarcely more destructible. The India rubber tires have been tried over roads slippery with frost and ice, and met with complete success. These engines promise to present some important applications. Seeing that they not only are not destructive of roads, but even independent of them, they may probably be usefully applied for agricultural purposes. And it is scarcely necessary to point out that they have some important military applications. A few of these engines working up the Col de Balaclava might have saved many lives in the Crimean winter of 1854, and the increased weight of siege-ordnance would now give to an engine of this sort an importance which it could not then have possessed."

### Special Notices.

#### Books and Progress.

If we wish to ascertain the progress of a nation, we can find no better index than in the character of its literature, and we see in the great demand in the United States for books relating to industrial subjects an evidence of the desire of our artisans and manufacturers to improve and excel in the quality, diversity, and extent of their products. So great is this demand that the publication of books relating to these subjects has become a speciality with more than one house in this country, and not a week, and indeed scarcely a day passes that a new book is not issued on some subject connected with practical science or the useful and ornamental arts. Mr. HENRY CAREY BAIRD, No. 406 Walnut street, Philadelphia, is the most prolific publisher of this class of books; and his publications are made with great judgment. His list of industrial publications is, with the exception of one or two on the continent of Europe, the largest in the world, embracing not only the works of the best American technological authors, but reprints of the best English and translations from the best French and German writers on chemistry, metallurgy, civil and mechanical engineering, architecture, fibrous and textile manufactures, dyeing, calico printing, perfumery, paper making, ornamental designing, and several of the minor arts. Mr. BAIRD'S advertisement will be found weekly, with frequent changes, in the AMERICAN JOURNAL OF MINING.

#### A Challenge from a Lady.

NEW YORK, October 20, 1868.

Messrs. Wheeler & Wilson, 625 Broadway.

GENTLEMEN: Referring to the challenge of Mr. Pratt, whose Wheeler & Wilson Sewing-machine, has been in use ten years without repairing, I beg to state that I have used my Wheeler & Wilson sewing machine, in family sewing, fourteen years, without even the most trifling repairs, and it is now in so good condition that I would not exchange it for your latest number (now upwards of 350,000.) One needle served me more than a year for fine sewing.

Can any one beat this?

Yours truly, MRS. ANNE WARNER.

Any one who can give a better report than this will be entitled to one of our new tucking gauges.

WHEELER & WILSON MANUFACTURING CO.

#### Mining Supplies, Etc.

We are glad to chronicle the continued success of Messrs. MOREY & SPERRY, manufacturers of all kinds of mining machinery. Their office, at 95 Liberty street, is already a sort of headquarters for those engaged in bona fide mining operations, while its atmosphere is refreshingly free from the odor of mere stock transactions. Machinery of the latter kind will be found in abundance at work in Wall street, but the products of Messrs. MOREY & SPERRY must be sought in the field, where they are pounding, grinding and amalgamating night and day, thus really adding to the wealth of the country. We understand that these gentlemen will soon enlarge their present business facilities by adding a store, for the exhibition and sale of their excellent mining supplies.

THE CENTRAL PACIFIC RAILROAD is now being carried forward with unprecedented energy, nearly 250 miles having been added during the current year, and the greater portion of the remainder is graded. The way business exceeds the present facilities of the Co. and the earnings already average more than quarter of a million in gold per month. A limited amount of the Company's First Mortgage Bonds (principle and interest in coin) will be disposed of at 102, and accrued interest in currency. Coupons payable July and January in New York city. For sale by banks, bankers, agents for the loan, and by

ISK & HATCH,

Bankers and Dealers in Government Securities,  
5 Nassan street, New York.

#### At Philadelphia.

We have appointed Mr. GEORGE E. CUMMINGS agent for all our publications in Philadelphia. His present address is corner of Fourth and Walnut streets, and friends of our papers will find him there ready to transact business on our account.

The attention of capitalists is directed to an advertisement in another column, calling for \$100,000 and a partner in the business of manufacturing of iron. We believe the advertiser's plans to be worthy of attention.

### Patent Claims.

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

82,876.—MACHINE FOR WORKING IRON.—Jacob Reese, Pittsburg, Pa. Ante-dated October 2, 1868:

I claim, 1st, The combination of a pair of reciprocating and compressing die-blocks (or jaws) with one or a pair of non-reciprocating compressing die-blocks (or cheek-plates) acting perpendicularly thereto and alternately therewith, substantially as described.

2d, An arrangement of mechanism for imparting to one or both of a pair of compressing die-blocks, a reciprocating movement simultaneously or alternately with a movement of approach toward or recession from each other, substantially as described.

3d, In combination with one or more compressing die-blocks, a pair of reciprocating and compressing die-blocks, the coating faces of which are, in their normal condition, more widely separated from one another at the point where the metal is introduced between them than at the point where the metal is extruded from between them, substantially as described.

4th, In combination with one or more compressing die-blocks, a pair of reciprocating compressing die-blocks, the coating surfaces of which, one or both, are curved substantially as described, for the purpose, in part, of permitting and aiding to produce a more or less retrograde or backward movement of the metal, while the same is being acted on alternately with the general forward movement of the same, substantially as hereinbefore set forth.

5th, In combination with a pair of reciprocating and compressing die-blocks, operating substantially in the manner described, an inclined feeding-trough for guiding and facilitating the forward movement of the bloom or puddle-balls, and between said die-blocks, substantially as herein described.

6th, As a whole, the improved machine consisting of the several parts, constructed and combined substantially as and for the purpose described.

83,091.—ELECTRICAL AMALGAMATOR.—Julio H. Rac, Syracuse, N. Y.:

I claim the drum, A, provided with a lining and with a beater, representing the two elements of a galvanic battery, said beater serving also to bring all the particles of the pulverized ore in intimate contact with the mercury, substantially as herein shown and described.

83,119.—MANUFACTURE OF IRON AND STEEL.—Richard Yelding, Detroit, Mich.:

I claim, 1st, the process of fusing and refining metal, and decarbonizing iron.

2d, The converting of iron into carbonized steel, and the use of the foregoing articles, in the manner and for the purposes herein set forth, and the general combination of the principles, and the use of the articles, combined and separately, and for the use of the oil alone, in the manner and for the purposes set forth in the foregoing specifications.

83,121.—PROCESS OF ROASTING AND CHLORIDIZING ORES.—Henry Tindall, Chicago, Ill.:

I claim the process of treating ores, substantially such as is above described.

83,122.—FURNACE FOR ROASTING AND CHLORIDIZING ORES.—Henry Tindall, Chicago, Ill.:

I claim, 1st, A furnace for treating ores, in which the operation of desulfurizing and chloridizing or chlorinating such ores is performed simultaneously with the roasting of the same, substantially in the manner described.

2d, The chamber, E, of the furnace, as composed of a metal bottom, with metal sides and roof, said bottom and sides being protected from the action of the sulphur, substantially as shown and described.

3d, The combination of the chamber, E, and the gas-generating apparatus, substantially as shown and described.

4th, The combination of the ore-supplying conduit and the chamber, E, substantially as shown and described.

5th, The arrangement of the sole or hearth with reference to the chute, F, substantially as shown and described.

6th, The arrangement of the walls or partitions, C, C', by which they are made to support the sole or hearth, substantially as shown and described.

7th, The arrangement of the car, H, with reference to the chute, F, and chamber, E, substantially as shown and described.

### On dit about Minerals, &c.

The Bethlehem, Pa., Times says:—"The Bethlehem Iron Company has not only added additional buildings to its old works, but is daily making other improvements by which its facilities and capacity are increased. They have now completed an arrangement by which property of the Northampton Iron Company falls into their possession. The consideration for the property was three thousand shares of the stock of the Bethlehem Iron Company. The stock is now quoted at about \$80 per share in the market, and the total consideration figures would therefore amount to about \$240,000. The works of the Northampton Iron Company are situated in South Bethlehem, below the Bethlehem Iron Company's works, and on the line of the Lehigh Valley R. R. The arrangement will go into effect immediately.

One of the most remarkable mines in California is that of Abergast & Nichols, located about one mile south from Rough and Ready, in Nevada County. The ledge is about six feet in thickness, and is encased in slate, the quartz being decomposed. The owners, when they want money, take a pan and go after the gold, and often pan out a thousand dollars in two hours. They are now about 50 feet down on the ledge, and it shows wonderfully rich all the way down. They refuse to sell the mine or any portion of it for any amount of money that can be offered. Their claim is 6,000 feet in extent. They have no machinery at the ledge, and do not seem to care to crush the rock.

The Ithaca (N. Y.) Journal, of the 23d inst., says the Executive Committee of the Board of Trustees of the Cornell University have completed the purchase of the Mineralogical Cabinet of Prof. Benj. Silliman, of Yale College, New Haven, which has long been considered one of the best in the country. Prof. Silliman speaks in regard to it as follows: "My collection has been formed almost exclusively by my own personal exertions, during more than twenty years of active experience as a collector in the field, and by the system of exchanges instituted from an early day with the most active collectors both in America and Europe."

A handsome California gold "nugget" is noticed by the San Francisco Bulletin. It was thickly veined, and nearly one-half covered with gold, and was found in the Lincoln tunnel, Butte county, about eleven hundred feet back in the drift, twenty-five hundred feet below the top of the hill, and eight hundred feet above the bed of the Big Butte Creek. It contained about five pounds of gold, worth eighteen dollars per ounce, and its value was about one thousand and eighty dollars.

A Chicago paper says:—"A magnificent specimen of dog tooth spar was exhibited on 'Change, taken from the Shuinan (Silver) Mines of Thunder Bay, on the northern shore of Lake Superior, and presented by Messrs. N. C. Norse and J. E. Withers, of the Mining Company, to the Chicago University. It is a rarity in size and beauty, and will, we doubt not, be highly prized by all connected with the institution chosen as the recipient.

### All Sorts.

A correspondent writes from Fairmont, Illinois, to the Chicago Tribune:—"Last Saturday some persons were cutting a ditch two miles southeast of this place, in the open prairie, two miles from timber, when they discovered the bones of an animal apparently much larger than those of an elephant. One leg bone that I saw was some seven or eight inches in diameter at the joint, and many others of a corresponding size; teeth five or six inches long, etc. The whole skeleton has not been examined yet, but a party is forming to make further explorations. These bones are found at a depth of about two and a half feet, in a common prairie slough. From the description of the bones taken out at Cobos, New York, I should say these are of the same class, or belonging to the same kind of an animal. I believe these are the only bones of the kind ever found in the State of Illinois."

It has long been contended that steel boilers never could be used, not being sufficiently tenacious. But this theory has been badly damaged by some recent experiments at Pittsburg, when a steel boiler has withstood the most pressure that could be brought to bear upon it. The boiler is made of two plates of No. 8 steel, 1 inch thick, 8 feet long, and is 8 feet in diameter. It has been subjected to several tests, the 10th trial giving it a pressure of 725 pounds to the square inch. Experiments on it continue, but up to this writing no pressure has been able to burst the boiler. It has stretched three inches since the tests commenced.

Wool is so cheap and old sheep so plentiful on the River Plate, South America, that many sheep are being "tried out" for grease. As they can be bought at from twenty-five cents to a dollar per head, it makes a very good business at the present time, yielding something like 100 per cent. profit. Though this is very pleasing to the speculator, it is a sorry part for the poor sheep farmer has to play in the affair, who, a few years ago, paid \$3 and \$4 a head for each animal. It is estimated that 500,000 are now killed per month.

COAL SHIPPERS.

The Westmoreland Coal Company OFFER THEIR SUPERIOR QUALITY OF BITUMINOUS COAL TO GAS COMPANIES, RAILROAD CORPORATIONS, And MANUFACTURERS of IRON AND STEEL.

More than two millions of tons of their Coal have been distributed through the New England and Middle States, and its character is established in the Market as having no superior in quality.

EDWARD C. BIDDLE, President. FRANCIS H. JACKSON, Sec. and Treas'r.

HECKSCHER, BOWNS & CO., NO 111 BROADWAY, (TRINITY BUILDING), ROOM 79, N. Y. CITY.

Anthracite and Bituminous Coal. Agents for the celebrated "HARTFORD ASSOCIATED COAL COMPANY'S COAL."

New Boston Coal Mining Company, Office, 55 Broadway, New York. BUCK MOUNTAIN COAL, Deliverable at Elizabethport and the Harbor of New York.

HONEY BROOK COAL COMPANY, Exclusive Miners and Shippers of the Celebrated HONEY BROOK LEHIGH COAL, No. 111 BROADWAY, NEW YORK.

RANDOLPH BROTHERS, SOLE AGENTS OF THE ORIGINAL SPRING MOUNTAIN LEHIGH COAL, Extensively Used for Smelting Iron.

THE DESPARD COAL COMPANY OFFER THEIR SUPERIOR DESPARD COAL To Gas Light Companies throughout the country. MINES IN HARRISON COUNTY, West Virginia.

COXE BROS & CO. Cross Creek Colliery, MINERS AND SHIPPERS of the Celebrated Cross Creek Free Burning Lehigh Red Ash Coal, FROM THE BUCK MOUNTAIN VEIN.

WILKESBARRE COAL, DELIVERED DIRECT FROM THE MINES OF The Wilkesbarre Coal and Iron Co., OR, FOR RESHIPMENT AT HOBOKEN AND JERSEY CITY.

CALDWELL, GORDON & CO., WHOLESALE DEALERS IN Anthracite and Bituminous Coal. HENRY HEIL'S CELEBRATED EAST FRANKLIN COAL, NO. 35 PINE STREET, NEW YORK.

COAL SHIPPERS.

C. B. Linderman & Co., MINERS, SUGAR LOAF, LEHIGH COAL.

OFFICE: 50 TRINITY BUILDING, may 23-ly 111 BROADWAY, N. Y.

SAMUEL BONNELL, JR., Offers for Sale his SUGAR CREEK AND HONEY BROOK Lehigh Coals, OFFICE—48 AND 45 "TRINITY BUILDING," 111 BROADWAY, N. Y.

DAY, HUDDALL & CO., MINERS AND SHIPPERS OF HARLEIGH LEHIGH COAL, And the Celebrated HICKORY, BROAD MOUNTAIN, EXCELSIOR, SHAMOKIN and NEW ENGLAND RED ASH.

WHITE, FOWLER & SNOW, Successors to JOHN WHITE & CO., Wilkesbarre and Lehigh Coal, FOR STEAM AND FAMILY USE. OFFICE, ROOM NO. 75, 111 BROADWAY, (Trinity Building.)

ENGLISH COAL AND CANNEL. DESPARD COAL, from Baltimore. PROVINCIAL COAL, ANTHRACITE COAL, For Sale in Lots to Suit. PARMELE BROS., AGENCY OF GEO. WRIGHT & CO., LIVERPOOL, Office, No. 32 Pine Street, New York.

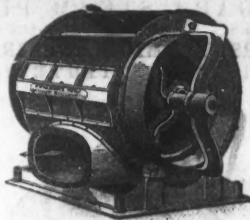
SLATE DEALERS. JOHN GALT. Wholesale Dealer in Roofing Slate. SOLE AGENT FOR THE EAGLE SLATE COMPANY OF VERMONT, Who produce Purple, Green, and Red ROOFING SLATE. Sole Agent for New York and the West for the CHAPMAN SLATE CO. OF PENNSYLVANIA.

HUDSON RIVER SLATE CO. 25 PARK ROW, NEW YORK. Supply from their Quarries Superior Blue Slate, IN Ashler Building fronts, Mantles and Mantle Stock, House-Tiles of all sizes, Slabs of any dimensions, Flaggng Tiles, of any large size, Hearths, of all sizes, Slate Dust, Plain Flaggng of any thickness, Billiard Beds, Sills and Lintels, Counters & Counter Tops, Sinks, Wainscoting and Paneling, Cementery Stock, Slabs for Marbleizing, of Slab Roofing, any size ordered, Curbing, plain and fancy.

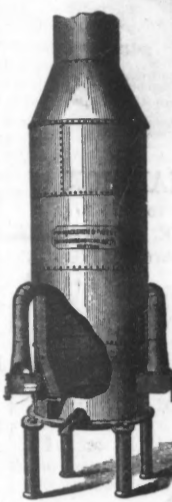
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ELEVEN GOLD MINES FOR SALE.—Address J. CLARK, Lock-Box 4, Lancaster, C. H., South Carolina. oct10-4t

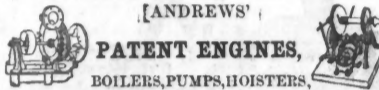
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HOISTING MACHINES, run without noise; speed changed or reversed instantaneously. ALL COMPACT, LIGHT and DURABLE. Address manufacturers, WM. D. ANDREWS & BRO., July 1-ly No. 414 Water street.

SOUTHARD, HOBSON & CO'S STONE DRILLING MACHINE. Portable, Durable and Cheap. Can be driven by hand, steam, or other power.

528 WATER STREET, New York City. The only machine for hand power that is perfectly simple and portable. Will never get out of order with common management. Will repay its cost several times over in one season, saving at least three-fourths of cost of drilling. je20-6m

STILLWELL'S HEATER & LIME CATCHER, is guaranteed to remove all scale or sediment of whatever kind from the worst feed water. Sea water can be fed to Boilers, through this Heater, and successfully used. Nearly 800 are in satisfactory operation, principally on Stationary Boilers at the West, but many on the Mississippi and Missouri Rivers. Scale is constantly rendering Boilers unsafe and causing explosion, reducing their efficiency and destroying their material. For Descriptive Pamphlets, prices and reference to parties using this Heater address JOHN B. ROOT, Agent for the Eastern States, Cuba, etc. Sept 53m 95 & 97 Liberty Street, New York.

IRON AND STEEL WIRE ROPE. MANUFACTURED BY JOHN A. ROEBLING, TRENTON, N. J. FOR INCLINED PLANES, MINING, STANDING SHIP RIGGING, SUSPENSION BRIDGES, FERRIES, STAYS AND GUYTS ON BRIDGES, CRANES & SHEARS, DERICKS, TILLERS, &C. A large stock of wire rope constantly on hand. Orders filled with despatch. For strength, size and cost see circular, which will be sent on application. nov34t

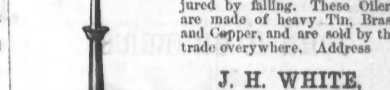
B. KREISCHER, New York Fire Brick AND STATEN ISLAND CLAY RETORT WORKS. ESTABLISHED, 1845. OFFICE, 58 GOERCK STREET, Corner Delaney Street, East River, NEW YORK. mar23-ly-q

MISCELLANEOUS.

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OLMSTEAD'S IMPROVED OILER. ALWAYS RIGHT SIDE UP. Warranted the most durable Oiler made. The spring cannot be "set" by use, or the Oiler injured by falling. These Oilers are made of heavy Tin, Brass and Copper, and are sold by the trade every where. Address J. H. WHITE, Newark, N. J., Manufacturer of SHEET and CAST METAL, small wares, Stationers' and Trunk makers, Hardware, NOTIONS, Patented Articles, &c., &c. Dies and Tools, Fancy Hardware, &c., made to order. July 1-ly



ATTENTION, Engineers, Miners, Quarrymen. LAMSON'S Patent Stone Channelling Machine, for quarrying Marble, Slate, Grindstone, Sandstone, and other rocks; does the work of 75 to 100 men per day; can be seen in the quarries at Rutland, Vt., or at the Company's works. CASE'S Patent Diamond Rock Drill; is pointed with diamonds; is adjusted and operated by one man; bores in any direction, or under water; bores in Marble 3 inches, in Granite 5 inches, in Quartz 8 inches, in Tale 6 inches per minute. One drill-head has bored over 2,000 feet without repair, and is still perfect. Address THE WINDSOR MFG CO., Windsor, Vt. Arrangements made for manufacturing any new Patent Machines. ap18-6m

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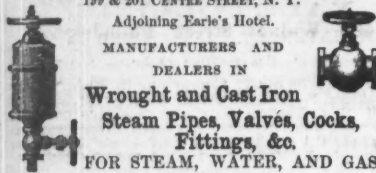
MOTIVE POWER. THE Greatest Hand-Power Machine which is in existence, and can be used wherever power is needed. H. Hasenpflug's Gig and Circular Saw Combined, will cut wood from 1 to 4 in. thick, and 1 in. as fast as by steam. The Gig Saw of the above Machine will cut scrolls and wagon felloes any thickness, with the greatest facility. Price for complete Machine, \$165. The Machine, with only circular saw, will cost only \$135. The movement can be applied to any other machine where power is needed. Price \$50. For further particulars, apply to HASENPLUG BROTHERS, No. 94 Bowery, and at the E. I. Braiding Machine Co., Sept 26 Cove street, Providence, R. I.

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Will examine and report upon mines, furnish working plans, or practically direct smelting or amalgamation. Can furnish the highest references. Would not object to go to Mexico or South America. Address, by letter or telegraph, W. S. KEYES, M. E., Helena, M. T. jy25:3m

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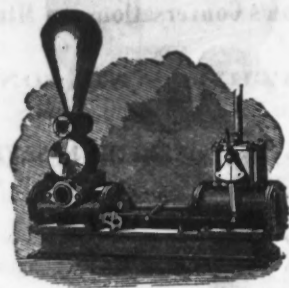
CHARLES SCHENCK, a resident of Pah-Ranagat Silver Mining District, and County Surveyor of Lincoln county, Nevada, begs leave to inform the mining public that he is able and ready to give true and valuable information about mining property in this District. Address CHARLES SCHENCK, M. E., Hiko, Pahranagat District, Nevada. References—Wm. A. Smith, Esq., 35 and 37 Nassau St. Prof. Harper, New York, etc. oct12:

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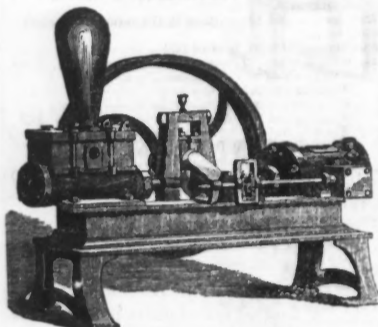


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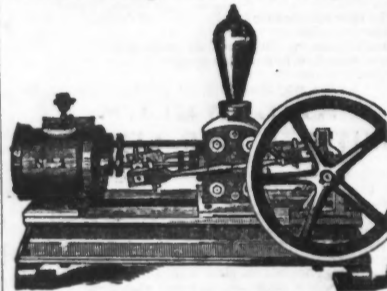
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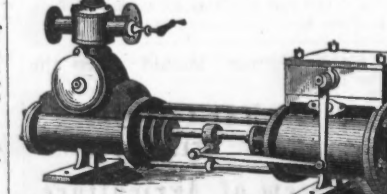
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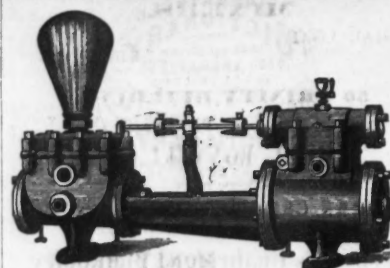


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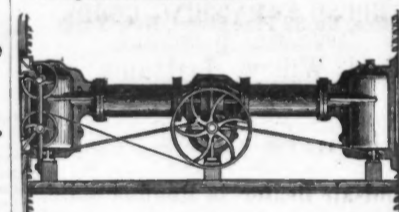
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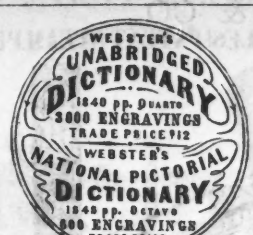
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 How to find the weight of  
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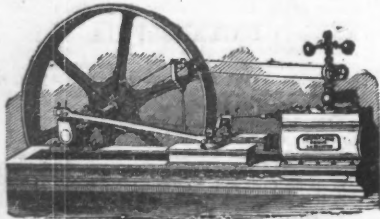
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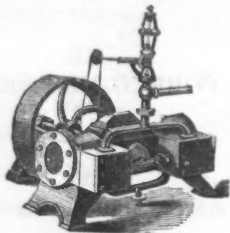
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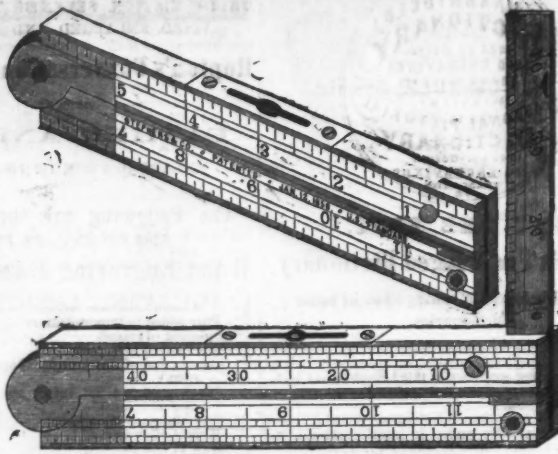
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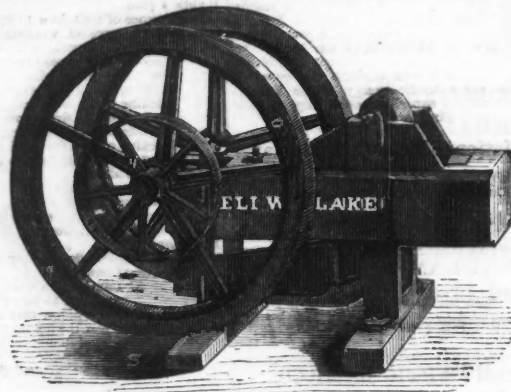
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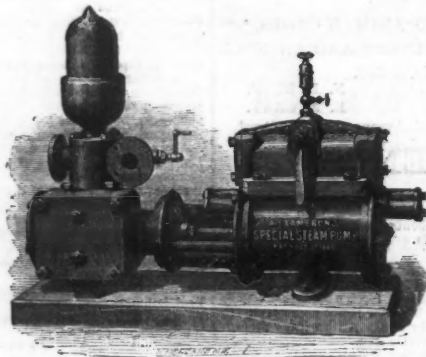
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mar14:ly 351

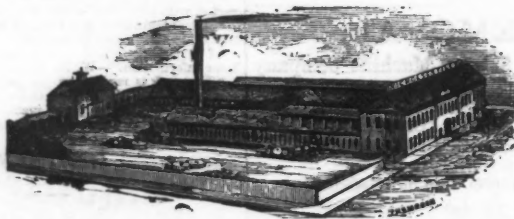
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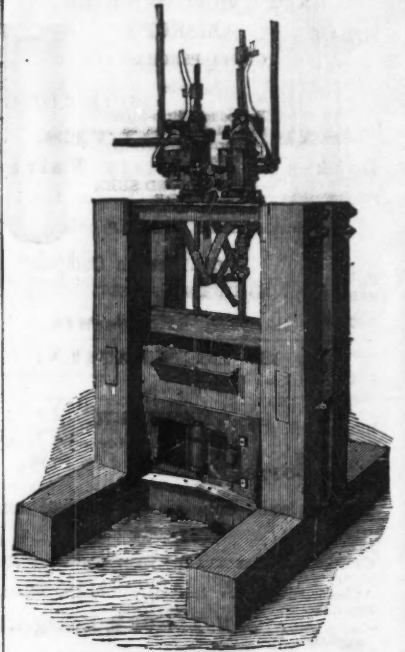
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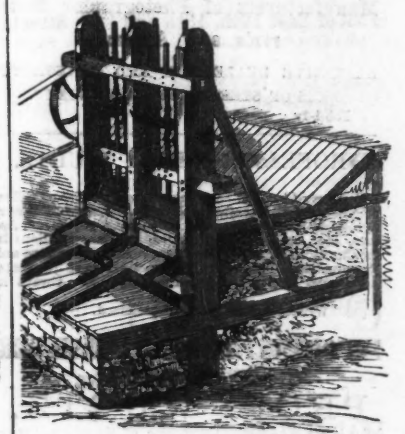
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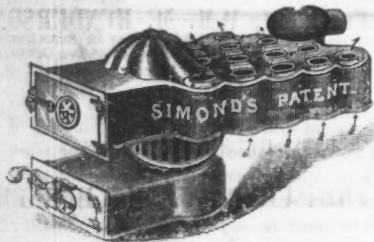
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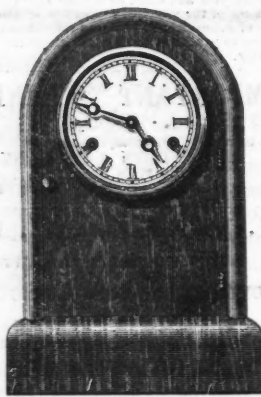
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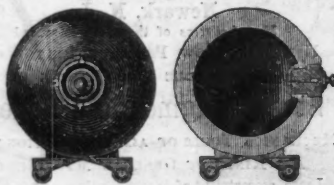
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